Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FOUNTAIN HILLS SOUTH

FLOODPLAIN DELINEATION STUDY

FCD 92-05

FEMA FORMS

Prepared By

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501

TABLE OF CONTENTS

	Section
Powder Wash	1
Cereus Wash	2
Logan Wash	3
Chukar Wash	4
Laser Drain	5
Cyprus Point Wash	6
Jacklin Wash	7
Kingstree Wash	8
Mangrum Drain	9
Emerald Wash	10
Malta Drain	11
Colony Wash	12
Fountain Channel	13
North Colony Wash	14
Sunburst Wash	15
Sycamore Wash	16
Greystone Wash	17

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 New Study

     Explain This is the first delineation of this watercourse
2. Flooding Source: POWDER WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X

   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Nesith
Signature of Revision Requester

Ron Nesith/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Hanel
Signature of Community Official

Randy L Hanel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

C 07 '95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through e community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by e Town Hall anytime during the ree-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

The report is a routine document prepared each year, according to District Manager Ron Huber.

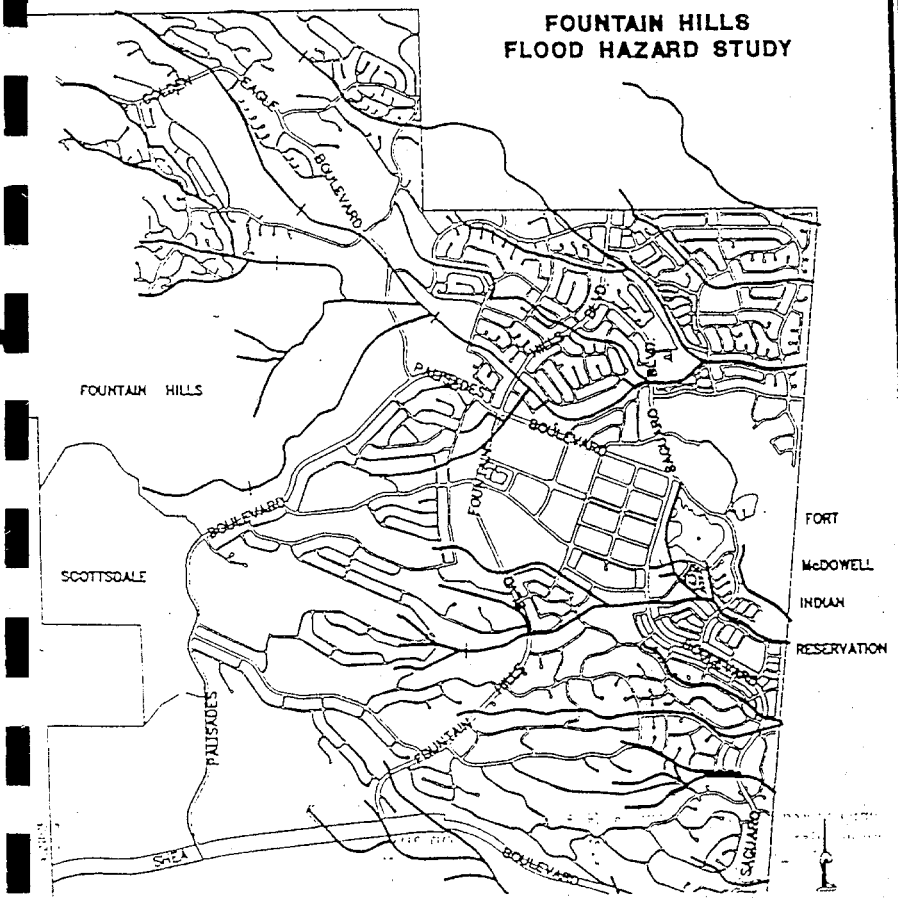
The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?

LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell your
call
erica

Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top Pr
Over 100 Opened & Closed Transactions S
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get m SOLD quickly! She keeps my LISTERS advised of the progress on th
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f e National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93- is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by Engineers and George V. Sabel Consulting Engineers. urpose of this study is to examine and evaluate flood hazard reas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations ose areas. Flood elevations will be used by Maricopa County rry out floodplain management objectives of the National Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applible for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an pportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control ict for consideration in the course of this study. Such mation should be addressed to Mr. Tim Murphy or Ms. Sandy , Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

shed FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal For Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License PROFESSIONAL ENGINEER

Hernan A. Aristizabal
Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: POWDER WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County)
Attach evidence of approval.

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

Stream: POWDER WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
800' UPSTREAM FROM POWDERHORN DR.	0.13	N/A	423
BELOW POWDERHORN DRIVE	0.17	N/A	502
BELOW UPPER LEO DRIVE CROSSING	0.27	N/A	560
BELOW LOWER LEO DRIVE CROSSING	0.32	N/A	583

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
SUBBASIN AREAS	☒	☐	FOUNTAIN HILLS/USGS MAPPING
LAGTIME, L, Lca, SLOPE, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
GREEN + Ampt Parameters	☒	☐	FCDMC HYDROLOGIC MANUAL
ROUTING REACH PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 HR.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.40 mi (TABLE A-1 1108)
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN - Ampt
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: POWDER WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. REACH TO BE REVISED

Downstream limit: 450' BELOW LOWER LEO DRIVE CROSSING

Upstream limit: 800' ABOVE POWDERHORN DRIVE

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	423 cfs	583 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined
CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .032-.035

Overbanks ..... 0 - .055

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and the overbank reach lengths were measured along the anticipated path of the center of mass of the 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.
FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON THE PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 12.97

Specify location SECNO 0.720

3. What is the distance between the cross-sections in 2 above? 502 ft.

4. What is the maximum distance between cross-sections? 516 ft.

Specify location SECNO .630

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A NEW STUDY foot

Specify location

c. What is the maximum velocity? 10.09 fps

Specify location SECNO 10000

d. Are there any negeative 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:

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)*

N/A NEW STUDY

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

THE PROFILES ARE LOCATED IN THE HYDRAULIC ANALYSIS NOTEBOOK.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

N/A
NEW STUDY

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	POWDER WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

MT-2 Form 4 Page 6 of 6

Sheet_____ of _____

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, ARIZONA (Town of Fountain Hills)

Flooding Source: POWDER WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: POWDER WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: LEO DRIVE
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 0.44
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed) _____

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
5-48" CMP's

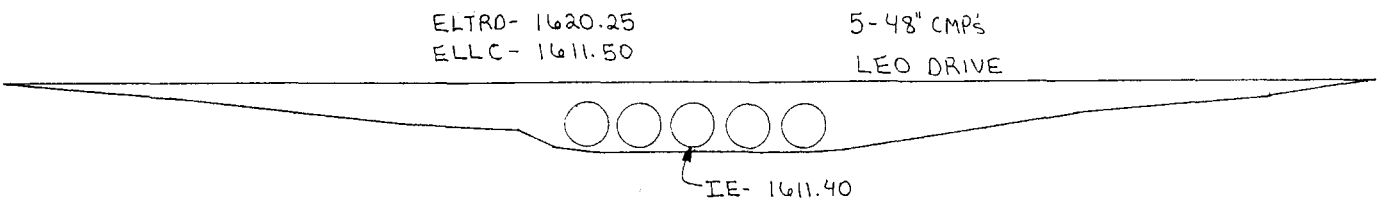
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
PIPE PROJECTING FROM FILL

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 SPECIAL CULVERT METHOD

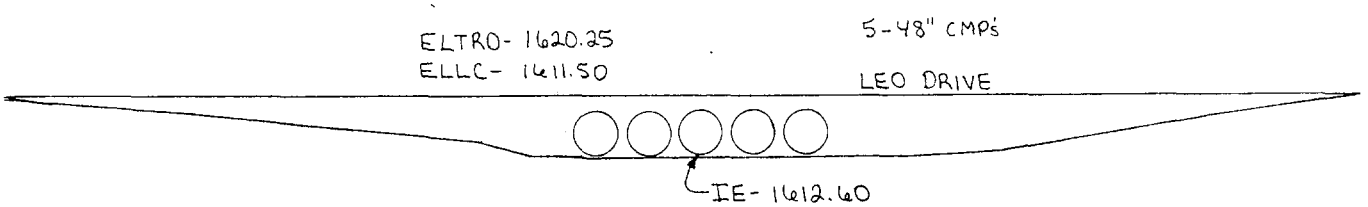
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

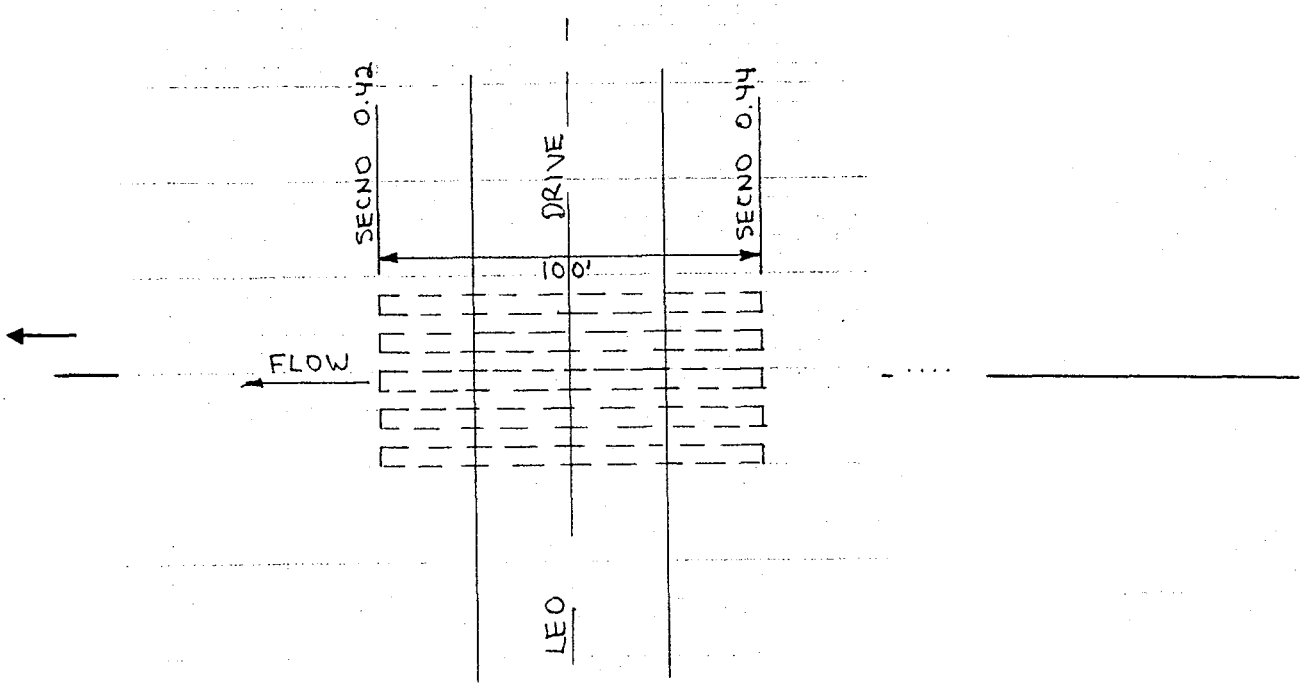
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	100 ft.
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	62.8 ft.²
Total culvert/bridge area (ft²)	62.8 ft.²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1620.25	1620.92
Downstream face	1620.25	1620.92

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1620	1620
Downstream face	1620	1620

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1617.91	1618
Downstream face	1613.63	1614.74

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	474	N/A	N/A	474

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	100 ft.	20 ft.	100 ft.
Downstream face	25 ft.	20 ft.	25 ft.

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	0.02
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	N/A
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: CEREUS WASH
3. Project Name/Identifier: Fountain Hills South FloodPlain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Neuth
Signature of Revision Requester

Ron Neuth/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy Hanel
Signature of Community Official

Randy L. Hanel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

'95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f the National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93- , is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by K Engineers and George V. Sabel Consulting Engineers. purpose of this study is to examine and evaluate flood hazard eas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County rry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applible for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an portunity to bring any relevant facts and technical data concerng local flood hazards to the attention of the Flood Control ict for consideration in the course of this study. Such mation should be addressed to Mr. Tim Murphy or Ms. Sandy , Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

shed FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd. The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

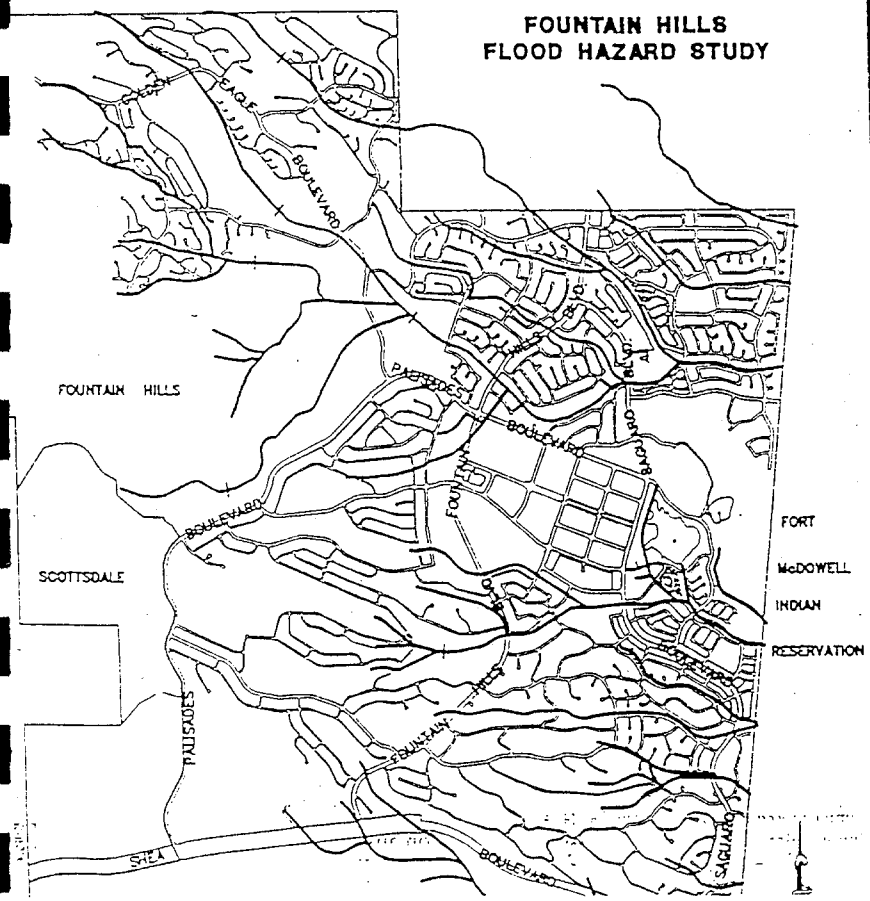
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell your
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get SOLD quickly! She keeps my LISTERS advised of the progress on
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: CEREUS WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County)
Attach evidence of approval.

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

Stream: CEREUS WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :

SEE ATTACHED COMPARISON SHEET.

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin areas	☒	☐	FOUNTAIN HILLS/USGS MAPPING
Lag time, L, Lca, Slope, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
Green + Ampt Parameters	☒	☐	FCDMC HYDROLOGIC MANUAL
Routing Reach Parameters	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability*	☐ Yes ☐ No
11. Comparison of results with other analyses	☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

***FEMA** does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCOMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 hr.
5.	Areal adjustment to precipitation (%):	N/A	Depends Upon Subbasin area
6.	Maximum overland flow length	N/A	0.98 mi
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN- Ampt
	Source of soils information:	N/A	SCS Soil Survey
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Comparison of 100-year Discharges

Location :	Drainage area (Sq. mi.)	FIS (cfs) :	Revised (cfs) :
300 ft. Above Fountain Hills Blvd.	0.08	N/A	172
Above upper Shea Blvd.	0.16	N/A	290
Below confluence with Walnut Wash	1.40	N/A	2078
Below confluence with Chukar Wash	1.71	N/A	2417
Below confluence with Logan Wash	1.94	N/A	2665
Above Saguaro Blvd.	2.28	N/A	2868
Below Saguaro Blvd.	2.30	N/A	590
Above lower Shea Blvd.	2.60	N/A	985
Town Limit (East)	2.62	N/A	1004

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: CEREUS WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. REACH TO BE REVISED

Downstream limit: Town Limit (east)

Upstream limit: 300 ft. above FOUNTAIN HILLS Blvd.

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	172 cfs	1004 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.034 - 0.042

Overbanks ..... 0.0 - 0.099

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.

2. What is the maximum change in energy gradient between cross-sections? 20.62

Specify location SECNO 4.97

3. What is the distance between the cross-sections in 2 above? 264 ft.

4. What is the maximum distance between cross-sections? 534 ft.

Specify location SECNO 3.93

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A NEW STUDY foot

Specify location

c. What is the maximum velocity? 15.20 fps

Specify location SECNO 3.59

d. Are there any negeative 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:

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)*

N/A NEW STUDY

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	CEREUS WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

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, ARIZONA (Town of Fountain Hills)

Flooding Source: CEREUS WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town OF Fountain Hills)

Flooding Source: CEREUS WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: SHEA BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 2.73
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
3 - 12 x 12 feet BOX CULVERTS

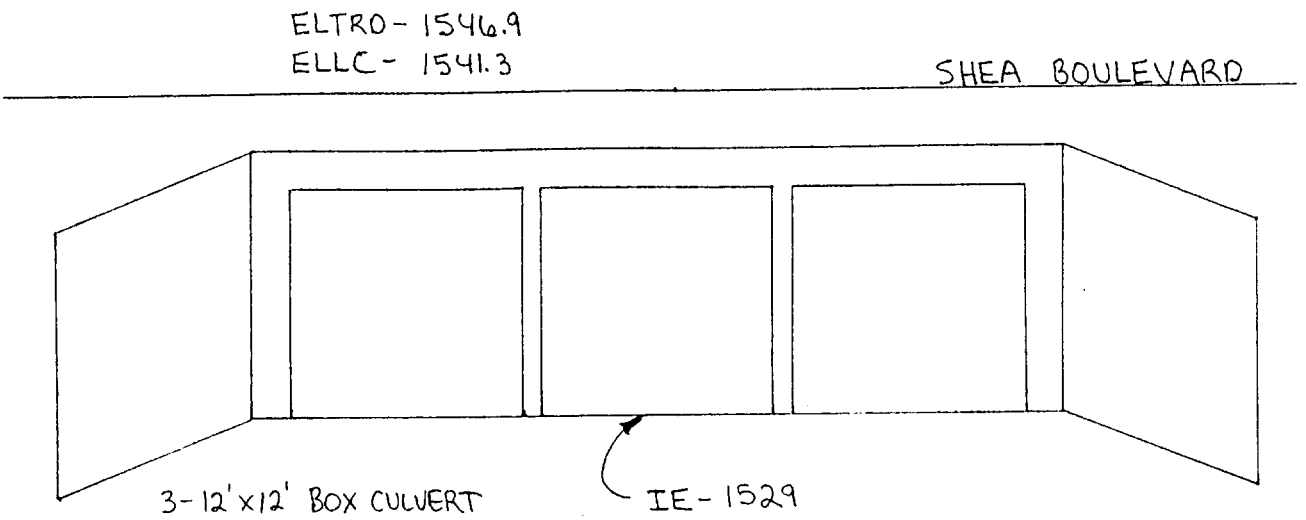
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
30°-75° WINGWALLS

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 SPECIAL CULVERT METHOD

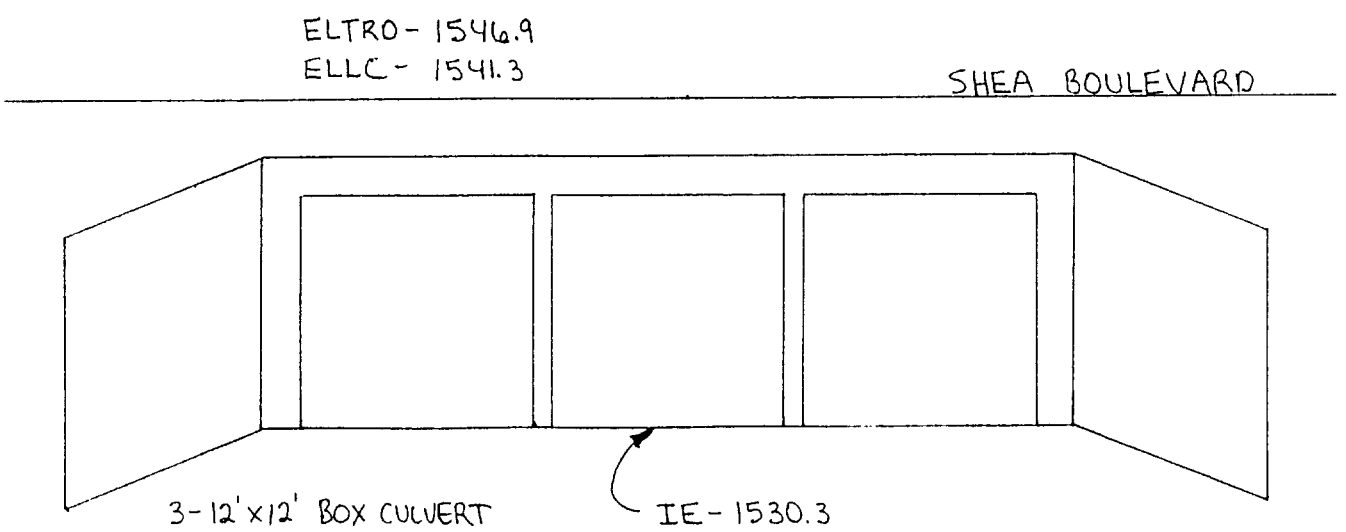
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

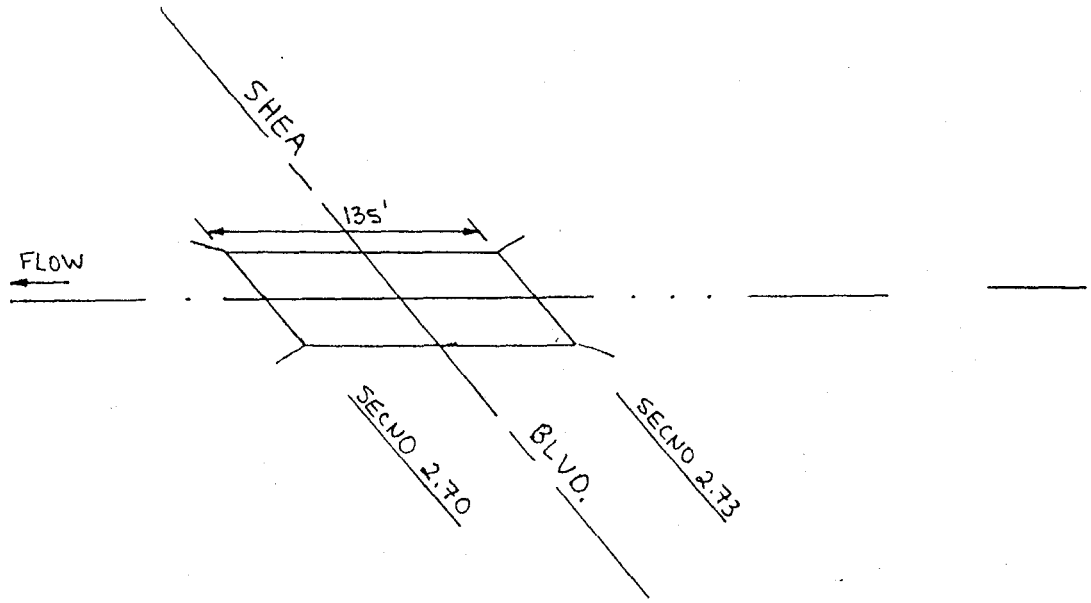
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	135 ft.
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	432 ft.²
Total culvert/bridge area (ft²)	432 ft.²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1547.03	1546.9
Downstream face	1547.03	1546.9

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1546.9	1546.9
Downstream face	1546.9	1546.9

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1534.76	1535.15
Downstream face	1531.51	1532.78

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	984	N/A	N/A	984

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	55	36	55
Downstream face	45	36	45

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.013
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	N/A
Pier coefficient	N/A
Contraction loss coefficient	0.1
Expansion loss coefficient	0.3

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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: Town of Fountain Hills

Flooding Source: Cereus Wash

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Saguaro Boulevard
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): between x-sections 3.01 and 3.04
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
Double barrel 10' x 8' Concrete box culvert

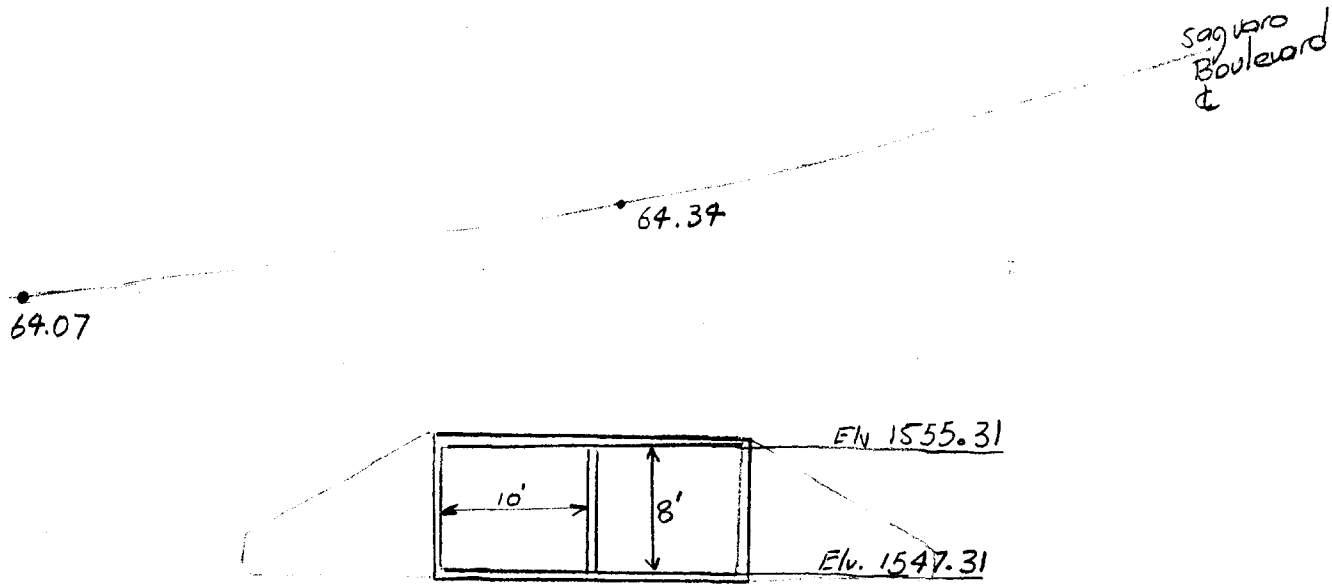
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) 30° - 75° wing walls square top edge

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2

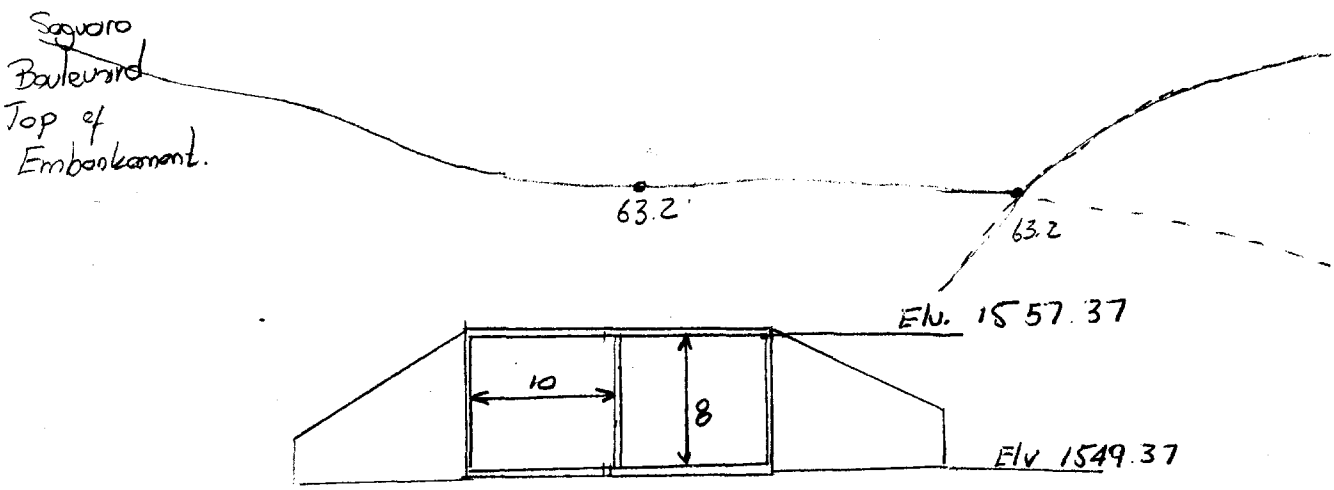
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

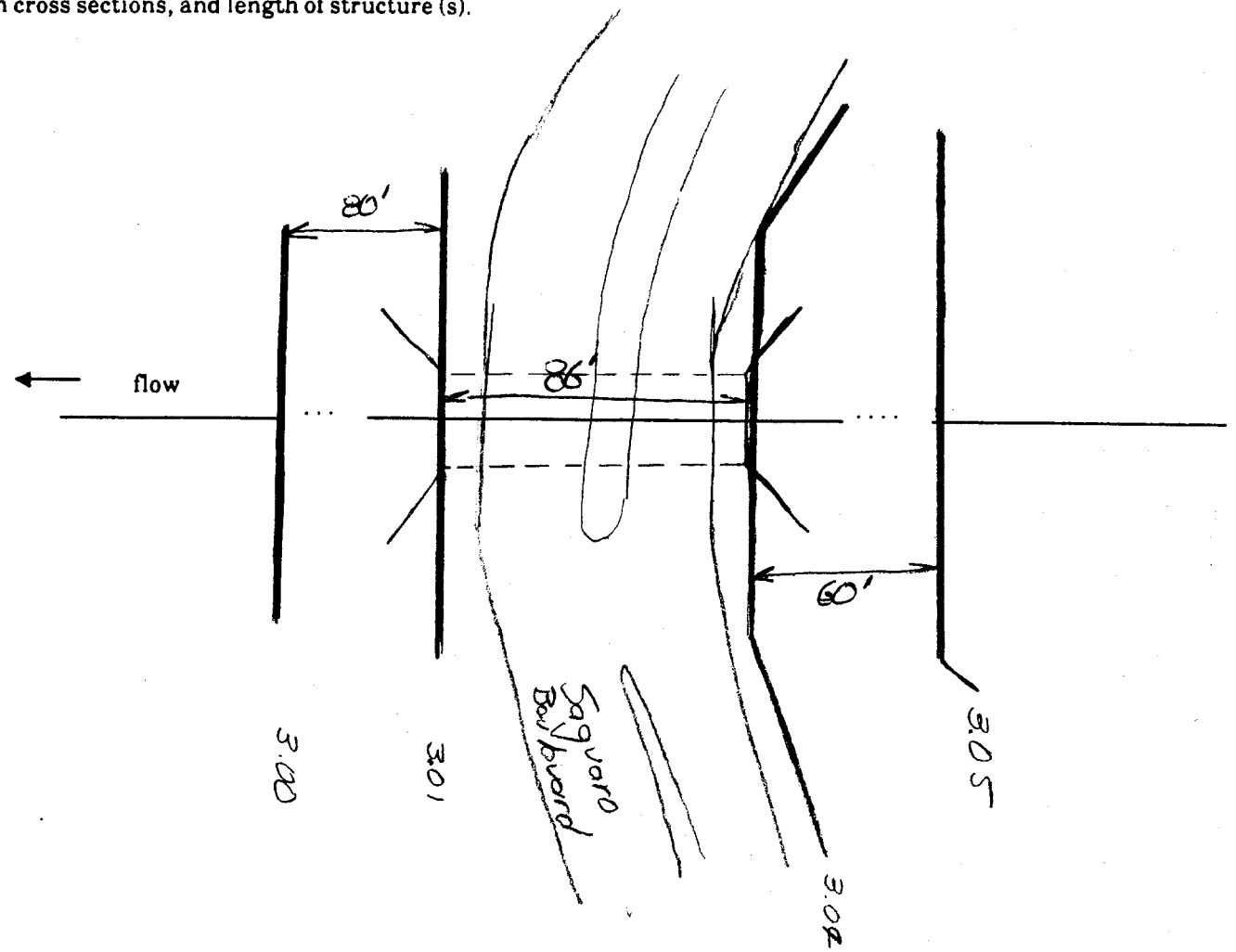
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	86 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	160 ft²
Total culvert/bridge area (ft²)	160 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1563.18	1563.11
Downstream face	1554.31	1553.78

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1563.2	1563.2
Downstream face	1564.34	1564.07

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1564.2	1564.6
Downstream face	1554.4	1556.2

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	N/A	2420	385	2813

The maximum depth of flow over the roadway/railroad (ft.) ..... _____

Weir length (ft.) ..... 162 ft

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	230	230	230
Downstream face	80	80	80

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.4
Manning's "n" value assigned to the structure(s)	0.013
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	0.4
Weir coefficient	2.7
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after several years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) Culvert was not encroached.

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: CEREUS WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: SHEA BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 4.64
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
1 - 84" CMP

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
CMP WITH HEADWALL

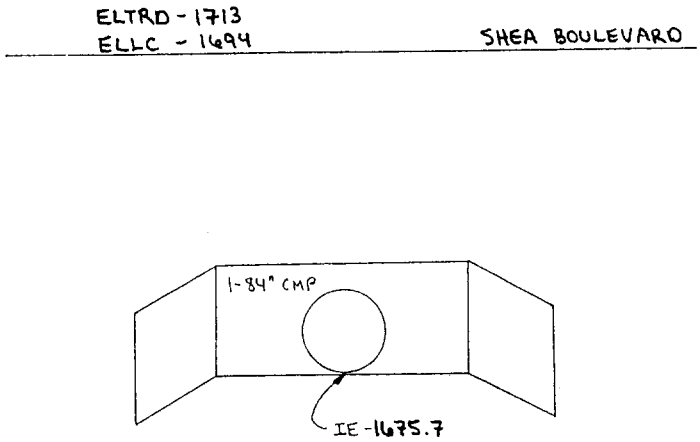
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 SPECIAL CULVERT METHOD

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

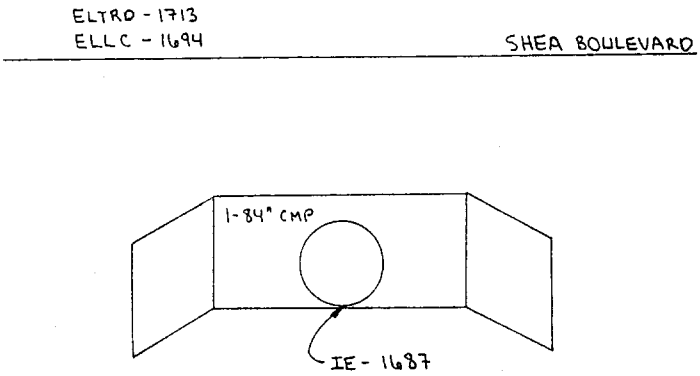
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

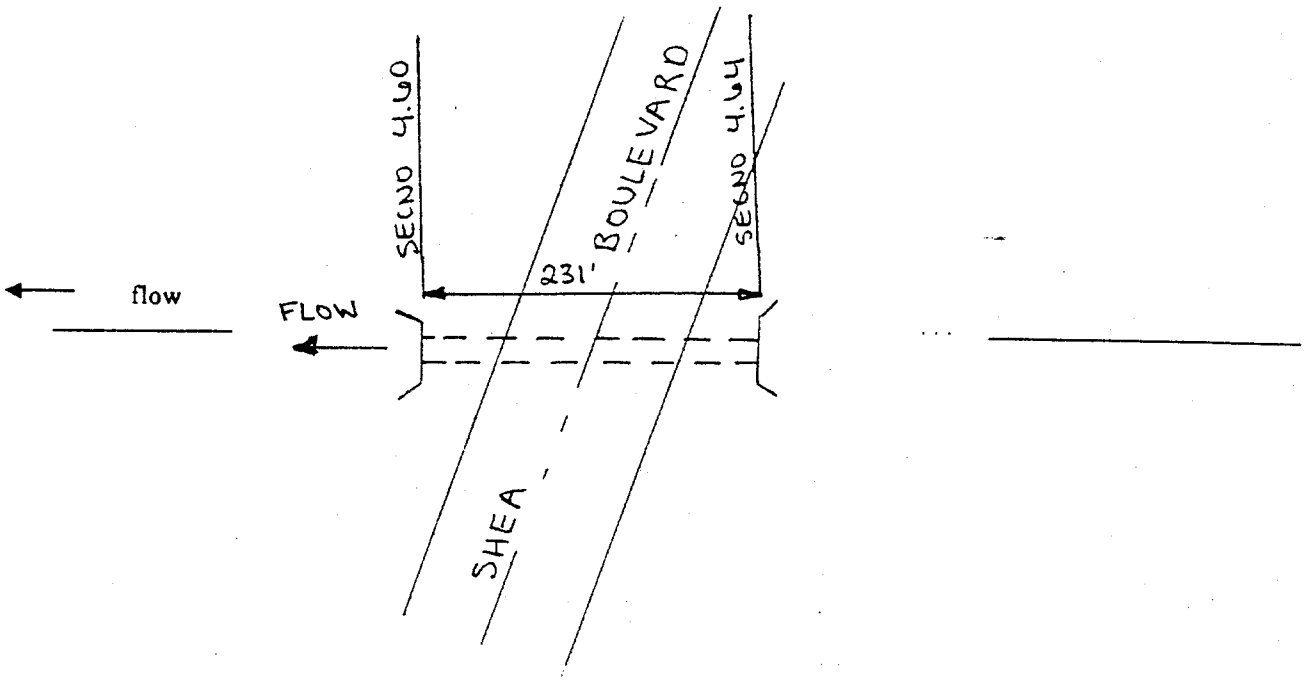
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	231 ft.
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	38.5 ft.²
Total culvert/bridge area (ft²)	38.5 ft.²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1713.4	1715.1
Downstream face	1713.4	1715.1

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1713.4	1713.4
Downstream face	1713.4	1713.4

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1694	1694
Downstream face	1679	1681

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	291	N/A	N/A	291

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	50	7	50
Downstream face	60	7	60

Loss Coefficients

Entrance loss coefficient	0.5
Manning's "n" value assigned to the structure(s)	0.028
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	N/A
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: CEREUS WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: FOUNTAIN HILLS BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 5.05
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed) _____

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
1 - 60" CMP

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
CMP WITH HEADWALL

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 SPECIAL CULVERT METHOD

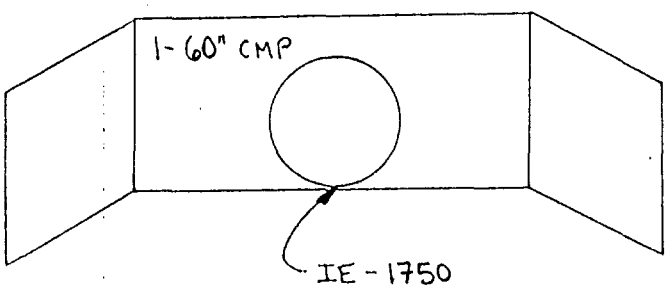
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.

