Floodplain Redelineation Study of Ocotillo Wash and Tributary-2, and Floodplain Delineation Study of Cave Creek West Tributaries 2 and 3

Volume 3 of 3

Contract FCD2006C024
Work Assignment No. 2

April 22, 2009

Prepared for:

Flood Control District of Maricopa County

HDR

Floodplain Redelineation Study of Ocotillo Wash and Tributary-2, and Floodplain Delineation Study of Cave Creek West Tributaries 2 and 3 within Cave Creek, Arizona

Prepared for:

Flood Control District of Maricopa County
Contract No. FCD2006C024
Work Assignment No. 2

Prepared by:

HDR
ONE COMPANY | *Many Solutions*™

3200 East Camelback Road
Suite 350
Phoenix, Arizona 85018-2311
602-522-7700

Volume 3 of 3

April 22, 2009

Registered Professional Engineer (Civil)
CERTIFICATE NO
35571
LINDA A.
POTTER
Date Signed 4/22/09
ARIZONA U.S.A.
Expires 12/31/09

List of Notebook Volumes

Volume 1 of 3:

Floodplain Redelineation Study of Ocotillo Wash and Tributary-2 and Floodplain Delineation Study of Cave Creek West Tributaries 2 and 3 within Cave Creek, Arizona

Volume 2 of 3:

Continuation of the Floodplain Redelineation Study of Ocotillo Wash and Tributary-2 and Floodplain Delineation Study of Cave Creek West Tributaries 2 and 3 within Cave Creek, Arizona

Appendix E

ROUGHESS COEFFICIENT ESTIMATION E.1
CROSS SECTION PLOTS E.2
EXPANSION AND CONTRACTION COEFFICIENTS E.3
ANALYSIS OF STRUCTURES E.4
HYDRAULIC CALCULATIONS E.5
EFFECTIVE FLOOD INSURANCE PROFILES E.6

Volume 3 of 3:

Continuation of the Floodplain Redelineation Study of Ocotillo Wash and Tributary-2 and Floodplain Delineation Study of Cave Creek West Tributaries 2 and 3 within Cave Creek, Arizona

Appendix F EROSION AND SEDIMENT TRANSPORT ANALYSES SUPPORTING DOCUMENTATION F-1

A. MAPS HYDROLOGIC EXHIBIT MAPS

B. MAPS HYDRAULIC EXHIBIT MAPS

C. MAPS FLOODPLAIN WORK STUDY MAPS

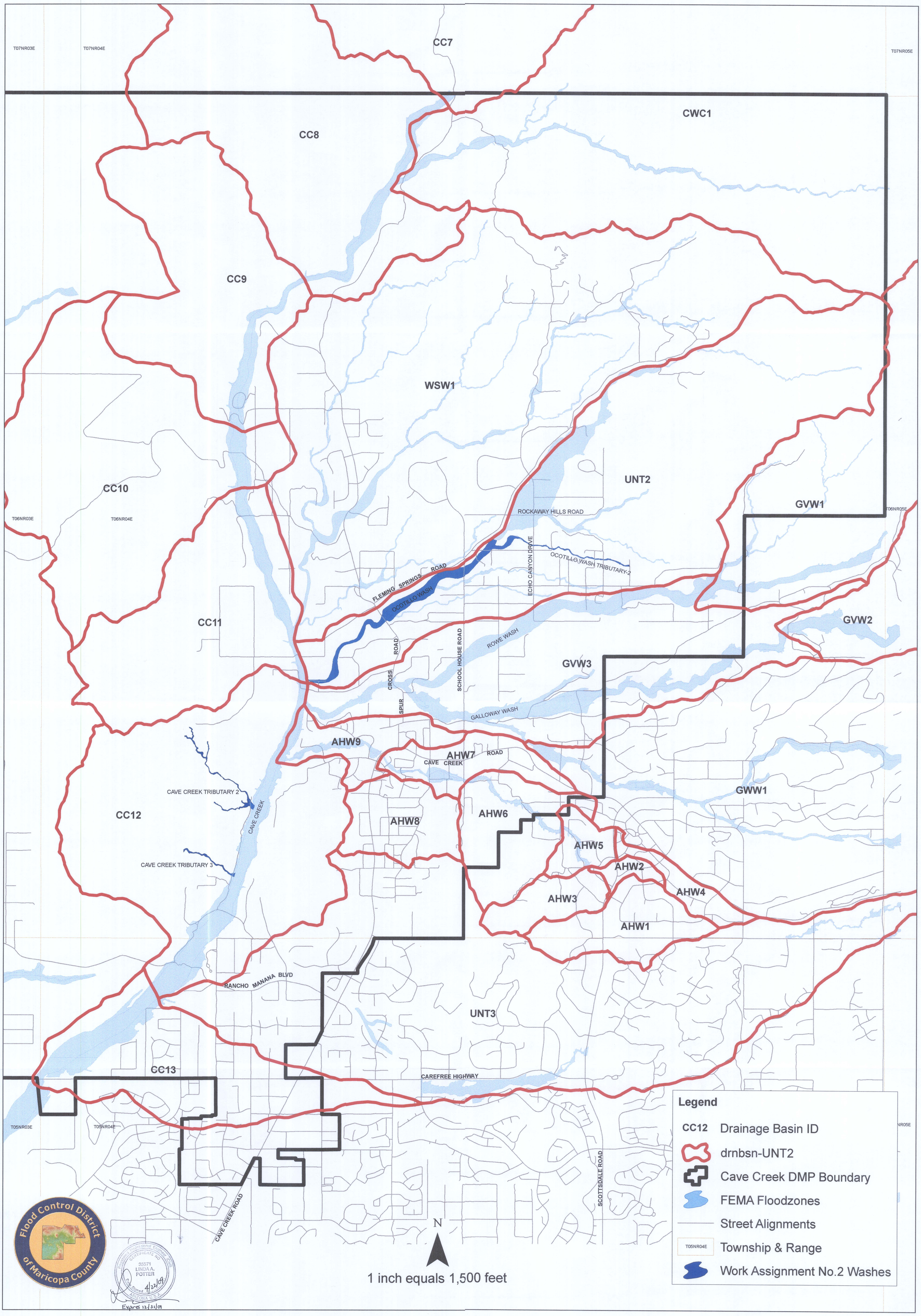
APPENDIX F EROSION AND SEDIMENT TRANSPORT ANALYSES SUPPORTING DOCUMENTATION

Not included as part of this study.

DATA DVD – DIGITAL DATA FILES

Refer to the front pocket within **Volume I**, for electronic media disks.

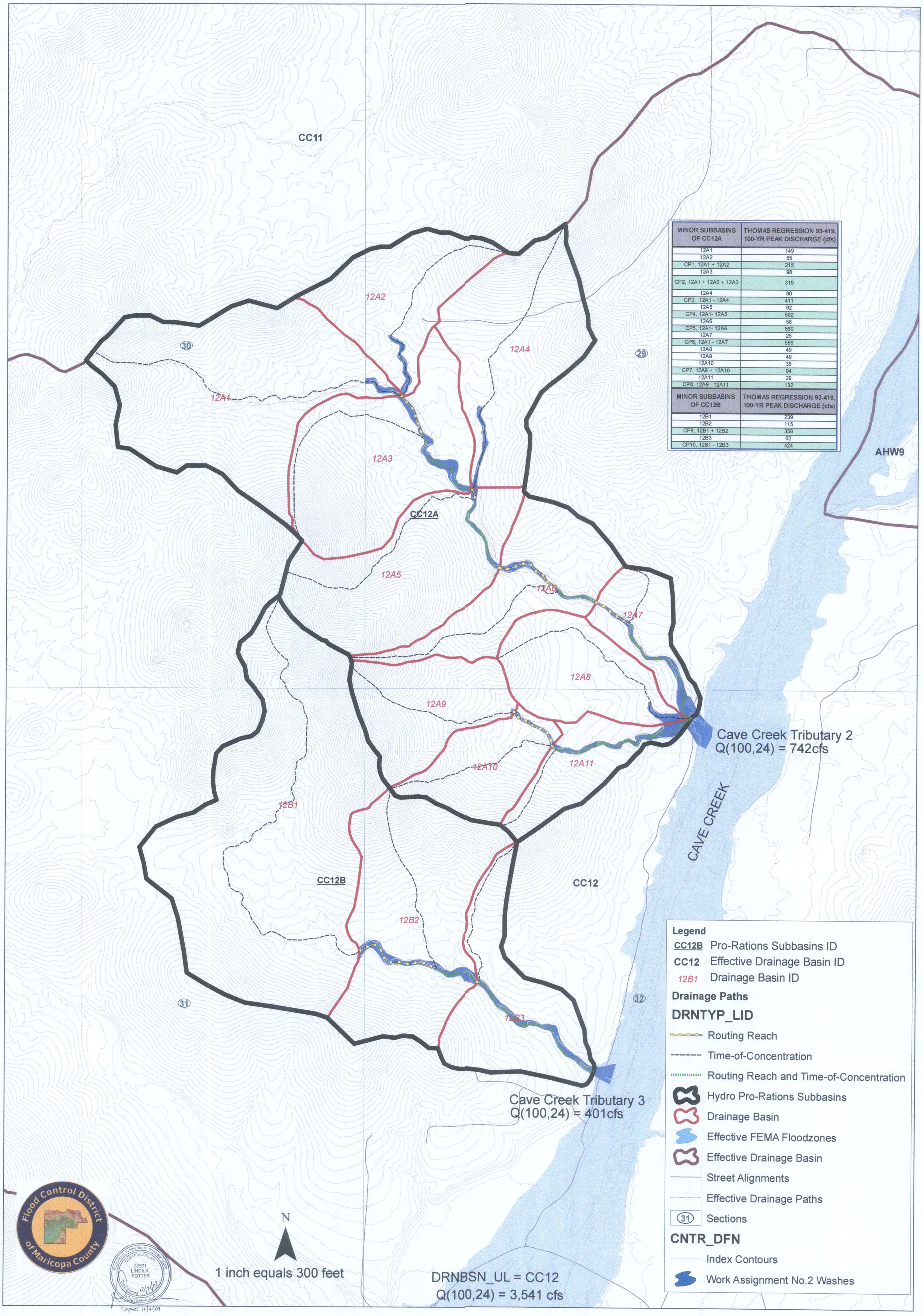
A. MAPS HYDROLOGIC EXHIBIT MAPS



HDR Engineering, Inc.
3200 East CamelbackRoad, Suite 350
Phoenix, Arizona 85018
(602) 522-7700
www.hdrinc.com

