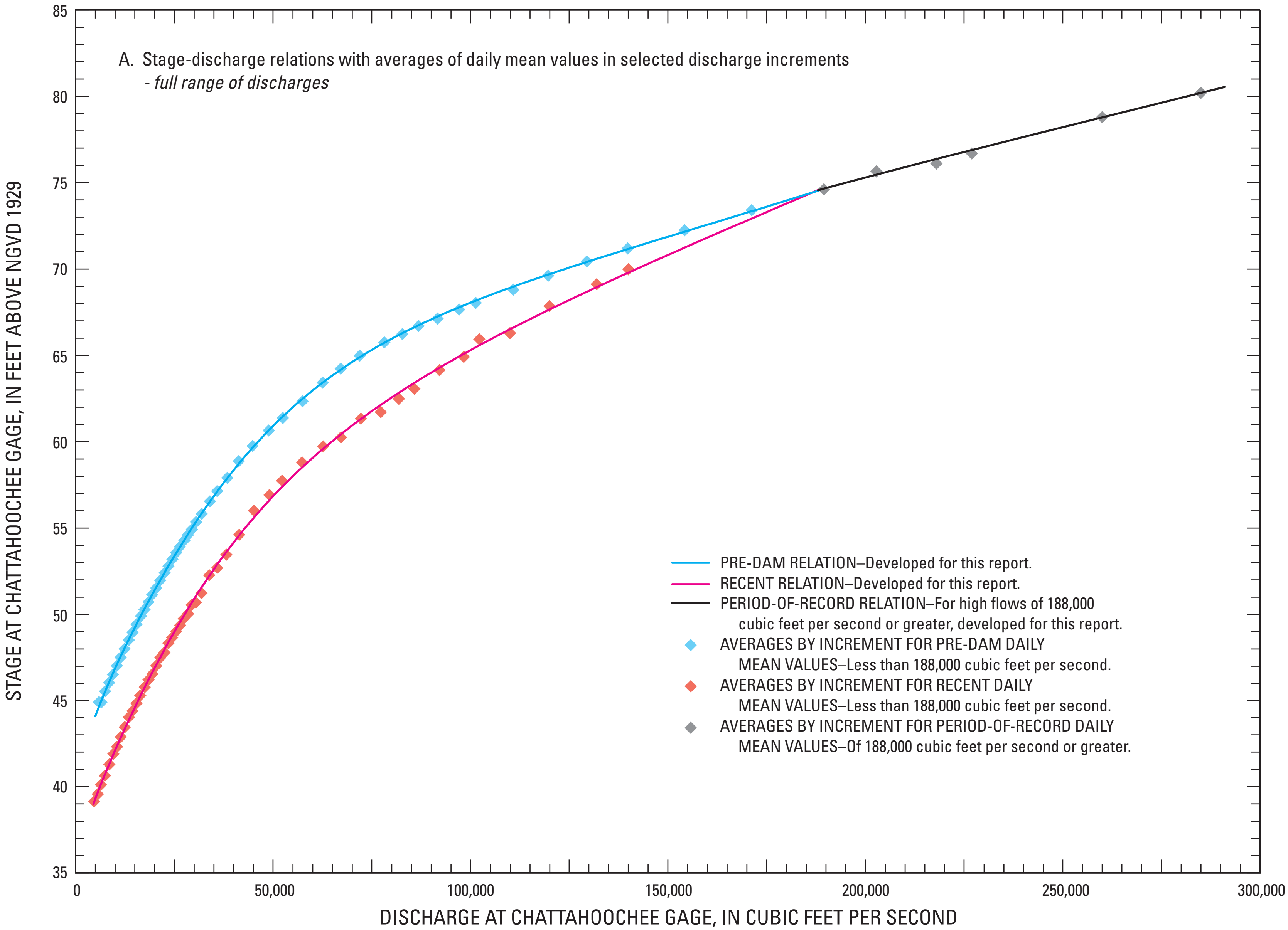
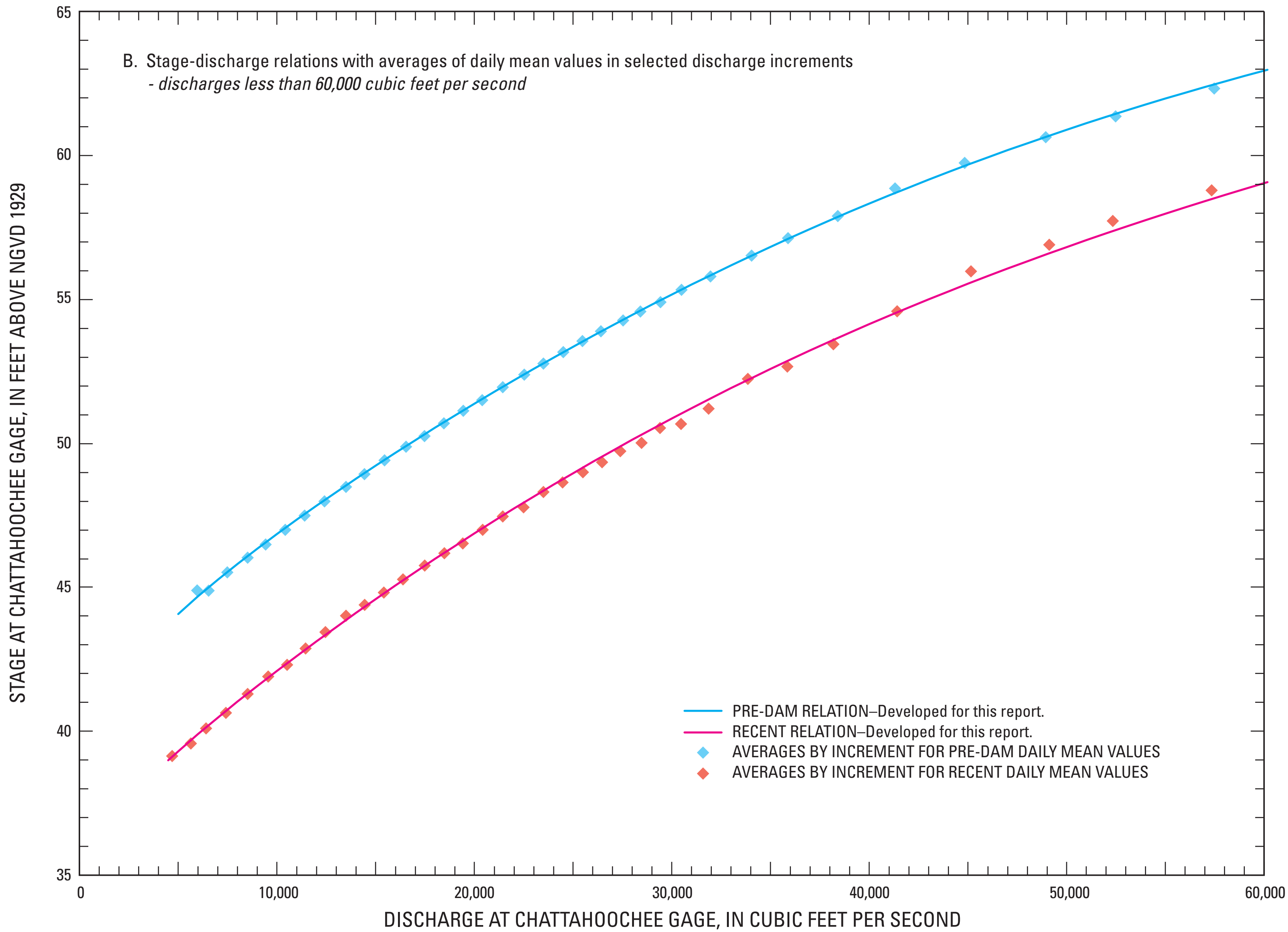