ELTRD - 1778
ELLC - 1762

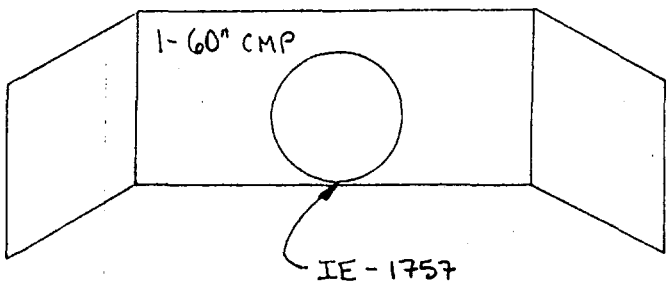
FOUNTAIN HILLS BOULEVARD



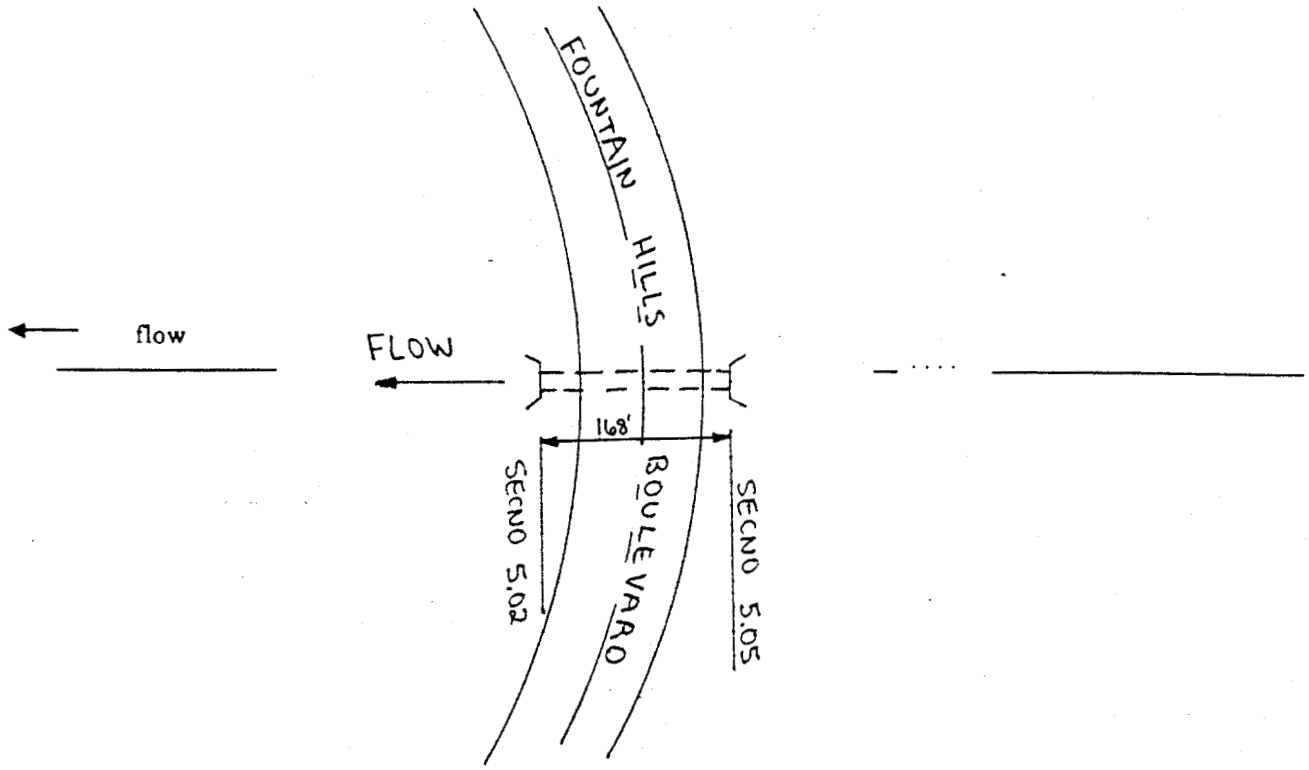
Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.

ELTRD - 1778
ELLC - 1762

FOUNTAIN HILLS BOULEVARD



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	168 ft.
Calculated culvert/bridge area (ft ²) by the hydraulic model, if applicable	19.6 ft.²
Total culvert/bridge area (ft ²)	19.6 ft.²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1778	1773
Downstream face	1778	1773

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1773	1773
Downstream face	1773	1773

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1762	1762.5
Downstream face	1753	1754

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	132	N/A	N/A	132

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	30	5	30
Downstream face	20	5	20

Loss Coefficients

Entrance loss coefficient	0.5
Manning's "n" value assigned to the structure(s)	0.024
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	N/A
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments (*explain any unusual situations*):

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: LOGAN WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L. Harrel
Signature of Community Official

Randy L. Harrel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

07 '95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed on over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

The report is a routine document prepared each year, according to District Manager Ron Huber.

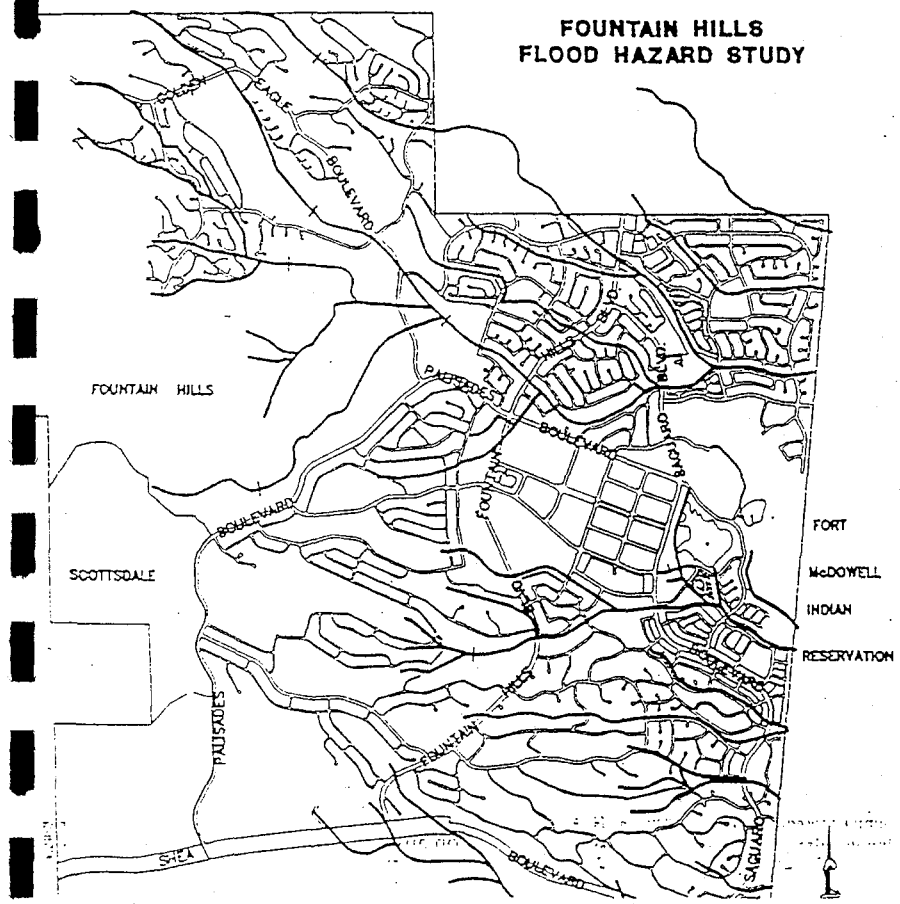
The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?

LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell your
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions S
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get m SOLD quickly! She keeps my LISTERS advised of the progress on th
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources (*hydrology, hydraulics, sediment transport, interior drainage*)* structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Hernan A. Aristizabal
Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: LOGAN WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County.)
Attach evidence of approval.

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

Stream: LOGAN WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
END OF STUDY (SECNO 0.63)	0.07	N/A	165 cfs
900' FROM END OF STUDY	0.11	N/A	296 cfs
100' FROM SAGUARO BLVD	0.12	N/A	435 cfs
ABOVE CONFLUENCE W/CEREUS WASH	0.19	N/A	435 cfs

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)*

N/A

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 N/A New study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin Areas	☒	☐	FOUNTAIN HILLS / USGS MAPPING
Lag Time, L, Lca, Slope, Kn	☒	☐	FOUNTAIN HILLS / USGS MAPPING
Green + Ampt Parameters	☒	☐	FCDMC HYDROLOGIC MANUAL
Routing Reach Parameters	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC Hydrologic Manual
4.	Rainfall duration:	N/A	6+24 hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.63mi TABLE A-2 (124A)
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN-Ampt
	Source of soils information:	N/A	SCS Soil Survey
	Source of land use information	N/A	Aerial Photos
9.	Channel routing method:	N/A	Normal Depth
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: LOGAN WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. REACH TO BE REVISED

Downstream limit: CONFLUENCE WITH CEREUS WASH

Upstream limit: 400' WEST OF TOMBSTONE AVE.

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	165 cfs	435 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.039 - 0.054

Overbanks ..... 0.00 - 0.054

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.
For those cross-sections where the HEC-2 model defaulted to critical depth the critical depth water surface elevations are plotted on the profiles and maps.

2. What is the maximum change in energy gradient between cross-sections? 16.84

Specify location 0.000

3. What is the distance between the cross-sections in 2 above? 352 ft.

4. What is the maximum distance between cross-sections? 514 ft.

Specify location 0.210

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A NEW STUDY foot

Specify location

c. What is the maximum velocity? 9.07 fps

Specify location 0.340

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in VOLUME 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY
WATER SURFACE ELEVATION CHECK

N/A. NEW STUDY

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	LOGAN WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

Sheet _____ of _____

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, ARIZONA (Town of Fountain Hills)

Flooding Source: LOGAN WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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?_____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: CHUKAR WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Nevitt
Signature of Revision Requester

RON NEVITT/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Hanel
Signature of Community Official

Randy L Hanel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

07 '95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f the National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93-), is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by K Engineers and George V. Sabel Consulting Engineers. purpose of this study is to examine and evaluate flood hazard eas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County arry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applicable for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an portunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control istrict for consideration in the course of this study. Such rmation should be addressed to Mr. Tim Murphy or Ms. Sandy y, Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

ished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: HERNAN A. ARISTIZABAL for ENTELLUS INC.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State ARIZONA

Type of License PROFESSIONAL ENGINEER

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: CHUKAR WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.)
Attach evidence of approval.

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

Stream: CHUKAR WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
1000' ABOVE CEREUS WASH CONFLUENCE	0.24	N/A	509 cfs
AT CEREUS WASH CONFLUENCE	0.28	N/A	573 cfs

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin areas	☒	☐	FOUNTAIN HILLS/USGS MAPPING
Lag time, L, Lca, Slope, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
Green + Ampt Parameters	☒	☐	FCDMC HYDROLOGIC MANUAL
Routing Reach Parameters	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

***FEMA** does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.73 mi TABLE A-2 (125B)
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN-AMPT
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: CHUKAR WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. REACH TO BE REVISED

Downstream limit: CONFLUENCE WITH CEREUS WASH

Upstream limit: WESTERN BORDER OF SECTION 27

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	509 cfs	573 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .039 - .039

Overbanks ..... .046 - .046

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.
For those cross-sections where the HEC-2 model defaulted to critical depth the critical depth water surface elevations are plotted on the profiles and maps.

2. What is the maximum change in energy gradient between cross-sections? 13.55

Specify location 0.11

3. What is the distance between the cross-sections in 2 above? 505 ft.

4. What is the maximum distance between cross-sections? 505 ft.

Specify location 0.11

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A NEW STUDY foot

Specify location

c. What is the maximum velocity? 8.32 fps

Specify location 0.09

d. Are there any negeative 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:

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)*

N/A NEW STUDY

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in Volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	CHUKAR WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

Sheet_____ of _____

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, ARIZONA (Town of Fountain Hills)

Flooding Source: CHUKAR WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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?_____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: LASER DRAIN
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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

Types of Flooding
- ☒ Riverine
- ☐ Coastal
- ☐ Alluvial Fan
- ☐ Shallow Flooding *(e.g. Zones AO and AH)*
- ☐ Lakes

Affected by wind/wave action
- ☐ Yes
- ☒ No

Structures
- ☐ Channelization
- ☐ Levee/Floodwall
- ☐ Bridge/Culvert
- ☐ Dam
- ☐ Coastal
- ☐ Fill
- ☐ Pump Station
- ☐ None
- ☐ Channel Relocation
- ☐ Excavation
- ☐ Other *(describe)*

Disciplines*
- ☐ Water Resources
  - ☒ Hydrology
  - ☒ Hydraulics
  - ☐ Sediment Transport
  - ☐ Interior Drainage
- ☐ Structural
- ☐ Geotechnical
- ☐ Land Surveying
- ☐ 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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L. Hanel
Signature of Community Official

Randy L. Hanel, Town Engineer
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

07 '95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f e National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93- is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by Engineers and George V. Sabel Consulting Engineers. urpose of this study is to examine and evaluate flood hazard reas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations ose areas. Flood elevations will be used by Maricopa County rry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applible for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an pportunity to bring any relevant facts and technical data concerng local flood hazards to the attention of the Flood Control ict for consideration in the course of this study. Such mation should be addressed to Mr. Tim Murphy or Ms. Sandy , Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

ished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed on over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

The report is a routine document prepared each year, according to District Manager Ron Huber.

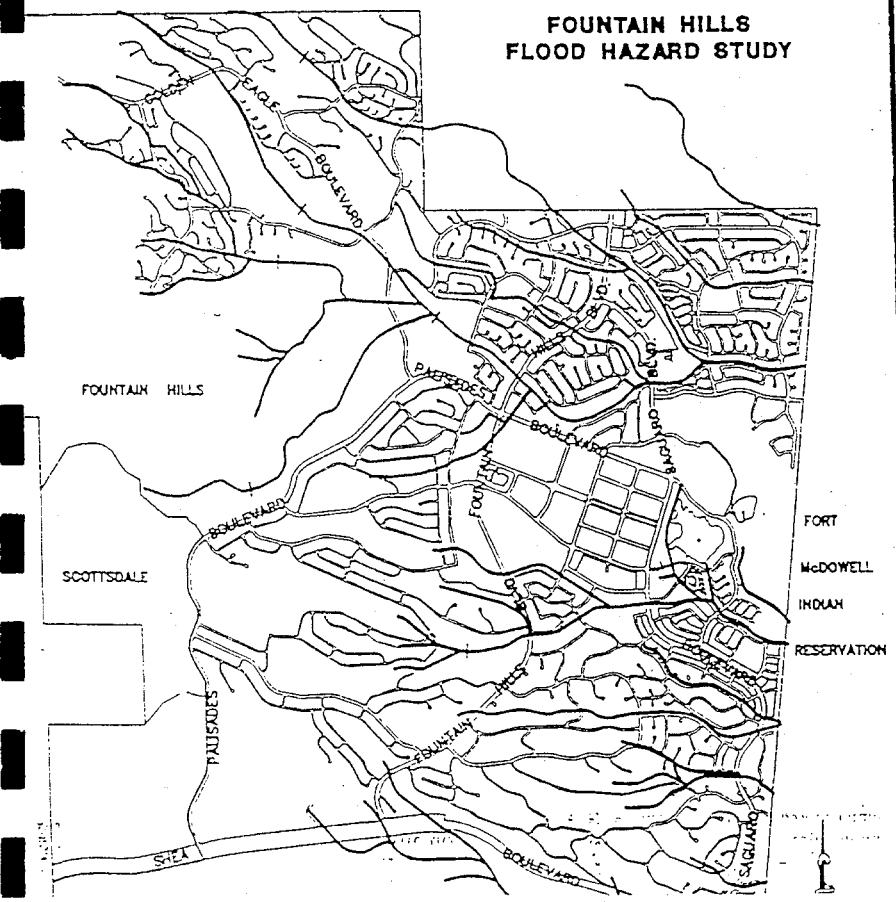
The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?

LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell you
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get SOLD quickly! She keeps my LISTERS advised of the progress of
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal For Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Hernan A. Aristizabal
Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: LASER DRAIN
(One form for each flooding source)

Project Name /Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County)
Attach evidence of approval.

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

Stream: LASER DRAIN

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
Above Cereus Wash	0.21	N/A	470
Above Saguaro Blvd.	0.18	N/A	410

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 N/A New study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

Unavailable

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin Areas	☒	☐	Fountain Hills & USGS Mapping
Lag Time, L, Lca, Slope, Kn	☒	☐	Fountain Hills & USGS Mapping
Green & Ampt Parameters	☒	☐	FCDMC Hydrologic Manual
Routing Reach Parametecs	☒	☐	FCDMC Hydrologic Manual
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:		4.0.1E
	Date:		May 1991
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		FCDMC Hydrologic Manual
4.	Rainfall duration:		6 & 24 Hour
5.	Areal adjustment to precipitation (%):		Depends upon Subbasin Area
6.	Maximum overland flow length		0.032 Mi
7.	Hydrograph development method:		Clark Unit Graph
8.	Loss rate method:		Green-Ampt
	Source of soils information:		SCS Soil Survey
	Source of land use information		Aerial Photos
9.	Channel routing method:		Normal Depth
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 The model was calibrated by comparing USGS gage data, runoff volume checks, results with estimates using a USGS regional regression equation, and with results from other studies.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: LASER DRAIN
(One form for each flooding source)

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. REACH TO BE REVISED

Downstream limit: Cereus Wash

Upstream limit: Upstream of Technology Drive

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	410 cfs	470 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

Slope area method in the downstream confluence.

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.018 TO 0.065

Overbanks ..... 0.033 TO 0.073

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
N/A		

Explain:

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.

The cross-sections were determined photogrammetrically by the Aerial Mapping Company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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. For those cross-sections where the HEC-2 model defaulted to critical depth, the critical depth water surface elevations are plotted on the profiles and maps.

2. What is the maximum change in energy gradient between cross-sections? 5.6 ft

Specify location 0.064

3. What is the distance between the cross-sections in 2 above? 320 ft

4. What is the maximum distance between cross-sections? 320 ft

Specify location secno 0.064

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? 0.0 foot

Specify location N/A

c. What is the maximum velocity? 8.1 fps

Specify location secno 0.161

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. N/A NEW STUDY The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

B. N/A NEW STUDY The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.
The profiles are located in the Hydraulic Analysis Report

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY
WATER SURFACE ELEVATION CHECK N/A NEW STUDY

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER

	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]

COMMENTS:

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.

Sheet _____ of _____

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, Arizona (Town of Fountain Hills)

Flooding Source: LASER DRAIN

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.) 1929 NGVD	☒ 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: This is the first study done in Fountain Hills, therefore there are no existing floodplain and floodway delineations

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.)*? Aerial mapping, August 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 Foot 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.

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.

N/A This is the first study of the area, therefore there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore there isn't an existing floodway delineation.

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

If no, explain:

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.

If requested, a digitized map can be supplied.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: CYPRUS POINT WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Nemitt
Signature of Revision Requester

Ron Nemitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy Hanel
Signature of Community Official

Randy L. Hanel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority he National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93-), is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by K Engineers and George V. Sabel Consulting Engineers.

purpose of this study is to examine and evaluate flood hazard eas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County arry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates appliable for buildings and their contents.

s announcement is intended to notify all interested persons of commencement of this study so that they may have an pportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control rict for consideration in the course of this study. Such rmation should be addressed to Mr. Tim Murphy or Ms. Sandy y, Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

lished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through e community will be held on T-ursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by he Town Hall anytime during the hree-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the s-udy is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

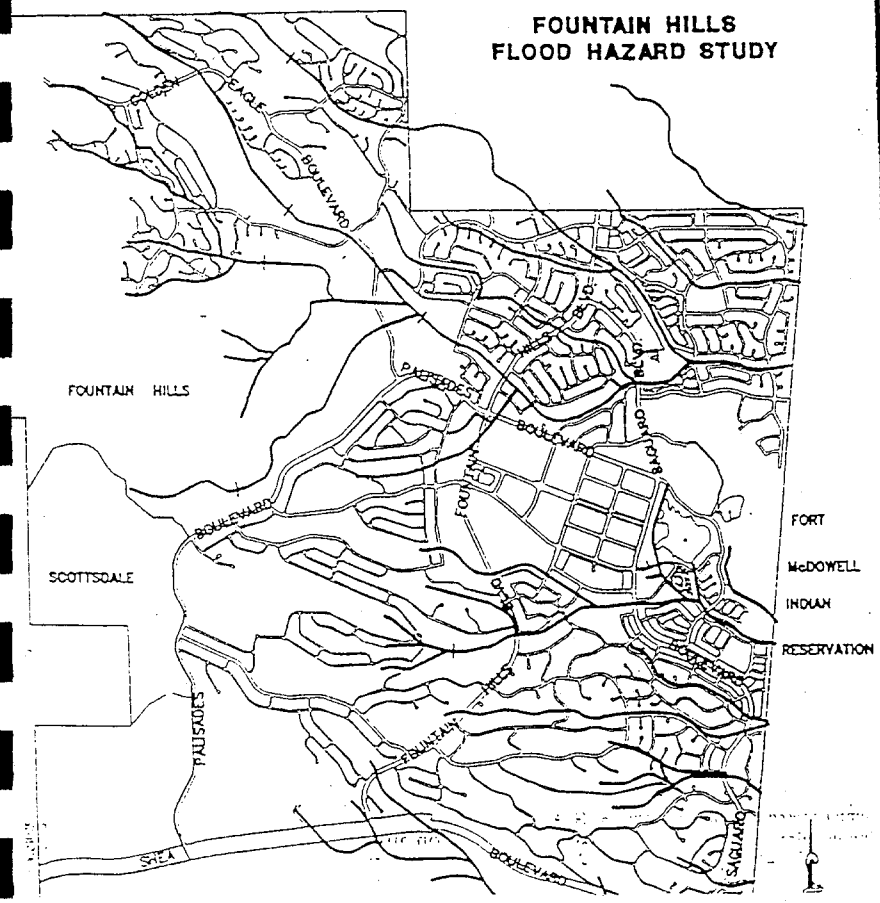
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell you
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.
Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get
SOLD quickly! She keeps my LISTERS advised of the progress on
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal For Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Hernan A. Aristizabal
Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills

Flooding Source: CYPRUS POINT WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD-92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY)
Attach evidence of approval.

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

ATTACHMENT A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 HR.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.42 mi. TABLE A-3 (130A)
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN-AMPT
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: CYPRUS POINT WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. REACH TO BE REVISED

Downstream limit: TOWN LIMIT (EAST)

Upstream limit: 800' ABOVE DEMARET DR.

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	193 cfs	331 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.018 - 0.038

Overbanks ..... 0.0 - 0.068

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.
FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 13.43

Specify location SECNO 2.55

3. What is the distance between the cross-sections in 2 above? 500 ft.

4. What is the maximum distance between cross-sections? 500 ft.

Specify location SECNO 2.55

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

Specify location NEW STUDY

c. What is the maximum velocity? 8.36 fps

Specify location SECNO 2.29

d. Are there any negeative 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:

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)*

N/A NEW STUDY

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	CYPRUS POINT WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

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, ARIZONA (Town of Fountain Hills)

Flooding Source: CYPRUS POINT WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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?_____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: CYPRUS POINT WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: SAGUARO BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 2.43
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed) _____

2. BACKGROUND

Provide the following information about the structure:

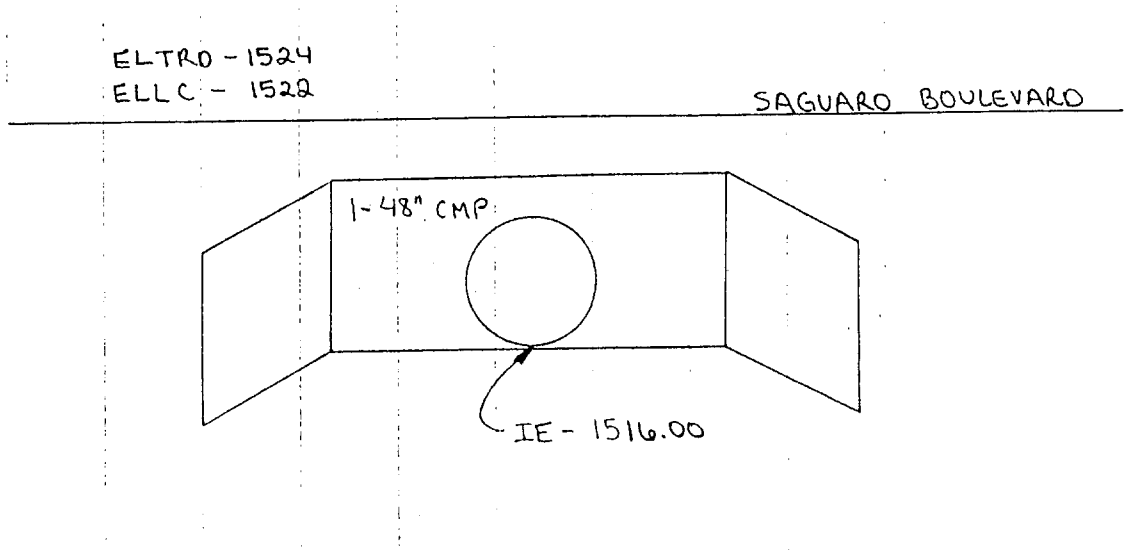
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
   1- 48" CMP
2. Entrance geometry of culvert/type of bridge opening (e.g. 30 ^{0} - 75 ^{0} wing walls with square top edge, sloping embankments and vertical abutments)
   CMP WITH HEADWALL
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
   HEC-2 SPECIAL CULVERT METHOD

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

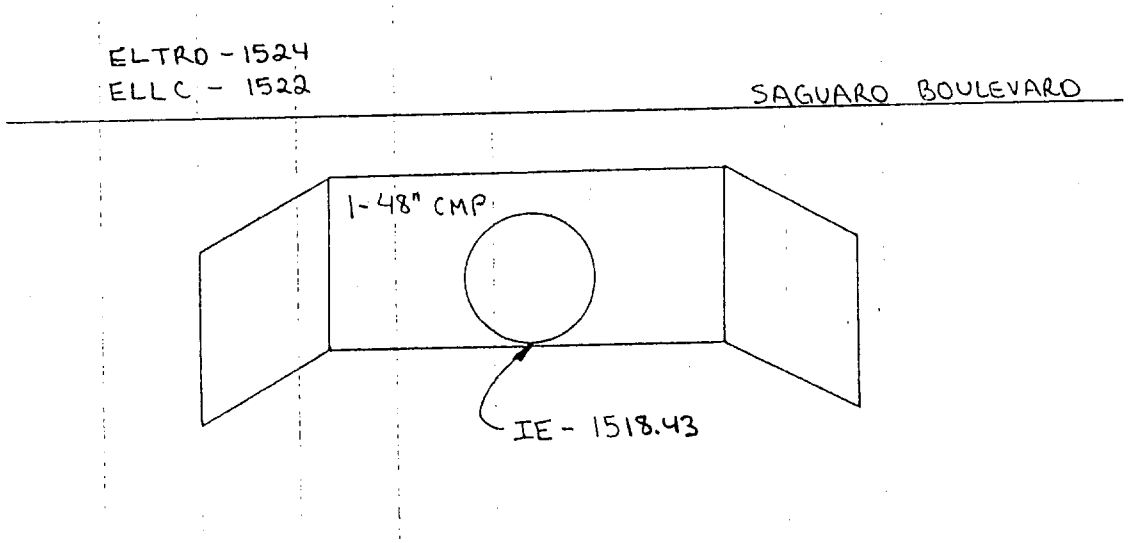
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

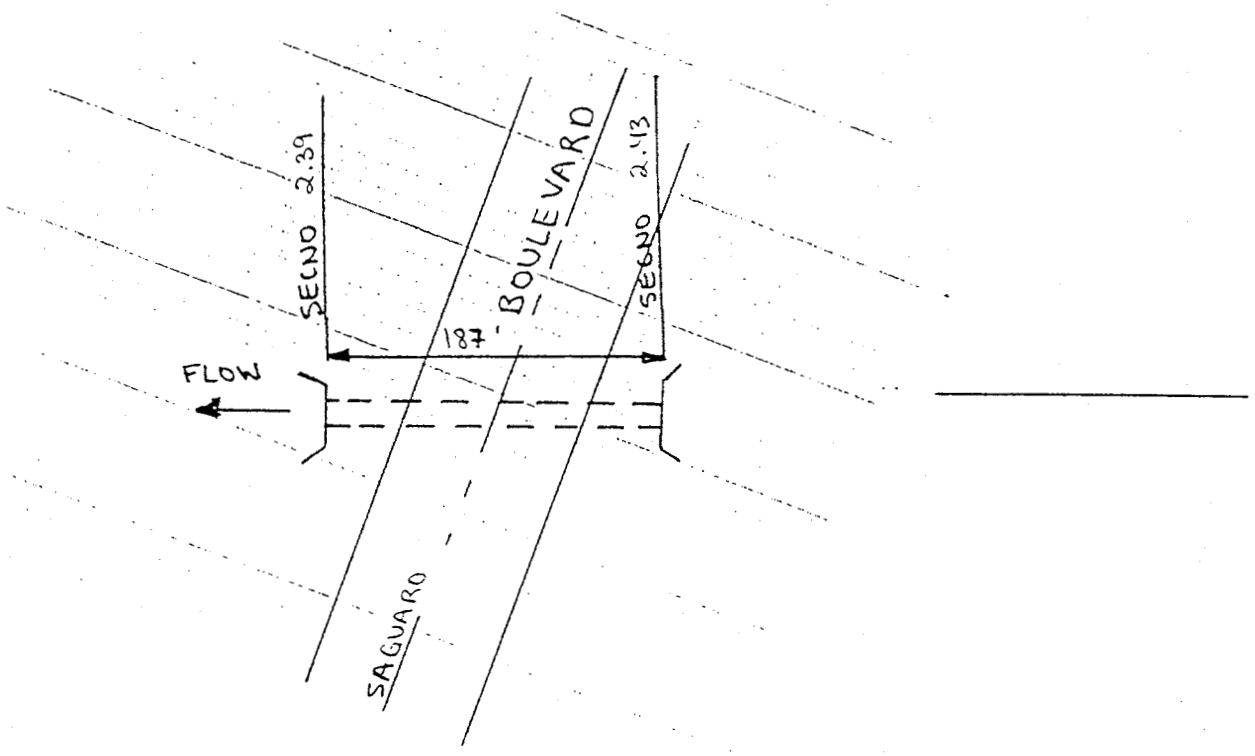
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	187 ft.
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	12.6 ft.²
Total culvert/bridge area (ft²)	12.6 ft.²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1524	1524
Downstream face	1524	1524

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1524	1524
Downstream face	1524	1524

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1525.3	1525.39
Downstream face	1519.09	1520

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	N/A	136	167	331

The maximum depth of flow over the roadway/railroad (ft.) ..... 1.3 ft.

Weir length (ft.) ..... 79 ft.

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	80	80	80
Downstream face	30	30	30

Loss Coefficients

Entrance loss coefficient	0.20
Manning's "n" value assigned to the structure(s)	0.023
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	2.80
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: JACKLIN WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Nesmith
Signature of Revision Requester

Ron Nesmith/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Hanel
Signature of Community Official

Randy L Hanel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

07 '95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f the National Flood Insurance Act of 1968 (P.L. 90 448), as ended, and the Flood Disaster Protection Act of 1973 (p.L. 93-4), is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by CK Engineers and George V. Sabel Consulting Engineers. e purpose of this study is to examine and evaluate flood hazard reas which are developed or which are likely to be developed or which are likely to be developed and to determine flood elevations those areas. Flood elevations will be used by Maricopa County carry out floodplain management objectives of the National od Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applicable for buildings and their contents.

s announcement is intended to notify all interested persons of commencement of this study so that they may have an pportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control trict for consideration in the course of this study. Such ormation should be addressed to Mr. Tim Murphy or Ms. Sandy ry, Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

blished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

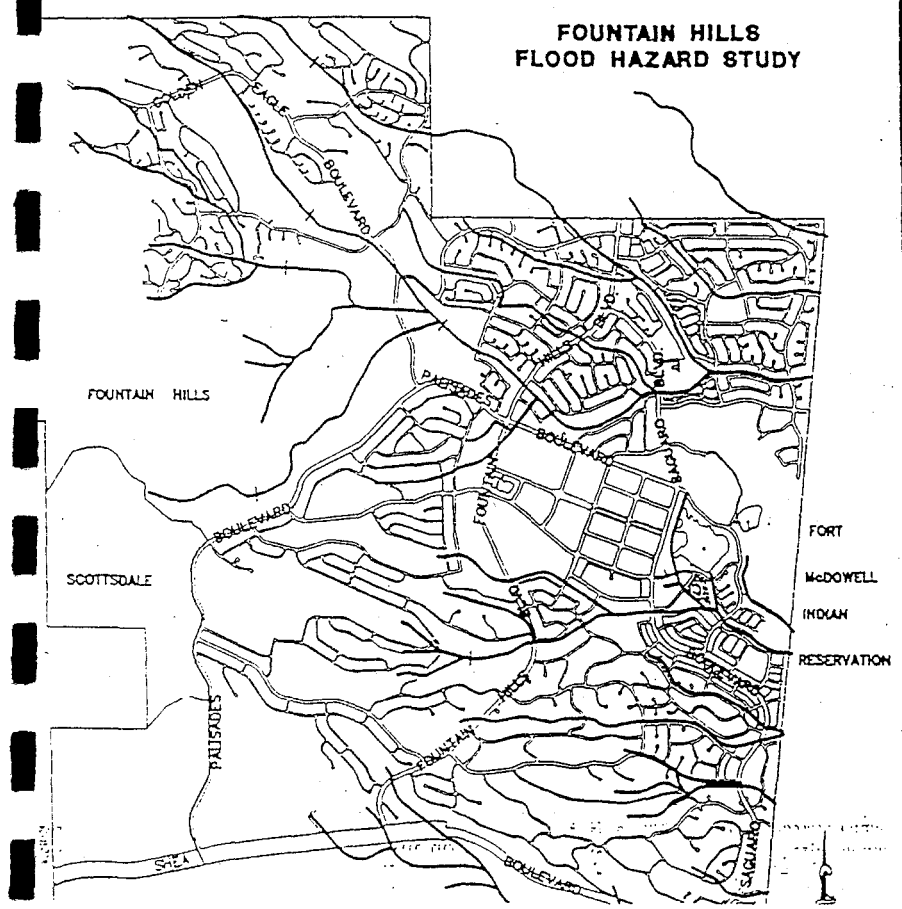
The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?

LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"

837-1640



When you need to sell your
call
erica

Watch... erica west
Channel 10 NEWS
"Real Estate Expert"

Fountain Hills #1 Top Pr
Over 100 Opened & Closed Transactions
(So Far)

...her team of "SPECIALIS
are WORKING FOR YOU

Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get m SOLD quickly! She keeps my LISTERS advised of the progress on th

Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study, so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Hernan A. Aristizabal
Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO. 29737
HERNAN A. ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: JACKLIN WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY)
Attach evidence of approval.