Hydrologic Model Drainage Basins for Floodplain Delineation Studies in Cave Creek, Arizona 2008

HDR Project	000000000091427
Drawn By:	M.FOUNTAIN
Checked By:	L. POTTER
SCALE	1 inch equals 1,500 feet
FCD 2006C024 WORK ASSIGNMENT NO. 2	
DATE	OCTOBER 21, 2008
Revision 3.00	
Exhibit A	



MINOR SUBBASINS OF CC12A	THOMAS REGRESSION 93-419, 100-YR PEAK DISCHARGE (cfs)
12A1	149
12A2	55
CP1, 12A1 + 12A2	215
12A3	98
CP2, 12A1 + 12A2 + 12A3	319
12A4	90
CP3, 12A1 - 12A4	411
12A5	92
CP4, 12A1- 12A5	502
12A6	58
CP5, 12A1- 12A6	560
12A7	25
CP6, 12A1 - 12A7	589
12A8	49
12A9	49
12A10	35
CP7, 12A9 + 12A10	94
12A11	29
CP8, 12A9 - 12A11	132
MINOR SUBBASINS OF CC12B	**THOMAS REGRESSION 93-419, 100-YR PEAK DISCHARGE (cfs)**
12B1	239
12B2	115
CP9, 12B1 + 12B2	358
12B3	62
CP10, 12B1 - 12B3	424

HDR Engineering, Inc.
3200 East CamelbackRoad, Suite 350
Phoenix, Arizona 85018
(602) 522-7700
www.hdrinc.com

Hydrologic Display for Cave Creek Tributaries 2 & 3, in Cave Creek, Arizona 2008

HDR Project 000000000091427

Drawn By: M.FOUNTAIN Checked By: L.POTTER

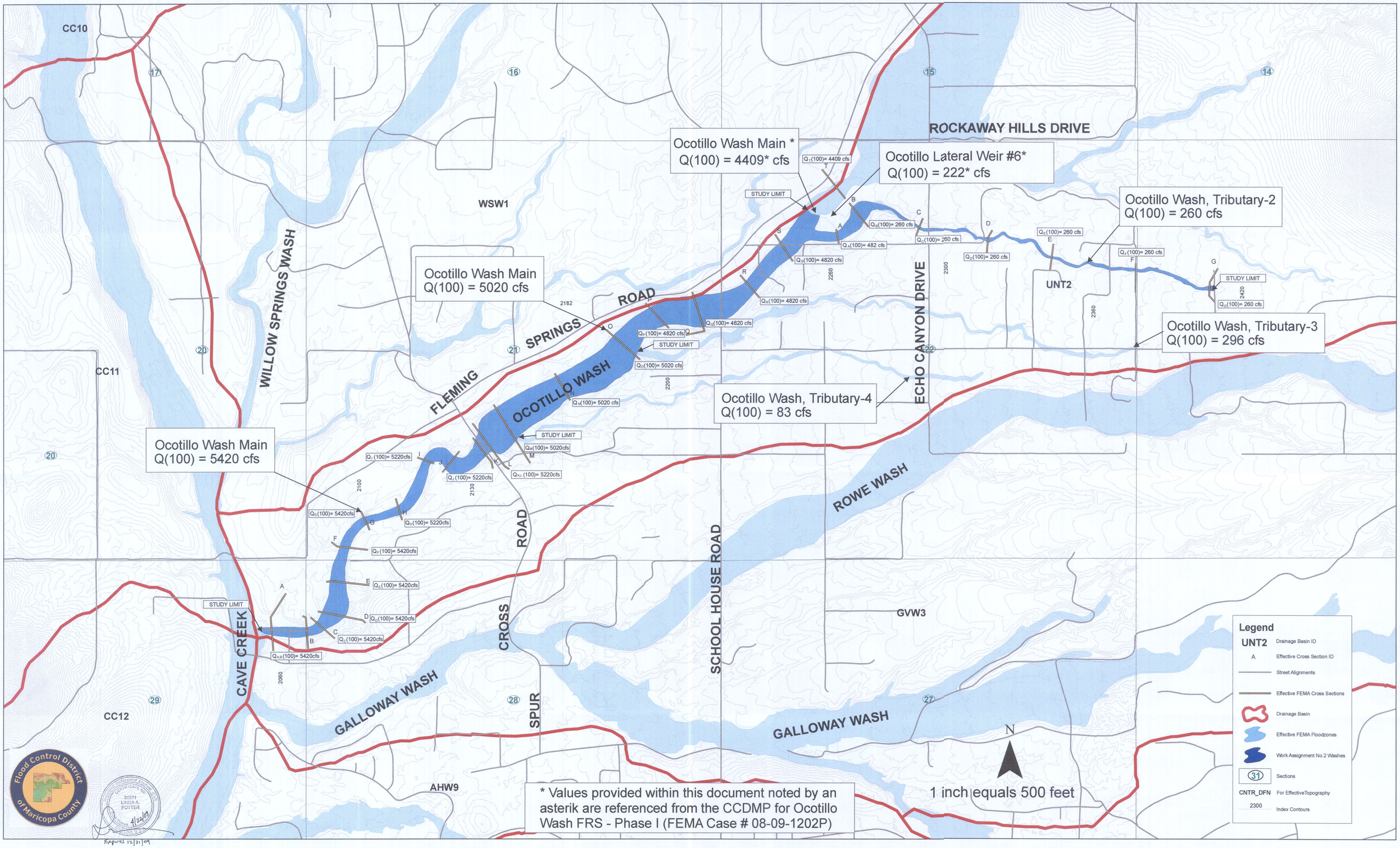
SCALE 1 inch equals 300 feet

FCD 2006C024
WORK ASSIGNMENT NO. 2

DATE OCTOBER 21, 2008

Revision 3.00

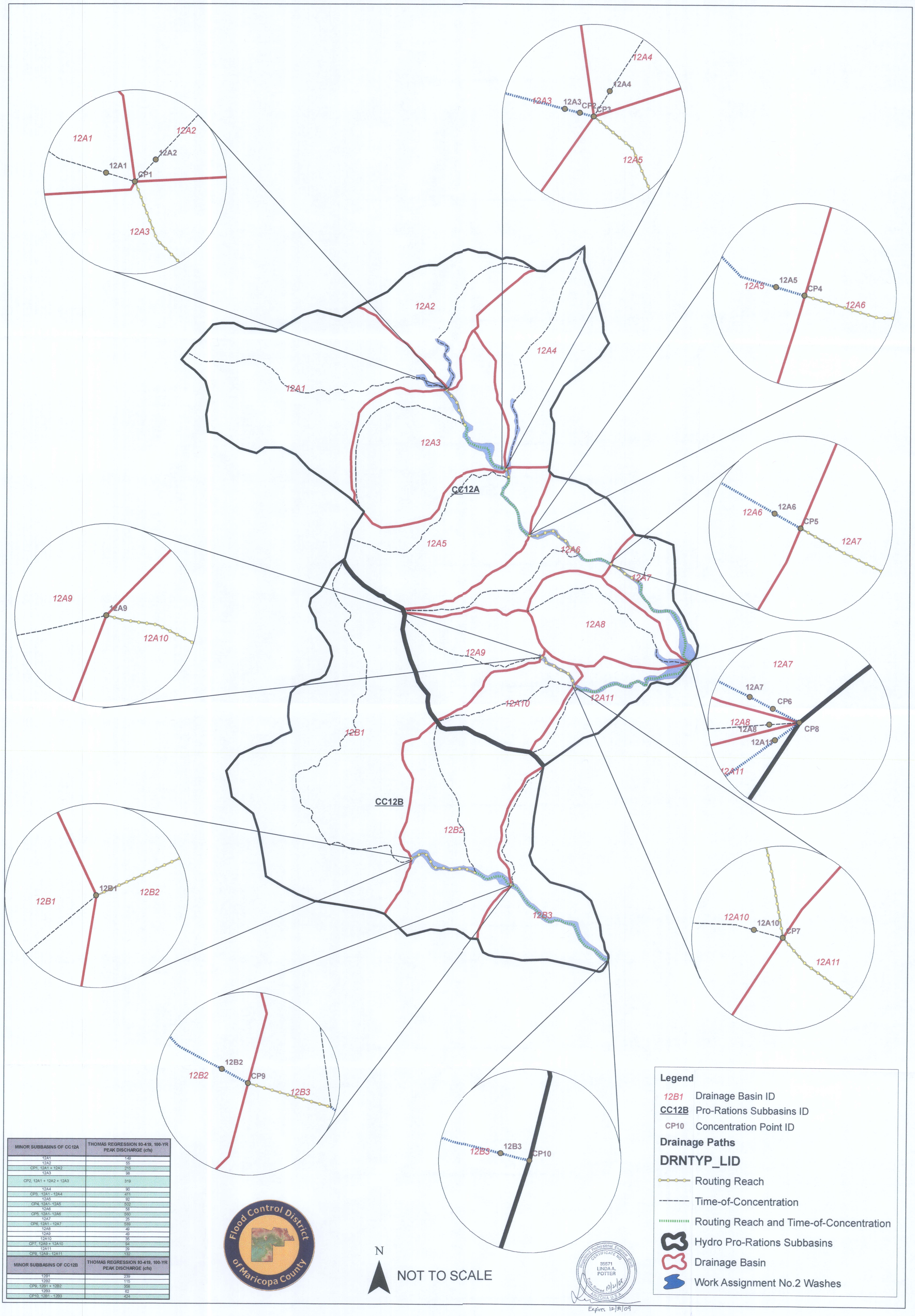
EXHIBIT B



* Values provided within this document noted by an asterik are referenced from the CCDMP for Ocotillo Wash FRS - Phase I (FEMA Case # 08-09-1202P)