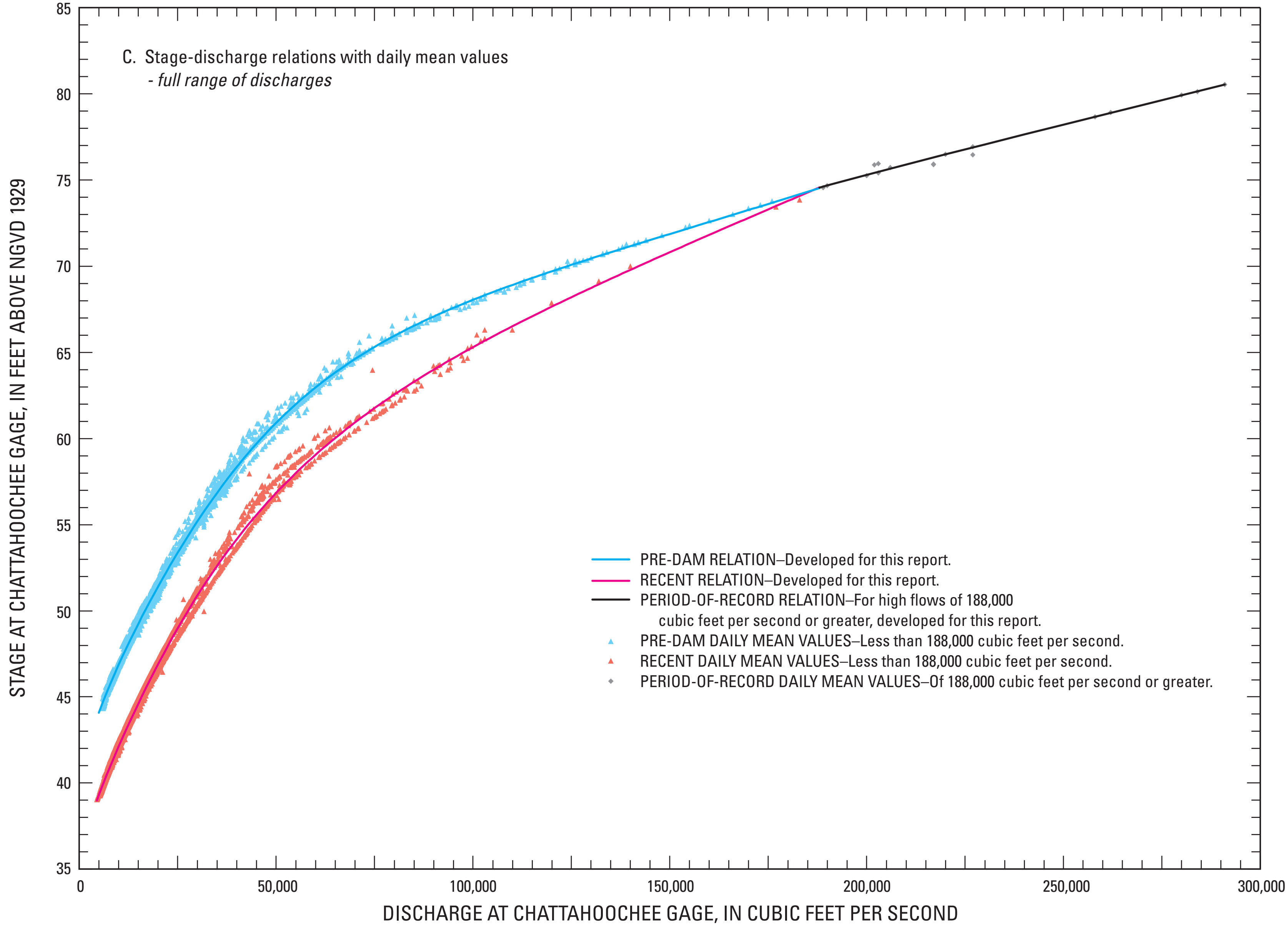
Appendixes I–X