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

Stream: JACKLIN WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
UPSTREAM LIMIT	.15	N/A	329
BELOW CONFLUENCE WITH MANGRUM WASH	.41	N/A	917
ABOVE SAGUARO BLVD.	.41	N/A	960
BELOW SAGUARO BLVD	.63	N/A	972
AT TOWN LIMIT (EAST)	.66	N/A	977

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
SUBBASIN AREAS	☒	☐	FOUNTAIN HILLS/USGS MAPPING
LAG TIME, L, Lca, SLOPE, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
GREEN + AMPT PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
ROUTING REACH PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 Hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.87 mi TABLE A-4 (150I)
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN-AMPT
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval:	5% limit	_____	cfs
	95% limit	_____	cfs
50% Confidence Interval:	25% limit	_____	cfs
	75% limit	_____	cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: JACKLIN WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY

1. REACH TO BE REVISED

Downstream limit: TOWN LIMIT (EAST)

Upstream limit: 800' N.E. OF NICKLAUS + KEOTA DRIVE INTERSECTION

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	329 cfs	977 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.017 - 0.045

Overbanks ..... 0.0 - 0.051

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.

FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 12.99

Specify location SECNO 3.00

3. What is the distance between the cross-sections in 2 above? 518 ft.

4. What is the maximum distance between cross-sections? 518 ft.

Specify location SECNO 3.00

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

Specify location NEW STUDY

c. What is the maximum velocity? 13.12 fps

Specify location SECNO 2.46

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	JACKLIN WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

Sheet_____ of _____

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, ARIZONA (Town of Fountain Hills)

Flooding Source: JACKLIN WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY
BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: JACKLIN WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: INDIAN WELLS DRIVE
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 2.34
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
2 - 60" CMP's

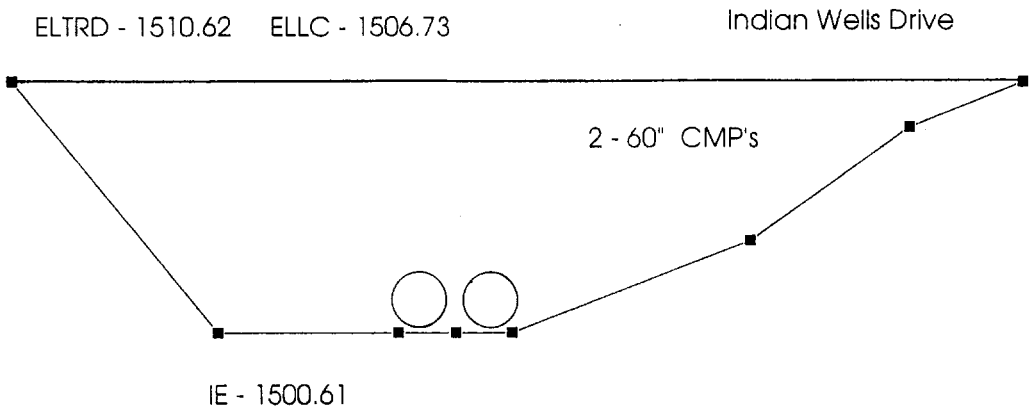
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
PIPE PROJECTING FROM FILL

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 SPECIAL CULVERT METHOD

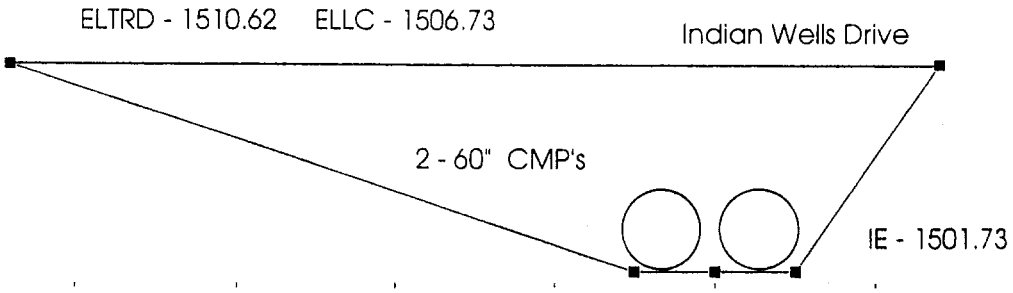
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

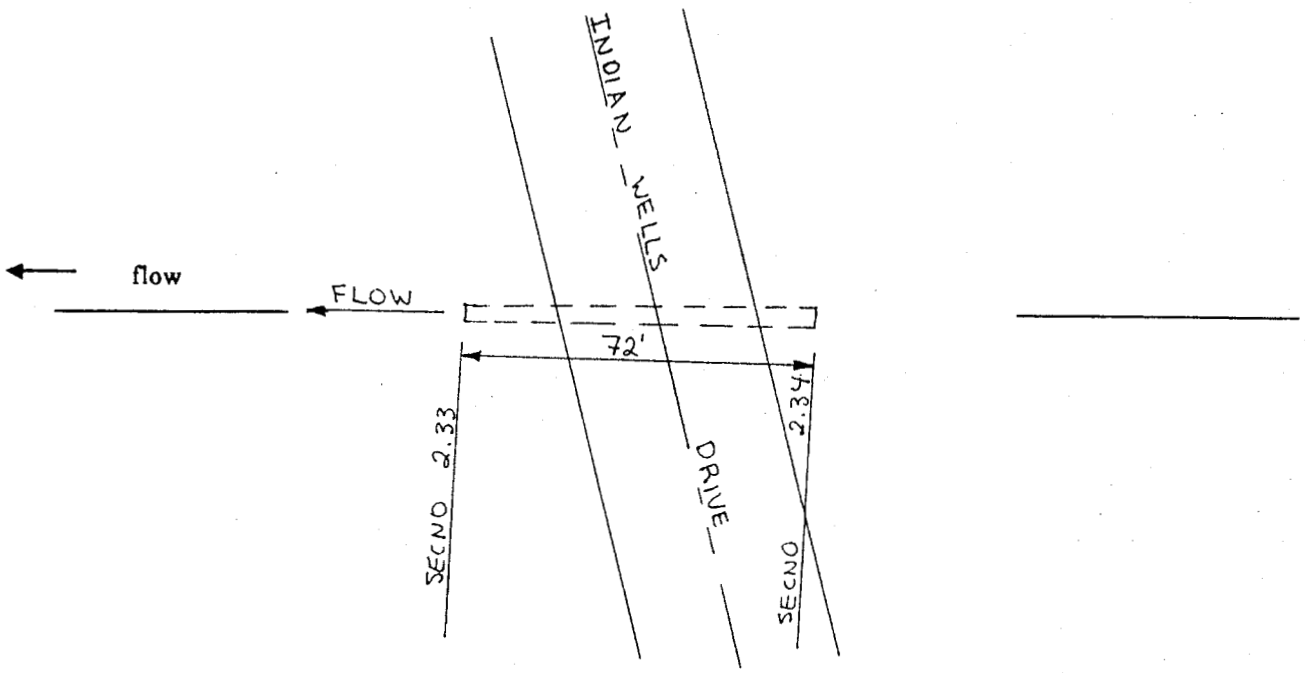
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	72 ft.
Calculated culvert/bridge area (ft 2) by the hydraulic model, if applicable	39.3 ft.^{2}
Total culvert/bridge area (ft 2)	39.3 ft.^{2}

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1510.8	1510.6
Downstream face	1504.5	1504.2

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1510.6	1510.6
Downstream face	1510.6	1510.6

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1511.3	1511.6
Downstream face	1504.5	1505.5

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	N/A	448	523	977

The maximum depth of flow over the roadway/railroad (ft.) ..... .5 ft.

Weir length (ft.) ..... 254 ft.

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	80	80	80
Downstream face	40	40	40

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	0.024
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: JACKLIN WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: SAGUARO BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 2.48
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)

1- 7' x 14' BOX CULVERT

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)

30°-75° WINGWALLS

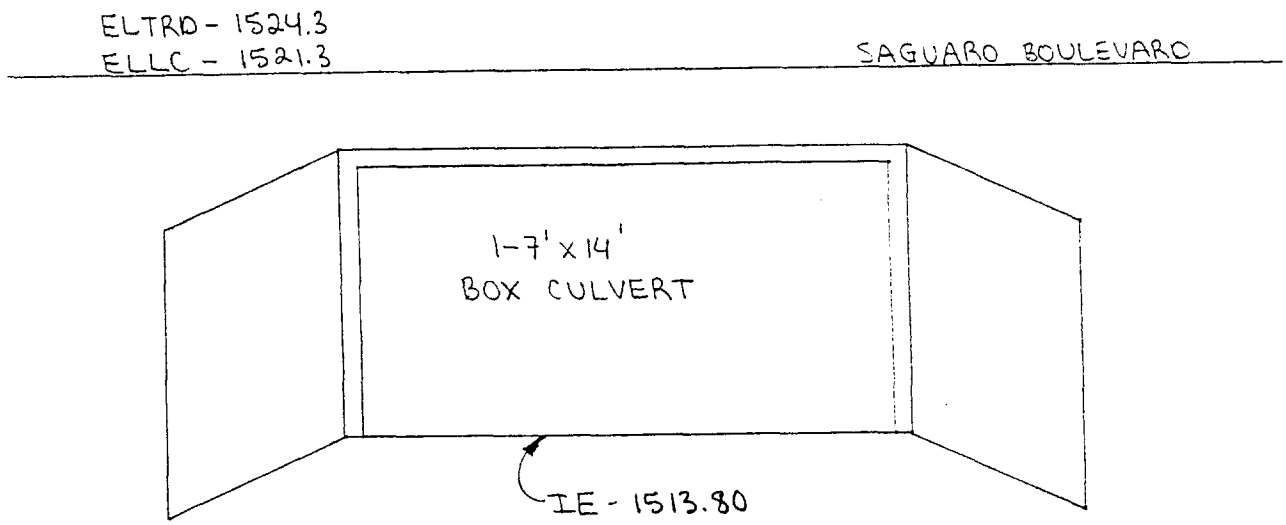
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)

HEC-2 Special Culvert Method

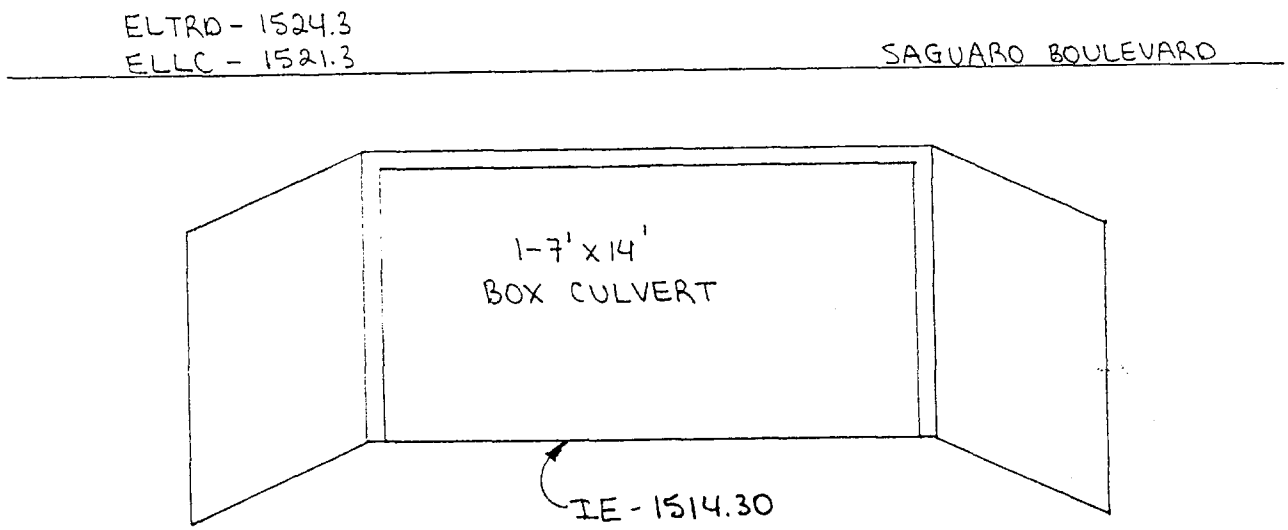
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

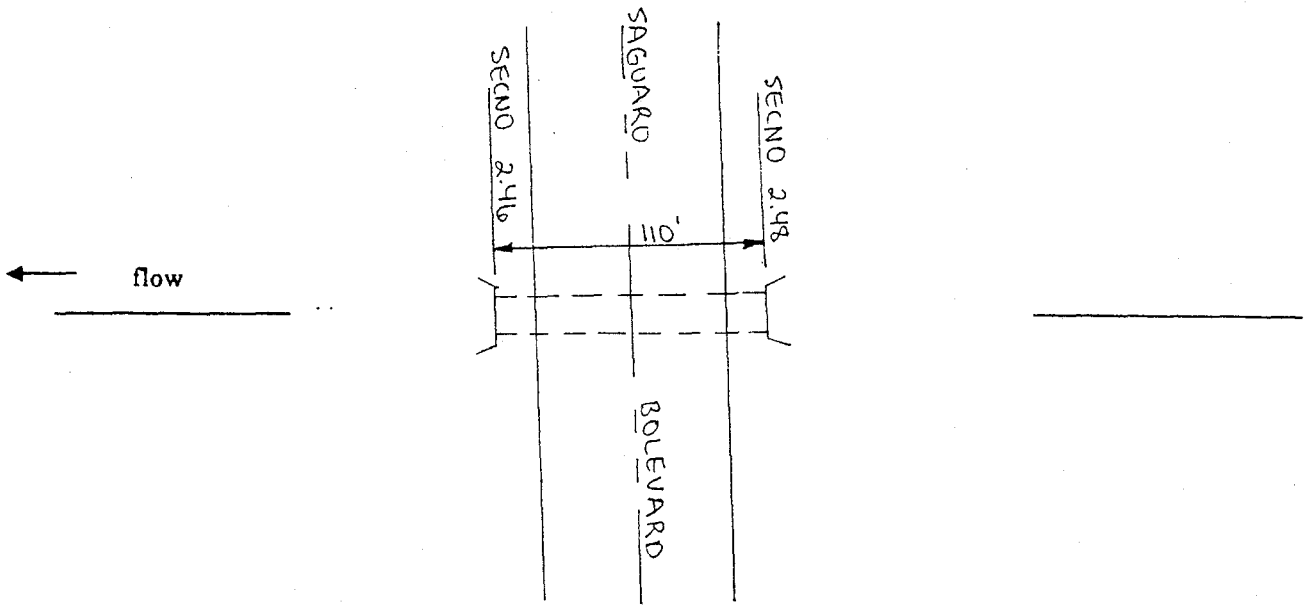
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	110 ft.
Calculated culvert/bridge area (ft ^{2}) by the hydraulic model, if applicable	98 ft.^{2}
Total culvert/bridge area (ft ^{2})	98 ft.^{2}

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1524.5	1524.5
Downstream face	1524.5	1524.5

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1524.3	1524.3
Downstream face	1524.3	1524.3

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1522.25	1523.41
Downstream face	1519.0	1521.7

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	960	N/A	N/A	960

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	50	14	50
Downstream face	30	14	30

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.013
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	N/A
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: KINGSTREE WASH
3. Project Name/Identifier: Fountain Hills South FloodPlain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Nemitt
Signature of Revision Requester

Ron Nemitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Harvel
Signature of Community Official

Randy L Harvel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

P.2
NOV 07 '95 04:46PM FOUNTAIN HILLS, AZ

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority he National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93-), is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by K Engineers and George V. Sabel Consulting Engineers.

purpose of this study is to examine and evaluate flood hazard reas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County urry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applible for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an pportunity to bring any relevant facts and technical data concerng local flood hazards to the attention of the Flood Control rict for consideration in the course of this study. Such rmation should be addressed to Mr. Tim Murphy or Ms. Sandy y, Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

lished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

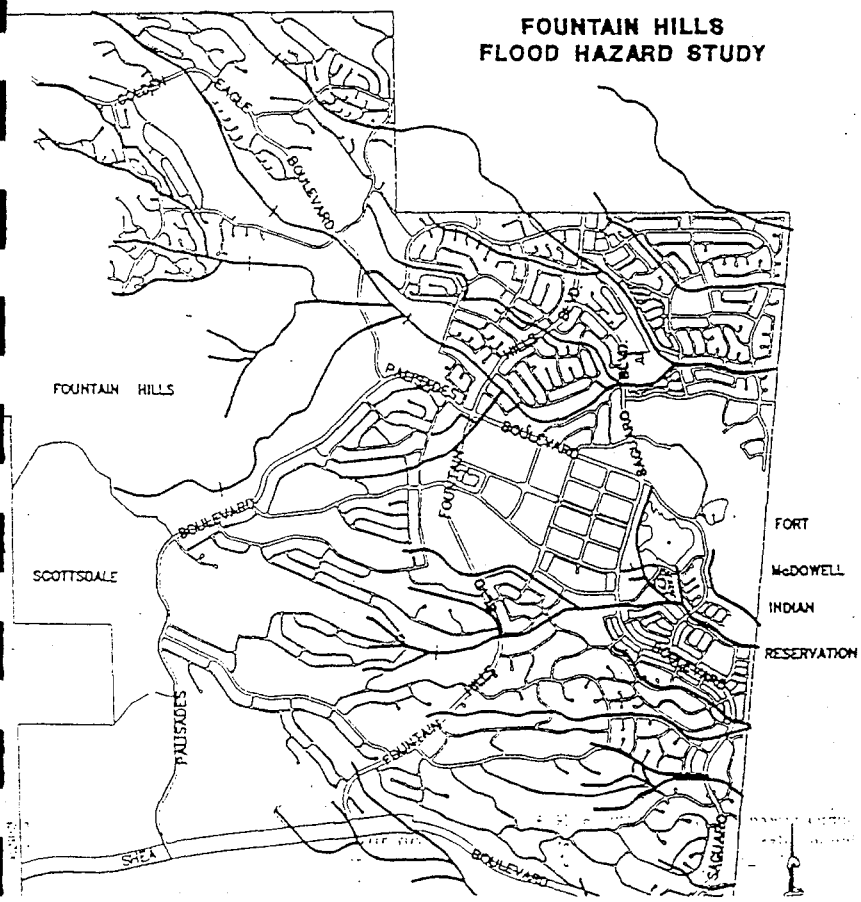
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell your
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions S
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get m SOLD quickly! She keeps my LISTERS advised of the progress on th
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil) CERTIFICATE NO. 29737 HERNAN A. ARISTIZABAL Date Signed 1-27-97 ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: KINGSTREE WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY)
Attach evidence of approval.

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

Stream: KINGSTREE WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
UPSTREAM LIMIT OF STUDY	.04	N/A	263
AT KINGSTREE BLVD. + INCA AVE. INTERSECTION	.13	N/A	279
AT CONFLUENCE WITH JACKUN WASH	.17	N/A	356

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
SUBBASIN AREAS	☒	☐	FOUNTAIN HILLS/USGS MAPPING
LAG TIME, L, Lca, SLOPE, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
GREEN + Ampt PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
ROUTING REACH PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.72 mi (15 HE) TABLE A.4
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN-Ampt
	Source of soils information:	N/A	SCS Soil Survey
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: KINGSTREE WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. REACH TO BE REVISED

Downstream limit: CONFLUENCE WITH JACKLIN WASH

Upstream limit: 1200' ABOVE KINGSTREE BOULEVARD

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	263 cfs	356 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

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

Overbanks .....

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.

FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 13.18

Specify location SECNO .81

3. What is the distance between the cross-sections in 2 above? 508 ft.

4. What is the maximum distance between cross-sections? 508 ft.

Specify location SECNO .81

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

Specify location NEW STUDY

c. What is the maximum velocity? 8.76 fps

Specify location SECNO .71

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	KINGSTREE WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FEWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS:

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.

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, ARIZONA (Town of Fountain Hills)

Flooding Source: KINGSTREE WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: MANGRUM Drain
3. Project Name/Identifier: Fountain Hills South FloodPlain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Nevitt
Signature of Revision Requester

Ron Nevitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Hurrel
Signature of Community Official

Randy L. Hurrel, Town Engr
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOV 07 '95 04:46PM FOUNTAIN HILLS, AZ

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

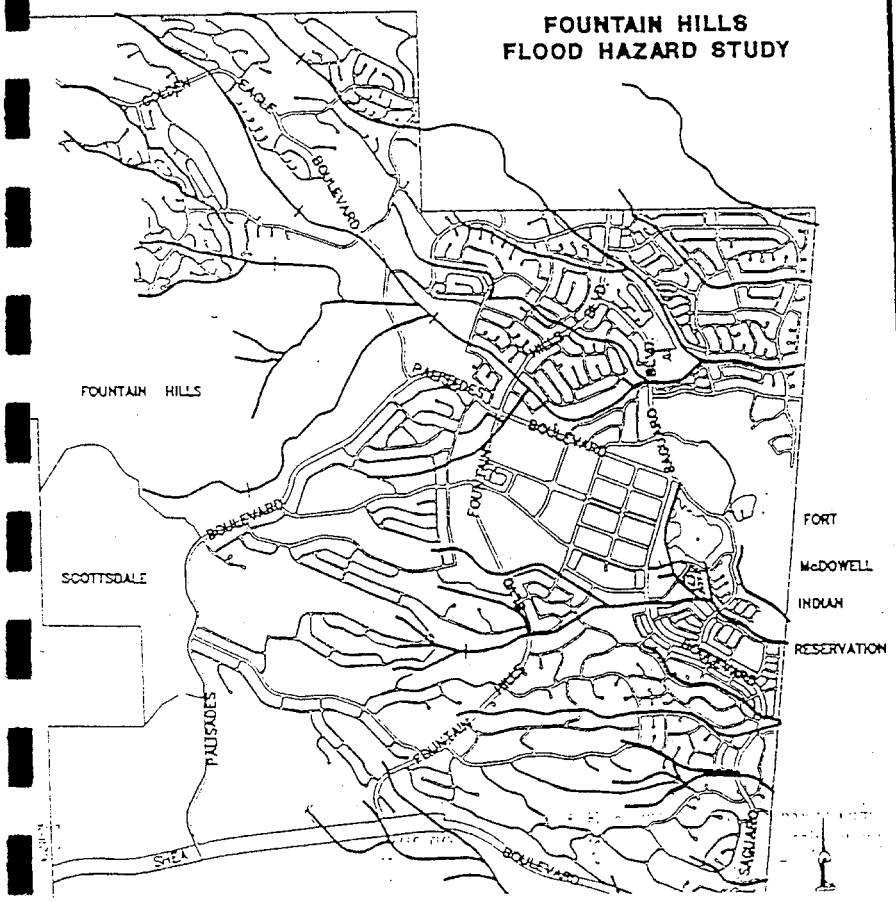
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell your
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top Pr
Over 100 Opened & Closed Transactions S
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.
Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get m SOLD quickly! She keeps my LISTERS advised of the progress on th
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority he National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93-), is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by K Engineers and George V. Sabel Consulting Engineers.

purpose of this study is to examine and evaluate flood hazard reas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County arry out floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applible for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an pportunity to bring any relevant facts and technical data concerng local flood hazards to the attention of the Flood Control rict for consideration in the course of this study. Such rmation should be addressed to Mr. Tim Murphy or Ms. Sandy y, Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

ished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO. 29737
HERNAN A. ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: MANGRUM WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY)
Attach evidence of approval.

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

Stream: MANGRUM WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
500' UPSTREAM FROM KINGSTREE			
SPILLING AREA	.10	N/A	202
AT KINGSTREE SPILLING AREA	.12	N/A	262
AT CONFLUENCE WITH JACKLIN WASH	.35	N/A	562

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
SUBBASIN AREAS	☒	☐	FOUNTAIN HILLS/USGS MAPPING
LAG TIME, L, LCA, SLOPE, KN	☒	☐	FOUNTAIN HILLS/USGS MAPPING
GREEN + AMPT PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
ROUTING REACH PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability*	☐ Yes ☐ No
11. Comparison of results with other analyses	☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.36 mi. TABLE A4 (152-A)
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN-AMPT
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharge of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: MANGRUM WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY 92-05

1. REACH TO BE REVISED

Downstream limit: CONFLUENCE WITH JACKLIN WASH

Upstream limit: 500' UPSTREAM FROM KINGSTREE SPILLING AREA

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	202 cfs	562 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .025 – .025

Overbanks ..... .027 – .027

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.

FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 9.51

Specify location SECNO .10

3. What is the distance between the cross-sections in 2 above? 397 ft.

4. What is the maximum distance between cross-sections? 397 ft.

Specify location SECNO .10

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

Specify location NEW STUDY

c. What is the maximum velocity? 6.96 fps

Specify location SECNO 0.00

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	MANGRAM WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

Sheet _____ of _____

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, ARIZONA

Flooding Source: MANGRUM WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: EMERALD WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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

Types of Flooding
- ☒ Riverine
- ☐ Coastal
- ☐ Alluvial Fan
- ☐ Shallow Flooding *(e.g. Zones AO and AH)*
- ☐ Lakes

Affected by wind/wave action
- ☐ Yes
- ☒ No

Structures
- ☐ Channelization
- ☐ Levee/Floodwall
- ☐ Bridge/Culvert
- ☐ Dam
- ☐ Coastal
- ☐ Fill
- ☐ Pump Station
- ☐ None
- ☐ Channel Relocation
- ☐ Excavation
- ☐ Other *(describe)*

Disciplines*
- ☐ Water Resources
  - ☒ Hydrology
  - ☒ Hydraulics
  - ☐ Sediment Transport
  - ☐ Interior Drainage
- ☐ Structural
- ☐ Geotechnical
- ☐ Land Surveying
- ☐ 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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-5501 1-29-97
Telephone No. Date

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

Randy L. Harel
Signature of Community Official

Randy L. Harel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

.0 07 '95 04:46PM FOUNTAIN HILLS, AZ

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f the National Flood Insurance Act of 1968 (P.L. 90 448), as ended, and the Flood Disaster Protection Act of 1973 (p.L. 93-), is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by K Engineers and George V. Sabel Consulting Engineers. purpose of this study is to examine and evaluate flood hazard eas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County arry our floodplain management objectives of the National od Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applicable for buildings and their contents.

s announcement is intended to notify all interested persons of commencement of this study so that they may have an portunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control istrict for consideration in the course of this study. Such rmation should be addressed to Mr. Tim Murphy or Ms. Sandy y, Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

lished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed in over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

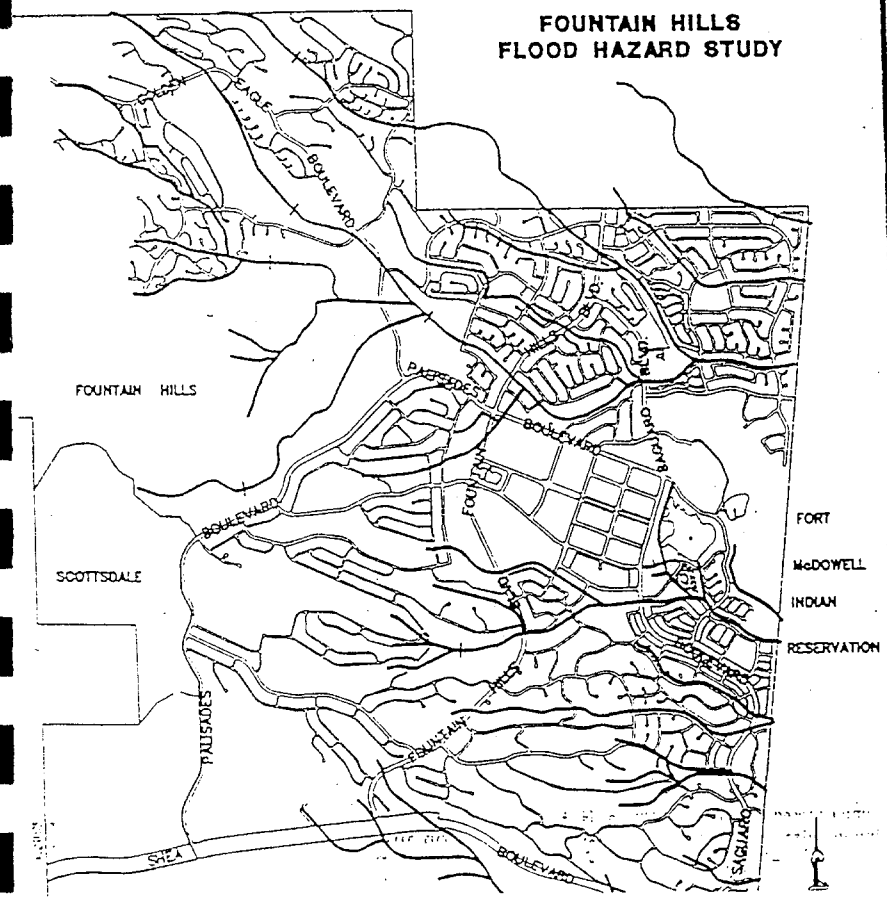
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell you
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions S
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get m SOLD quickly! She keeps my LISTERS advised of the progress on th
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil) CERTIFICATE NO. 29737 HERNAN A. ARISTIZABAL Date Signed 1-27-97 ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: EMERALD WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY)
Attach evidence of approval.

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

Stream: EMERALD WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
500' ABOVE FOUNTAIN HILLS BLVD.	.14	N/A	326
BELOW FOUNTAIN HILLS BLVD.	.32	N/A	463
BELOW BARON DRIVE	.41	N/A	302
ABOVE SAGUARO BLVD.	.61	N/A	529
AT TOWN LIMIT (EAST)	.61	N/A	907

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
SUBBASIN AREAS	☒	☐	FOUNTAIN HILLS/USGS MAPPING
LAG TIME, L, Lca, SLOPE, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
GREEN + Ampt PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
ROUTING REACH PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.85 mi (TABLE A.5 (1607))
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN - AMPT
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: EMERALD WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. REACH TO BE REVISED

Downstream limit: TOWN LIMIT (EAST)

Upstream limit: 500' ABOVE FOUNTAIN HILLS BOULEVARD

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	326 cfs	907 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .038 - .049

Overbanks ..... 0.0 - .062

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.

FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 13.76

Specify location SECNO 3.90

3. What is the distance between the cross-sections in 2 above? 95 ft.

4. What is the maximum distance between cross-sections? 508 ft.

Specify location SECNO 2.64

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

Specify location NEW STUDY

c. What is the maximum velocity? 13.25 fps

Specify location SECNO 3.00

d. Are there any negeative 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:

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)*

N/A NEW STUDY

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	EMERALD WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

Sheet_____ of _____

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, ARIZONA (Town of Fountain Hills)

Flooding Source: EMERALD WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: EMERALD WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: SAGUARO BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 2.39
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
2-60" CMP's

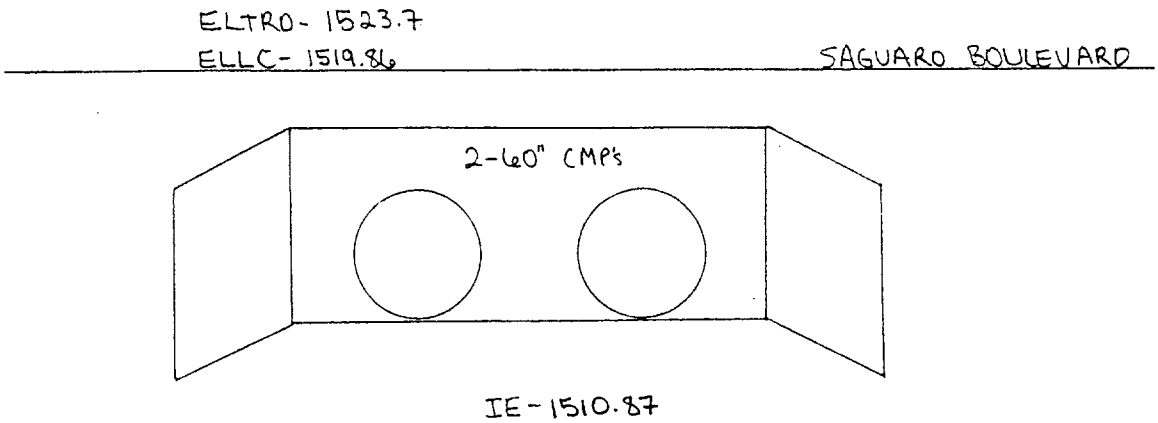
2. Entrance geometry of culvert/type of bridge opening (e.g. 30 ° - 75 ° wing walls with square top edge, sloping embankments and vertical abutments)
CMP WITH HEADWALL

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 Special Culvert Method

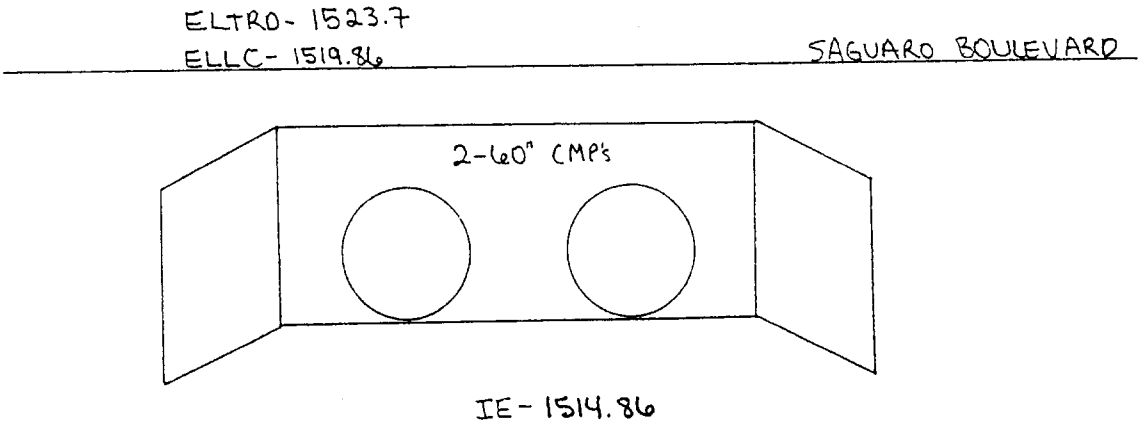
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

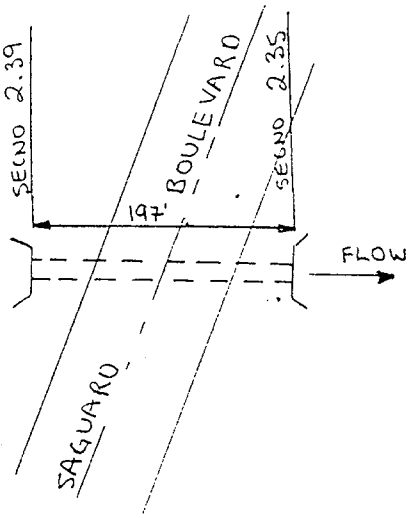
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	197 ft.
Calculated culvert/bridge area (ft 2) by the hydraulic model, if applicable	39.3 ft.^{2}
Total culvert/bridge area (ft 2)	39.3 ft.^{2}

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1523.38	1523.8
Downstream face	1514	1523.8

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1523.7	1523.7
Downstream face	1523.7	1523.7

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1524.18	1524.23
Downstream face	1514.20	1514.60

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	N/A	493	39	529

The maximum depth of flow over the roadway/railroad (ft.) ..... .5 ft.

Weir length (ft.) ..... 28 ft.