Expires 12/31/09

HDR Engineering, Inc. 3200 East Camelback Road, Suite 350 Phoenix, Arizona 85018 (602) 522-7700	**Effective Peak Discharge Display for Ocotillo Wash and Tributary-2, in Cave Creek, Arizona 2008**	Project 000000000091427 Drawn By: M.FOUNTAIN Checked By: L. POTTER **1 inch equals 500 feet**	**FCD 2006C024, WORK ASSIGNMENT NO. 2** DATE October 21, 2008 **Revision 3.00** **EXHIBIT C**



MINOR SUBBASINS OF CC12A	THOMAS REGRESSION 93-419, 100-YR PEAK DISCHARGE (cfs)
12A1	149
12A2	55
CP1, 12A1 + 12A2	215
12A3	98
CP2, 12A1 + 12A2 + 12A3	319
12A4	90
CP3, 12A1 - 12A4	411
12A5	92
CP4, 12A1- 12A5	502
12A6	58
CP5, 12A1- 12A6	560
12A7	25
CP6, 12A1 - 12A7	589
12A8	49
12A9	49
12A10	35
CP7, 12A9 + 12A10	94
12A11	29
CP8, 12A9 - 12A11	132
MINOR SUBBASINS OF CC12B	**THOMAS REGRESSION 93-419, 100-YR PEAK DISCHARGE (cfs)**
12B1	239
12B2	115
CP9, 12B1 + 12B2	358
12B3	62
CP10, 12B1 - 12B3	424

HDR Engineering, Inc.
3200 East CamelbackRoad, Suite 350
Phoenix, Arizona 85018
(602) 522-7700
www.hdrinc.com

Concentration Point Display for Cave Creek Tributaries 2 & 3, in Cave Creek, Arizona 2008

HDR Project 000000000091427

Drawn By: M.FOUNTAIN Checked By: L. POTTER

SCALE NOT TO SCALE

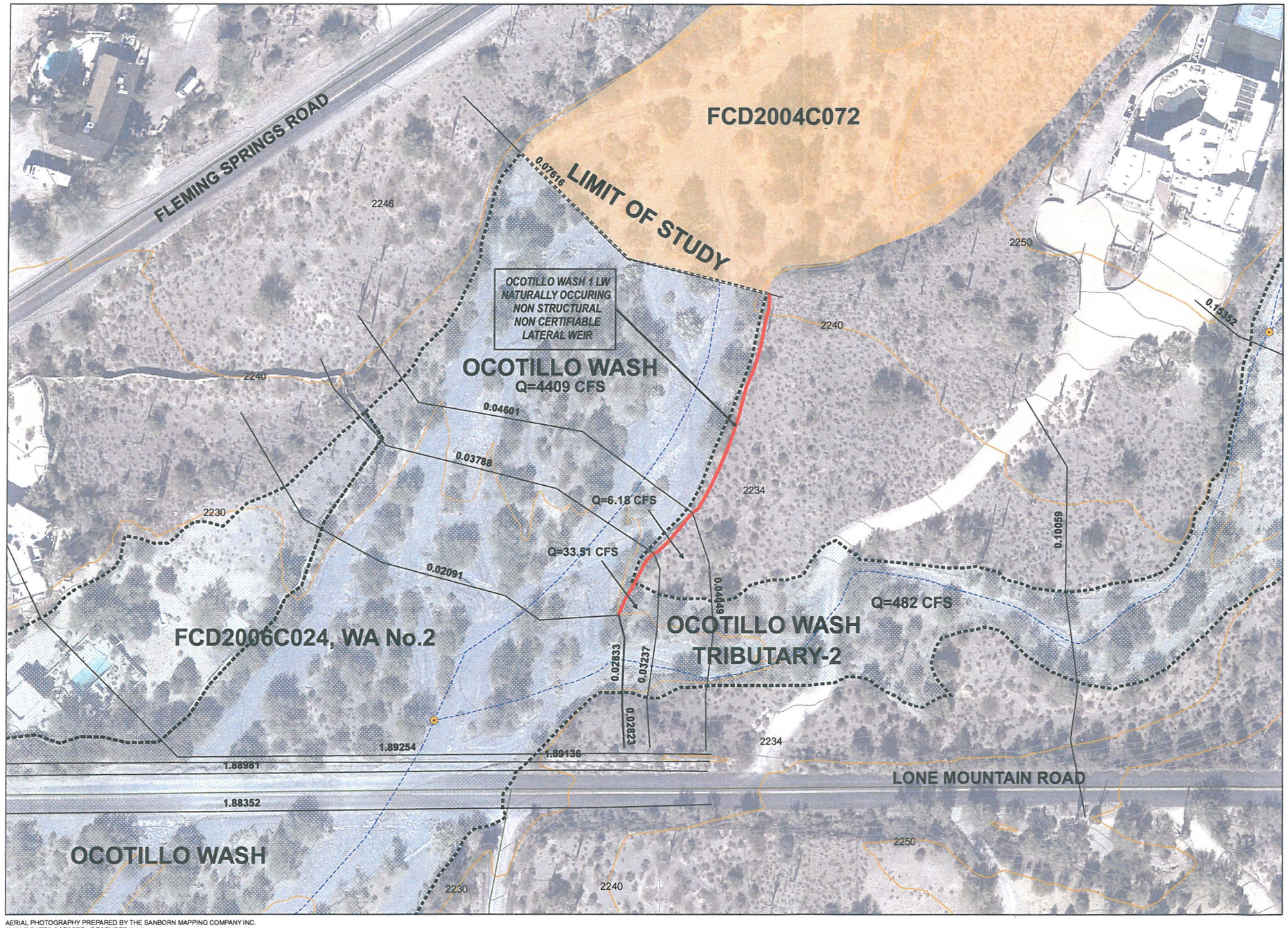
FCD 2006C024
WORK ASSIGNMENT NO. 2

DATE OCTOBER 21, 2008

Revision 3.00

EXHIBIT D

B. MAPS HYDRAULIC EXHIBIT MAPS



Legend

- RIVER MILE
- JUNCTION
- XS CUT LINES
- STREET ALIGNMENTS
- LATERAL WEIR
- RIVER ALIGNMENT
- FLOODWAY BOUNDARY

FLOODWAY CODE

- FLOODWAY
- ZONE AE

EFFECTIVE FEMA FLOOD ZONES: SEPTEMBER 30, 2005

- A
- AE
- FW

ELEVATION CONTOURS

- 2150 Index (10 ft)
- Intermediate (2 ft)

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35571
LINDA A. POTTER
Date Signed 4/22/09
ARIZONA U.S.A.
Expires 12/31/09

N

100 50 0 Feet

CONTOUR INTERVAL = 2'

AERIAL PHOTOGRAPHY PREPARED BY THE SANBORN MAPPING COMPANY INC.
FLIGHT DATES OCTOBER - DECEMBER 2008

TOPOGRAPHIC MAPPING PREPARED BY COOPER AERIAL SURVEYS COMPANY.
FLIGHT DATES: NOVEMBER 2003 AND DECEMBER 2004.
PREPARED UNDER CONTRACTS FCD2003C048, WA#4 AND FCD2005C030.

GROUND CONTROL SURVEY DATA PREPARED BY ATEAM PROFESSIONAL ASSOCIATES, INC.
GROUND CONTROL/ELEVATION REFERENCE MARKS FOR HORIZONTAL AND VERTICAL SURVEY CONTROL ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) RESPECTIVELY.
SURVEY DATA WAS PRESENTED IN STATE PLANE COORDINATES, ARIZONA CENTRAL ZONE 0202.