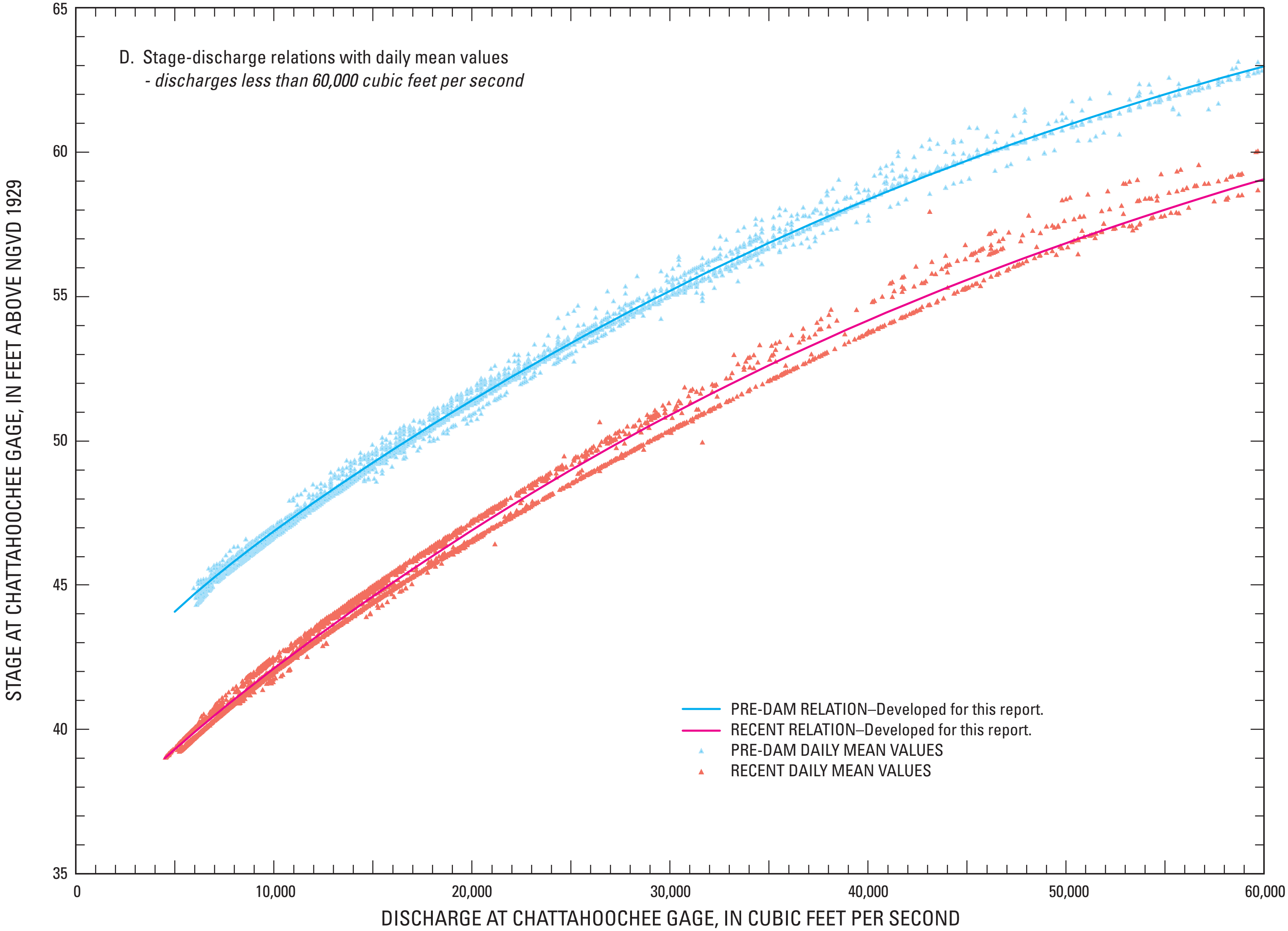
Appendix I. Stage-discharge relations at the Chattahoochee streamgage in the Apalachicola River, Florida.