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	60	30	60
Downstream face	300	150	300

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.8
Manning's "n" value assigned to the structure(s)	0.024
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: EMERALD WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: INCA AVE.
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 3.03
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)

1-60" CMP

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)

1 CMP WITH HEADWALL

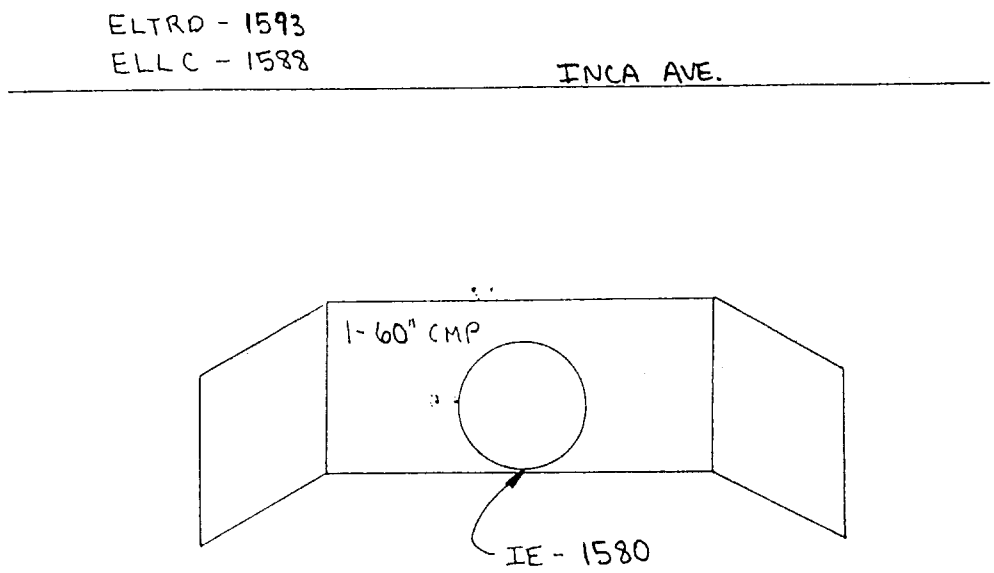
3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

HEC-2 Special Culvert Method

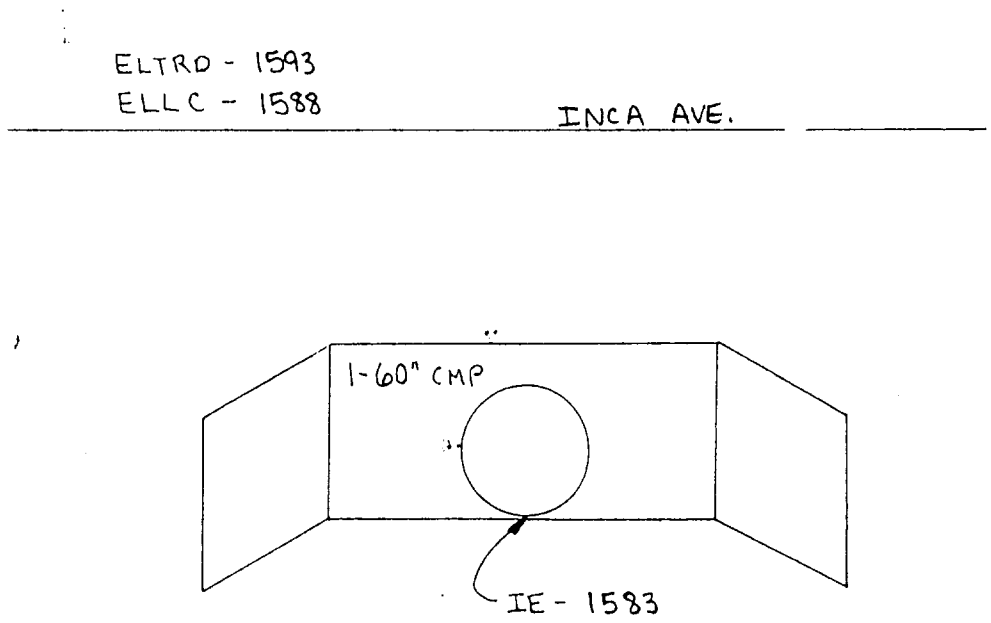
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1593.7	1593.7
Downstream face	1588.8	1588.1

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1593	1593
Downstream face	1593	1593

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1592.65	1593.03
Downstream face	1585.39	1588.11

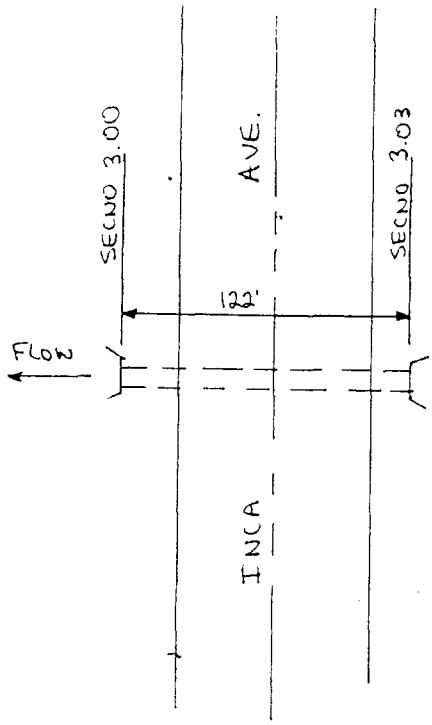
Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	N/A	239	N/A	239

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	120	5	120
Downstream face	70	5	70

Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	122 ft.
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	19.6 ft.²
Total culvert/bridge area (ft²)	19.6 ft.²

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	0.024
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	N/A
Pier coefficient	N/A
Contraction loss coefficient	0.1
Expansion loss coefficient	0.3

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: EMERALD WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: BARON DR.
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 3.36
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
1-60" CMP

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
1 CMP WITH HEADWALL

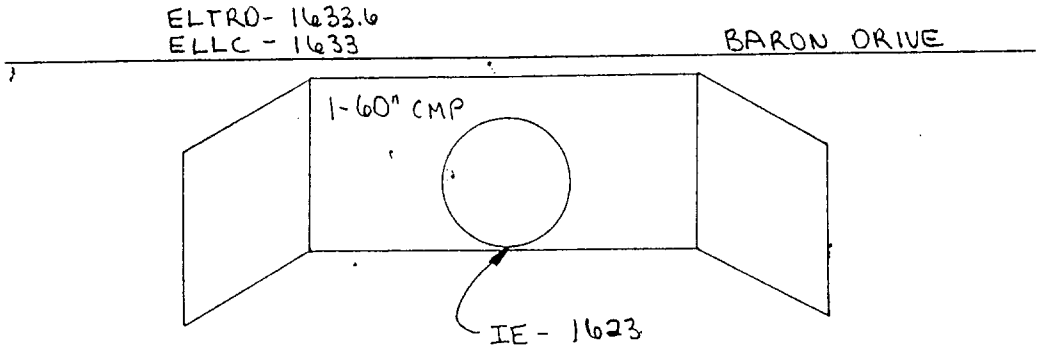
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 Special Culvert Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

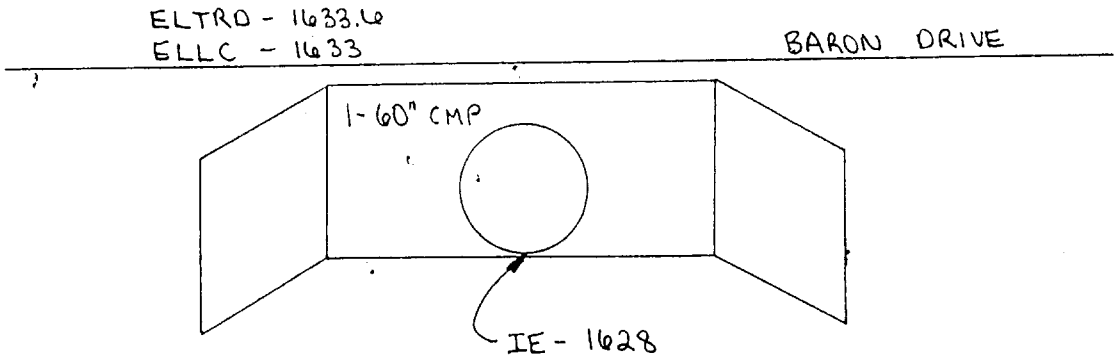
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

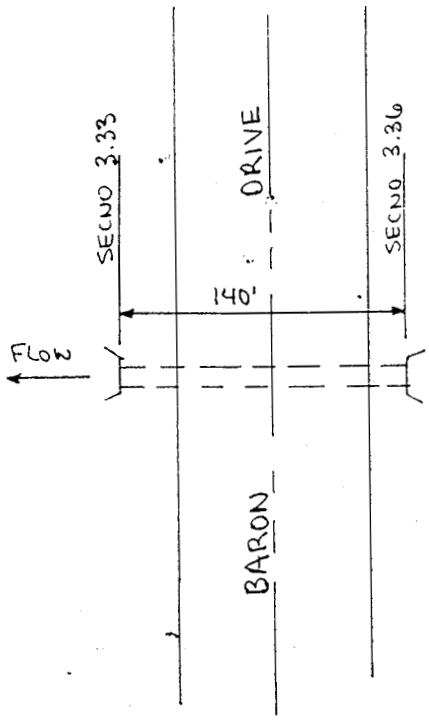
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	140 ft.
Calculated culvert/bridge area (ft ²) by the hydraulic model, if applicable	19.6 ft.²
Total culvert/bridge area (ft ²)	19.6 ft.²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1633	1633.6
Downstream face	1633	1633.6

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1633	1633
Downstream face	1633	1633

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1633.79	1633.89
Downstream face	1626.83	1628.77

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	N/A	137	74	214

The maximum depth of flow over the roadway/railroad (ft.) ..... .8 ft.

Weir length (ft.) ..... 74 ft.

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	90	75	90
Downstream face	20	20	20

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	0.024
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: EMERALD WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: FOUNTAIN HILLS BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO 3.94
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)

1-60" CMP

2. Entrance geometry of culvert/type of bridge opening (e.g. 30 ^{0} - 75 ^{0} wing walls with square top edge, sloping embankments and vertical abutments)

3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

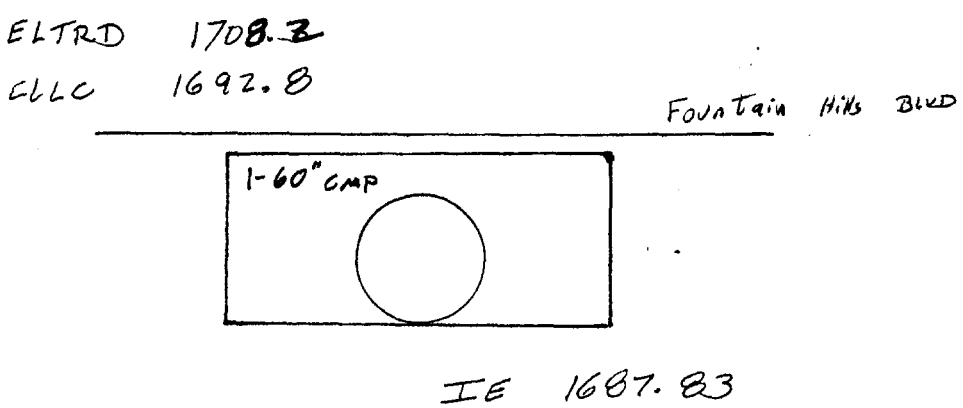
HEC-2 Special BRIDGE Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

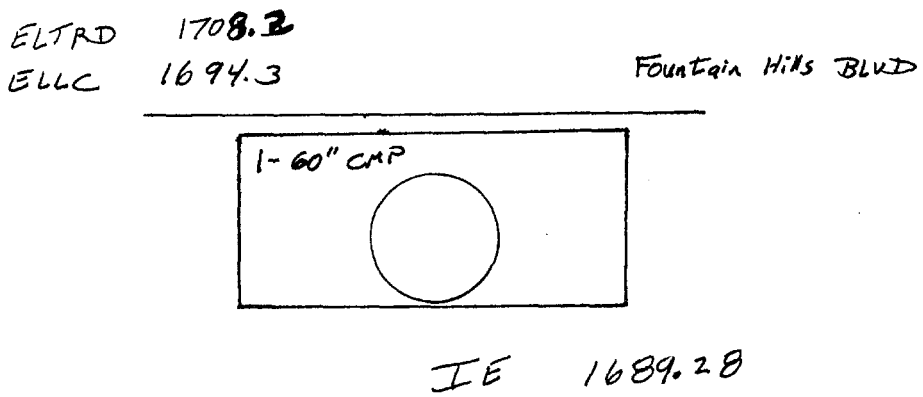
SPECIAL BRIDGE USED BECAUSE OF THE SEWER LINE AT BOTTOM OF CULVERT CHANGES THE GEOMETRY ENOUGH SO THE CULVERT ROUTINE IS NOT APPROPRIATE.

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

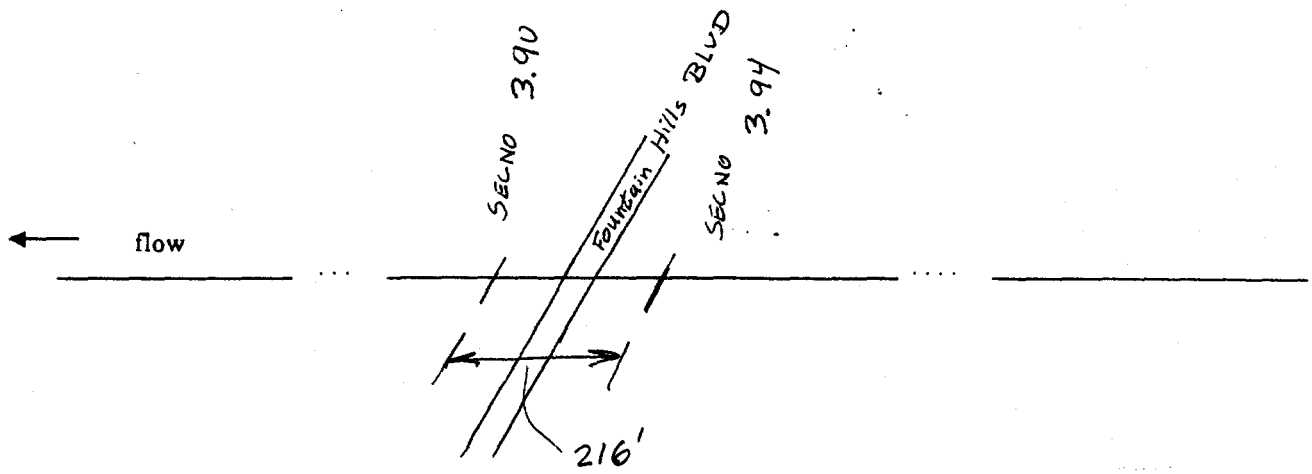
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	216 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	19.6 ft²
Total culvert/bridge area (ft²)	19.6 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1708.2	1708.2
Downstream face	1708.2	1708.2

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1708	1708
Downstream face	1708	1708

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1702.1	1702.3
Downstream face	1693.2	1695.8

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	-	207	-	207

The maximum depth of flow over the roadway/railroad (ft.) ..... —

Weir length (ft.) ..... —

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face		5 ft	
Downstream face		5 ft	

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: MALTA DRAIN
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Hanel
Signature of Community Official

Randy L Hanel, Town Engr
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f the National Flood Insurance Act of 1968 (P.L. 90 448), as ended, and the Flood Disaster Protection Act of 1973 (p.L. 93- is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by Engineers and George V. Sabel Consulting Engineers.

purpose of this study is to examine and evaluate flood hazard reas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations ose areas. Flood elevations will be used by Maricopa County rry our floodplain management objectives of the National Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applible for buildings and their contents.

announcement is intended to notify all interested persons of ommencement of this study so that they may have an portunity to bring any relevant facts and technical data concerng local flood hazards to the attention of the Flood Control ict for consideration in the course of this study. Such nation should be addressed to Mr. Tim Murphy or Ms. Sandy , Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

shed FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study, so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic / The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: HERNAN A. ARISTIZABAL for ENTELLUS INC.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date: _____

State Arizona

Type of License PROFESSIONAL ENGINEER

Hernan A. Aristizabal
Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO. 29737
HERNAN A. ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: MALTA DRAIN
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY)
Attach evidence of approval.

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

Stream: MALTA DRAIN

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
150' BELOW HAWK DRIVE	.17	N/A	366
AT QUINTO DRIVE	.17	N/A	366
ABOVE RAND DRIVE	.17	N/A	366
BELOW RAND DRIVE	.20	N/A	431
AT CONFLUENCE/EMERALD WASH	.20	N/A	440

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
SUBBASIN AREAS	☒	☐	FOUNTAIN HILLS/USGS MAPPING
LAG TIME, L, Lca, SLOPE, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
GREEN + Ampt PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
ROUTING REACH PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

ATTACHMENT B: REGIONAL REGRESSION EQUATIONS

1. Bibliographical Reference: N/A

_____

_____

_____

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
   Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

_____

_____

_____

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

_____

_____

_____

_____

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.80 TABLE A.6a (170E)
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN-AMPT
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: MALTA DRAIN
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. REACH TO BE REVISED

Downstream limit: TOWN LIMIT (EAST)

Upstream limit: 150' BELOW HAWK DRIVE

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	366 cfs	440 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .035 - .048

Overbanks ..... 0.0 - .065

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.

FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 11.1

Specify location SECNO .16

3. What is the distance between the cross-sections in 2 above? 429 ft.

4. What is the maximum distance between cross-sections? 500 ft

Specify location SECNO .36

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

Specify location NEW STUDY

c. What is the maximum velocity? 10.16 fps

Specify location SECNO .17

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	MALTA DRAIN	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

Sheet_____ of _____

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, ARIZONA (Town of Fountain Hills)

Flooding Source: MALTA DRAIN

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: MALTA DRAIN

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: SAGUARO BOULEVARD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO .06
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)

2 - 48" CMP's

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)

2 CMP's WITH HEADWALL

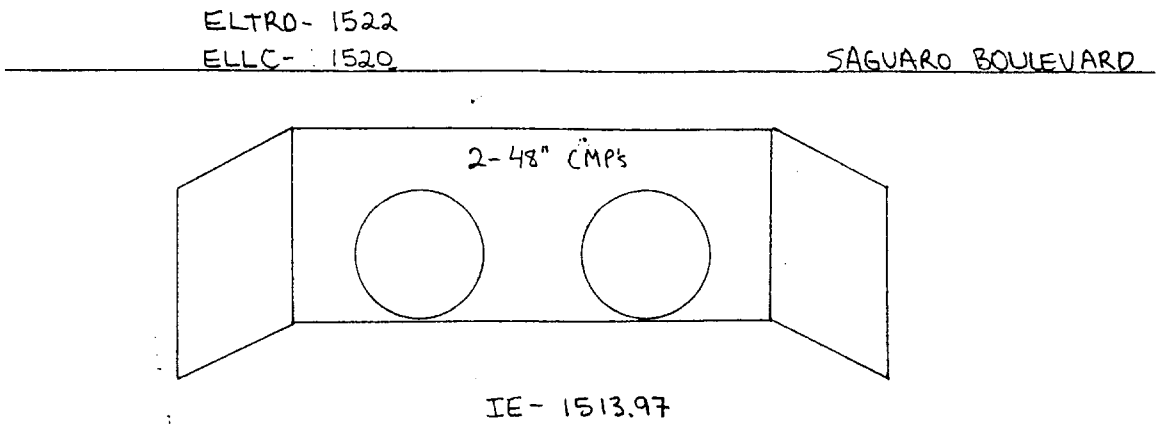
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)

HEC-2 Special Culvert Method

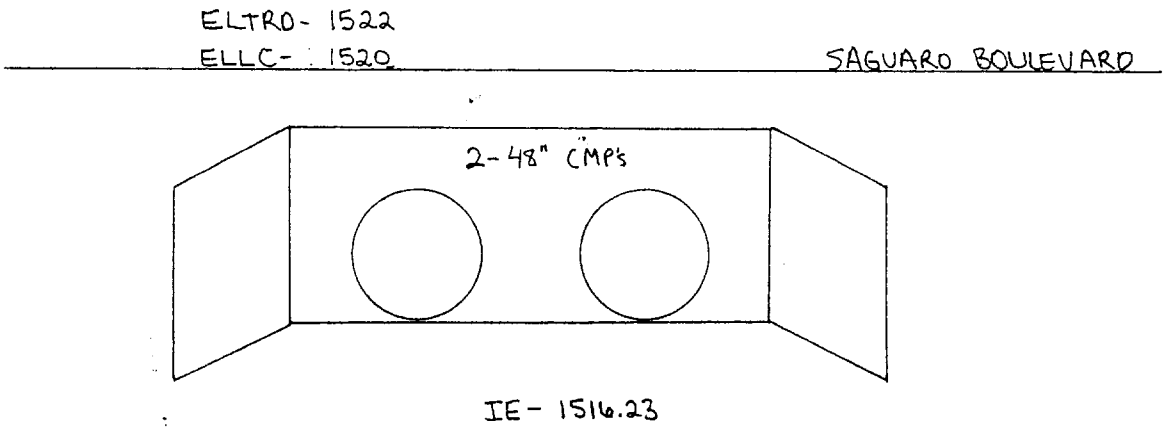
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

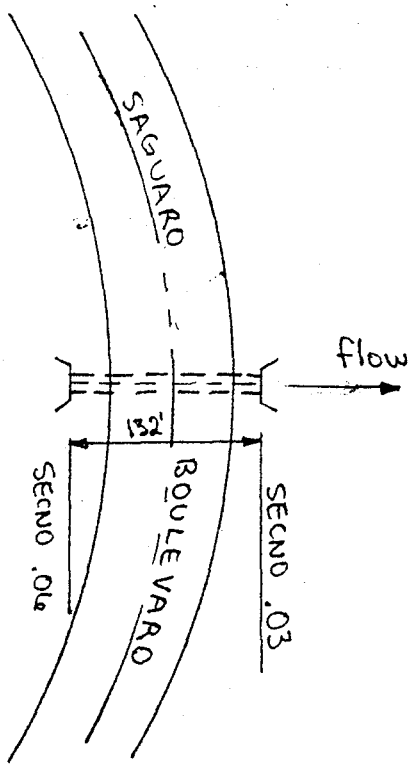
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	132 ft.
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	25.1 ft.²
Total culvert/bridge area (ft²)	25.1 ft.²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1524.4	1524
Downstream face	1524	1524

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1524	1524
Downstream face	1524	1524

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1524.07	1524.28
Downstream face	1514.64	1515.60

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	N/A	298	143	440

The maximum depth of flow over the roadway/railroad (ft.) ..... .1 ft.

Weir length (ft.) ..... 68 ft.

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	40	40	40
Downstream face	300	40	300

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.8
Manning's "n" value assigned to the structure(s)	0.020
Friction loss coefficient through structure (s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: COLONY WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 the owner and the State (entity) with a maximum interval of 36 months between inspections for the State and four months for the owner.

B. Based on the results of scheduled periodic inspections, appropriate maintenance of the flood control facilities will be conducted by the owners (MCO Properties, Inc. and The Town of Fountain Hills) (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.

See Emergency Action Plan attached to FORM # 11.

D. The community is willing to assume responsibility for ☐ performing ☒ overseeing compliance with the maintenance and operation plans of the Stoneridge Dam (structure #19)
(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 See the Reports attached to Form # 11.

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt / Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Harrel
Signature of Community Official

Randy L Harrel, Town Engineer
Printed Name and Title of Community Official

Town of Fountain Hills
Community Name

1-22-97
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.

11-22-95

07 '95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f the National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93- is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by Engineers and George V. Sabel Consulting Engineers. purpose of this study is to examine and evaluate flood hazard eas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations those areas. Flood elevations will be used by Maricopa County rry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applable for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an portunity to bring any relevant facts and technical data concerng local flood hazards to the attention of the Flood Control istrict for consideration in the course of this study. Such mation should be addressed to Mr. Tim Murphy or Ms. Sandy , Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

shed FH Times 1/13, 1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed in over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

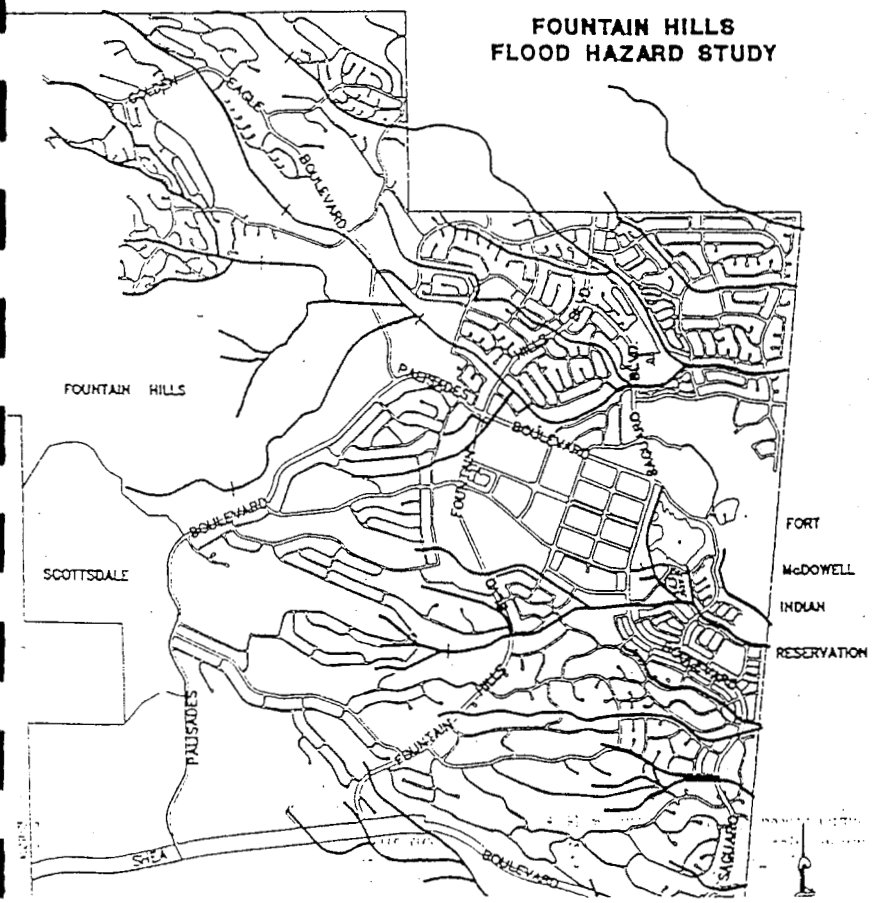
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Lar
INVESTMEI
Deserve a second opinion?
LaCosta Construction Inc
designers & builders
of
LUXURY LA COSTA HOM
"The Art of Construction"
837-1640



When you need to sell you
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get SOLD quickly! She keeps my LISTERS advised of the progress on
Administration Specialist
Carol Talty.....
handles all mailings:brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO. 29737
HERNAN A. ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: COLONY WASH
(One form for each flooding source)

Project Name /Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County)
Attach evidence of approval.

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

Stream: Colony Wash

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
Town Limit (East side) (CLN 10)	3.52	N/A	1333
Above Fountain Channel (CLN 7)	1.69	N/A	643
Arroyo Vista Drive (CLN 3)	1.16	N/A	354
Above Fountain Hills BLVD (*CLN 1)	1.10	N/A	217

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 N/A New study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

Unavailable

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin Areas	☒	☐	Fountain Hills & USGS Mapping
Lag Time, L, Lca, Slope, Kn	☒	☐	Fountain Hills & USGS Mapping
Green & Ampt Parameters	☒	☐	FCDMC Hydrologic Manual
Routing Reach Parameters	☒	☐	FCDMC Hydrologic Manual
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:		4.0.1E
	Date:		May 1991
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		FCDMC Hydrologic Manual
4.	Rainfall duration:		6 & 24 Hour
5.	Areal adjustment to precipitation (%):		Depends upon subbasin Area
6.	Maximum overland flow length		6438 Ft (180 B)
7.	Hydrograph development method:		Clark Unit Graph
8.	Loss rate method:		Green-Ampt
	Source of soils information:		SCS Soil Survey
	Source of land use information		Aerial Photos
9.	Channel routing method:		Normal Depth
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 The model was calibrated by comparing USGS gage data, runoff volume checks, results with estimates using a USGS regional regression equation, and with results from other studies.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: COLONY WASH
(One form for each flooding source)

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. REACH TO BE REVISED

Downstream limit: Border with Fort McDowell Indian Reservation

Upstream limit: Stoneridge Dam (structure #19)

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	217 cfs	1333 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

Critical Depth

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.033 – 0.038

Overbanks ..... 0.040 – 0.060

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
N/A		

Explain: New Study

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.

The cross-sections were determined photogrammetrically by the Aerial Mapping Company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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. For those cross-sections where the HEC-2 model defaulted to critical depth, the critical depth water surface elevations are plotted on the profiles and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 12.64 ft

Specify location ..... X-SEC 3.900

3. What is the distance between the cross-sections in 2 above? ..... 377 ft

4. What is the maximum distance between cross-sections? ..... 519 ft

Specify location ..... X-SEC 3.12

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? ..... 0.0 foot

Specify location ..... —

c. What is the maximum velocity? ..... 14.1 fps

Specify location ..... X-SEC 4.290

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. N/A NEW STUDY The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

B. N/A NEW STUDY The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.
The profiles are located in the Hydraulic Analysis Report

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY
WATER SURFACE ELEVATION CHECK N/A · NEW STUDY

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER

	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]

COMMENTS:

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.

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, Arizona (Town of Fountain Hills)

Flooding Source: COLONY WASH

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H. Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.) 1929 NGVD	☒ 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: This is the first study done in Fountain Hills, therefore there are no existing floodplain and floodway delineations

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.)*? Aerial mapping, August 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 Foot 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.

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.

N/A This is the first study of the area, therefore there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore there isn't an existing floodway delineation.

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

If no, explain:

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.

If requested, a digitized map can be supplied.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Panorama Drive
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): cross section 2,88
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

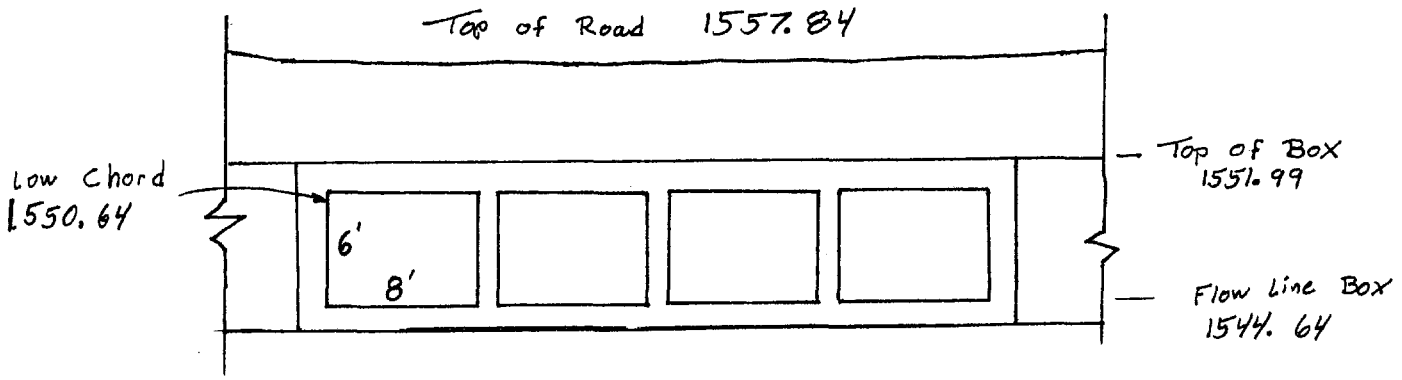
Provide the following information about the structure:

1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) 4 6'(H) x 8'(W) concrete box culverts
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) Box culvert includes wing walls
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 Special Culvert Method

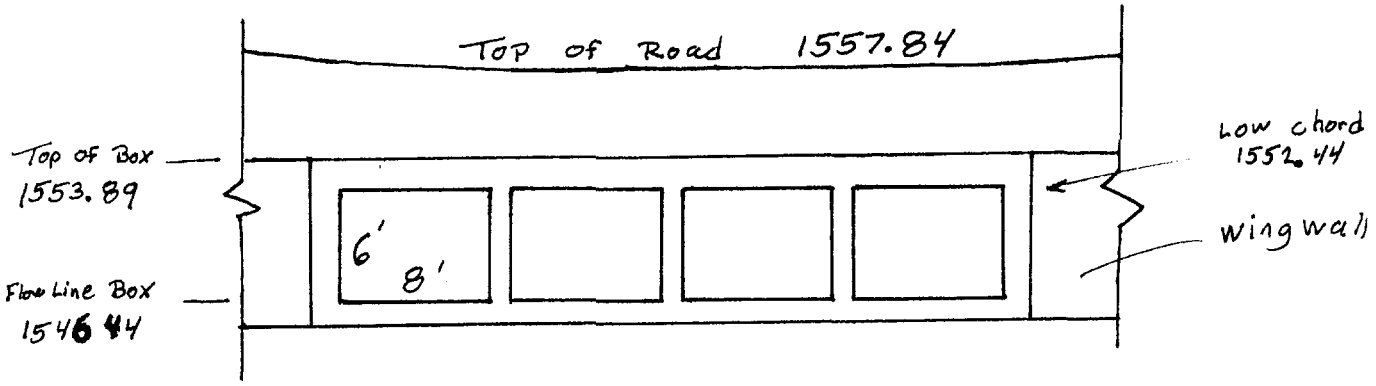
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

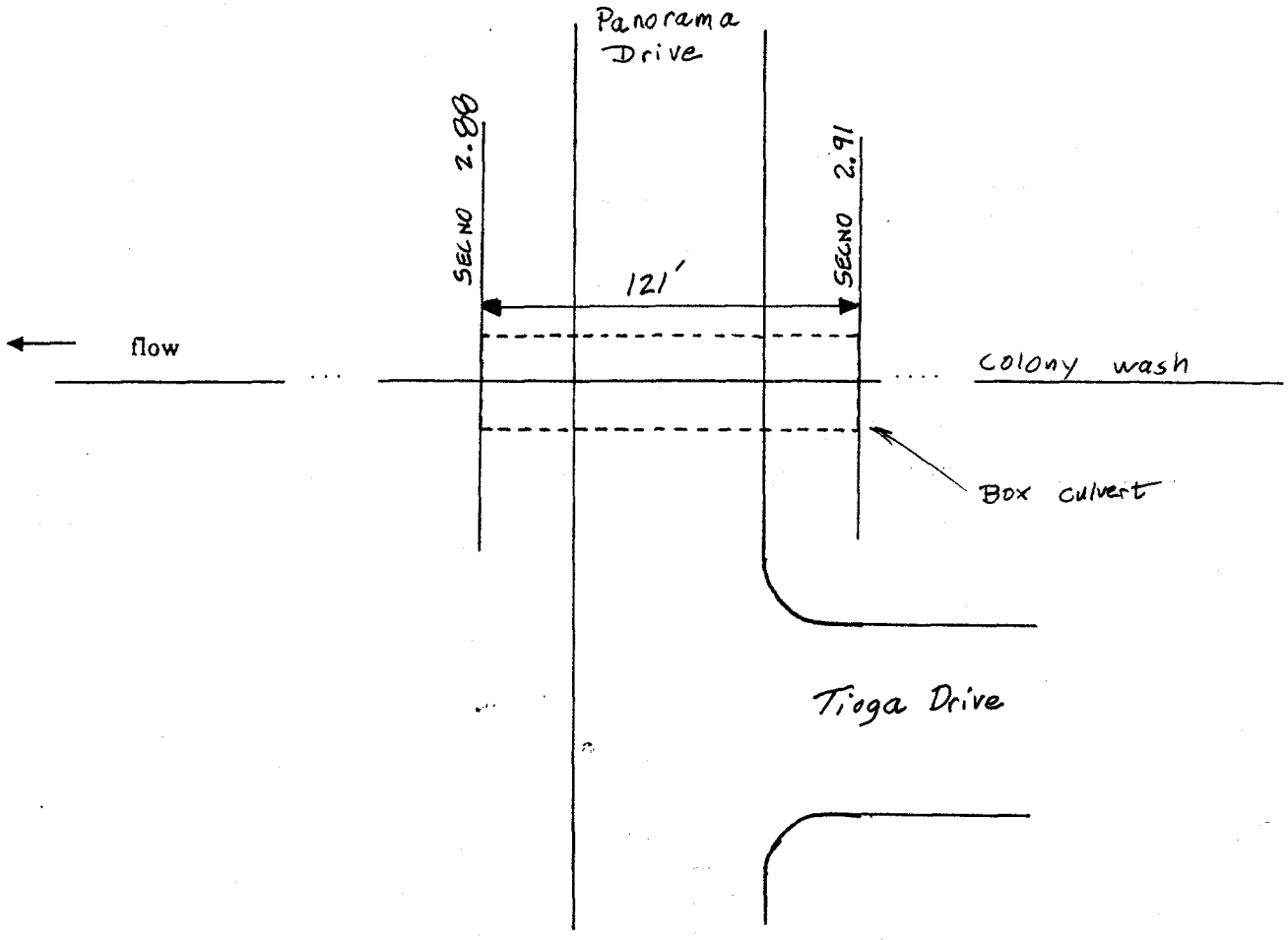
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	121 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	192 ft²
Total culvert/bridge area (ft²)	192 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1557.84	1557.84
Downstream face	1557.84	1557.84

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1557.84	1557.84
Downstream face	1557.84	1557.84

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1552.0	1552.74
Downstream face	1548.2	1550.03

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		1295	—	1295

The maximum depth of flow over the roadway/railroad (ft.) 0.0

Weir length (ft.) 0.0

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	34	34	34
Downstream face	34	34	34

Loss Coefficients

Entrance loss coefficient	0.4
Manning's "n" value assigned to the structure(s)	.015
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	
Weir coefficient	2.8
Pier coefficient	N/A
Contraction loss coefficient	.3
Expansion loss coefficient	.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Saguaro BLVD
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross section 3.28
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) One 72" CMP

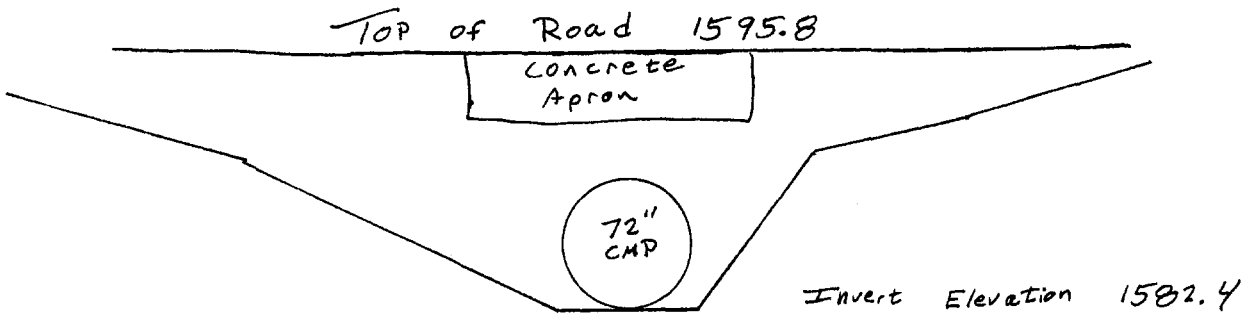
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) Projecting from fill.