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCUARACY STANDARDS FOR 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

OCOTILLO WASH 1 LATERAL WEIR

Flood Control District of Maricopa County

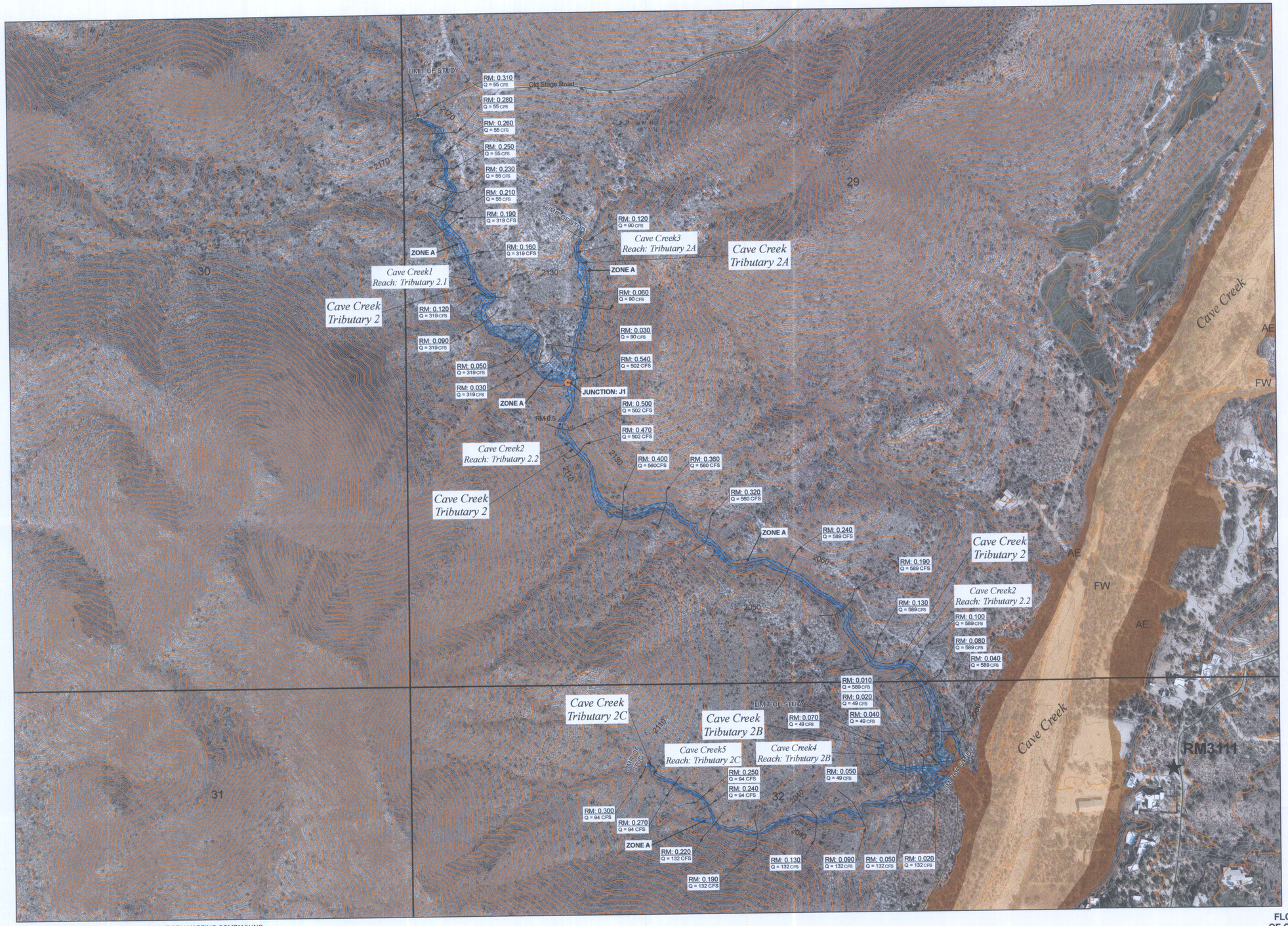
HDR
3200 EAST CAMELBACK ROAD, SUITE 350
PHOENIX, AZ 85018-2311
(602) 522-7700

FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2, AND FLOODPLAIN DELINEATION STUDY OF CAVE CREEK TRIBUTARES 2 AND 3.

CONTRACT NUMBER: FCD2006C024
WORK ASSIGNMENT NO. 2
HDR PROJECT NUMBER: 91427

APRIL 22, 2009
FNL MAFO.04222009

C. MAPS FLOODPLAIN WORK STUDY MAPS



Legend

- JUNCTION
- RIVER MILE
- XS CUT LINES — RM: 0.026 - RIVER MILE STATION; Q = 42 CFS - 1% ANNUAL DISCHARGE
- RIVER ALIGNMENT
- STREET ALIGNMENTS
- FLOODPLAIN BOUNDARY
- ZONE A
- 31 SECTION LINES and SECTION NUMBER

EFFECTIVE FEMA FLOOD ZONES: SEPTEMBER 30, 2005

- A
- AE
- FW

ELEVATION CONTOURS

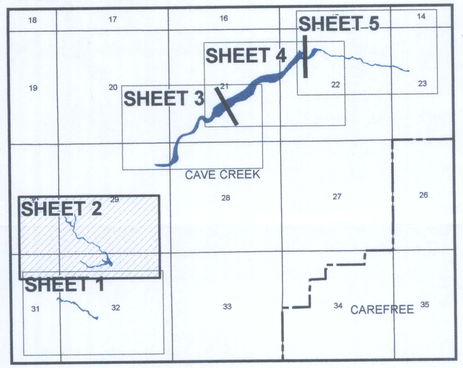
- 2058 INDEX (10 FT)
- INTERMEDIATE (2 FT)
- ★ **BM10** BENCHMARK DESIGNATION / NUMBER

N

400 200 0 400 Feet

SCALE: 1" = 200'
CONTOUR INTERVAL = 2'

INDEX MAP



AERIAL PHOTOGRAPHY PREPARED BY THE SANBORN MAPPING COMPANY INC.
FLIGHT DATES OCTOBER - DECEMBER 2008

TOPOGRAPHIC MAPPING PREPARED BY COOPER AERIAL SURVEYS COMPANY.
FLIGHT DATES: NOVEMBER 2003 AND DECEMBER 2004.
PREPARED UNDER CONTRACTS FCD2003C048, WA#4 AND FCD2005C030.

GROUND CONTROL SURVEY DATA PREPARED BY ATEAM PROFESSIONAL ASSOCIATES, INC.
GROUND CONTROL/ELEVATION REFERENCE MARKS FOR HORIZONTAL AND VERTICAL SURVEY CONTROL ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) RESPECTIVELY.
SURVEY DATA WAS PRESENTED IN STATE PLANE COORDINATES, ARIZONA CENTRAL ZONE 0202.

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCUARACY STANDARDS FOR 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

BENCHMARK INFORMATION:
ELEVATION REFERENCE MARK RM3111
DATUM: NAVD 88, ELEVATION: 2007.317
NORTHING: 1028632.734, EASTING: 684838.075
FEMA CONTROL MONUMENT

FLOODPLAIN DELINEATION WORK MAP FOR CAVE CREEK TRIBUTARIES 2, 2A, 2B & 2C

Flood Control District of Maricopa County

HDR
3200 EAST CAMELBACK ROAD, SUITE 350
PHOENIX, AZ 85018-2311
(602) 522-7700

FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2, AND FLOODPLAIN DELINEATION STUDY OF CAVE CREEK TRIBUTARES 2 AND 3.

CONTRACT NUMBER: FCD2006C024
WORK ASSIGNMENT NO. 2
HDR PROJECT NUMBER: 91427

SHEET 2 OF 5

Registered Professional Engineer (Civil) CERTIFICATE NO. 35571 LINDA A. POTTER ARIZONA U.S.A. Date Signed 4/22/09 Expires 12/31/09

APRIL 22, 2009
FNL.MAFO.04222009

Legend

- RIVER MILE
- XS CUT LINES — RM: 0.026 - RIVER MILE STATION; Q = 42 CFS - 1% ANNUAL DISCHARGE
- RIVER ALIGNMENT
- STREET ALIGNMENTS
- FLOODPLAIN BOUNDARY
- ZONE A
- 31 SECTION LINES and SECTION NUMBER

EFFECTIVE FEMA FLOOD ZONES: SEPTEMBER 30, 2005

- A
- AE
- FW

ELEVATION CONTOURS

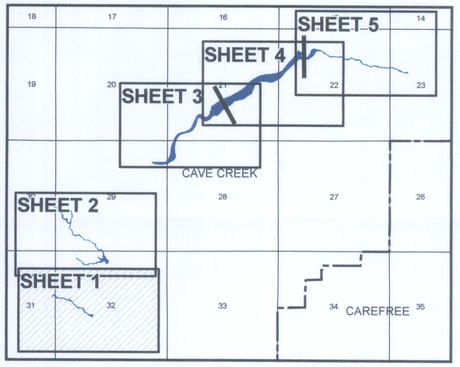
- 2120 INDEX (10 FT)
- INTERMEDIATE (2 FT)
- ★BM10 BENCHMARK DESIGNATION / NUMBER

N

400 200 0 400 Feet

SCALE: 1" = 200'
CONTOUR INTERVAL = 2'

INDEX MAP



AERIAL PHOTOGRAPHY PREPARED BY THE SANBORN MAPPING COMPANY INC.
FLIGHT DATES OCTOBER - DECEMBER 2008

TOPOGRAPHIC MAPPING PREPARED BY COOPER AERIAL SURVEYS COMPANY.
FLIGHT DATES: NOVEMBER 2003 AND DECEMBER 2004.
PREPARED UNDER CONTRACTS FCD2003C048, WA#4 AND FCD2005C030.

GROUND CONTROL SURVEY DATA PREPARED BY ATEAM PROFESSIONAL ASSOCIATES, INC.
GROUND CONTROL/ELEVATION REFERENCE MARKS FOR HORIZONTAL AND VERTICAL SURVEY CONTROL ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) RESPECTIVELY.
SURVEY DATA WAS PRESENTED IN STATE PLANE COORDINATES, ARIZONA CENTRAL ZONE 0202.