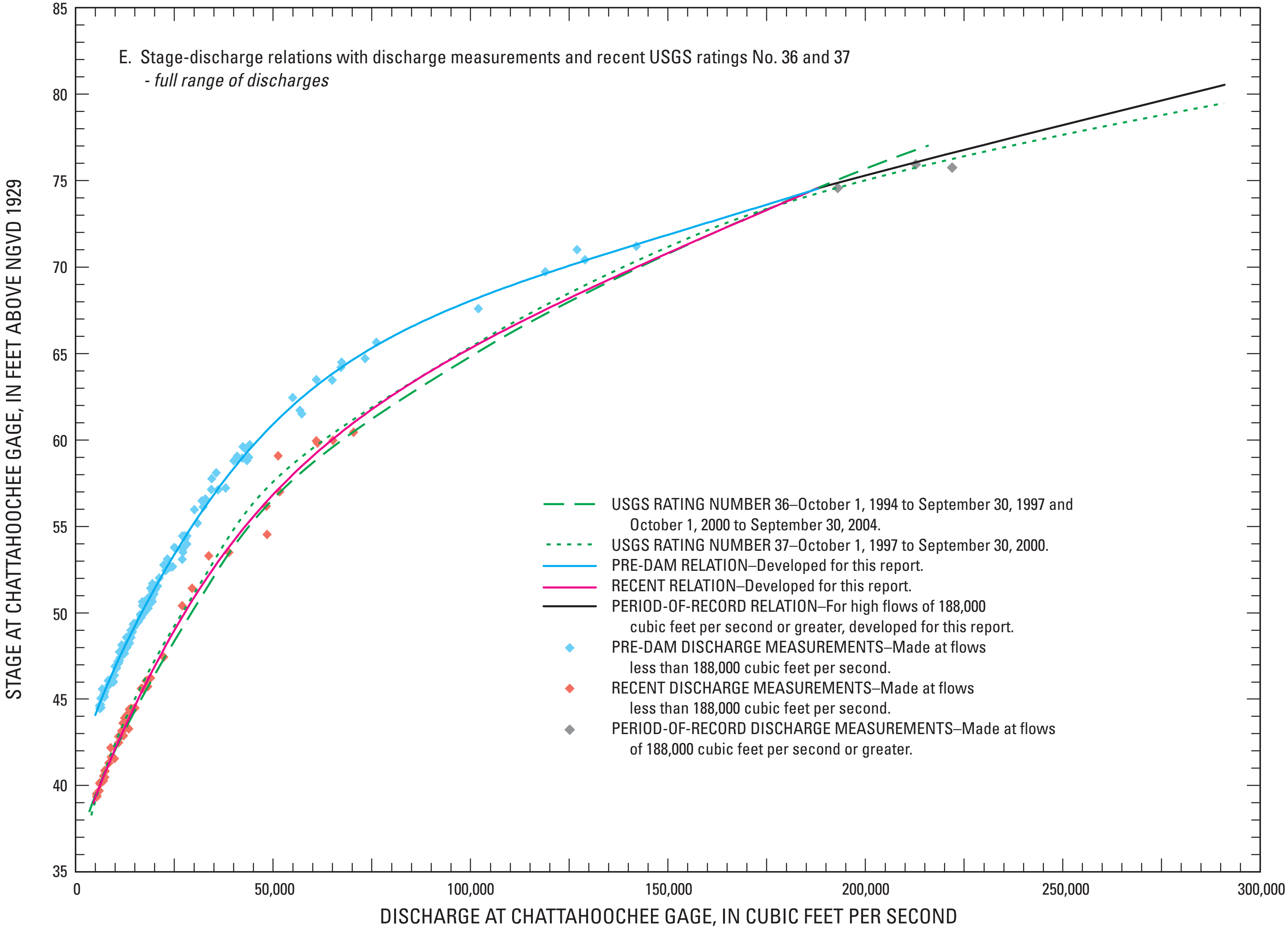
Appendix I. (Continued) Stage-discharge relations at the Chattahoochee streamgage in the Apalachicola River, Florida.