3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)* HEC-2 Special Culvert Method

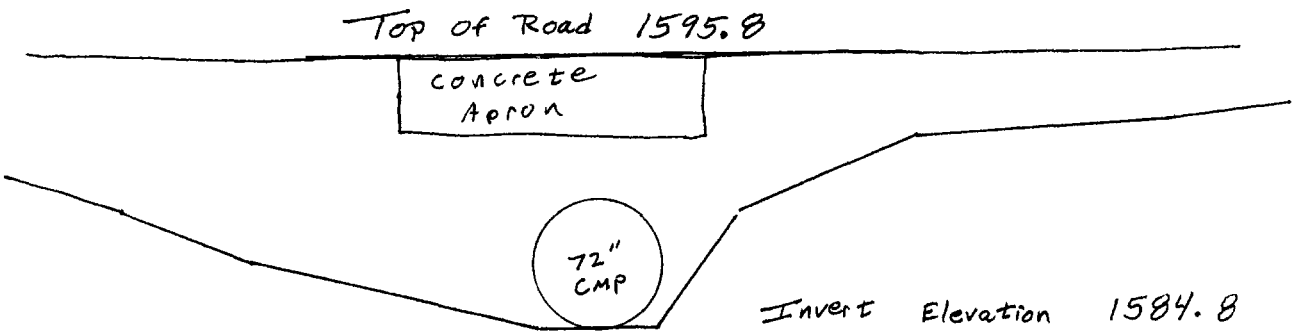
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

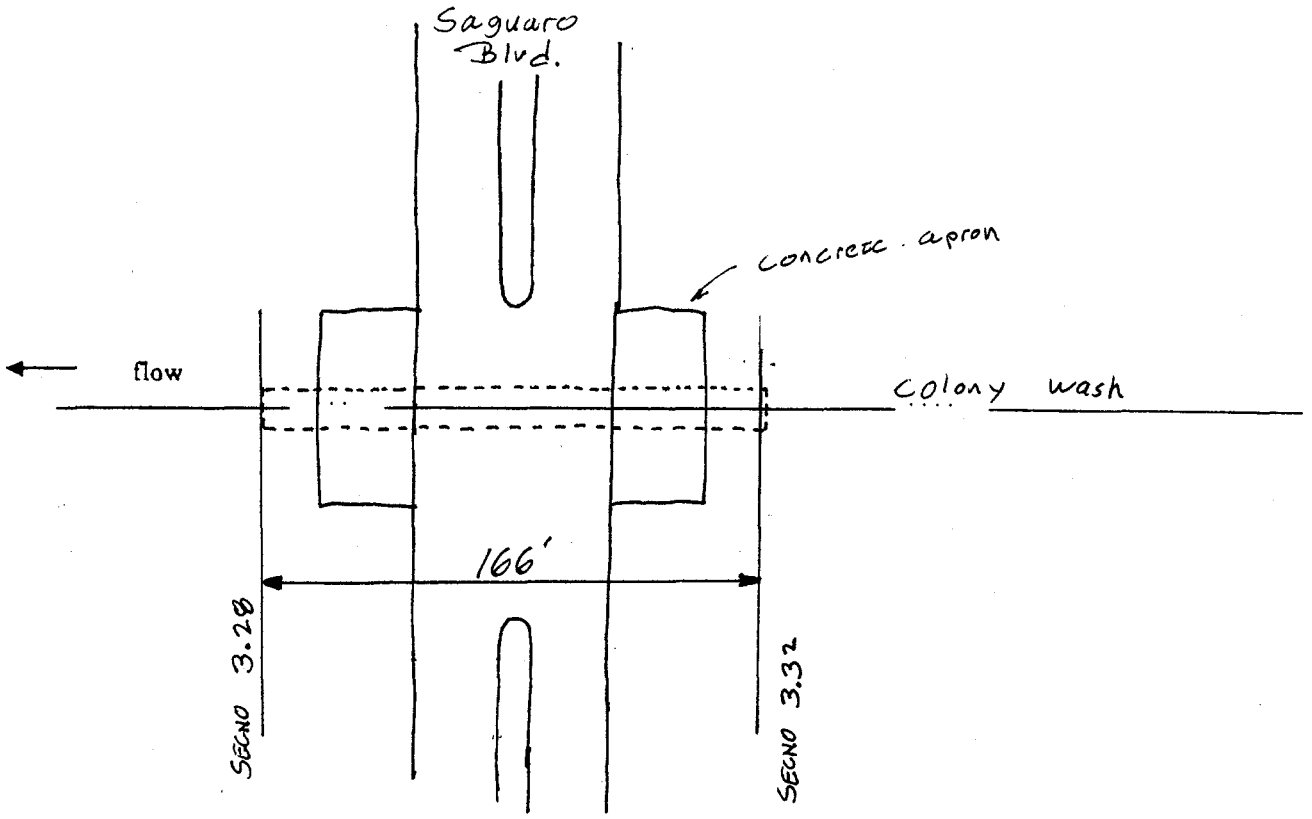
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	166 ft
Calculated culvert/bridge area (ft 2) by the hydraulic model, if applicable	28.3 ft²
Total culvert/bridge area (ft 2)	28.3

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1595.86	1595.86
Downstream face	1595.86	1595.86

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1595.86	1595.86
Downstream face	1595.86	1595.86

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1596.8	1596.82
Downstream face	1587.96	1589.92

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		356	255	613

The maximum depth of flow over the roadway/railroad (ft.) ..... 1.0 ft

Weir length (ft.) ..... 181 ft

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	155	155 ft	155
Downstream face	60	23 ft	60

Loss Coefficients

Entrance loss coefficient	0.8
Manning's "n" value assigned to the structure(s)	.026
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	
Weir coefficient	2.8
Pier coefficient	N/A
Contraction loss coefficient	.3
Expansion loss coefficient	.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Arroya Vista Drive
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 3.65
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
Two 60" CMP culverts

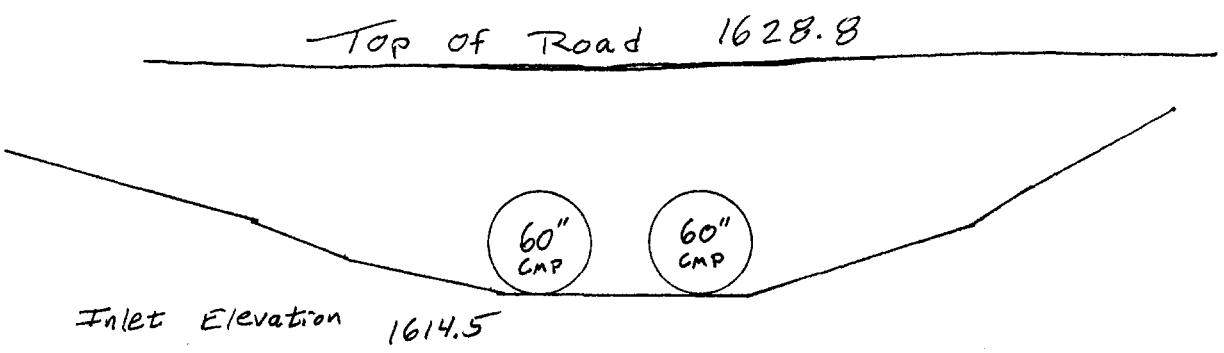
2. Entrance geometry of culvert/type of bridge opening (e.g. 30 ^{0} - 75 ^{0} wing walls with square top edge, sloping embankments and vertical abutments)
Projecting from fill

3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*
HEC-2 Special Culvert Method

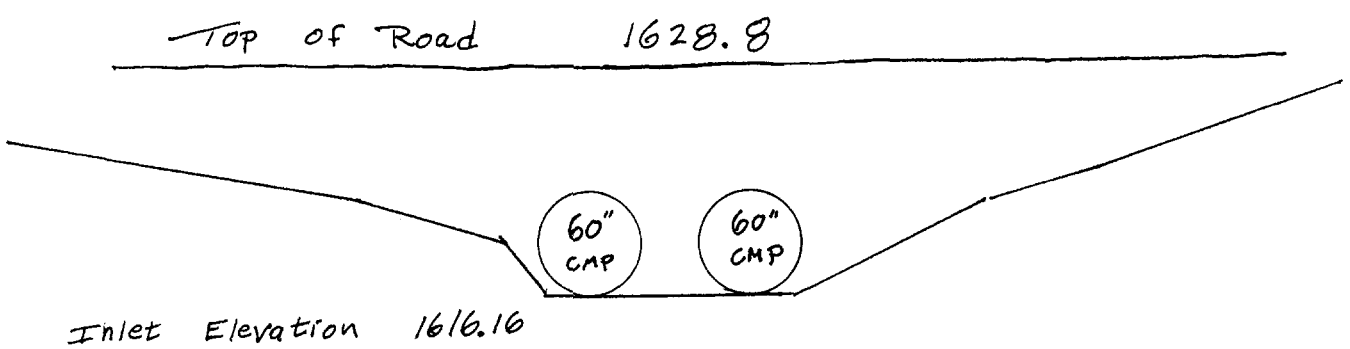
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

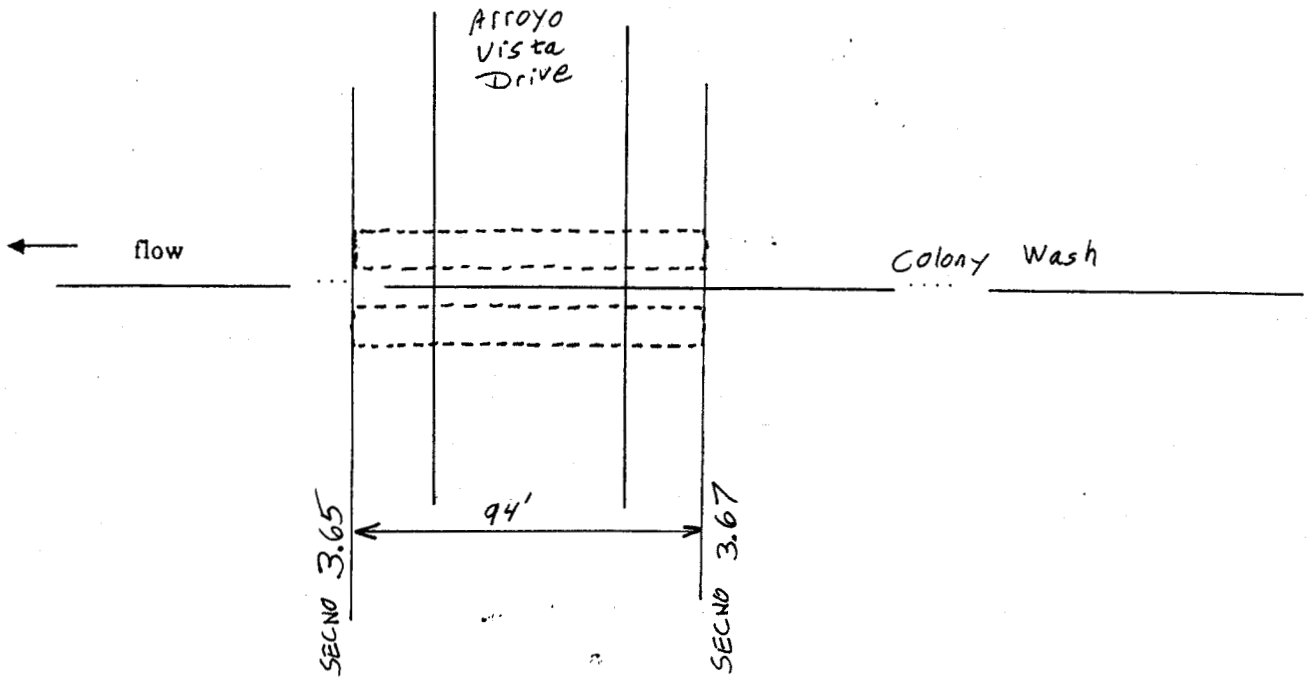
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	94 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	39.3 ft²
Total culvert/bridge area (ft²)	39.3 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1628.8	1628.8
Downstream face	1628.8	1628.8

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1628.8	1628.8
Downstream face	1628.8	1628.8

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1622.67	1623.05
Downstream face	1617.97	1619.71

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	303	0	303

The maximum depth of flow over the roadway/railroad (ft.) 0

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	50 ft	10 ft	50 ft
Downstream face	50 ft	10 ft	50 ft

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	.3
Expansion loss coefficient	.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) NO encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Fountain Hills Blvd
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 3.92
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
Two 60" CMP culverts

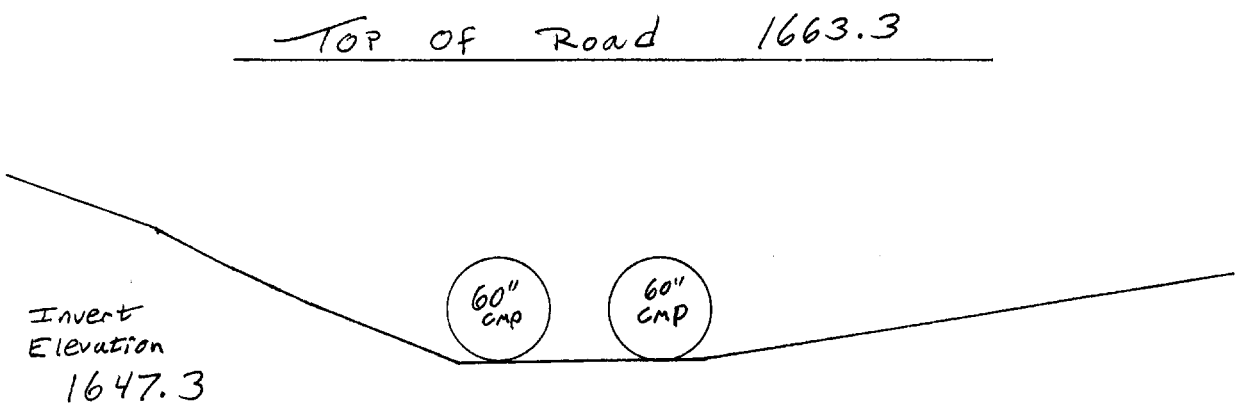
2. Entrance geometry of culvert/type of bridge opening (e.g. 30 ° - 75 ° wing walls with square top edge, sloping embankments and vertical abutments)
Projecting from Fill

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 Special Culvert Method

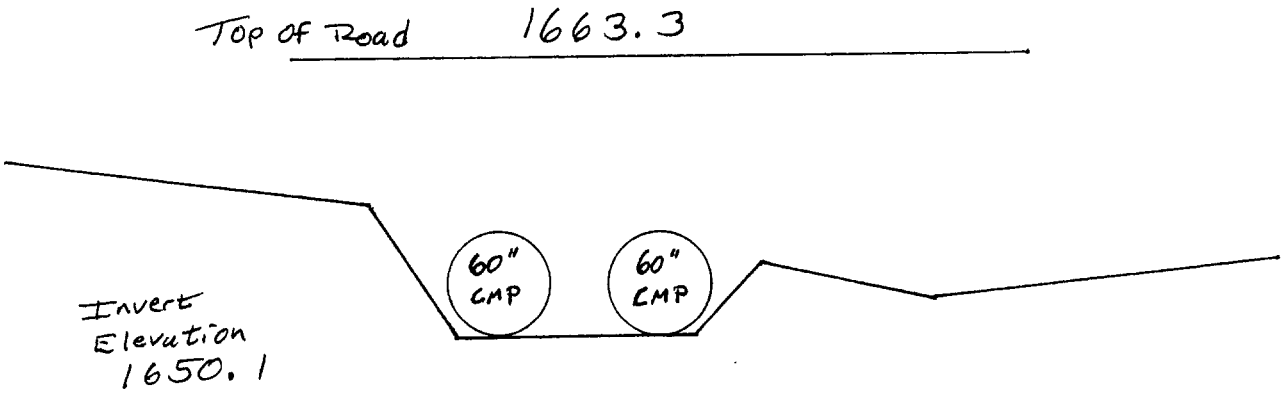
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

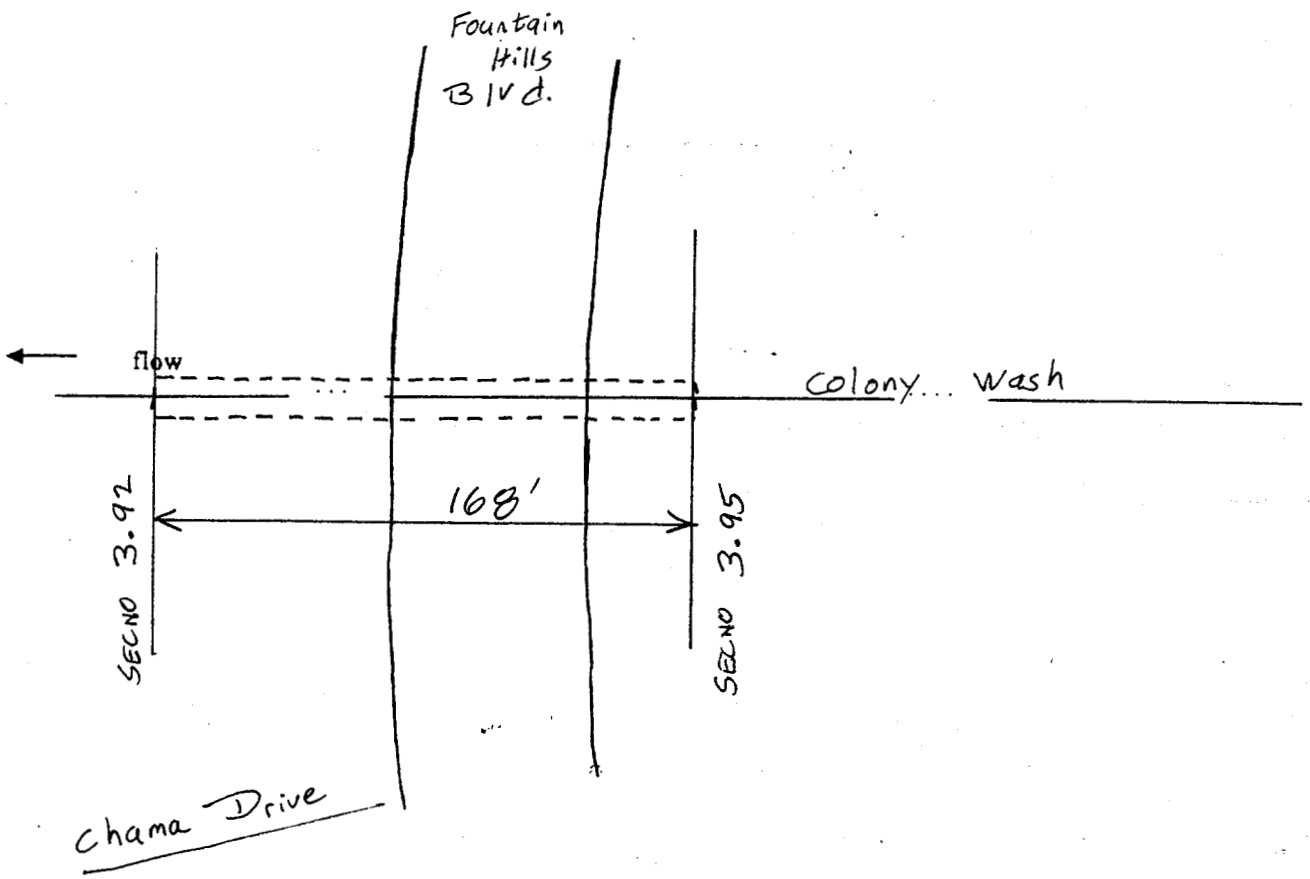
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	168 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	36.3 ft²
Total culvert/bridge area (ft²)	36.3 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1663.3	1663.3
Downstream face	1663.3	1663.3

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1663.3	1663.3
Downstream face	1663.3	1663.3

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1656.26	1656.55
Downstream face	1649.83	1651.40

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		289	0	289

The maximum depth of flow over the roadway/railroad (ft.) 0

Weir length (ft.) 0

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	+ 100 ft	10	+ 100 ft
Downstream face	70	10	70

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	.3
Expansion loss coefficient	.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **DAM 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 0.5 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.

Community Name: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: COLONY WASH

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

IDENTIFIER

Name of Dam: Stoneridge Dam (Structure #19)

Location of dam along flood source (in terms of stream distance or cross section identifier):

Cross Section 4.29

Check one of the following:

- [x] Existing dam
- [ ] New dam
- [ ] Modifications of existing dam (describe modifications) _____

Was the dam designed by ____ Federal agency ____ State agency

____ Local government agency ___X___ Private organization?

BACKGROUND

Does the dam have dedicated flood control storage? [x] Yes [ ] No

Does the project involve revised hydrology? This is the first study of the area [x] Yes [ ] No

If yes, complete Hydrologic Analysis Form and include calculations of the 100-year inflow flood hydrograph routed through the dam with the beginning pool at the normal pool elevation (spillway crest elevation for ungated spillway). Include any inflow hydrograph bulking by watershed sediment yield and provide necessary debris and sediment yield analysis.

Also see the Hydrology Report

Does the revised hydrology affect the 100-year water-surface elevation behind the dam or downstream of the dam? New study [x] Yes [ ] No

If yes, complete the Riverine Hydraulic Analysis Form and complete the table shown on the following page. Also see the Hydraulics Report

	Stillwater Elevation Behind the Dam	
	FIS	Revised
10-year		
50-year		
100-year	N/A	1697.3
500-year		
Normal Pool Elevation		None (Empty)

Was long term sediment accumulation taken into consideration in determining the normal pool elevation? ☒ Yes ☐ No

Was the dam designed to withstand the hydrostatic and hydrodynamic forces associated with floods greater than the 100-year flood? ☒ Yes ☐ No

If no, and the dam has a reasonable probability of failure during the 100-year flood, please attach dam break analysis.

Provide the following data on the dam:

Dimensional Height: 34 ft (To top of Dam)
Crest Elevation of top of dam: 1711
100-year flood storage capacity: 32 ac-ft
Freeboard (measured from 100-year water surface elevation): 13.7 ft

Spillway(s):

Type: ☐ gated ☒ ungated

Dimensional Width: 100 ft
Dimensional Height: 7 ft
Crest Elevation of top of spillway: 1703.7

Outlet(s):

Type: ☐ gated ☒ ungated

Width: —
Height —
Diameter: 30"
Invert Elevation: 1677.2

Explain flow regulation plan: This is a flood retarding structure which uses an ungated pipe to reduce the peak discharge. During a flow event no human intervention is required for the operation of this structure

Are the project features, including the emergency spillway, designed to accommodate the 100-year flood discharge without overtopping the dam? ☒ Yes ☐ No

Was the dam designed in accordance with all currently applicable local, State, and Federal regulations? ☒ Yes ☐ No

If no, please provide explanation.

FEMA may request a list of regulations that have been complied with and supporting documentation demonstrating compliance with these regulations. See attached licenses from the State and the Emergency Action Plan Report.

Attach copy of formal operation and maintenance plan

Answer N/A to any questions which are not applicable

State of Arizona
DEPARTMENT OF WATER RESOURCES
Division of Safety of Dams

LICENSE OF APPROVAL

Pursuant to Chapter 3, Title 45-Waters, of the Arizona Revised Statutes, the DIRECTOR, Department of Water Resources authorizes the use of: FOUNTAIN HILLS FRS #19 *Dam and Reservoir, Application Number* 07.41 *Located in Sec.* 22 *, Tp.* 3N *, R.* 6E *, G. & S. R. B. & M.* Maricopa *County, State of Arizona to impound water in accordance with and subject to the following terms and conditions:*

(1) Use shall be only as a flood retarding structure, limited to temporary storage during periods of flood and for such additional time as may be required to completely evacuate the flood waters through the outlet conduit. (2) The owner shall take reasonable actions toward removal of deficiencies present at the dam in a timely manner.

This license of approval supersedes every previous consent for use issued by the State of Arizona relative to said dam and reservoir.

Witness my hand and seal of the Arizona Department of Water Resources

6th *day of* December *, 19* 84 *.*

Wesley E. Steiner

WESLEY E. STEINER
DIRECTOR

State of Arizona
OFFICE OF THE STATE WATER ENGINEER
Supervision of Safety of Dams

License of Approval

Pursuant to Chapter 3, Title 45 (Waters), of the Arizona Revised Statutes, the STATE WATER ENGINEER has found that the FOUNTAIN HILLS DAM #19 *Dam and Reservoir, State Application Number* 7-41, *located in Sec.* 22, *Tp.* 3N, *R.* 6E, *G. & S. R. B & M,* Maricopa *County, State of Arizona, are safe to impound water; and the use of said dam and reservoir to impound water in accordance with and subject to the following terms and conditions is hereby authorized:* Use shall be only as a flood retarding structure, limited to temporary storage during periods of flood and for such additional time as may be required to completely evacuate the flood waters through the outlet conduit.

This license of approval supersedes every previous consent for use issued by the State of Arizona relative to said dam and reservoir.

Witness my hand and the seal of the Arizona Water Commission of the State of Arizona this 13th *day of* December, *19*73.

STATE WATER ENGINEER

Benson G. Scott

By Chief, Supervision of Safety of Dams

OCT 23

Town of Fountain Hills
Maricopa County, Arizona

Fountain Hills Retardation Structures
Aspen Dam (No. 6)
Fountain Lake Dam
Hesperus Wash Dam (No. 36)
Stoneridge Dam (No. 19)

EMERGENCY ACTION PLAN

June 1996

Prepared for:

MCO Properties Inc.
16838 E. Palisades Blvd.
Fountain Hills, Arizona 85268

Prepared by:

Anderson-Nelson, Inc.
4441 East McDowell Road
Phoenix, Arizona 85008
(602) 273-1850

TABLE OF CONTENTS

		Page
I	PURPOSE	1
II	RETARDATION STRUCTURES VICINITY MAP	2
III	RESPONSIBILITIES	3
IV	NOTIFICATION FLOW CHART	9
V	EMERGENCY ACTION TABLE	13
VI	INSPECTION & MAINTENANCE PROCEDURES	15
VII	DEFINITIONS	16

I. PURPOSE

The purpose of this Emergency Action Plan is to define responsibilities and provide procedures to identify unusual and unlikely conditions which may endanger the integrity of the seven Flood Retardation Structures north of Shea Blvd. This identification process should be done in time to take remedial action and to notify the appropriate public officials of possible impending, or actual failure of one or more of the structures.

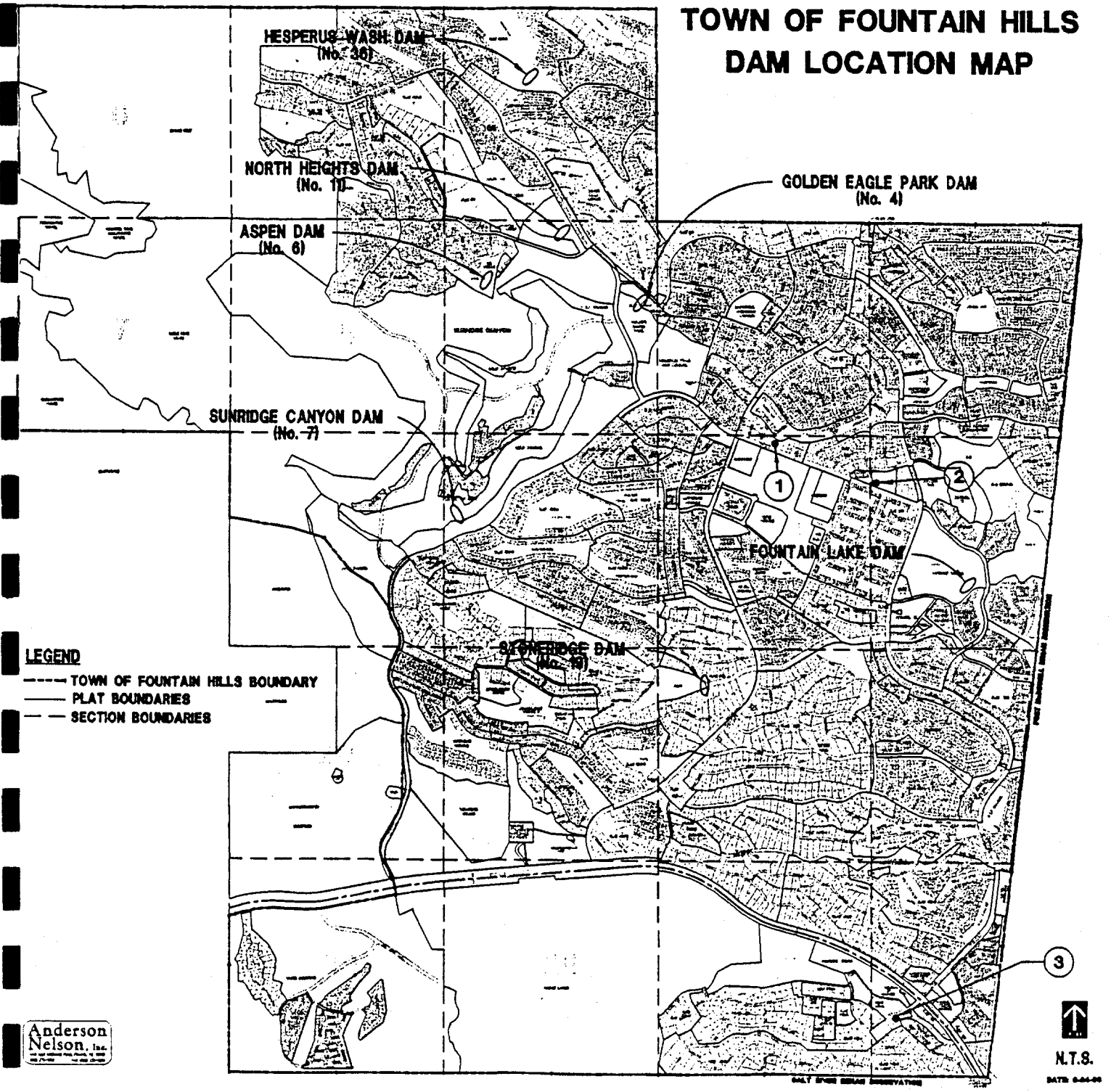
The EAP for the four Retardation Structures also includes sections from the Town of Fountain Hills Emergency Operations Plan. The Town will be the main vehicle for carrying out of the emergency response and evacuation of public entities threatened by the breaching or failure of the structures. The initial detection of potential problems and the evaluation of the risks associated with those problems will fall upon both MCO Properties Inc. and the Town of Fountain Hills under the inspection, maintenance and emergency action plan procedures outlined in this plan.

The Retardation Structures evaluated are Hesperus Wash Dam (Structure No. 36), Aspen Dam (Structure No. 6), Stoneridge Dam (Structure No. 19) and Fountain Lake Dam.

II.

LOCATION OF EMERGENCY SERVICES

1. TOWN OFFICES, TOWN MARSHALL, & MCO
2. FIRE DEPARTMENT
3. MARICOPA COUNTY SHERRIF'S OFFICE



III. RESPONSIBILITIES

Mr. Paul Miller of MCO Properties Inc., will have the responsibility for the day to day monitoring of the dam structures. He will monitor the initial filling and operations of these structures. In addition he will also be responsible for monitoring these structures during any severe storm event. Mr. Miller will report directly to Mr. Robert Kuta, Water Operations Manager for MCO Properties Inc. Mr. Kuta will analyze the situation and take the appropriate remedial action and/or the notification of local authorities of any imminent potential danger. However, under certain circumstances, such as when failure is imminent or has already occurred, Mr. Miller will have the authority for notification. Warning and evacuation will be handled and coordinated through the Town of Fountain Hills under their Emergency Operation Plan. Facilities located directly below the dam structures (see listing on following page) would be notified immediately by MCO Properties Inc. so as to insure adequate time for evacuation. This procedure will be coordinated with the appropriate public officials. To accomplish this task Mr. Miller will contact the lead coordinator for the Town of Fountain Hills (see Emergency Response Organization Notification Flow Chart) to ensure the proper line of succession is established for dissemination of emergency information.

Mr. Kuta, as Water Operations Manager, will be designated as the EAP coordinator. He will be responsible for all EAP related activities, including preparing revisions to the EAP, establishing training for new field personnel, coordinating EAP drills, etc. Mr. Kuta will be the person to contact should there be any questions concerning the EAP.

PRIMARY CONTACT

Field Supervisor:	Mr. Paul Miller	
	Work	837-9522 ext. 17
	Pager	590-3423
	Mobile	(602) 810-1034
	Home	483-1058

SECONDARY CONTACT

EAP Coordinator:	Mr. Robert Kuta, Water Operations Manager	
	Office	837-9666 ext. 317
	Pager	590-3400
	Mobile	316-6588
	Home	940-0608

TERTIARY CONTACT

MCO Properties Inc.:	Mr. Greg Bielli, Vice President	
	Office	837-9660 ext. 319
	Mobile	309-3717
	Home	860-0848

FACILITIES LOCATED WITHIN THE PROJECTED FLOOD INUNDATION AREA

	Facility and Location	Telephone Number and Contact
1.	Fire Station	911 Dispatch
2.	Sheriff Station 16833 E. Saguaro Blvd.	911 Dispatch
3.	Fountain Hills High School 16000 E. Palisades Blvd.	837-0690 Don Combrink
4.	F.H. Sanitary District 16941 E. Pepperwood Crl.	837-9444 Ron Huber
5.	Fort McDowell Sand & Gravel El Pueblo & Grande	837-2358 Shift Boss
6.	Ft. McDowell Casino Ft. McDowell Road and Shea Blvd.	837-1424 Mr. Kinsley

MCO PROPERTIES INC.
DAM STRUCTURE
QUATERLY INSPECTION REPORT

Structure Name: _____

Inspection Date: _____

Date of Last Inspection: _____

Inspectors: _____

Indication of Recent Rainfall or Impoundment: Yes [ ] No [ ]

Existing weather conditions: _____

DAM

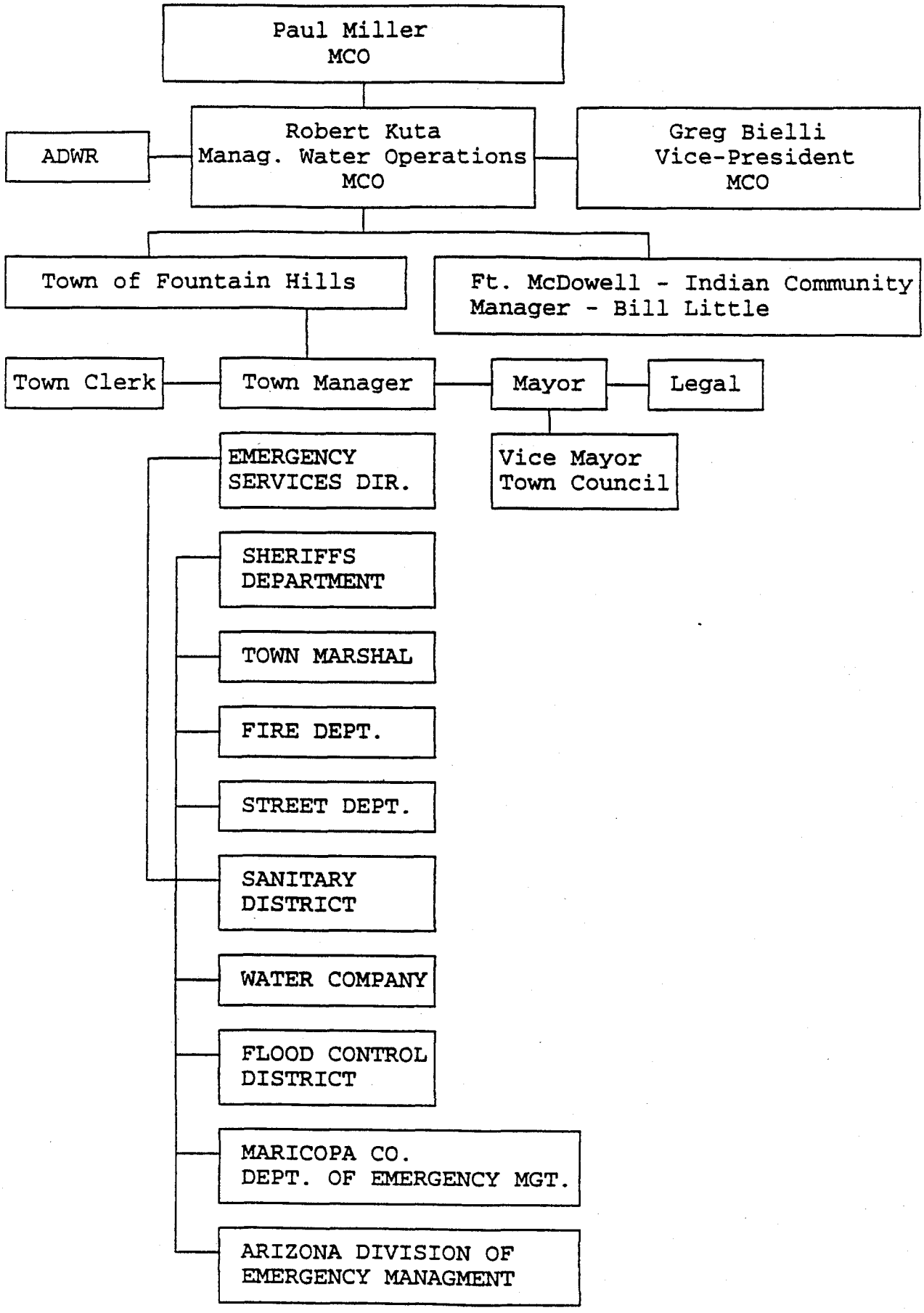
Yes	No	**Access Road and Entrance**
[ ]	[ ]	Existence of holes or deterioration of pavement. See Comments: _____
[ ]	[ ]	Existence of rock or debris on roadway. See Comments: _____
[ ]	[ ]	Existence of obstructive vegetative growth interfering with the view of vehicles entering and exiting the entrance area. See Comments: _____
[ ]	[ ]	Existence of dislocated boulders and landscape rock See Comments: _____
[ ]	[ ]	Existence of vandalized or dead cacti or plants. See Comments: _____

Yes	No	Inlet & Outlet Structure
[ ]	[ ]	Existence of obstruction or damage at the inlet. See Comments:_____
[ ]	[ ]	Downstream slope of the dam. Existence of erosion, vehicle trespass, sloughing, suspicious areas, dislocated boulders, and rodent activity. See Comments: _____
[ ]	[ ]	Principal Outlet Structure - Stilling Basin - Outlet Channel Existence of debris, silt, or obstructions in the box. See Comments: _____
[ ]	[ ]	Existence of cracking, spalled areas, or stress of concrete. See Comments:_____
[ ]	[ ]	Existence of damaged security fencing - vandalism. See Comments:_____
[ ]	[ ]	Existence of obstructive vegetative growth or silt accumulation interfering with designed grade of outlet channel. See Comments:_____
[ ]	[ ]	Existence of illegal vehicular trespassing or dumping in the area. See Comments:_____
[ ]	[ ]	Existence of down or damaged "No Trespassing" and "No Dumping" signs. See Comments:_____
[ ]	[ ]	Existing access roads unsuitable for maintenance vehicles. See Comments:_____

Yes	No	
		Principal outlet structure - intake
[ ]	[ ]	Existence of accumulation of trash, debris, or dead wood.
		See Comments:_____
[ ]	[ ]	Existence of settlement, spalled areas, or cracking of structure.
		See Comments:_____
[ ]	[ ]	Existence of deterioration of paint on the wood grates, physical damage.
		See Comments: _____
		Principal outlet conduit
[ ]	[ ]	Existence of debris, cracking, settlement, loss of joint material.
		See Comments:_____
[ ]	[ ]	Existence of silt accumulation at the intake structure above the invert of the intake.
		See Comments:_____
		Impound Area and Inflow Channel
[ ]	[ ]	Existence of unwanted vegetative growth, dead wood, and obstructions.
		See Comments:_____
		Impound Area - Signing
[ ]	[ ]	"No Trespassing" and "No Dumping", existing signs down or damaged.
		See Comments:_____
		Upstream Slope of Dam
[ ]	[ ]	Existence of erosion, vehicle trespass, sloughing, dislocated boulders, or rodent activity.
		See Comments:_____
[ ]	[ ]	**Seepage along toe of Dam and/or downstream slope.**
		See Comments:_____

Yes	No	**Emergency Spillway Area**
[ ]	[ ]	Concrete sill, existence of cracking and stress damage. See Comments:_____
[ ]	[ ]	Upstream and downstream slopes - existence of obstructive vegetative growth or obstructions. See Comments:_____
[ ]	[ ]	Access roads - unsuitable for maintenance vehicles. See Comments:_____

IV. NOTIFICATION FLOW CHART



MCO PROPERTIES INC.