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCUARACY STANDARDS FOR 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

BENCHMARK INFORMATION:
(REFER TO SHEET 2)
ELEVATION REFERENCE MARK RM3111
DATUM: NAVD 88, ELEVATION: 2007.317
NORTHING: 1028632.734, EASTING: 684838.075
FEMA CONTROL MONUMENT

FLOODPLAIN DELINEATION WORK MAP FOR CAVE CREEK TRIBUTARY 3

Flood Control District of Maricopa County

HDR
3200 EAST CAMELBACK ROAD, SUITE 350
PHOENIX, AZ 85018-2311
(602) 522-7700

FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2, AND FLOODPLAIN DELINEATION STUDY OF CAVE CREEK TRIBUTARES 2 AND 3.

CONTRACT NUMBER: FCD2006C024
WORK ASSIGNMENT NO. 2
HDR PROJECT NUMBER: 91427

SHEET 1 OF 5

Registered Professional Engineer (Civil) CERTIFICATE NO. 35571 LINDA A. POTTER Date Signed 4/22/09 ARIZONA U.S.A.
Expires 12/31/09

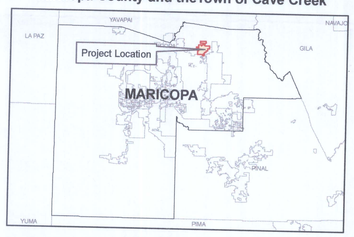
APRIL 22, 2009
FNL.MAFO.04222009

FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2, AND FLOODPLAIN DELINEATION STUDY OF CAVE CREEK TRIBUTARES 2 AND 3 WITHIN CAVE CREEK, ARIZONA.

CONTRACT NUMBER: FCD2006C024
WORK ASSIGNMENT NO. 2
HDR PROJECT NUMBER: 91427

Flood Control District of Maricopa County

Project located in the the State of Arizona, within Maricopa County and theTown of Cave Creek



PROJECT LOCATION

THE PROJECT SITE IS LOCATED IN THE TOWN OF CAVE CREEK, ARIZONA WITHIN SECTIONS 21, 22, 23, 28, 29, 31 AND 32 OF TOWNSHIP 6 NORTH, RANGE 4 EAST.

AUTHORITY FOR STUDY

THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY (FCDMC) HAS CONTRACTED HDR TO PREPARE THIS STUDY UNDER THE CONTRACT NUMBER FCD 2006C024, WORK ASSIGNMENT NUMBER 2. PROJECT CONTROL NUMBER 690.02.20.

BENCHMARKS (NAD83 & NAVD 88)

BENCHMARK FOR OCOTILLO WASH AND TRIBUTARY-2
NORTHING: 1039441.987, EASTING: 693515.706
BM # 10 - ELEVATION 2275.855,
LOCATED AT THE INTERSECTION OF ROCKAWAY HILLS ROAD AND FLEMING SPRINGS ROAD (NE CORNER)

ELEVATION REFERENCE MARK FOR CAVE CREEK TRIBUTARIES 2 & 3, NORTHING: 1028632.734, EASTING: 684838.075. RM # 3111 - ELEVATION 2007.317, LOCATED AT THE TOP OF BRASS CAP IN CONCRETE 10 FEET NORTH AND 6 FEET WEST OF ELECTRIC TRANSFORMER #M66450 BEING ON THE WEST SIDE OF ANDORA HILLS WASH DRIVE, BEING IN THE NORTHEAST QUARTER OF SECTION 32, T6N, R4E.

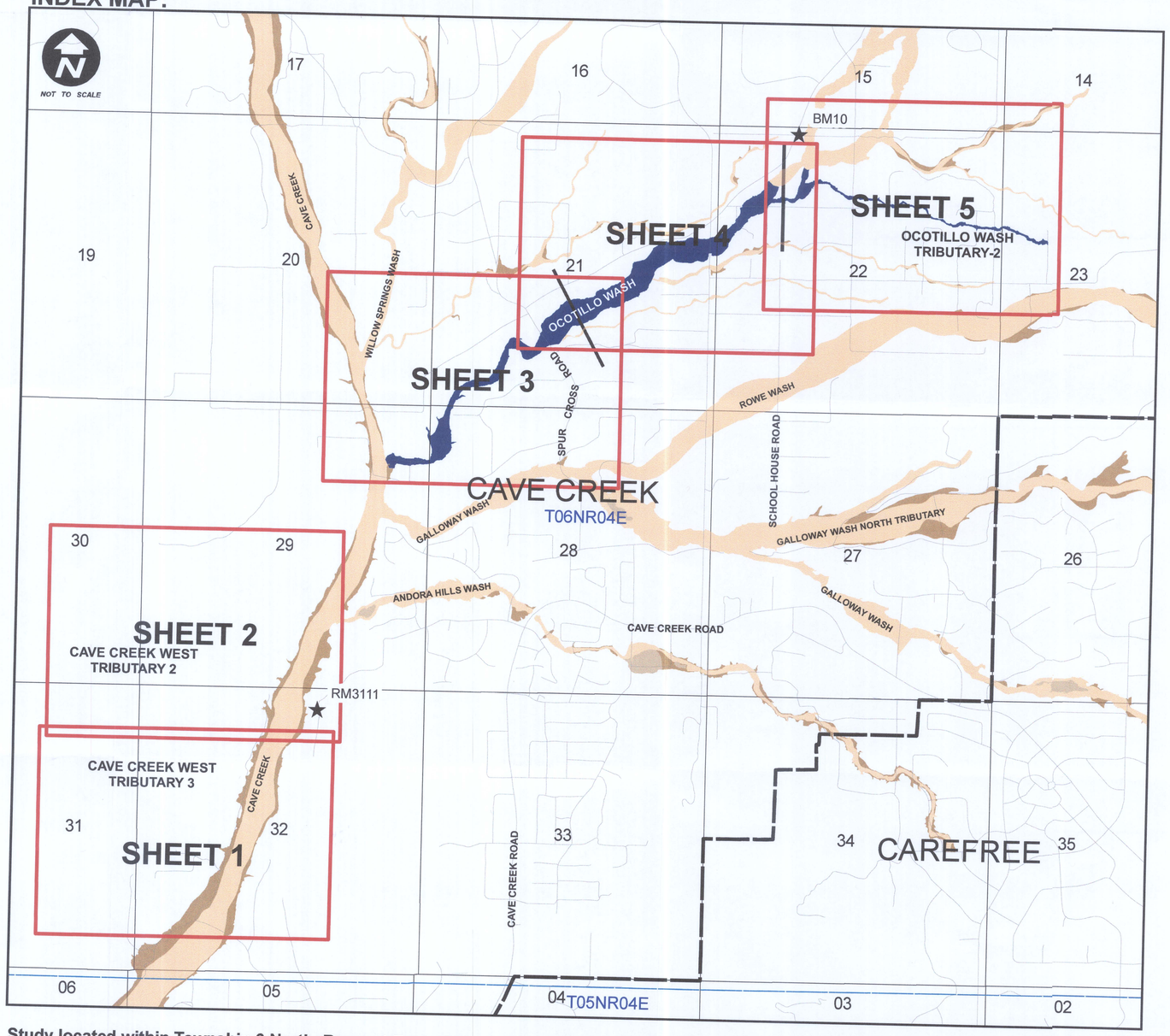
ABBREVIATIONS

DMP	- DRAINAGE MASTER PLAN
CC	- CAVE CREEK
ROW	- RIGHT OF WAY
EXIST	- EXISTING
T.	- TOWNSHIP
R.	- RANGE
S.	- SECTION
N.T.S	- NOT TO SCALE
BM	- BENCHMARK
LW6	- LATERAL WEIR #6
OW1	- OCOTILLO WEIR 1
OWMS1	- OCOTILLO WASH MAIN STEM 1
OWMS2	- OCOTILLO WASH MAIN STEM 2
CMP	- CORRUGATED METAL PIPE
CBC	- CONCRETE BOX CULVERT

SHEET INDEX

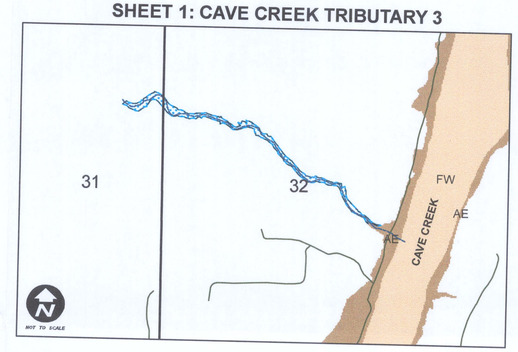
SHEETS	MODEL RIVER	MODEL REACH
1	CAVE CREEK	TRIBUTARY 3
2	CAVE CREEK1	TRIBUTARY 2.1
	CAVE CREEK2	TRIBUTARY 2.2
	CAVE CREEK3	TRIBUTARY 2A
	CAVE CREEK4	TRIBUTARY 2B
	CAVE CREEK5	TRIBUTARY 2C
3, 4 & 5	OCOTILLO WASH1	TRIBUTARY-2.1
	OCOTILLO WASH2	TRIBUTARY-2.2
	OCOTILLO WASH3	OW SPLIT
	OCOTILLO WASH4	OWMS1
	OCOTILLO WASH5	OWMS2

INDEX MAP:

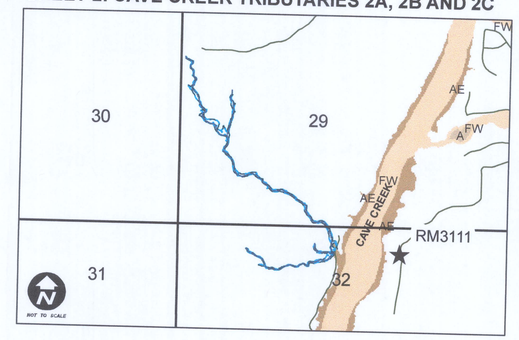


Study located within Township 6 North, Range 4 East of the Gila and Salt River Meridian within the County of Maricopa in the State of Arizona.