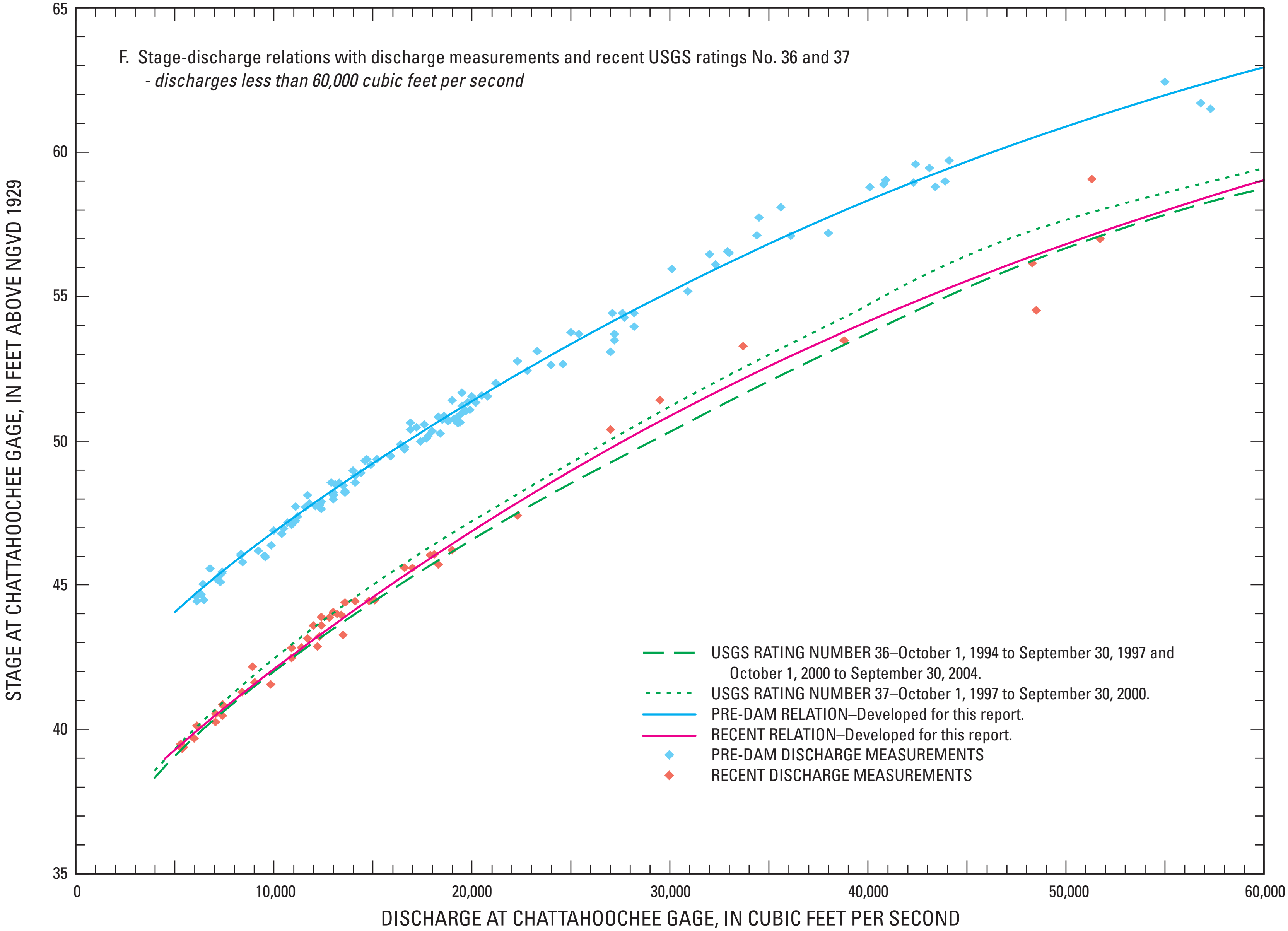
Appendix I. (Continued) Stage-discharge relations at the Chattahoochee streamgage in the Apalachicola River, Florida.