EMERGENCY ORGANIZATION CHART

Robert Kuta
Manager Water Operations
Work - 837-9660 ext. 317
Cellular - 316-6588
Pager - 590-3400
Home - 940-0608

Primary Point of Contact
Paul Miller, Field Supervisor
Work - 837-9522 ext. 17
Cellular - 810-1034
Pager - 590-3423
Home - 483-1058

Greg Bielli
Vice President
Work - 837-9660 ext. 319
Home - 860-0848

Jeff Games
Pager - 590-3379
Home - 924-5502

Larry Halvorsen
Pager - 590-3025
Home - 837-4371

FORT McDOWELL INDIAN COMMUNITY

POSITION	NAME	TELEPHONE NUMBER
Manager	Bill Little	Pager (520) 421-5608
President	Clinton Pattea	837-5121
Tribal Police	Duty Officer	837-1091

TOWN OF FOUNTAIN HILLS

Position	Name	Address	Telephone Number
Key Staff Personnel:			
Town Manager	Paul Nordin	14614 Dickens Dr.	837-3035
Admin. Asst. To Manager	Diana Nottingham	Not available	314-5347
Town Clerk	Cassie Hansen	15716 E. Sunburst Dr.	837-0437
Emergency Services Dir.	Randy Harrel	Not available	979-2321
MCSO Dist 4	Jerry Sheridan	Not available	256-1742
Town Marshal	Steve Gendler	Not available	837-0118
Fire Chief	Scott Wheelwright	16810 E. Glenbrook Blvd.	837-3651 817-0817 pager
Asst. Fire Chief	Tony Lombardi	Not Available	837-2003
Street Superintendent	Gordon "Pat" Harvey	Not available	837-9685 450-3346 pager
Sanitary District	Ron Huber	Not available	867-4874
Chaparral City Water Co.	Rob Kuta	Not available	837-9522
Maricopa County Flood Control Dist.	Steve Waters	2801 W. Durango	273-1411

Council Members:			
Mayor	Jerry Miles	16317 E. Inca Ave.	837-3214
Council*	William J. O'Brian	16680 E. Hawk Dr.	837-8941
Council*	Sidney Apps	14481 LaCosta	816-0021 203-0285
Vice Mayor*	Don Lawrence	15528 E. Cholla Dr.	837-2256
Council*	Marianne Wiggshoff	Que-Jav-He-Ma, Rocky Mt. Place	837-8460
Council*	Albert Poma	11219 N. Woodpecker Bay	837-1739
Council*	Penfield Mower	15957 E. Ponderosa Dr.	837-8055
Legal:			
Attorney	Bill Farrell	Not Available	661-6044
Other Emergency Telephone Numbers			
State Fire Marshal		1540 W. Van Buren Street	255-4964
State Land Department		1616 W. Adams Street	255-4052
Arizona Dept. of Water Resources Statewide Flood Warning Section	Wayne Cooley	500 North 3rd Street	417-2400 ext. 7197

* Vice Mayor position is periodically shared by each Council member.

V. EMERGENCY ACTION TABLE

PROBLEM	HOW TO EVALUATE	EMERGENCY ACTION	REQUIRED EQUIPMENT, MATERIALS, AND LABOR	NOTIFICATION	DATA TO RECORD
Flooding	Flood Protection				
	a. Large spillway releases.	During and after any unusual spillway use a special inspection shall be made. If any problems are found, see appropriate items for evaluation, emergency action, and notification procedures. Lower the reservoir by pumping at the maximum rate with no effluent inflow.		Dam operator notifies Effluent Systems Engineer & ADWR.	Discharge, head- water and tailwater elevations, and duration of spill. Complete special inspection checklist.
	b. Headwater is within one foot of the top of dam.	Make a special inspection of the dam; see above.		Dam operator is to notify Effluent Systems Engineer & ADWR.	Discharge, head- water and tail-water elevations, & duration of spill. Complete special inspection checklist.
	c. Flood to approach or exceed top of dam.	Make a special inspection of the dam; see above.		Dam operator initiates notification process and notifies ADWR.	Discharge, rate of rise, time when dam is overtopped, and time of failure.
Seepage					
a. Water - Uncontrolled leakage.	Not Serious - Uncontrolled leak without the removal of fines. Rate of flow not increasing	None required.		Notify the Effluent Sys. Engr. & ADWR.	Size and location of area, approxi-mate flow.

		[redacted] flow [redacted] increasing. Tail-water flows and elevation are increasing without the removal of fines and no increase in spillway discharge.	[redacted] Coordinate with Effluent Sys. Engr. for discharge instructions. Place a ring of sandbags top towards natural drainage to monitor flow. If boil becomes too large to build a dike around it; place a blanket filter over the area. Blanket of material to be coarse sand at bottom to large gravel 2-4" at top. Blanket to be 3-5' thick. Safety precaution: in no case shall the personnel making the repairs be placed in danger.	Materials: Sand and bags; see materials list.	[redacted] Sys. Engr. and immediately notify ADWR if seepage rate is increasing. Begin notification process.	[redacted] area, approximate flow and how rapidly flow is increasing.
		Failure Imminent - Emerging water is muddy; rate of flow is increasing and an upstream whirlpool develops in reservoir. Tailwater flows and elevation increasing with no increase in spillway discharge.	Lower reservoir by pumping at maximum rate. Notify the Effluent Sys. Engr. Control loss of material by using sandbags to sufficient height to provide back pressure to prevent loss of materials. Safety precaution: In no case shall the personnel making the repairs be placed in danger.	Equipment: Shovels, trucks, dozer, and crane. Materials: Sand, bags, gravel, bales of straw or hay and rip rap. Labor: Equipment operators, 2 or 3 laborers.	For failure in less than 1 day, initiate notification process immedialtely and notify ADWR.	Size, location rate of flow is increasing for boil. Also, size and location of the whirlpool.

MCO RETARDATION STRUCTURES
EMERGENCY ACTION PLAN

MATERIALS LIST

Heavy Equipment
Case 580 Backhoe*
Cat Backhoe*
Dump Truck*

Vehicles
2 - Ford Ranger Pickups
1 - GMC S-15 Pickup
1 - Chevrolet Cheyenne
1 - Chevrolet Suburban

Power Equipment
4" Trash Pump w/125 ft. Discharge Hose
12' Boat and 4 hp motor
3 hp Power Sprayer for Lake Management
Trailer Mounted 8" Diesel Driven Pump
2 - Rotohammers
1 1/2" Diaphragm Pump
5 hp Air Compressor

Communications
6 - Hand Held Radios
2 - Truck Mounted Radios
2 - Mobile Telephones
5 - Digital Pagers

Materials
Surplus Fill
Surplus Rip Rap
500+ft. 8" Aluminum Mainline
Road Barricades
Warning Cones
Emergency Flares
Misc. Hand Tools (i.e., shovels, picks, etc.)

Labor
1 - Manager
1 - Field Supervisor
2 - System Operators
10- Additional Field Laborers*

* Available through Chaparral City Water Company a wholly owned subsidiary of MCO Properties Inc.

VI. INSPECTION AND MAINTENANCE PROCEDURES

The inspection and maintenance of the dams should be performed in accordance with this EAP. All unusual or abnormal conditions that may adversely affect operations, maintenances or safety should be reported promptly.

During the initial or any subsequent rapid filling of the reservoir, the downstream slope of the dam and the foundation contacts should be inspected for indications of any abnormal conditions. Special inspections should be performed after all unusual occurrences, such as heavy rainfall, excessive runoff, high winds or infrequent low reservoir conditions that expose features normally submerged. Low reservoir levels afford the opportunity to carefully inspect the reservoir floor for tears in the liner, seepage holes or sink holes that may endanger the integrity of the liner and/or structure.

The down stream slopes should be carefully inspected for indications of cracks, slides, sloughs, subsidence, impairment of slope protection, springs, seeps or boggy areas caused by seepage from the reservoir. The upstream slope should be carefully inspected for adequate protection of the liner material. Extensive wave action and/or cracking and displacement of the gunite edge can expose the PVC liner.

The maintenance of the embankment consists of removing debris from the upstream face of the dams, replacing disintegrated rip rap, repairing eroded material, proper grading of access roads and controlling undesirable vegetation and rodents

Following completion and licensing, each dam will be on a yearly inspection schedule with the Arizona Department of Water Resources.

VII. DEFINITIONS

Boil: A flow of soil, usually fine sand or silt, into the bottom of a depression or excavation; forced in by water or water and air under pressure. A spring is a boil with very little sand in the flow.

Boggy Areas: Wet spongy ground; poorly drained area.

Emergency: A situation arising with or without warning, causing or threatening death, injury or disruption to normal life for numbers of people in excess of those which can be dealt with by the public services operating under normal conditions, and which requires special mobilization and organization of those forces.

Emergency Action Plan (EAP): An Emergency Action Plan is a formal plan that identifies potential emergency conditions at a dam and prescribes the procedures to be followed to minimize property damage and loss of life. An Emergency in terms of dam operation is defined as a condition which develops unexpectedly, endangers he structural integrity of the dam and/or downstream property and human life, and requires immediate action.

Emergency Operations Plan (EOP): Multi-hazard, functional plan that treats emergency management activities generally, with the unique aspects of individual disasters contained in hazard-specific annexes. It describes the emergency organization and the means of coordination with other entities. It assigns functional responsibilities and details tasks to be carried out as accurately as permitted by the situation.

Emergency Response Organization: Key personnel responding to emergencies and/or disasters, composed of the Mayor and his executive group which acts as advisors and the operations group which will man and operate the EOC.

Eminent Danger: Potential danger standing out as to be readily perceived or noted

Evacuation: Government recommended or ordered movement of persons and property from a hazard area to an area of safety.

Response: The efforts to minimize the risks created in an emergency by protecting the people, the environment, and property, and the efforts to return the scene to normal pre-emergency conditions.

Seepage: The process of seeping; oozing; a quantity of fluid that has seeped through porous material.

Seepage Hole: An area containing porous soil whereby water seeps through the soil collecting at the surface. Also see definition of boil.

Sink Hole: An opening in the ground surface leading to a subsurface cavity or a hole produced by the caving in of the roof of a subsurface cavity.

Slides: A sliding down of the soil on a slope due to an increase of load (due to rain or a new structure), or the removal of support at the foot due to excavation or erosion. Clays are particularly liable to sliding.

Slope Failure: The breakdown of soil cohesion between soil particles of an earthen slope. Slope failure produces a slide.

Sloughs: Pertaining to an earthen slope; a portion of the ground sliding or breaking off.

Subsidence: Downward movement of the ground surface for any reason. Subsidence is usually caused by the compression or movement of the soil below it. (syn; settlement).

Weather-Related Definitions:

WATCH: Severe weather or flash flood WATCH means that conditions are such that a storm or flood of significant magnitude is likely to occur. Persons within the area alerted should take precautionary steps.

WARNING: Announcement that threatening conditions (thunderstorm, high winds, tornado, flooding, dam or levee failure) are occurring or are imminent, and are expected to have a harmful effect upon the area alerted. Persons within the area must take immediate steps to protect themselves.

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 New Study

     Explain This is the first delineation of this watercourse
2. Flooding Source: FOUNTAIN CHANNEL
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X

   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Harrel
Signature of Community Official

Randy L Harrel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

.C 07 '95 04:46PM FOUNTAIN HILLS, AZ

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f the National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93- , is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by Engineers and George V. Sabel Consulting Engineers. purpose of this study is to examine and evaluate flood hazard s which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County rry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applicable for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an portunity to bring any relevant facts and technical data concerng local flood hazards to the attention of the Flood Control istrict for consideration in the course of this study. Such mation should be addressed to Mr. Tim Murphy or Ms. Sandy , Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

ished FH Times 1/13, 1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

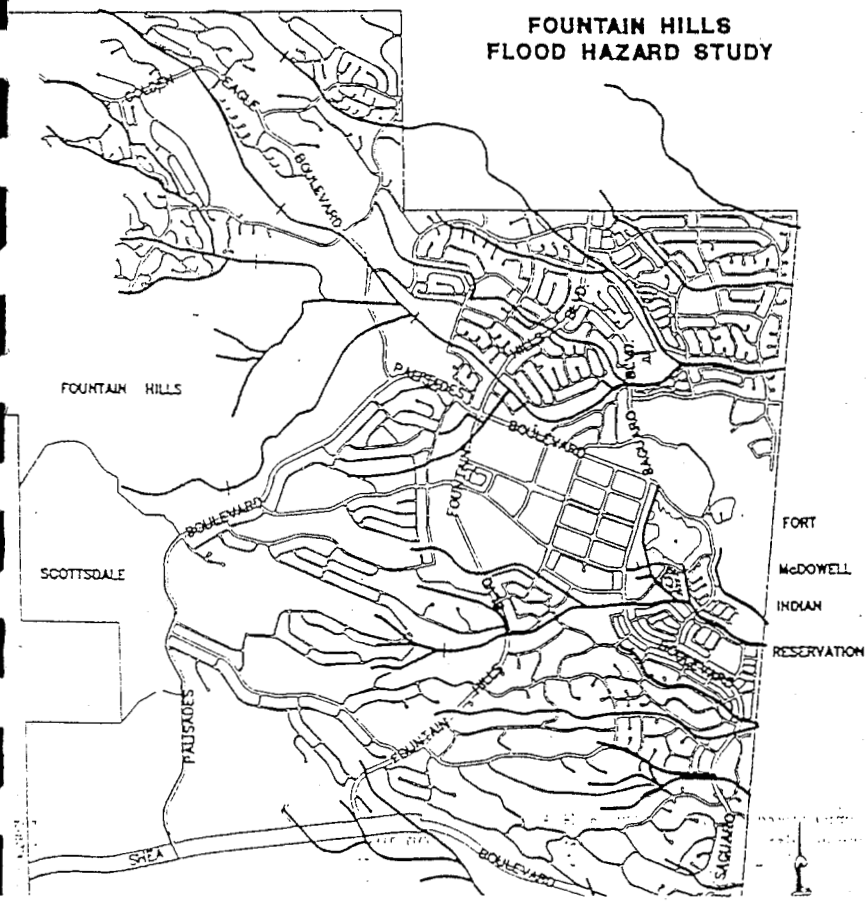
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Lars
INVESTMEN
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell you
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get SOLD quickly! She keeps my LISTERS advised of the progress on
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal for Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO. 29737
HERNAN A. ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: FOUNTAIN CHANNEL
(One form for each flooding source)

Project Name /Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County)
Attach evidence of approval.

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

Stream: FOUNTAIN CHANNEL

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
Above Colony Wash (FC 7)	1.64	N/A	885
Above El Lago BLVD (FC 4)	0.39	N/A	738
End of Study (DFC 2)	0.26	N/A	451

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 N/A New study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

Unavailable

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin Areas	☒	☐	Fountain Hills & USGS Mapping
Lag Time, L, Lca, Slope, Kn	☒	☐	Fountain Hills & USGS Mapping
Green & Ampt Parameters	☒	☐	FCDMC Hydrologic Manual
Routing Reach Parametecs	☒	☐	FCDMC Hydrologic Manual
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:		4.0.1 E
	Date:		May 1991
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		FCDMC Hydrologic Manual
4.	Rainfall duration:		6 & 24 Hour
5.	Areal adjustment to precipitation (%):		Depends upon Subbasin Area
6.	Maximum overland flow length		3910 ft. (182 G)
7.	Hydrograph development method:		Clark Unit Graph
8.	Loss rate method:		Green-Ampt
	Source of soils information:		SCS Soil Survey
	Source of land use information		Aerial Photos
9.	Channel routing method:		Normal Depth
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 The model was calibrated by comparing USGS gage data, runoff volume checks, results with estimates using a USGS regional regression equation, and with results from other studies.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: _____

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: FOUNTAIN CHANNEL
(One form for each flooding source)

Project Name/Identifier: Fountain Hills South Floodplain Delineation study FCD 92-05

1. REACH TO BE REVISED

Downstream limit: confluence with Colony wash

Upstream limit: Saguaro Boulevard

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	451 cfs	885 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

Critical Depth

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

Overbanks .....

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
N/A		

Explain:

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.

The cross-sections were determined photogrammetrically by the Aerial Mapping Company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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. For those cross-sections where the HEC-2 model defaulted to critical depth, the critical depth water surface elevations are plotted on the profiles and maps.

2. What is the maximum change in energy gradient between cross-sections? 12.99 ft

Specify location 0.080

3. What is the distance between the cross-sections in 2 above? 421 ft

4. What is the maximum distance between cross-sections? 487 ft

Specify location 0.41

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? 0.0 foot

Specify location –

c. What is the maximum velocity? 11.1 fps

Specify location .210

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in the Hydraulic Analysis Report

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

N/A NEW STUDY

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER

	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]

COMMENTS:

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.

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, Arizona (Town of Fountain Hills)

Flooding Source: FOUNTAIN CHANNEL

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.) 1929 NGVD	☒ 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: This is the first study done in Fountain Hills, therefore there are no existing floodplain and floodway delineations

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.)*? Aerial mapping, August 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 Foot 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.

   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.

N/A This is the first study of the area, therefore there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore there isn't an existing floodway delineation.

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

If no, explain:

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.

If requested, a digitized map can be supplied.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: FOUNTAIN CHANNEL

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: El Lago Blvd.
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross section 0.21
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
Two 4' x 10' Box Culverts

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
with wingwalls

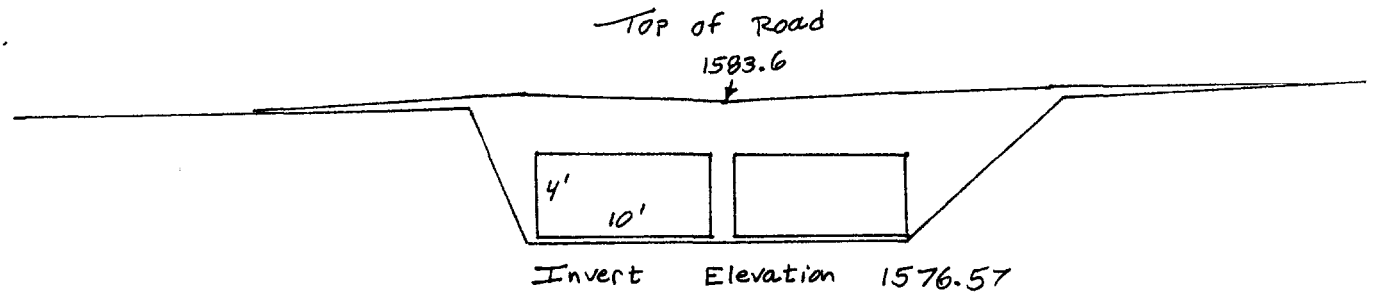
3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*
HEC-2 Special Culvert Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

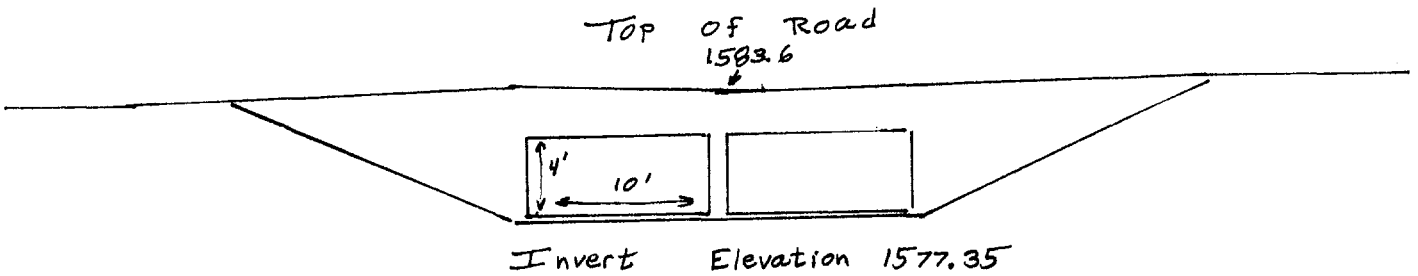
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

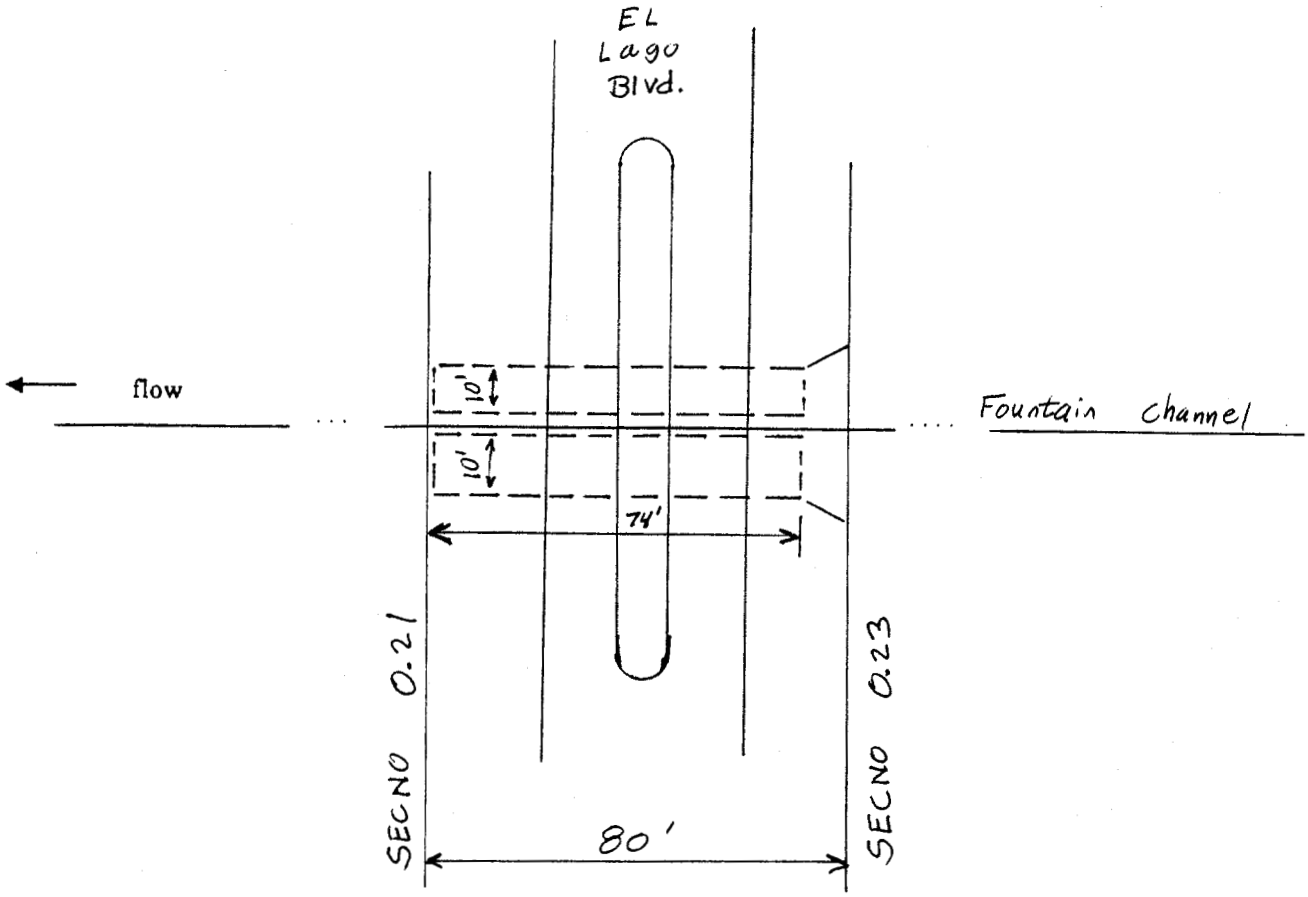
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	74'
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	80 ft²
Total culvert/bridge area (ft²)	80 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1583.5	1583.6
Downstream face	1583.5	1583.6

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1583.5	1583.6
Downstream face	1583.5	1583.6

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1582.65	1583.25
Downstream face	1580.40	1582.33

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		668 cfs	0	668 cfs

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	20	20	20
Downstream face	20	20	20

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	.013
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: NORTH COLONY WASH
3. Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Harrel
Signature of Community Official

Randy L Harrel, Town Engr
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

07 '95 04:46PM FOUNTAIN HILLS, AZ

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd. The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

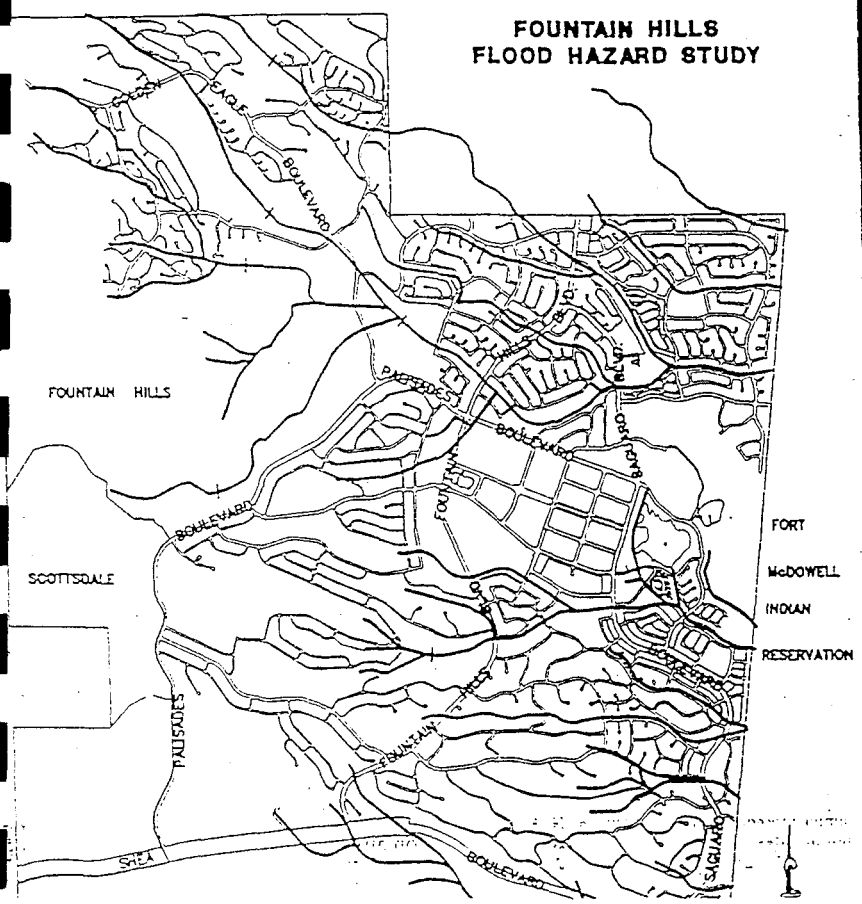
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Large
INVESTMENT
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell your
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top Pr
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get my SOLD quickly! She keeps my LISTERS advised of the progress of m
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study, so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic / The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal For Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License PROFESSIONAL ENGINEER

Hernan A. Aristizabal
Signature

January 27, 1997
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO. 29737
HERNAN A. ARISTIZABAL
Date Signed 1-27-97
ARIZONA, U.S.A.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: NORTH COLONY WASH
(One form for each flooding source)

Project Name /Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County)
Attach evidence of approval.

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

Stream: NORTH COLONY WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
Above Colony Wash (NCL9)	0.37	N/A	295
Below Fountain Hills Blvd (NCL7)	0.36	N/A	289
Above Mimosa Drive (NCL2)	0.13	N/A	188

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

Unavailable

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin Areas	☒	☐	Fountain Hills & USGS Mapping
Lag Time, L, L_{ca}, Slope, Kn	☒	☐	Fountain Hills & USGS Mapping
Green & Ampt Parameters	☒	☐	FCDMC Hydrologic Manual
Routing Reach Parametecs	☒	☐	FCDMC Hydrologic Manual
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:		4.0.1 E
	Date:		May 1991
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		FCDMC Hydrologic Manual
4.	Rainfall duration:		6 & 24 Hour
5.	Areal adjustment to precipitation (%):		Depends upon Subbasin Area
6.	Maximum overland flow length		5625 ft. (184 E)
7.	Hydrograph development method:		Clark Unit Graph
8.	Loss rate method:		Green-Ampt
	Source of soils information:		SCS Soil Survey
	Source of land use information		Aerial Photos
9.	Channel routing method:		Normal Depth
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 The model was calibrated by comparing USGS gage data, runoff volume checks, results with estimates using a USGS regional regression equation, and with results from other studies.

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.

See the Hydrology Report

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: NORTH COLONY WASH
(One form for each flooding source)

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. REACH TO BE REVISED

Downstream limit: Confluence with Colony Wash

Upstream limit: Mimosa Drive

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	188 cfs	295 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

Critical Depth

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

Overbanks .....

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
N/A		

Explain:

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.

The cross-sections were determined photogrammetrically by the Aerial Mapping Company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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. For those cross-sections where the HEC-2 model defaulted to critical depth, the critical depth water surface elevations are plotted on the profiles and maps.

2. What is the maximum change in energy gradient between cross-sections? 11.12

Specify location ..... .040

3. What is the distance between the cross-sections in 2 above? ..... 233 ft.

4. What is the maximum distance between cross-sections? ..... 504 ft

Specify location 0.45

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? ..... 0.0 foot

Specify location ..... —

c. What is the maximum velocity? ..... 17.0 fps

Specify location 0.270

d. Are there any negeative 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)*

N/A NEW STUDY

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. N/A NEW STUDY The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

B. N/A NEW STUDY The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.
The profiles are located in the Hydraulic Analysis Report

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK N/A NEW STUDY

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER

	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]

COMMENTS:

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.

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, Arizona (Town of Fountain Hills)

Flooding Source: NORTH COLONY WASH

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.) 1929 NGVD	☒ 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: This is the first study done in Fountain Hills, therefore there are no existing floodplain and floodway delineations

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.)*? Aerial mapping, August 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 Foot 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.

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.

N/A This is the first study of the area, therefore there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore there isn't an existing floodway delineation.

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

If no, explain:

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.

If requested, a digitized map can be supplied.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: NORTH COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Chama Drive
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 0.08
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
One 60" CMP Culvert

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
Projecting From Fill

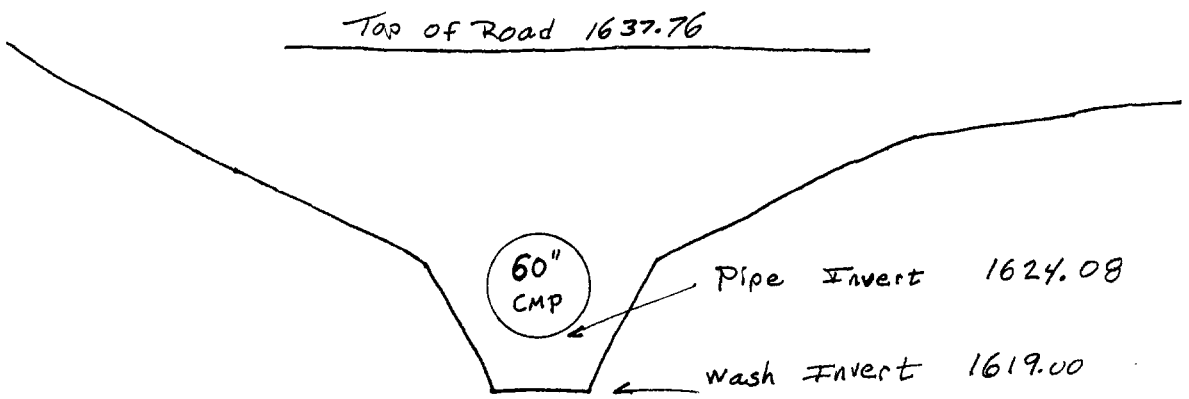
3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*
HEC-2 Special Culvert Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

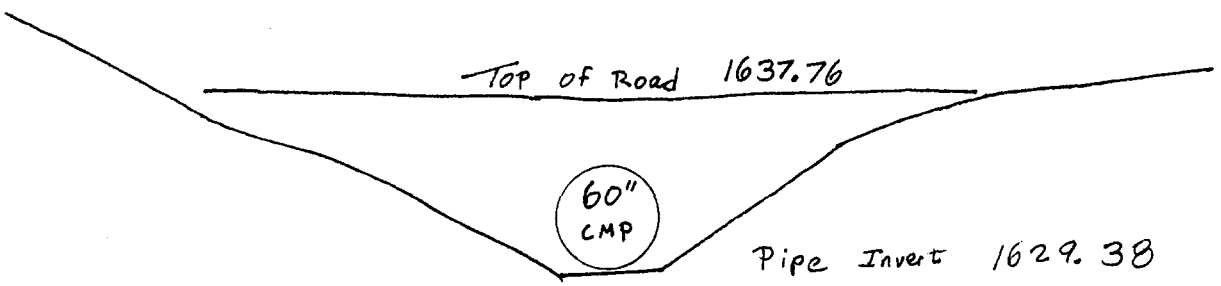
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

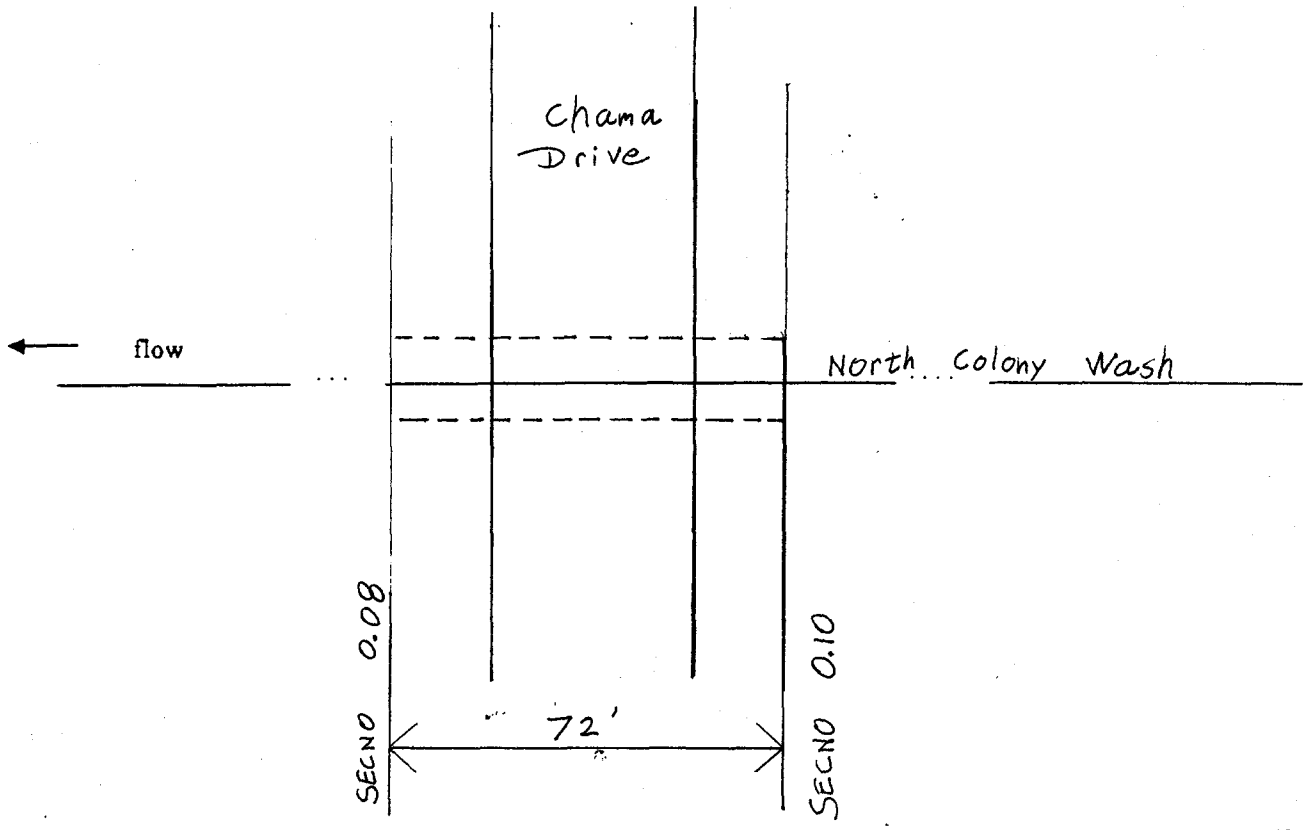
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	72 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	19.6 ft²
Total culvert/bridge area (ft²)	19.6 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1637.76	1637.2
Downstream face	1637.76	1637.2

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1637.76	1637.76
Downstream face	1637.76	1637.76

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1637.89	1637.95
Downstream face	1623.75	1626.15

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		205	86	295

The maximum depth of flow over the roadway/railroad (ft.) ..... 1.1 ft

Weir length (ft.) ..... 57 ft

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	45 ft	41 ft	45 ft
Downstream face	20 ft	6 ft	20 ft

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.0
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: NORTH COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: La Montana Drive
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 0.26
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
One 60" CMP and one 66" CMP. Modeled as two 60" CMP's.