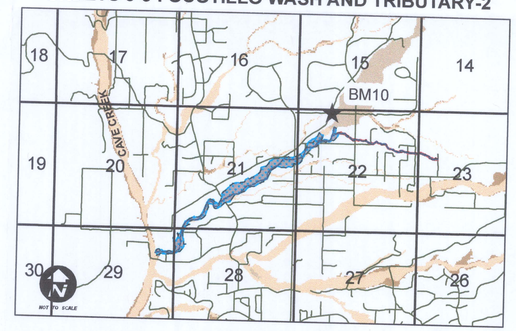
SHEET 1: CAVE CREEK TRIBUTARY 3



SHEET 2: CAVE CREEK TRIBUTARIES 2A, 2B AND 2C



SHEETS 3-5 : OCOTILLO WASH AND TRIBUTARY-2



SURVEY STATEMENT

I, JOHN R. STOCK, AN ARIZONA REGISTERED LAND SURVEYOR, CERTIFY THAT THE FIELD SURVEYS, DOCUMENTED HEREIN, ALONG WITH ALL FIELD AND OFFICE PROCESS PROCEDURES USED DURING THE COURSE OF THIS SURVEY, WERE PERFORMED UNDER MY DIRECT SUPERVISION, AND THAT THESE SURVEYS, ARE RETRACEABLE, AND REPEATABLE. FURTHER, I CERTIFY THAT THE SURVEY REPORT WAS PREPARED UNDER MY DIRECT SUPERVISION; AND THAT THE COORDINATE VALUES AND THEIR ACCURACIES, AS SHOWN IN THE REPORT, ARE CORRECT.

JOHN R. STOCK

AZ RLS #25087

REGISTERED LAND SURVEYOR CERTIFICATE NO. 25087 JOHN R. STOCK Expires 6-30-2010 ARIZONA U.S.A.

Expires 6-30-2010

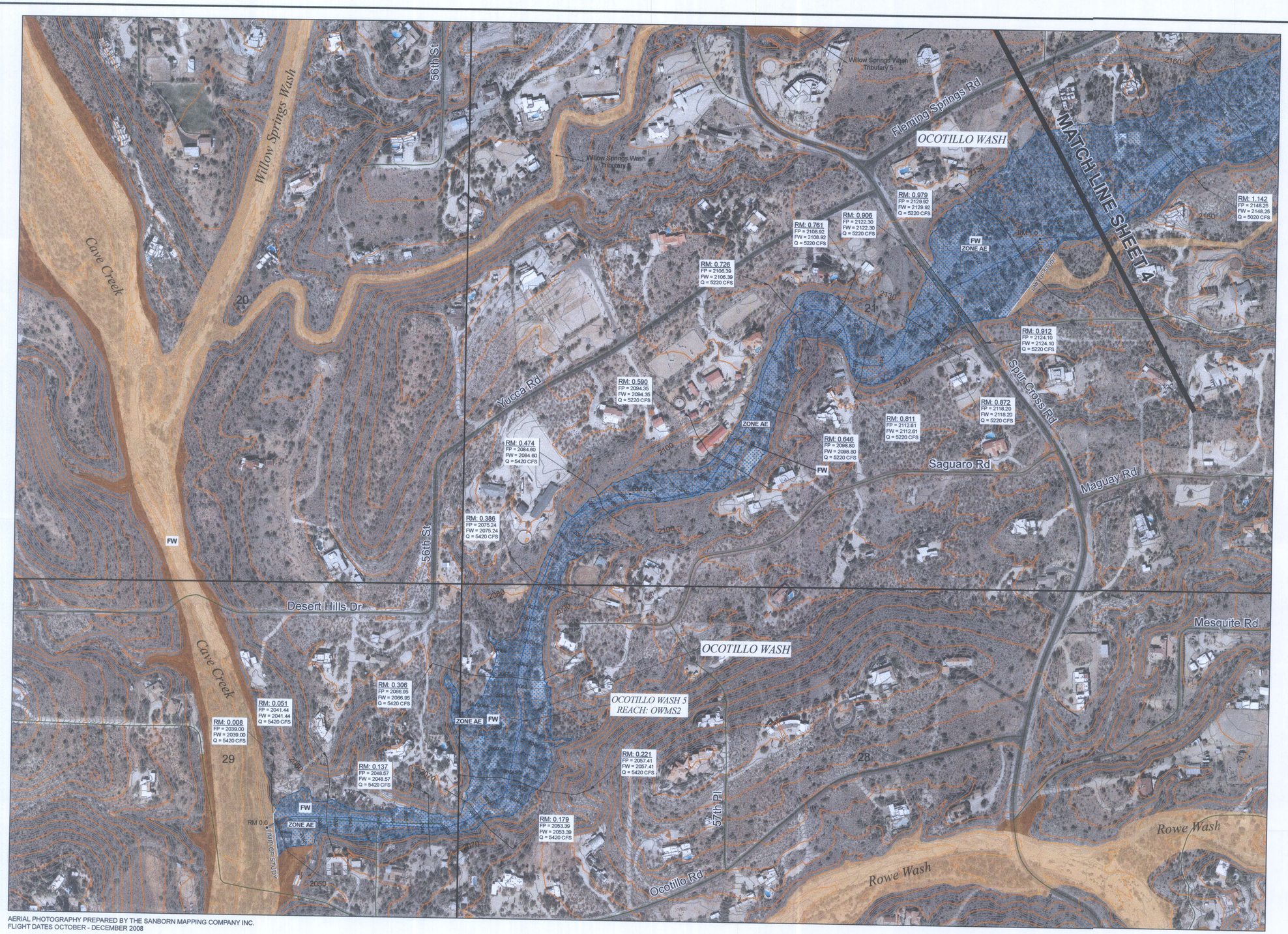
HDR

3200 EAST CAMELBACK ROAD, SUITE 350
PHOENIX, AZ 85018-2311
(602) 522-7700

REGISTERED PROFESSIONAL ENGINEER CERTIFICATE NO. 35571 LINDA A. POTTER Expires 12/31/09 ARIZONA U.S.A.

4/22/09

APRIL 22, 2009
FNL.MAFO.04222009



Legend

- RIVER MILE
- XS CUT LINES — CROSS SECTION STATION (MILE) RM:1.322; 100-YEAR DISCHARGE FP = 2166.75, FW = 2166.75, Q = 526 CFS; FLOODPLAIN WATER SURFACE ELEVATION; FLOODWAY WATER SURFACE ELEVATION
- MATCH LINES FOR SHEETS
- RIVER ALIGNMENT
- 2150 BASE FLOOD ELEVATION
- STREET ALIGNMENTS
- FLOODWAY BOUNDARY
- FLOODWAY
- 31 SECTION LINES and SECTION NUMBER

EFFECTIVE FEMA FLOOD ZONES:

SEPTEMBER 30, 2005

- A
- AE
- FW

ELEVATION CONTOURS

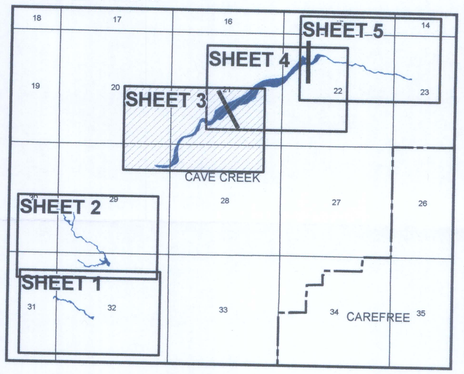
- ★ **BM10** BENCHMARK DESIGNATION / NUMBER
- 2150 INDEX (10 FT)
- INTERMEDIATE (2 FT)

N

400 200 0 400 Feet

SCALE: 1" = 200'
CONTOUR INTERVAL = 2'

INDEX MAP



AERIAL PHOTOGRAPHY PREPARED BY THE SANBORN MAPPING COMPANY INC.
FLIGHT DATES OCTOBER - DECEMBER 2008

TOPOGRAPHIC MAPPING PREPARED BY COOPER AERIAL SURVEYS COMPANY.
FLIGHT DATES: NOVEMBER 2003 AND DECEMBER 2004.
PREPARED UNDER CONTRACTS FCD2003C048, WA#4 AND FCD2005C030.

GROUND CONTROL SURVEY DATA PREPARED BY ATEAM PROFESSIONAL ASSOCIATES, INC.
GROUND CONTROL/ELEVATION REFERENCE MARKS FOR HORIZONTAL AND VERTICAL SURVEY CONTROL ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) RESPECTIVELY.
SURVEY DATA WAS PRESENTED IN STATE PLANE COORDINATES, ARIZONA CENTRAL ZONE 0202.