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
Projecting from fill

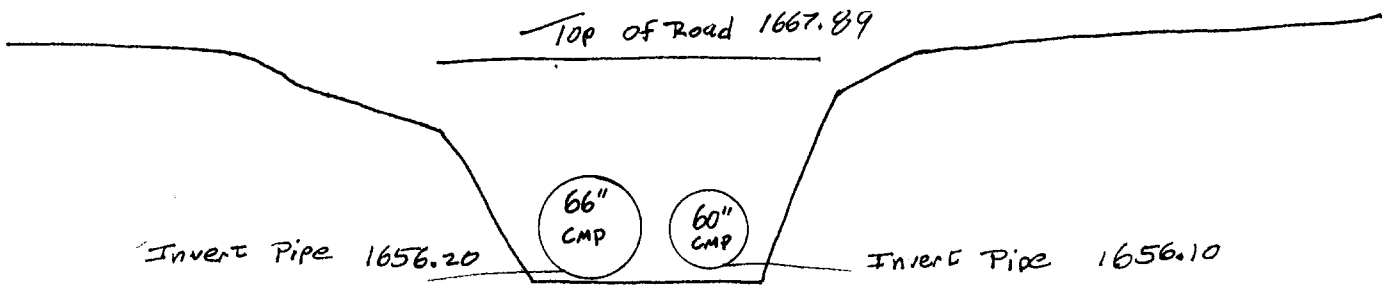
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 Special Culvert Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

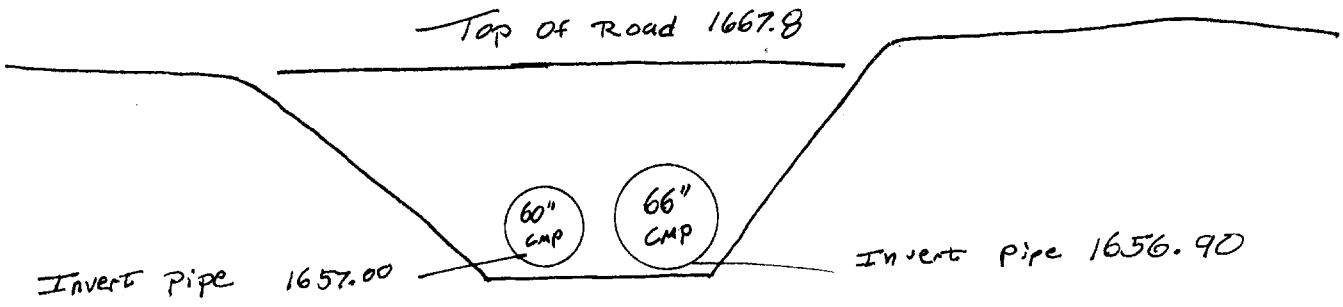
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

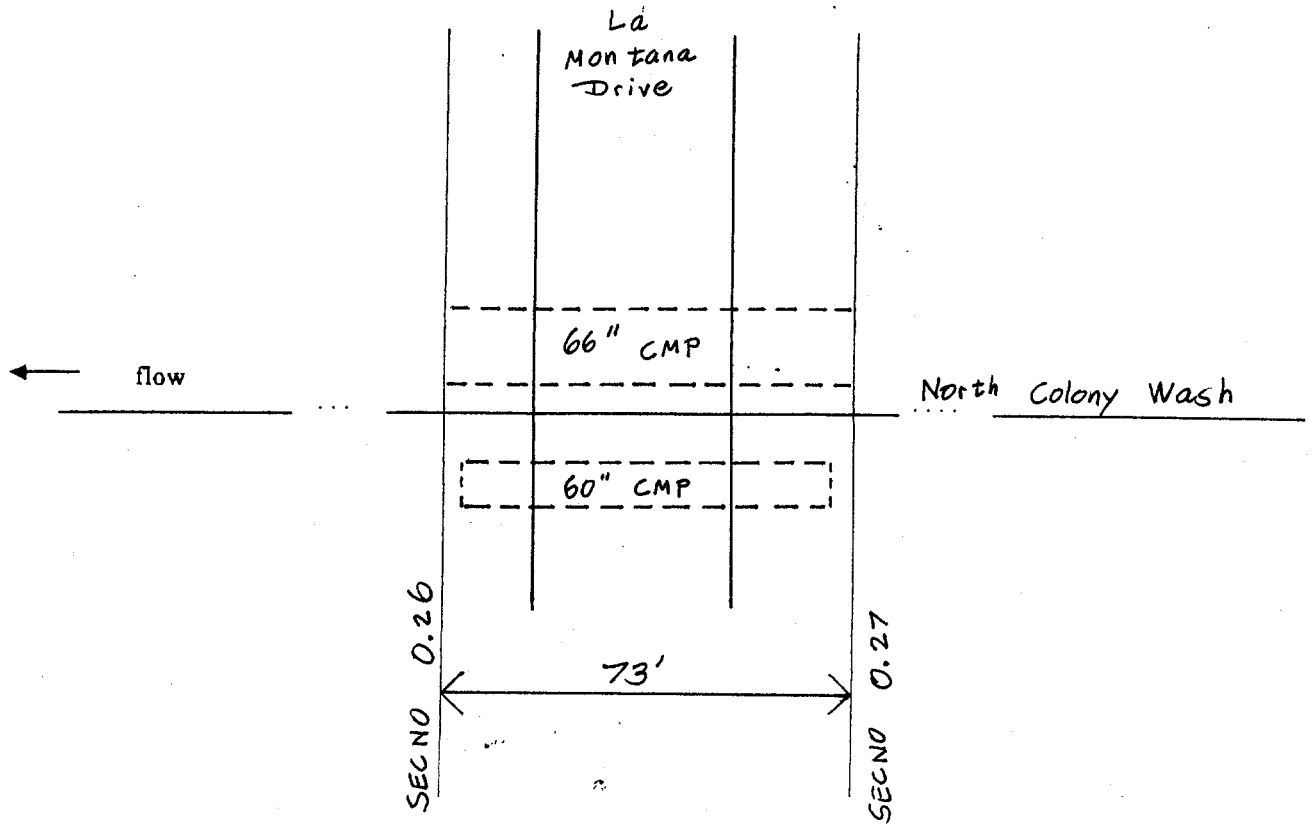
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	73 ft
Calculated culvert/bridge area (ft 2) by the hydraulic model, if applicable	42.5 ft²
Total culvert/bridge area (ft 2)	42.5 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1665.6	1667.89
Downstream face	1665.6	1667.89

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1667.89	1667.89
Downstream face	1667.89	1667.89

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1658.32	1662.79
Downstream face	1658.75	1660.07

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		283	0	283

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	51	12	51
Downstream face	28	12	28

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: NORTH COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Fountain Hills Blvd.
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 0.55
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed) _____

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) One 60" CMP Culvert

2. Entrance geometry of culvert/type of bridge opening (e.g. 30 ° - 75 ° wing walls with square top edge, sloping embankments and vertical abutments) Projecting from fill

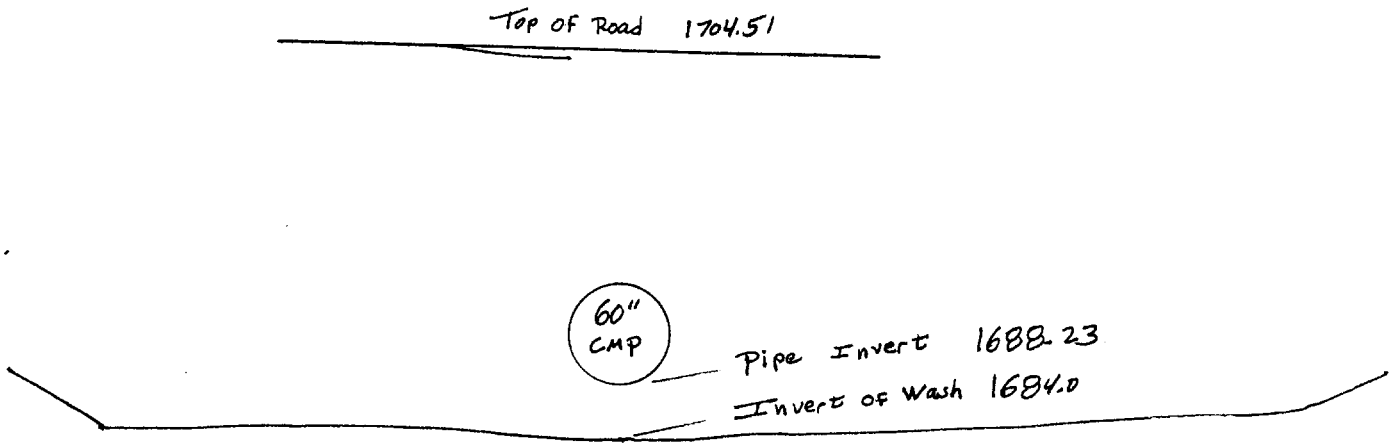
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 Special Culvert Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

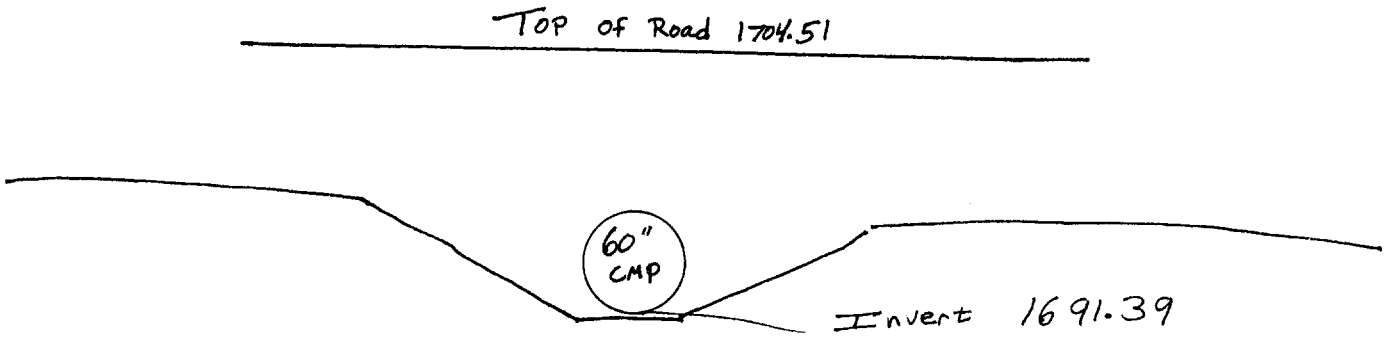
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

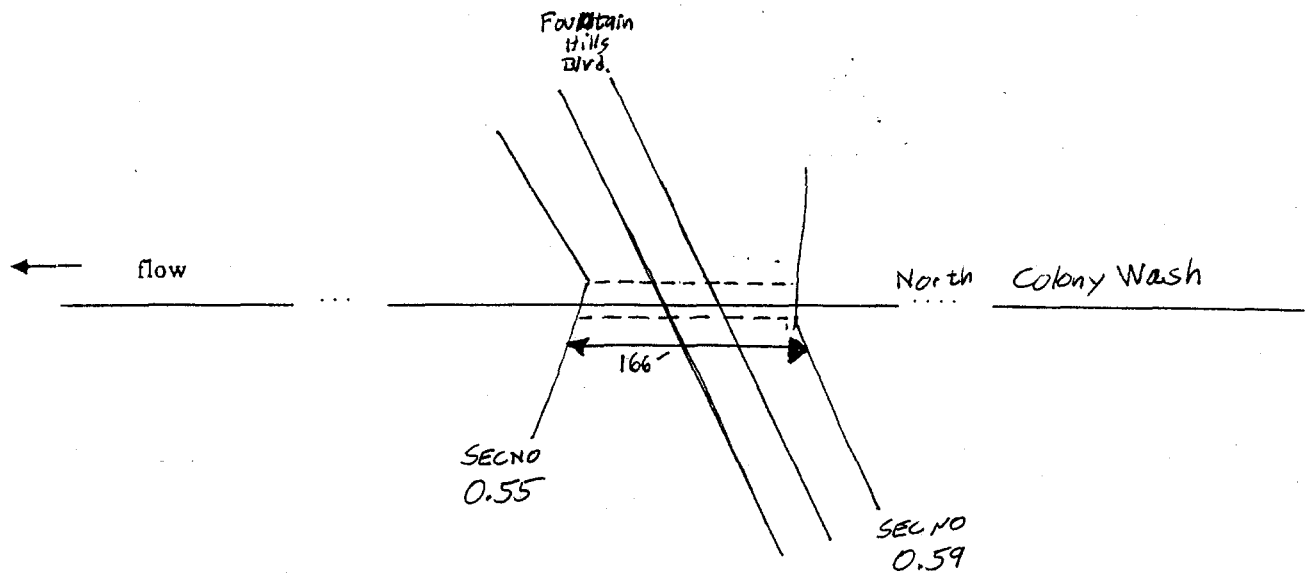
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	216 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	19.6 ft²
Total culvert/bridge area (ft²)	19.6 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1704.51	1704.51
Downstream face	1704.51	1704.51

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1704.51	1704.16
Downstream face	1704.51	1704.16

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1702.43	1702.73
Downstream face	1688.34	1690.53

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		246	0	246

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	200 ft	6 ft	200 ft
Downstream face	45 ft	6 ft	45 ft

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: NORTH COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Mountainside Drive
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 0.83
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
One 60" CMP culvert

2. Entrance geometry of culvert/type of bridge opening (e.g. 30 ^{0} - 75 ^{0} wing walls with square top edge, sloping embankments and vertical abutments)
Projecting from fill

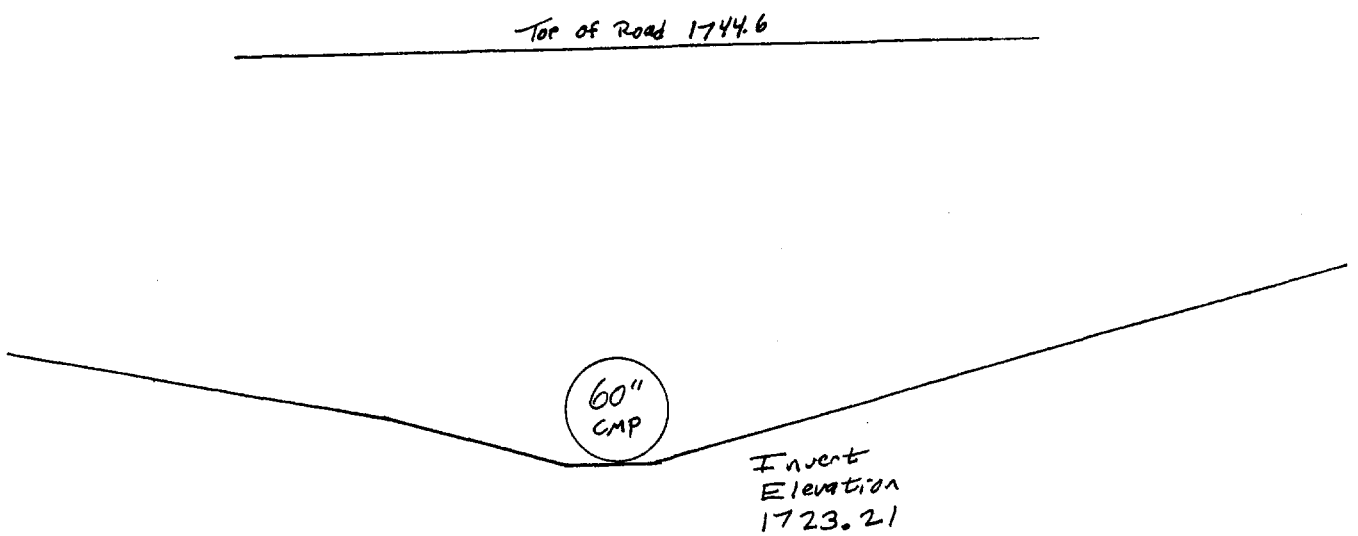
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 Special Culvert Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

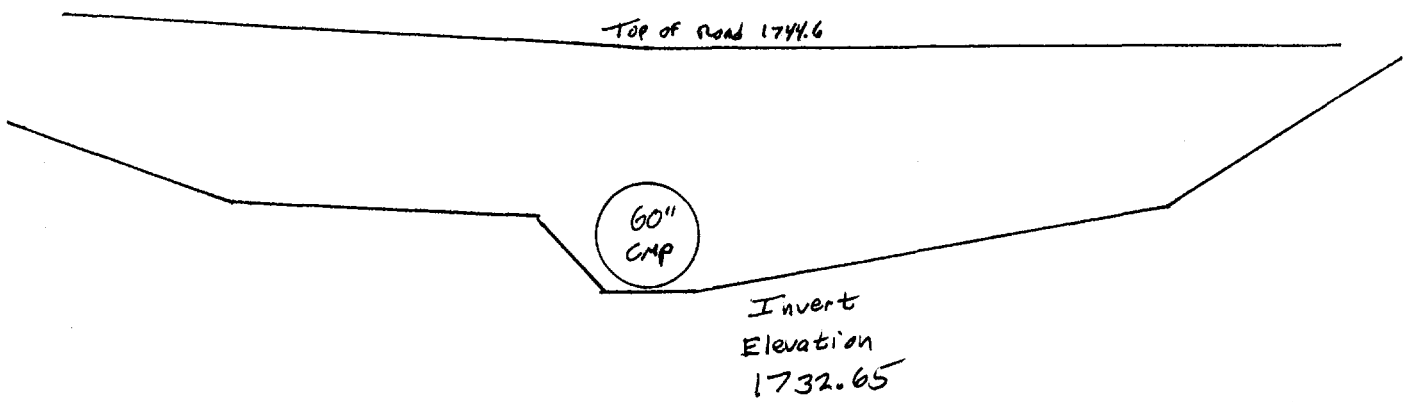
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

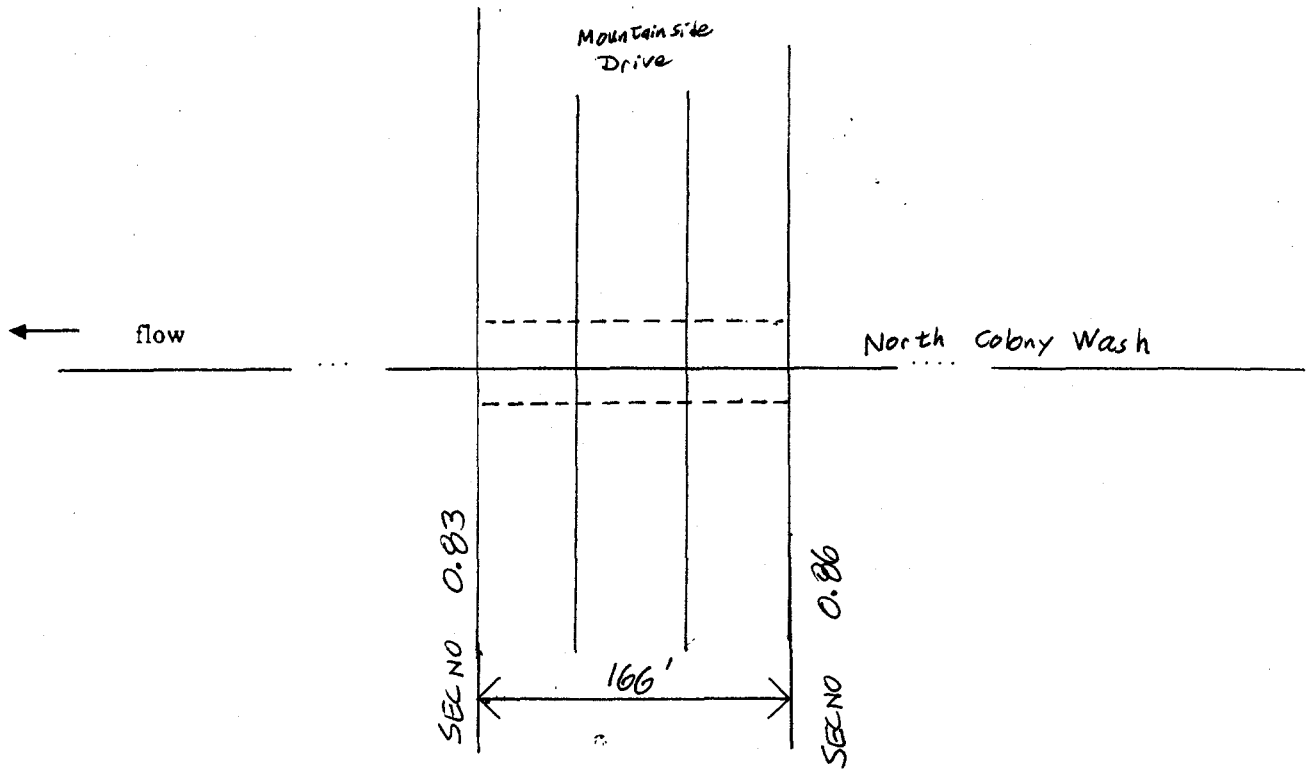
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	166'
Calculated culvert/bridge area (ft 2) by the hydraulic model, if applicable	19.6 ft^2
Total culvert/bridge area (ft 2)	19.6 ft^2

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1744.6	1744.3
Downstream face	1744.6	1744.3

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1744.6	1744.3
Downstream face	1744.6	1744.3

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1739.33	1739.77
Downstream face	1727.39	1729.47

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		178	0	178

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	50	5	50
Downstream face	40	5	40

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: NORTH COLONY WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Mimosa Dr.
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 0.89
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
One 60" CMP Culvert

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
Projecting from fill

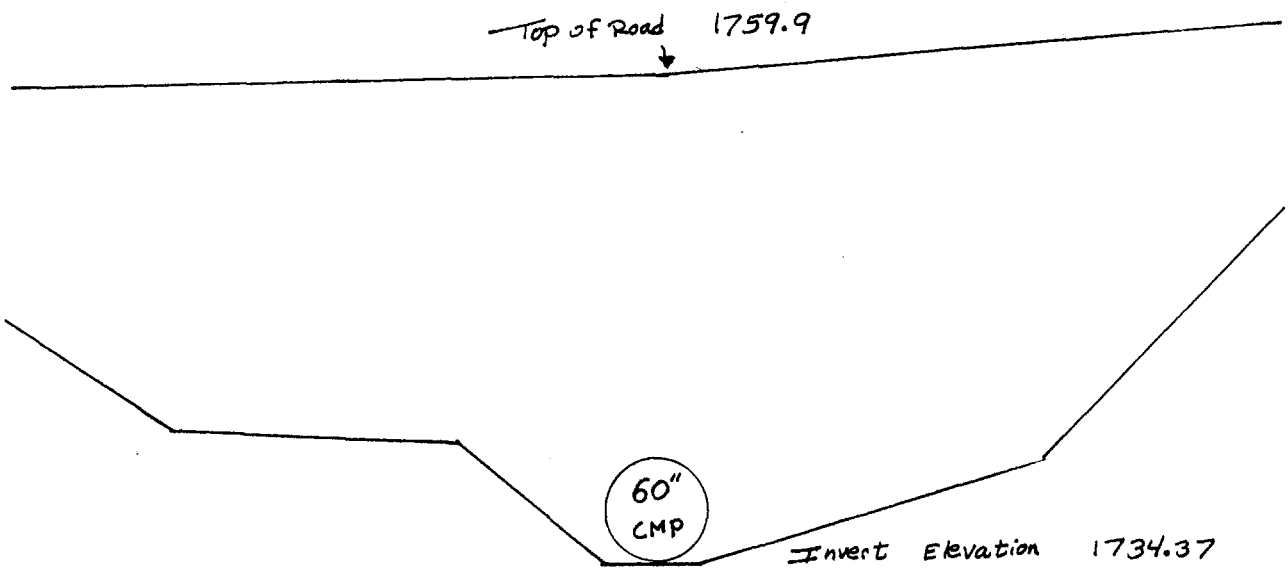
3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*
HEC-2 Special Culvert Method

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

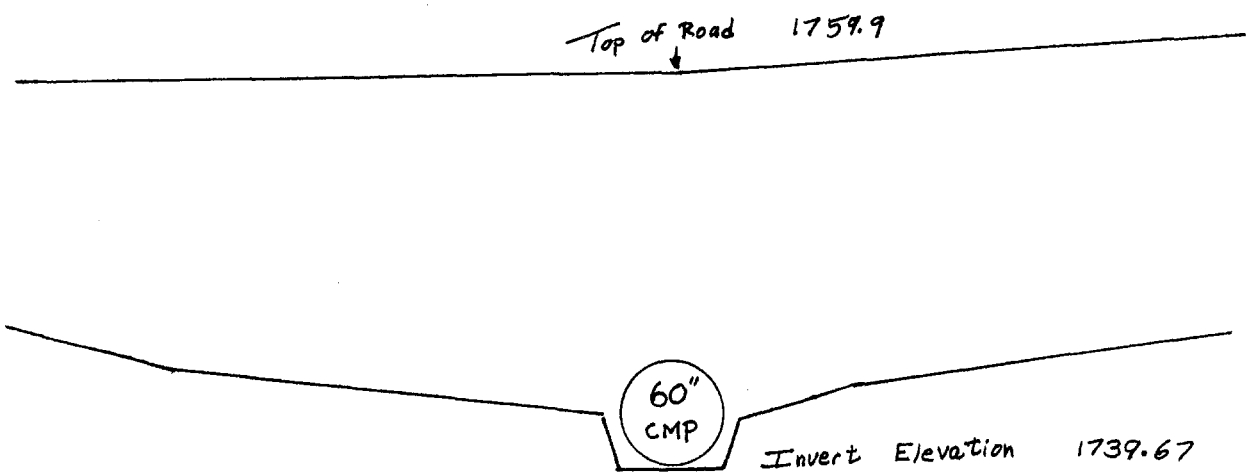
Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

3. ANALYSIS

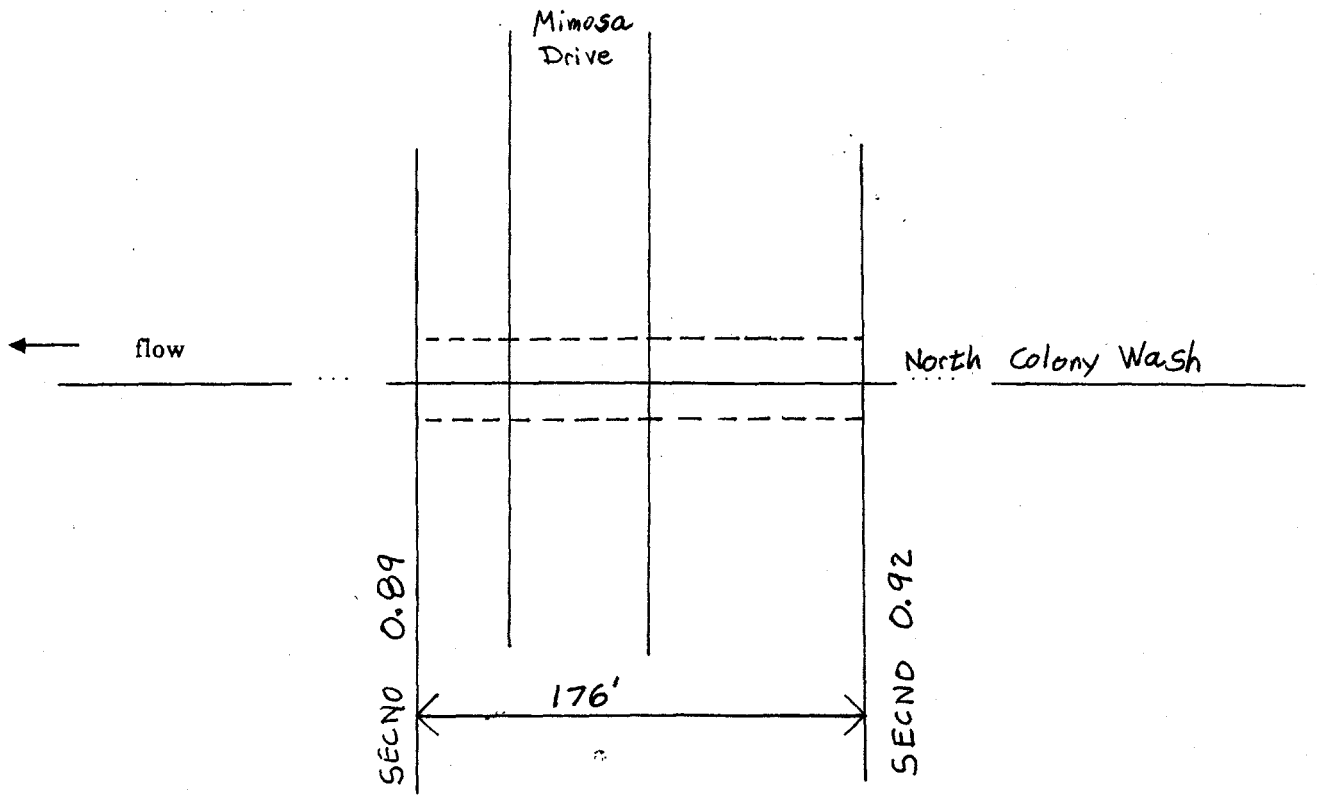
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	176 ft
Calculated culvert/bridge area (ft ^{2}) by the hydraulic model, if applicable	19.6 ft^2
Total culvert/bridge area (ft ^{2})	19.6 ft^2

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1758.1	1759.9
Downstream face	1758.1	1759.9

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1758.1	1759.9
Downstream face	1758.1	1759.9

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1746.27	1746.69
Downstream face	1739.55	1740.33

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		174	0	174

The maximum depth of flow over the roadway/railroad (ft.) ..... N/A

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	70	5	70
Downstream face	30	5	30

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New Study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Nemitt
Signature of Revision Requester

Ron Nemitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy Lowe
Signature of Community Official

Randy L. Lowe/Town Engr
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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.

11-22-95

07 '95 04:46PM FOUNTAIN HILLS, AZ

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority he National Flood Insurance Act of 1968 (P.L. 90 448), as nded, and the Flood Disaster Protection Act of 1973 (p.L. 93- , is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by K Engineers and George V. Sabel Consulting Engineers. purpose of this study is to examine and evaluate flood hazard eas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations hose areas. Flood elevations will be used by Maricopa County rry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applible for buildings and their contents.

announcement is intended to notify all interested persons of commencement of this study so that they may have an portunity to bring any relevant facts and technical data concern- g local flood hazards to the attention of the Flood Control rict for consideration in the course of this study. Such rmation should be addressed to Mr. Tim Murphy or Ms. Sandy y, Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

ished FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed over 30 washes flowing through community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd. The public is invited to come by Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

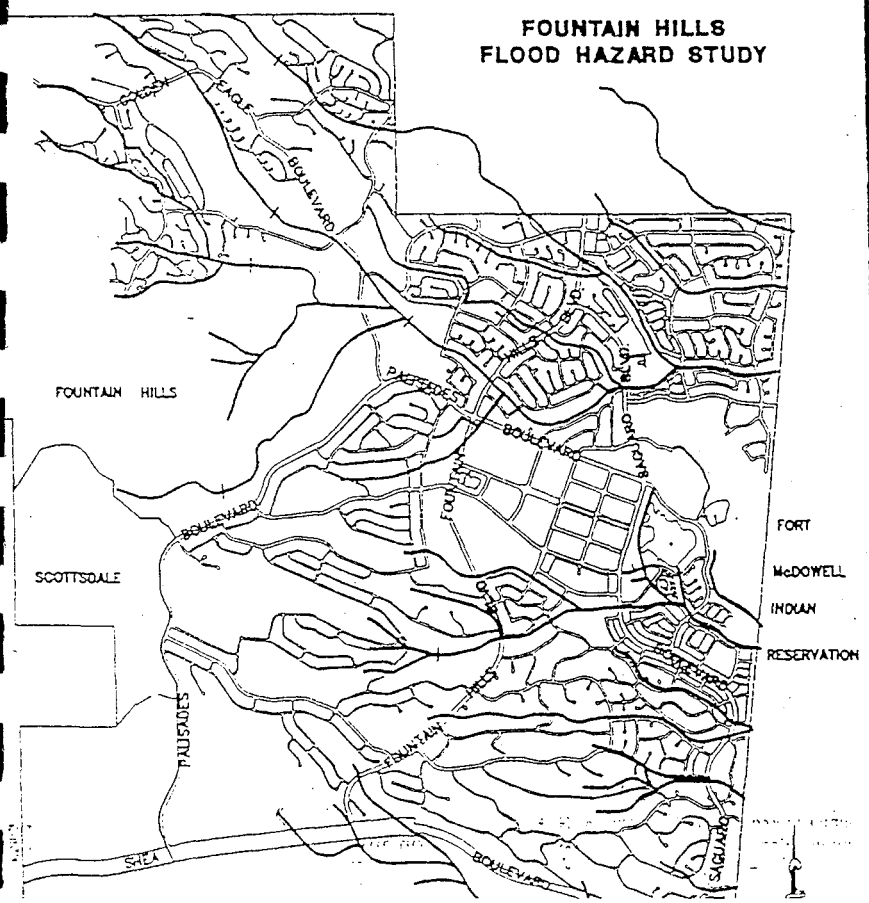
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Larg
INVESTMEN
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell your
call
erica
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get m SOLD quickly! She keeps my LISTERS advised of the progress on th
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal For Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil) CERTIFICATE NO. 29737 HERNAN A. ARISTIZABAL Date Signed 1-27-97 ARIZONA, U.S.A.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: SUNBURST WASH
(One form for each flooding source)

Project Name /Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., FLOOD CONTROL DISTRICT OF MARICOPA COUNTY)
Attach evidence of approval.

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

4. REVIEW OF RESULTS

Stream: SUNBURST WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
700' ABOVE SYCAMORE DR.	.33	N/A	6066
AT SYCAMORE DR.	.33	N/A	92
AT CONFLUENCE/ COLONY WASH	.39	N/A	122

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)*

N/A

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

UNAVAILABLE

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
SUBBASIN AREAS	☒	☐	FOUNTAIN HILLS/USGS MAPPING
LAG TIME, L, Lca, SLOPE, Kn	☒	☐	FOUNTAIN HILLS/USGS MAPPING
GREEN + Ampt PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
ROUTING REACH PARAMETERS	☒	☐	FCDMC HYDROLOGIC MANUAL
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:	N/A	4.0.1E
	Date:	N/A	MAY 1991
2.	Source of rainfall depth:	N/A	NOAA ATLAS 2
3.	Source of rainfall distribution:	N/A	FCDMC HYDROLOGIC MANUAL
4.	Rainfall duration:	N/A	6 + 24 hr.
5.	Areal adjustment to precipitation (%):	N/A	DEPENDS UPON SUBBASIN AREA
6.	Maximum overland flow length	N/A	.82 (186H) TABLE A.7
7.	Hydrograph development method:	N/A	CLARK UNIT GRAPH
8.	Loss rate method:	N/A	GREEN - AMPT
	Source of soils information:	N/A	SCS SOIL SURVEY
	Source of land use information	N/A	AERIAL PHOTOS
9.	Channel routing method:	N/A	NORMAL DEPTH
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 The model was calibrated by comparison of estimated values of peak discharges of this study to other M.C. study results

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: MARICOPA COUNTY, ARIZONA (Town of Fountain Hills)

Flooding Source: SUNBURST WASH
(One form for each flooding source)

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

1. REACH TO BE REVISED

Downstream limit: CONFLUENCE WITH COLONY WASH

Upstream limit: 700' ABOVE SYCAMORE DRIVE

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

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".