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCUARACY STANDARDS FOR 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

BENCHMARK INFORMATION:
(REFER TO SHEET 5)
BENCHMARK 10
DATUM: NAVD 88
NORTHING: 1039441.987
EASTING: 693515.706
ELEVATION: 2275.855,
QUALITY: BRASS CAP IN CONCRETE
MONUMENT TYPE: 30 NGS
DIAMETER HOLE: 10"
HOLE DEPTH: 36"
ROD FOOTAGE: 6'-4"
ROD TYPE: 9/16" STEEL

FLOODPLAIN REDELINEATION WORK MAP FOR OCOTILLO WASH AND TRIBUTARY-2

Flood Control District of Maricopa County

HDR
3200 EAST CAMELBACK ROAD, SUITE 350
PHOENIX, AZ 85018-2311
(602) 522-7700

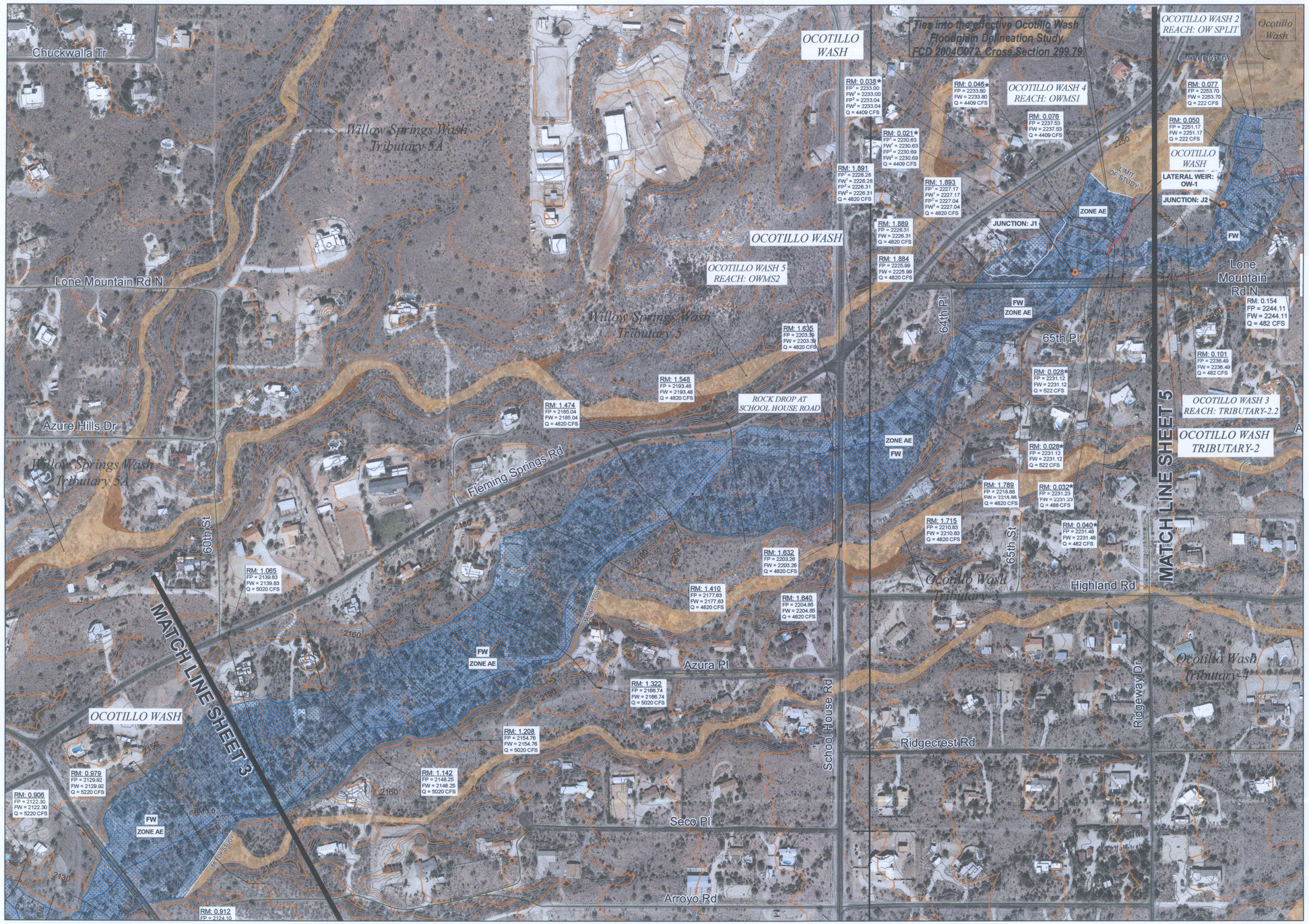
FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2, AND FLOODPLAIN DELINEATION STUDY OF CAVE CREEK TRIBUTARES 2 AND 3.

CONTRACT NUMBER: FCD2006C024
WORK ASSIGNMENT NO. 2
HDR PROJECT NUMBER: 91427

SHEET 3 OF 5

Registered Professional Engineer (Civil) CERTIFICATE NO. 35571 LINDA A. POTTER Date Signed 4/22/09 ARIZONA U.S.A. Expires 12/31/09

APRIL 22, 2009
FNL.MAFO.04222009



Legend

- RIVER MILE
- JUNCTION
- XS CUT LINES — CROSS SECTION STATION (MILE) RM:1.322; 100-YEAR DISCHARGE; FP = 2166.75 FLOODPLAIN WATER SURFACE ELEVATION; FW = 2166.75 FLOODWAY WATER SURFACE ELEVATION; Q = 526 CFS
- MATCH LINES FOR SHEETS
- LATERAL WEIR
- 31 SECTION LINES and SECTION NUMBER
- RIVER ALIGNMENT
- 2150 BASE FLOOD ELEVATION
- FLOODWAY BOUNDARY

FLOODPLAIN

- FLOODWAY
- ZONE AE
- STREET ALIGNMENTS

EFFECTIVE FEMA FLOOD ZONES:

SEPTEMBER 30, 2005

- A
- AE
- FW

★ **BM10** BENCHMARK DESIGNATION / NUMBER

ELEVATION CONTOURS

- 2150 INDEX (10 FT)
- INTERMEDIATE (2 FT)

400 200 0 400 Feet

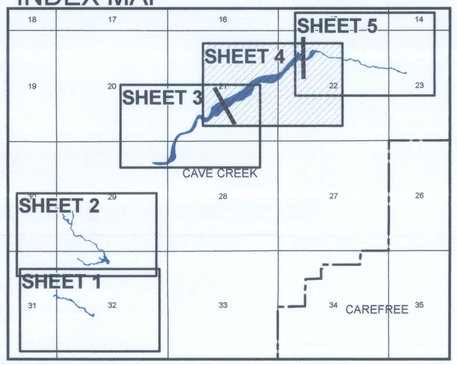
N

SCALE: 1" = 200'
CONTOUR INTERVAL = 2'

NOTES:

This work map has been prepared in support of the FRDS of Ocotillo Wash and Tributary-2. The discharges shown on Ocotillo Wash for cross sections 0.046, 0.038 and 0.021 are non-optimized hard coded flows. The discharges shown for Ocotillo Wash, Tributary-2 on cross sections 0.028, 0.032 and 0.040 are non-optimized hard coded flows. FP and FW elevations for Ocotillo Wash for cross sections 0.021, 0.038, 1.893 and 1.891 are reflect two scenarios (FW1) "With" Blocked Obstruction (FW2) "Without" Blocked Obstruction. Cross Sections containing an asterisk (*) by their station number reflect flow rates and water surface elevations from the optimization of the lateral weir OW-1. Refer to Section 5 of the TDN for additional information regarding hard coded discharges, Lateral Weir OW-1 optimizations and multiple FP and FW elevations for blocked obstruction alternatives.

INDEX MAP



AERIAL PHOTOGRAPHY PREPARED BY THE SANBORN MAPPING COMPANY INC.
FLIGHT DATES OCTOBER - DECEMBER 2008

TOPOGRAPHIC MAPPING PREPARED BY COOPER AERIAL SURVEYS COMPANY.
FLIGHT DATES: NOVEMBER 2003 AND DECEMBER 2004.
PREPARED UNDER CONTRACTS FCD2003C048, WA#4 AND FCD2005C030.

GROUND CONTROL SURVEY DATA PREPARED BY ATEAM PROFESSIONAL ASSOCIATES, INC.
GROUND CONTROL/ELEVATION REFERENCE MARKS FOR HORIZONTAL AND VERTICAL SURVEY CONTROL ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) RESPECTIVELY.
SURVEY DATA WAS PRESENTED IN STATE PLANE COORDINATES, ARIZONA CENTRAL ZONE 0202.

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCUARACY STANDARDS FOR 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

BENCHMARK INFORMATION:

(REFER TO SHEET 5)
BENCHMARK 10
DATUM: NAVD 88
NORTHING: 1039441.987
EASTING: 693515.706
ELEVATION: 2275.855,
QUALITY: BRASS CAP IN CONCRETE
MONUMENT TYPE: 30 NGS
DIAMETER HOLE: 10"
HOLE DEPTH: 36"
ROD FOOTAGE: 6'-4"
ROD TYPE: 9/16" STEEL

FLOODPLAIN REDELINEATION WORK MAP FOR OCOTILLO WASH AND TRIBUTARY-2

Flood Control District of Maricopa County

HDR
3200 EAST CAMELBACK ROAD, SUITE 350
PHOENIX, AZ 85018-2311
(602) 522-7700

FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2, AND FLOODPLAIN DELINEATION STUDY OF CAVE CREEK TRIBUTARES 2 AND 3.

CONTRACT NUMBER: FCD2006C024
WORK ASSIGNMENT NO. 2
HDR PROJECT NUMBER: 91427

SHEET 4 OF 5

Registered Professional Engineer (Civil) CERTIFICATE NO. 35571 LINDA A. POTTER ARIZONA U.S.A. 4/22/09 Expires 12/31/09

APRIL 22, 2009
FNL.MAFO.04222009

Legend

- RIVER MILE
- JUNCTION
- XS CUT LINES (CROSS SECTION STATION (MILE) — RM: 1.322 — FP = 2168.75, FW = 2166.75, Q = 525 cfs — 100-YEAR DISCHARGE — FLOODPLAIN WATER SURFACE ELEVATION — FLOODWAY WATER SURFACE ELEVATION)
- MATCH LINES FOR SHEETS
- LATERAL WEIR
- 31 SECTION LINES and SECTION NUMBER
- RIVER ALIGNMENT
- 2150 BASE FLOOD ELEVATION
- FLOODWAY BOUNDARY

FLOODWAY

- FLOODWAY
- ZONE AE
- STREET ALIGNMENTS

EFFECTIVE FEMA FLOOD ZONES:

SEPTEMBER 30, 2005

- A
- AE
- FW

★ **BM10** BENCHMARK DESIGNATION / NUMBER

ELEVATION CONTOURS

- 2150 INDEX (10 FT)
- INTERMEDIATE (2 FT)

N

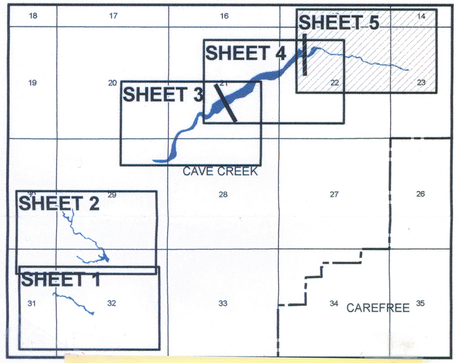
400 200 0 400 Feet

SCALE: 1" = 200'
CONTOUR INTERVAL = 2'

NOTES:

This work map has been prepared in support of the FRDS of Ocotillo Wash and Tributary-2. The hydraulic modeling for Tributary-2 contains additional cross sections that are not displayed herein. These cross sections are noted as "NON_DEV" in the hydraulic models which have been incorporated to provide additional support for the floodway delineation. Refer to Section 5 of the TDN for additional information regarding the utilization of these cross sections.

INDEX MAP



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FLIGHT DATES: NOVEMBER 2003 AND DECEMBER 2004.
PREPARED UNDER CONTRACTS FCD2003C048, WA#4 AND FCD2005C030.

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GROUND CONTROL/ELEVATION REFERENCE MARKS FOR HORIZONTAL AND VERTICAL SURVEY CONTROL ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) RESPECTIVELY.
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QUALITY: BRASS CAP IN CONCRETE
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DIAMETER HOLE: 10"
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FLOODPLAIN REDELINEATION WORK MAP FOR OCOTILLO WASH AND TRIBUTARY-2

Flood Control District of Maricopa County

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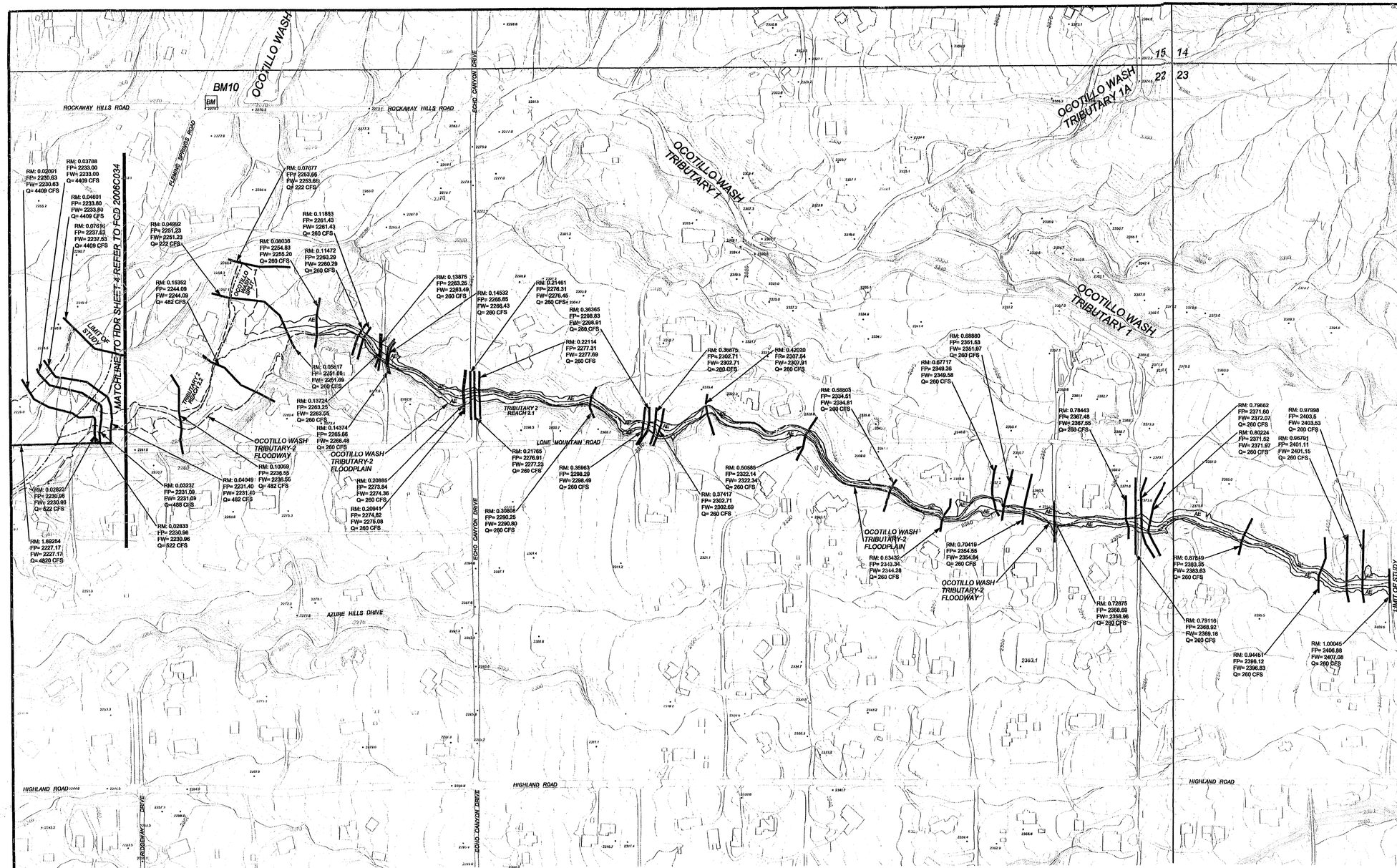
(602) 522-7700

FLOODPLAIN RE
OF OCOTILLO WA
AND FLOODPLA
OF CAVE CREEK

CONTRACT NU
WORK AS
HDR PROJE
SHEE

Superceded 10/11/16 RPA

APRIL 22, 2009
FNL_MAFO.04222009



LEGEND

LOMR 100-YR FLOODPLAIN BOUNDARY	————
LOMR FLOODWAY BOUNDARY	- - - - - -
CROSS SECTION	————
ZONE DESIGNATIONS	AE

ELEVATION REFERENCE MARKS

ALL ELEVATIONS ARE BASED ON NAVD88

BENCHMARK 10:
DATUM: NAVD88
NORTHING: 1039441.987
EASTING: 693515.706
ELEVATION: 2275.855
QUALITY: BRASS CAP IN CONCRETE
MONUMENT TYPE: 30NGS
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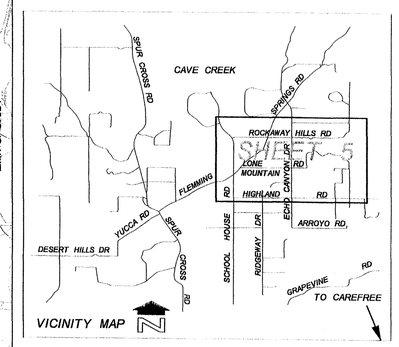

N

200' 0' 200' 400'

SCALE: 1" = 200'
CONTOUR INTERVAL: 2'

GROUND CONTROL SURVEY DATA PREPARED BY: A TEAM PROFESSIONAL ASSOCIATES, INC.
GROUND CONTROL/ELEVATION REFERENCE MARKS FOR HORIZONTAL AND VERTICAL SURVEY CONTROL ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) RESPECTIVELY.
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TOPOGRAPHIC MAPPING PREPARED BY:
COOPER AERIAL SURVEYS COMPANY

FLIGHT DATES:
NOVEMBER 2003 AND DECEMBER 2004
PREPARED UNDER CONTRACTS :
FCD2003C048,WA#4 AND FCD2005C030

FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2

PRELIMINARY MAPS
THE INFORMATION SHOWN ON THIS PRELIMINARY MAPPING IS THE BEST TECHNICAL INFORMATION AVAILABLE AT THIS TIME TO DETERMINE THE 100-YEAR FLOODPLAIN AND IS SUBJECT TO CHANGE.

Flood Control District of Maricopa County

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN REDELINEATION STUDY OF OCOTILLO WASH AND TRIBUTARY-2

Registered Professional Engineer (Civil) CERTIFICATE NO. 28636 RICHARD P. HARDER Date Signed 3/31/10 ARIZONA, U.S.A.

exp. 3/31/10

	BY	DATE
DESIGNED	RPH	10/10
DRAWN	JGW/FDK	10/10
CHECKED	CWR	10/10

Supercedes HDR's Sheet 5

DRAWING NO.	PLAN AND PROFILE SHEET	SHEET OF
C5		5 5