See the Hydraulics Report

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	606 cfs	122 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

CRITICAL DEPTH

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .04 - .04

Overbanks ..... 0.0 - .057

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
N/A		

Explain: NEW STUDY

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.

The cross-sections were determined photogrammetrically by the aerial mapping company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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.

FOR THOSE CROSS-SECTIONS WHERE THE HEC-2 MODEL DEFAULTED TO CRITICAL DEPTH THE CRITICAL DEPTH WATER SURFACE ELEVATIONS ARE PLOTTED ON PROFILES AND MAPS.

2. What is the maximum change in energy gradient between cross-sections? 11.72

Specify location SECNO .21

3. What is the distance between the cross-sections in 2 above? 127 ft.

4. What is the maximum distance between cross-sections? 459 ft.

Specify location SECNO .19

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

Specify location NEW STUDY

c. What is the maximum velocity? 11.68 fps

Specify location SECNO .36

d. Are there any negeative 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:

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.

The profiles are located in volume 2 of 2 of the hydraulic analysis notebook.

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 MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
MARICOPA COUNTY, ARIZONA	SUNBURST WASH	FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

	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]

COMMENTS:

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.

Sheet _____ of _____

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, ARIZONA (Town of Fountain Hills)

Flooding Source: SUNBURST WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.~~) NGVD 1929	☒ 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: THIS IS THE FIRST STUDY DONE IN FOUNTAIN HILLS, THEREFORE THERE ARE NO EXISTING FLOODPLAIN AND FLOODWAY DELINEATIONS.

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.)*? AERIAL MAPPING AUGUST 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 FOOT 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.

   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.

N/A This is the first study of the area, therefore, there isn't an existing 100-year floodplain delineation.

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? _____

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:

N/A This is the first study of the area, therefore, there isn't an existing floodway delineation.

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

If no, explain:

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.

IF REQUESTED A DIGITIZED MAP CAN BE SUPPLIED.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA (Town of Fountain Hills)

Flooding Source: SUNBURST WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: SYCAMORE DRIVE
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): SECNO .24
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)

   1-48" CMP

2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)

   PIPE PROJECTING FROM FILL

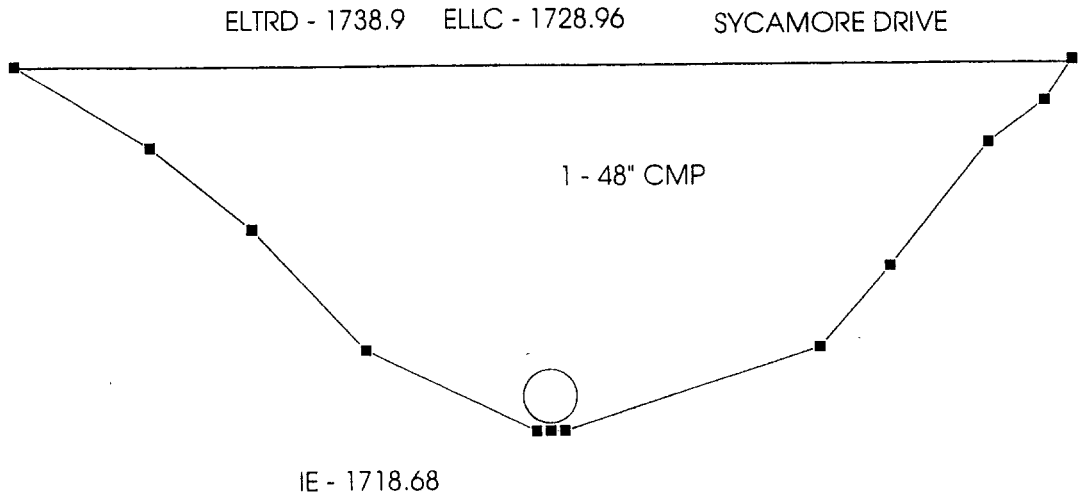
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)

   HEC-2 Special Culvert Method

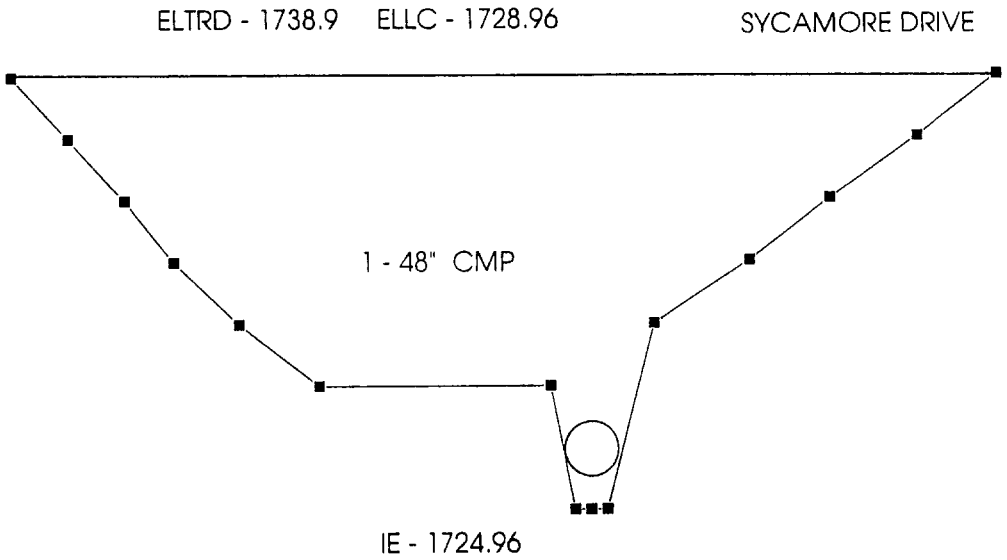
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

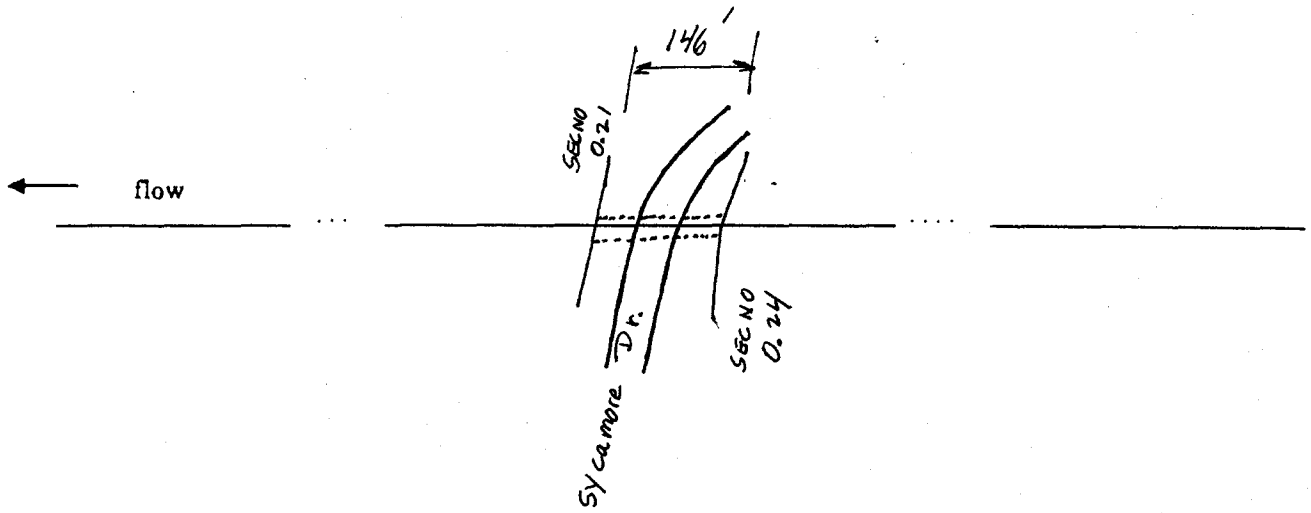
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	146 ft.
Calculated culvert/bridge area (ft 2) by the hydraulic model, if applicable	12.6 ft^2
Total culvert/bridge area (ft 2)	12.6 ft^2

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1738.9	1738.9
Downstream face	1738.9	1738.9

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1738.9	1738.9
Downstream face	1738.9	1738.9

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1729.96	1730.28
Downstream face	1721.76	1723.30

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		92	0	92

The maximum depth of flow over the roadway/railroad (ft.) 0

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face			
Downstream face			

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.8
Manning's "n" value assigned to the structure(s)	.023
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.0
Pier coefficient	—
Contraction loss coefficient	.3
Expansion loss coefficient	.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments (*explain any unusual situations*):

Attach analysis.

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 New Study

   Explain This is the first delineation of this watercourse

2. Flooding Source: GREYSTONE WASH
3. Project Name/Identifier: Fountain Hills South FloodPlain Delineation Study FCD 92-05
4. FEMA zone designations affected: X
   (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
04013	Maricopa County	Maricopa	AZ	04013 C	1750 E	9-4-91

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

Types of Flooding
- ☒ Riverine
- ☐ Coastal
- ☐ Alluvial Fan
- ☐ Shallow Flooding *(e.g. Zones AO and AH)*
- ☐ Lakes

Affected by wind/wave action
- ☐ Yes
- ☒ No

Structures
- ☐ Channelization
- ☐ Levee/Floodwall
- ☐ Bridge/Culvert
- ☐ Dam
- ☐ Coastal
- ☐ Fill
- ☐ Pump Station
- ☐ None
- ☐ Channel Relocation
- ☐ Excavation
- ☐ Other *(describe)*

Disciplines*
- ☐ Water Resources
  - ☒ Hydrology
  - ☒ Hydraulics
  - ☐ Sediment Transport
  - ☐ Interior Drainage
- ☐ Structural
- ☐ Geotechnical
- ☐ Land Surveying
- ☐ 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: New Study, this is the first delineation of this watercourse

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. See attached articles and announcements

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 ACKNOWLEDGMENT

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 ACKNOWLEDGMENT

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 acknowledgment 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 N/A New study

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. I 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. I, 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 primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. ☐ Yes ☐ No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazard, or solely to provide more detailed data. ☒ Yes ☐ No

This is the first study of this watercourse

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

Ron Newitt
Signature of Revision Requester

Ron Newitt/Program Mgr. NFIP
Printed Name and Title of Revision Requester

Flood Control District of Maricopa Co.
Company Name

(602) 506-1501 1-29-97
Telephone No. Date

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

Randy L Harrel
Signature of Community Official

Randy L Harrel, Town Engr.
Printed Name and Title of Community Official

Fountain Hills
Community Name

1-22-97
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 Hydrology, hydraulics
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 5 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:
   Hydrology analysis and floodplain delineation
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 N/A first study of the area.
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: Hernan A. Aristizabal For Entellus Inc.
(please print or type)

Title: Project Engineer
(please print or type)

Registration No. 29737 Expiration Date:

State Arizona

Type of License Professional Engineer

Signature

January 27, 1997
Date

Registered Professional Engineer (Civil) CERTIFICATE NO. 29737 HERNAN A. ARISTIZABAL Date Signed 1-27-97 ARIZONA, U.S.A.

Seal
(*Optional*)

*Specify Subdiscipline

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

11-22-95

No big problems in County floodplain study

If you've ever wondered what would happen in Fountain Hills in the event of a 100-year flood, Maricopa County has just completed a study that will tell you.

Representatives of Maricopa County Flood Control District were on hand for an open house at Town Hall on Thursday, Oct. 16. They were there to explain and answer questions concerning the Fountain Hills Flood Delineation Study.

The study defines the areas that would be inundated in the event of a 100-year storm and flood.

There was not a big turnout for the two-hour session, but a few residents dropped by to ask about their own particular concerns.

Town Engineer Randy Harrel said the study indicates no significant problems for individual homeowners. Some residents have property which lies within the flood area, but few if any structures are threatened.

One area of concern that town officials will look at is the Baptist Church on Saguaro Boulevard. In the event of a significant 100-year flooding event all of the church buildings and the parking lot would be under water. It is a low flat area which Nicklaus and Cypress washes flow into.

A Sanitary District pumping station adjacent to the church is apparently not within the flood plain.

Sanitary District Manager Ron Huber said no flood study was done when the pumping facility was constructed. But he said the pump building is significantly higher than the church buildings.

Huber also said that pump station is scheduled to be abandoned in the near future.

Harrel said the town will use the study to consider its options for protecting citizens and property during such a flood.

There are 26 street crossings the town wants to study further besides the area around the church, Harrel said. The options that may be considered would include culvert work and possibly diversion or containment structures.

Those further studies are to begin in the near future.

Nearly all of the area included in the 100-year flood plain will belong to the Town of Fountain Hills once the wash property transfer between the town and MCO Properties is completed in the near future.

Fountain Hills Vice Mayor Peg Tibbetts, center, discusses the county's floodplain study with Flood Control District representatives Ron Nevitt and Sandy Walchuk.

However, Harrel said the flood plain delineation will not significantly impact what the town may choose to do with the washes in the way of public use.

Harrel said no structures would be built in the washes, and measures can be taken to protect whatever facilities might be placed in the washes.

The Maricopa County Flood Control District has spent about two years on the study.

NOTICE OF REGULAR SESSION

OF THE

FOUNTAIN HILLS TOWN COUNCIL

WHEN: NOVEMBER 16, 1995

TIME: **6:30 P.M.

WHERE: TOWN HALL COUNCIL CHAMBERS

Pursuant to A.R.S. 38-431.02, notice is hereby given to the members of the Town Council of Fountain Hills and to the general public that the Town Council of Fountain Hills will hold a regular session open to the public on Thursday, November 16, 1995 at 6:30 p.m. in the Council Chambers of the Fountain Hills Town Hall, located at 16836 E. Palisades Blvd., Building C, Fountain Hills, Arizona.

*** Prior to the regularly scheduled Council meeting, the Flood Control District of Maricopa County and the Town of Fountain Hills Engineering Department will host an open public meeting presenting the results of the Fountain Hills Floodplain Delineation Studies. The public meeting will be held in the conference room from 4:00 to 6:30 p.m.*

RULES FOR ADDRESSING THE COUNCIL - ADOPTED 1/18/90

It is the Council's desire to hear public comment on agenda items. As it is important to maintain order during the meeting, please adhere to the following rules of order if you wish to speak:

1.) All citizens wishing to speak must first be recognized by the Mayor.
2.) The Mayor will not call for public comment on an item until after a motion has been made and seconded and the Council has had adequate opportunity to discuss the item.
3.) Please stand and state your name and address after being called on to speak.
4.) All comments must be directed to the Mayor.
5.) TIME LIMIT - 3 MINUTES PER PERSON PER ITEM.
6.) Statements should not be repetitive.
7.) Persons or groups wishing to make longer presentations, should see the Town Clerk prior to the meeting.

The agenda for the meeting is as follows:

1.) Meeting called to order, pledge to the flag, invocation and roll call.

Consent Agenda:

All items listed with an asterisk (*) are considered to be routine, non-controversial matters and will be enacted by one motion and one roll call vote of the Council. There will be no separate discussion of these items unless a Councilmember or member of the public so requests. If a Councilmember or member of the public wishes to discuss an item on the consent agenda, they may request so prior to the motion to accept the consent agenda. The item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

Open house Thursday on floodplain

A public open house will be held Thursday, Nov. 16, to review results of floodplain delineation studies performed in Fountain Hills.

The open house will be held from 4 to 6:30 p.m. at Town Hall's conference room.

Floodplain delineation involves developing detailed topographic maps to determine where water goes while incorporating the results of rainfall patterns to determine typical and peak amounts of runoff.

Along with extensive surveying and aerial mapping, drainage factors such as slope, vegetation, soil composition and land use are analyzed and included.

The studies will be used to better manage the floodplain to reduce or prevent flood damage and maintain the integrity of the floodplains.

Areas designated for further analysis in an upcoming area drainage master study also will be presented.

Results obtained in the north and south delineation studies will be displayed at the open house.

Representatives from the Flood Control District of Maricopa County, the Town of Fountain Hills' Engineering Department and the engineering consulting firms will be available to discuss the results and answer questions.

PUBLIC NOTICE
YOUR RIGHT TO KNOW

ANNOUNCEMENT OF FLOOD HAZARD STUDY

he Flood Control District of Maricopa County, under authority f he National Flood Insurance Act of 1968 (P.L. 90 448), as r nded, and the Flood Disaster Protection Act of 1973 (p.L. 93- is funding a detailed study of flood hazard areas in The Town f Fountain Hills, Arizona.

he study is being performed for the Flood Control District by Engineers and George V. Sabel Consulting Engineers. urpose of this study is to examine and evaluate flood hazard reas which are developed or which are likely to be developed or hich are likely to be developed and to determine flood elevations ose areas. Flood elevations will be used by Maricopa County rry our floodplain management objectives of the National d Insurance Program. They will also be used as the basis for etermining appropriate flood insurance premium rates applicable for buildings and their contents.

announcement is intended to notify all interested persons of ommencement of this study so that they may have an portunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control ict for consideration in the course of this study. Such mation should be addressed to Mr. Tim Murphy or Ms. Sandy , Flood Control District of Maricopa County, 2801 W. urango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

shed FH Times 1/13,1/20/93.

AFFIDAVIT OF PUBLICATION

The Times
OF FOUNTAIN HILLS AND RIO VERDE, ARIZONA

A publication of Western States Publishers, Inc.

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

L. ALAN CRUIKSHANK, being first duly sworn, upon oath deposes and says: That he is the publisher of

THE TIMES OF FOUNTAIN HILLS AND RIO VERDE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Fountain Hills, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in The Times of Fountain Hills and Rio Verde on the following dates:

Jan. 13, 1993
Jan 20, 1993

Sworn to before me this

23 day of

February A.D. 19 93

Karen Kirkendoll
Notary Public

OFFICIAL SEAL
KAREN KIRKENDOLL
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My comm. expires May 14, 1993

Meeting on flood plain plan

Find out where flood waters go on Dec. 17

An open house to inform Fountain Hills residents of floodplain delineation studies being performed on over 30 washes flowing through the community will be held on Thursday, Dec. 17.

The meeting will be held from 5 to 8 p.m. at the Town Hall Conference Room, 16836 E. Palisades Blvd.

The public is invited to come by the Town Hall anytime during the three-hour open house to share their experience and observations of local flooding and hear details about the studies.

Details will include how the study is conducted, what kind of information is being gathered and how the information will be used.

Mapping floodplains involves developing detailed topographic maps to determine where water goes and studying rainfall patterns to determine typical amounts of runoff. The studies and resulting maps will be used to better manage the floodplain so as to reduce or prevent flood damage and maintain the integrity of the floodplains.

Extensive surveying and aerial mapping is involved in the studies, but other factors influencing drainage also must be considered, including soil composition, slope and vegetation and land use.

The Fountain Hills studies are expected to take 12 months to complete, after which time a second open house will be held to inform residents of the results of the studies.

Questions or additional information regarding the studies can be obtained by writing or calling Jim Phipps or Tim Murphy of the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone 506-1501, or Randy Harrel, town engineer, Town of Fountain Hills, 16836 E. Palisades Blvd, Fountain Hills, AZ 85268, telephone 837-2003.

Audit tops Sanitary agenda

The annual audit report will be the major topic on the agenda for the Sanitary District board of directors when it meets Thursday, Dec. 10.

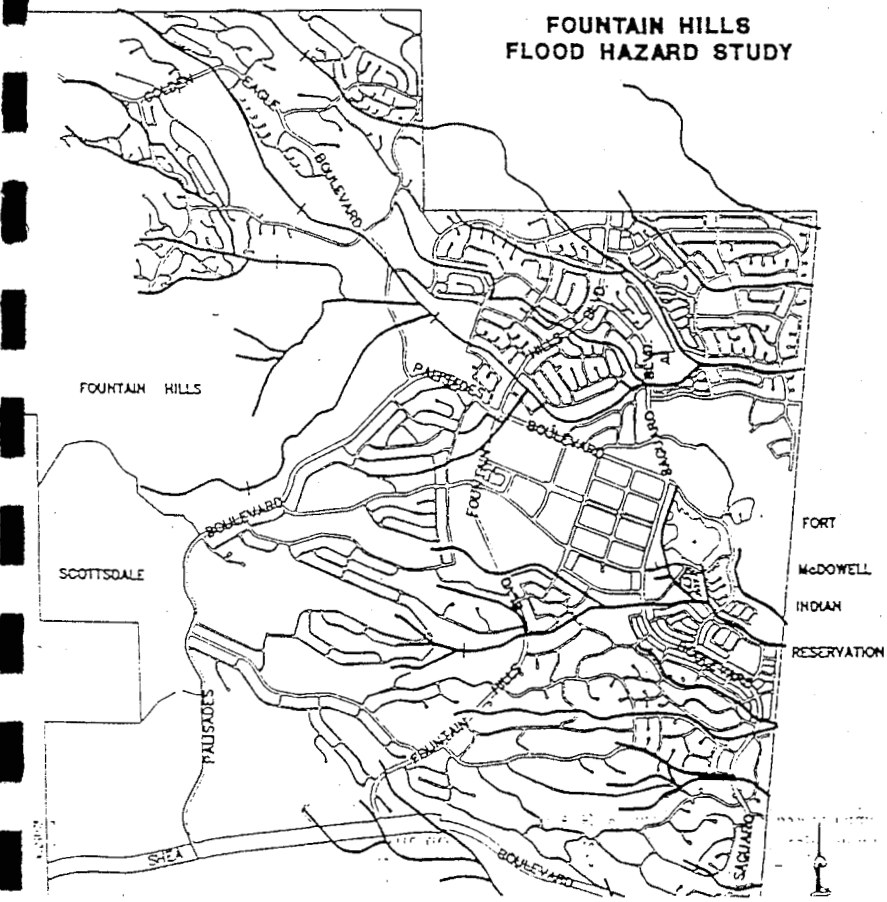
The report is a routine document prepared each year, according to District Manager Ron Huber.

The board will also select a new chairman for the coming calendar year.

The job of chairman has simply rotated under the current board, and that being the case Director Dennis Regeski will be leading the board for the next year. Director Bruce Hansen is the outgoing chairman.

Huber said monthly staff reports will also be presented at the meeting, and he has a few carryover items to update the board on.

Doesn't Your Single Lar
INVESTMEN
Deserve a second opinion?
LaCosta Construction Inc.
designers & builders
of
LUXURY LA COSTA HOME
"The Art of Construction"
837-1640



When you need to sell you
call
eric
Watch... erica west
Channel 10 NEWS
"Real Estate Expert"
Fountain Hills #1 Top P
Over 100 Opened & Closed Transactions
(So Far)
...her team of "SPECIALIS
are WORKING FOR YOU
Transaction Specialist
Larraine LaGiglia.....
daily monitors the progress of each of my ESCROWS and LISTINGS. She is in constant contact with my LISTERS & concentrates on finding BUYERS for my listings.

Systems Specialists
Dana West.....
implements the unique MARKETING SYSTEMS designed to get SOLD quickly! She keeps my LISTERS advised of the progress on
Administration Specialist
Carol Talty.....
handles all mailings/brochures and assists with special projects

The Times of Fountain Hills

12-9-92

INVOICE NO. 93008

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The Flood Control District of Maricopa County, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is funding a detailed study of flood hazard areas in The Town of Fountain Hills, Arizona.

The study is being performed for the Flood Control District by AGK Engineers and George V. Sabol Consulting Engineers.

The purpose of this study is to examine and evaluate flood hazard areas which are developed or which are likely to be developed and to determine flood elevations for those areas. Flood elevations will be used by Maricopa County to carry out floodplain management objectives of the National Flood Insurance Program. They will also be used as the basis for determining appropriate flood insurance premium rates applicable for buildings and their contents.

This announcement is intended to notify all interested persons of the commencement of this study so that they may have an opportunity to bring any relevant facts and technical data concerning local flood hazards to the attention of the Flood Control District for consideration in the course of this study. Such information should be addressed to Mr. Tim Murphy or Ms. Sandy Story, Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, telephone (602) 506-1501.

Published: Arizona Republic, January 13, 20, 1993.

AFFIDAVIT OF PUBLICATION

The Arizona Republic/The Phoenix Gazette

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

JOAN LOHR, being first duly sworn, upon oath deposes and says: That she is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic and The Phoenix Gazette, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

~~The Arizona Republic~~
The Phoenix Gazette

JANUARY 13, 20, 1993

Joan Lohr

Sworn to before me this

25TH day of

JANUARY 93 A.D. 19

OFFICIAL SEAL
MARY LEE BOOHER
NOTARY PUBLIC STATE OF ARIZONA
MARICOPA COUNTY
My Comm. Expires March 17, 1995

Mary Lee Booher
Notary Public

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: GREYSTONE WASH
(One form for each flooding source)

Project Name /Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) The analysis was performed using HEC-1

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ 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.

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., Flood Control District of Maricopa County)
Attach evidence of approval.

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

Stream: GREY STONE WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
Confluence with Sycamore Wash	0.10	N/A	194 cfs

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 N/A New Study

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: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

Unavailable

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

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
Subbasin Areas	☒	☐	Fountain Hills & USGS Mapping
Lag Time, L, L_{ca}, Slope, Kn	☒	☐	Fountain Hills & USGS Mapping
Green & Ampt Parameters	☒	☐	FCDMC Hydrologic Manual
Routing Reach Parameters	☒	☐	FCDMC Hydrologic Manual
	☐	☐	

- 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.

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 A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference: N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:	N/A	HEC-1
	Version:		4.0.1E
	Date:		May 1991
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		FCDMC Hydrologic Manual
4.	Rainfall duration:		6 & 24 Hour
5.	Areal adjustment to precipitation (%):		Depends upon Subbasin Area
6.	Maximum overland flow length		0.75 Mi
7.	Hydrograph development method:		Clark Unit Graph
8.	Loss rate method:		Green-Ampt
	Source of soils information:		SCS Soil Survey
	Source of land use information		Aerial Photos
9.	Channel routing method:		Normal Depth
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 The model was calibrated by comparing USGS gage data, runoff volume checks, results with estimates using a USGS regional regression equation, and with results from other studies.

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.

See the Hydrology Report

ATTACHMENT D: CONFIDENCE LIMITS EVALUATION

Stream: N/A

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

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: Maricopa County, Arizona (Town of Fountain Hills)

Flooding Source: GREYSTONE WASH
(One form for each flooding source)

Project Name/Identifier: Fountain Hills South Floodplain Delineation study FCD 92-05

1. REACH TO BE REVISED

Downstream limit: Confluence with Sycamore wash and Colony Wash

Upstream limit: 1600 ft upstream of Sycamore Drive

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 _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

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: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

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 ☐ Floodway ☐

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.

2. Corrected Effective Model — Natural ☐ Floodway ☐

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.

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 ☐ Floodway ☐

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 submitted. — Natural ☒ Floodway ☒

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

See the Hydraulics Report

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	194 cfs	194 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined

Critical Depth

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.039 to 0.040

Overbanks ..... 0.045 to 0.050

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
N/A		

Explain:

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.

The cross-sections were determined photogrammetrically by the Aerial Mapping Company. All cross-sections are stationed from left to right looking downstream with the thalweg set at station 10,000.

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:

4. MODEL PARAMETERS (*Cont'd*)

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

Channel reach lengths were measured along the thalweg and overbank reach lengths were measured along the anticipated path of the center of mass of the 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. For those cross-sections where the HEC-2 model defaulted to critical depth, the critical depth water surface elevations are plotted on the profiles and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 17 ft

Specify location ..... SECNO 0.180

3. What is the distance between the cross-sections in 2 above? ..... 375 ft

4. What is the maximum distance between cross-sections? ..... 420 ft

Specify location ..... SECNO 0.310

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1 foot

b. What is the maximum surcharge for the revised conditions? ..... 0.0 foot

Specify location ..... N/A

c. What is the maximum velocity? ..... 6.4 fps

Specify location 0.180

d. Are there any negeative 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: _____

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)*

N/A NEW STUDY

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A NEW STUDY

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet *(vertical)* and upstream of the project at cross section_____within_____feet *(vertical)*.

N/A NEW STUDY

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet *(vertical)* and upstream of the project at cross section_____ within_____feet *(vertical)*.

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.
The profiles are located in the Hydraulic Analysis Report

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

N/A NEW STUDY

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER

	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]

COMMENTS:

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.

Sheet_____ of _____

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, Arizona (Town of Fountain Hills)

Flooding Source: GREYSTONE WASH

Project Name/Identifier: Fountain Hills South Floodplain Delineation Study FCD 92-05

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	☐ 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	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ 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.) 1929 NGVD	☒ 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: This is the first study done in Fountain Hills, therefore there are no existing floodplain and floodway delineations

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.)*? Aerial mapping, August 1991

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS N/A scale N/A Contour interval
   b. Revision Request 1" = 200' scale 2 Foot 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.

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.

N/A This is the first study of the area, therefore there isn't an existing 100-year floodplain delineation.

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?_____

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:

N/A This is the first study of the area, therefore there isn't an existing floodway delineation.

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

If no, explain:

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.

If requested, a digitized map can be supplied.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed N/A

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? N/A ☐ 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.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT 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 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, ARIZONA

Flooding Source: GREYSTONE WASH

Project Name/Identifier: FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY FCO 92-05

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Sycamore Drive
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Cross Section 0.00
3. This revision reflects *(check one of the following)*:

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1 Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
Two 60" CMP and one 48" CMP culverts

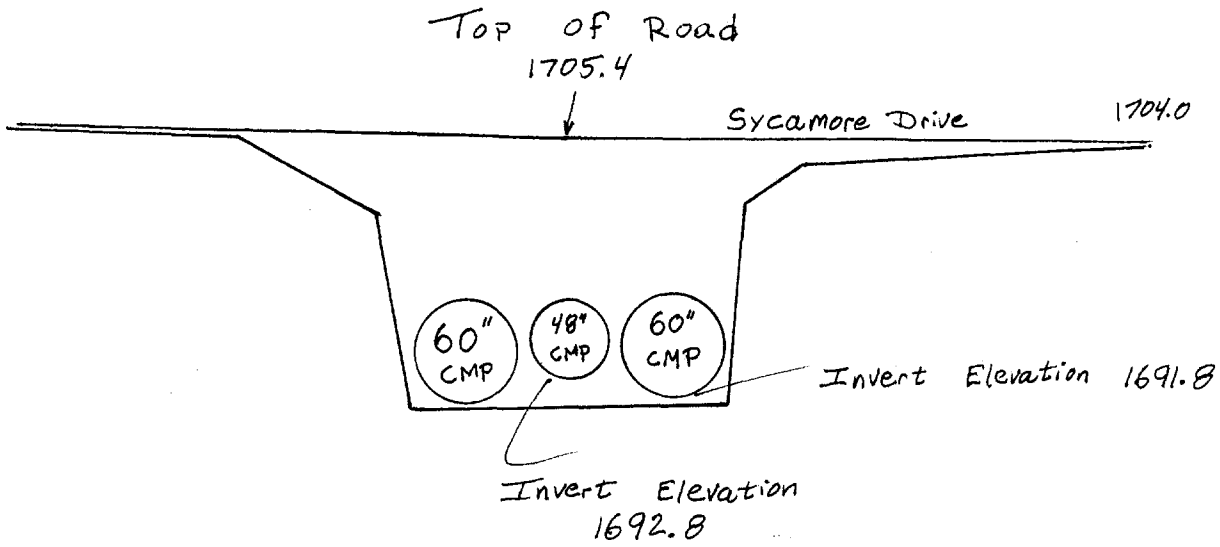
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
Projecting from fill

3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*)
HEC-2 Special Culvert Method

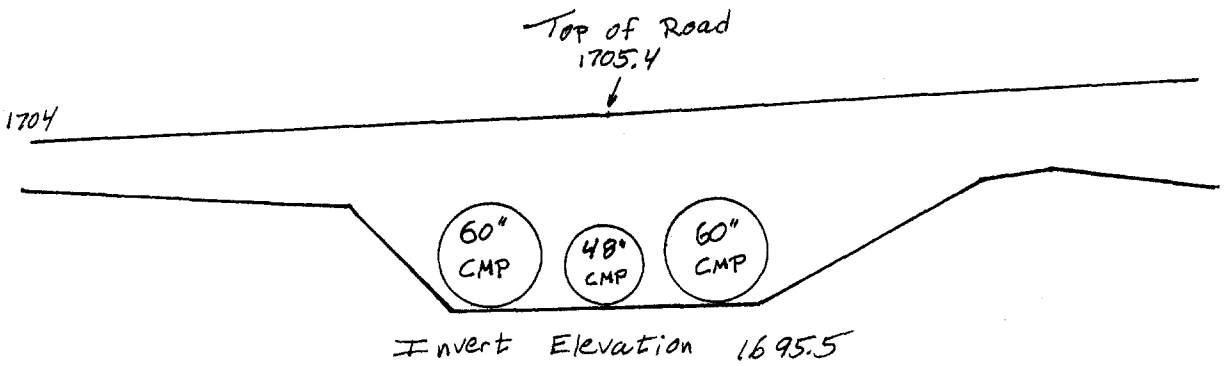
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
*** One form per new/revised bridge/culvert**

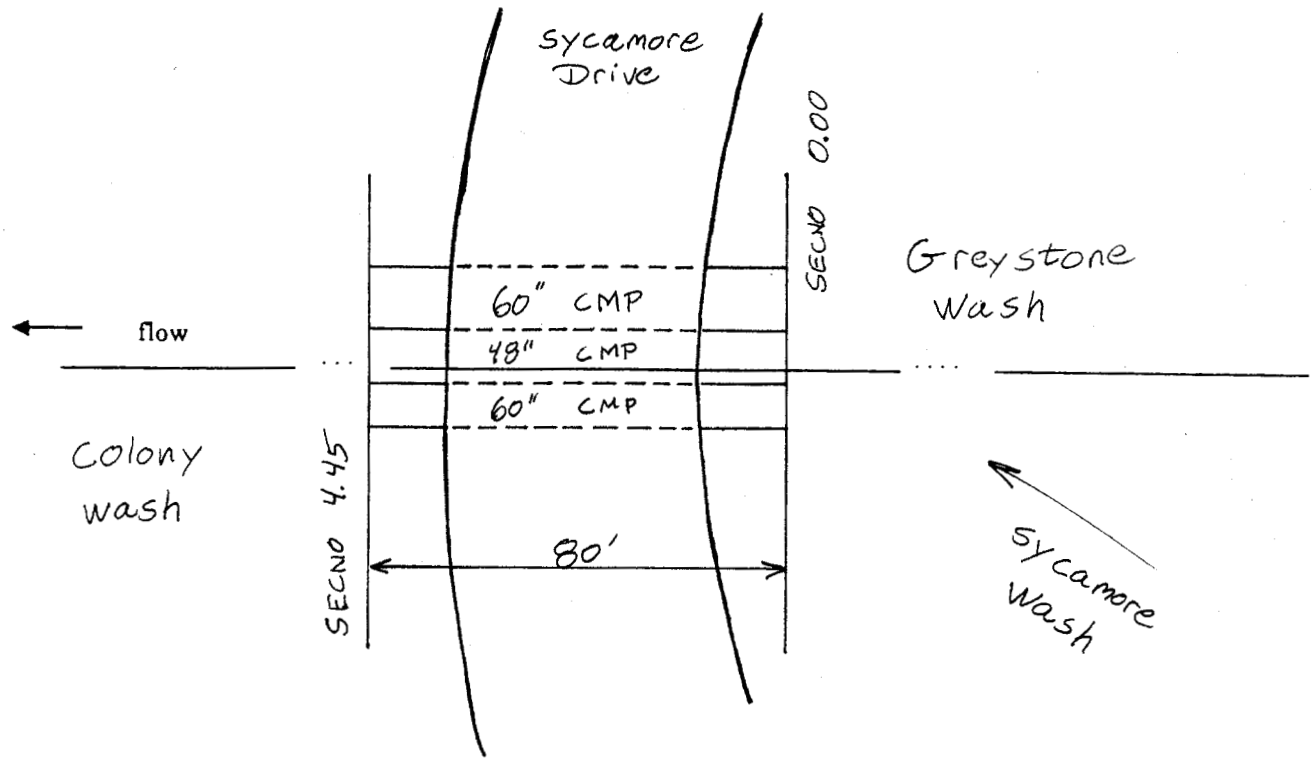
Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	80 ft
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	52 ft²
Total culvert/bridge area (ft²)	52 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1704.0	1705.7
Downstream face	1704.0	1705.7

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1704.0	1705.7
Downstream face	1704.0	1705.7

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1701.40	1701.68
Downstream face	1694.46	1695.80

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)		396 cfs	0	396 cfs

The maximum depth of flow over the roadway/railroad (ft.) ..... 0.0 ft

Weir length (ft.) ..... N/A

Top Widths	Total Floodplain Width	Total Effective Flow Width	Floodway Width
Upstream face	100 ft	16 ft	100 ft
Downstream face	70 ft	16 ft	70 ft

Loss Coefficients

Entrance loss coefficient	0.80
Manning's "n" value assigned to the structure(s)	0.024
Friction loss coefficient through structure (s)	
Other loss coefficients (e.g., bend manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	N/A
Contraction loss coefficient	0.3
Expansion loss coefficient	0.5

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport (*including scour and deposition*) can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions (*such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions*), is there a potential for debris and sediment transport (*including scour and deposition*) to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (*bed material*) load?
   _____cfs (*attach gradation curve*)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition Because this is only a floodplain delineation study, sediment transport and scour analysis were not done. These types of analysis are above and beyond the scope of work for a floodplain delineation study. However, the topographic data and field surveys reflect the existing condition of the culvert after some 10 to 20 years of service.

   B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.