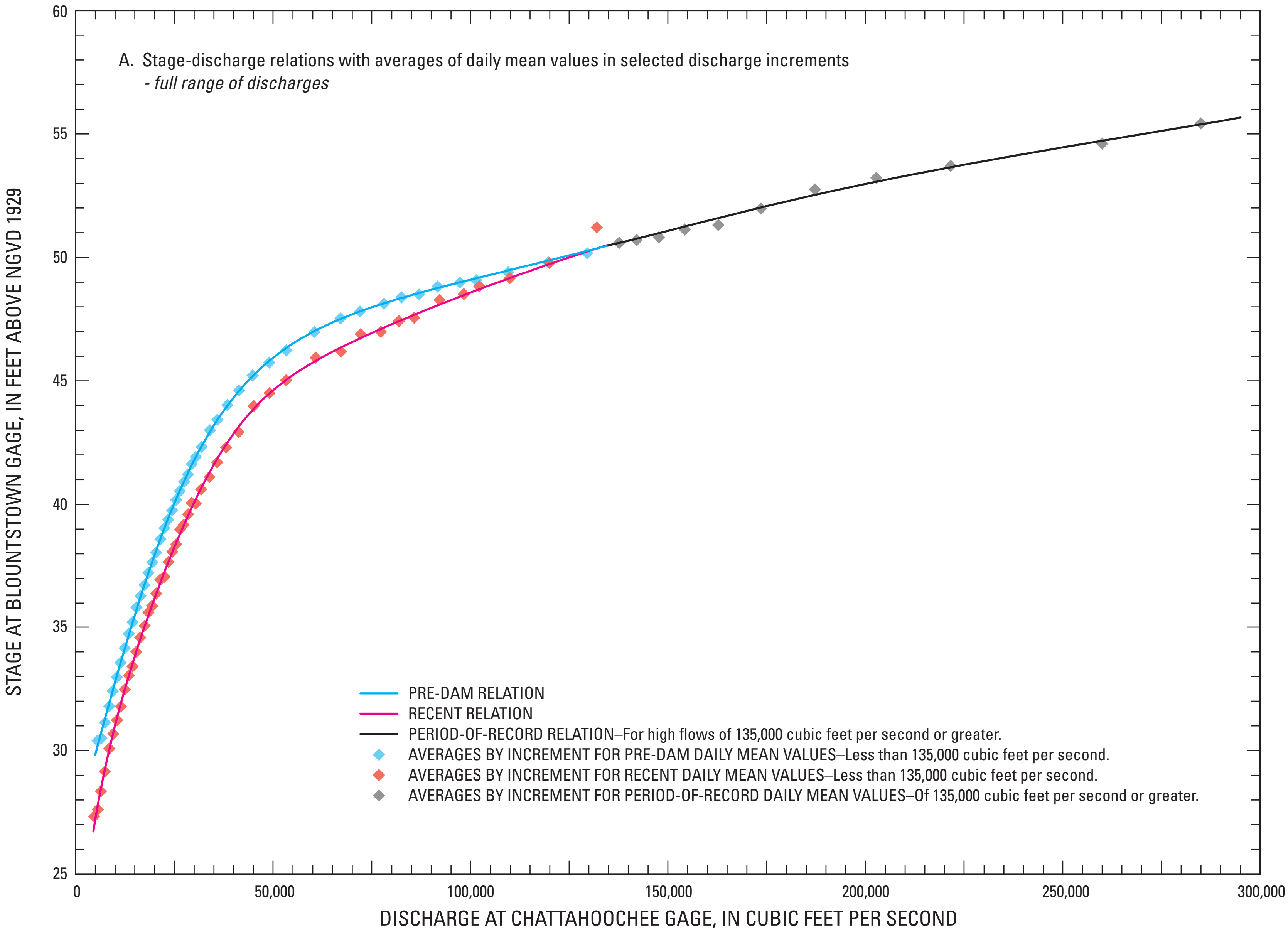
Appendix I. (Continued) Stage-discharge relations at the Chattahoochee streamgage in the Apalachicola River, Florida.



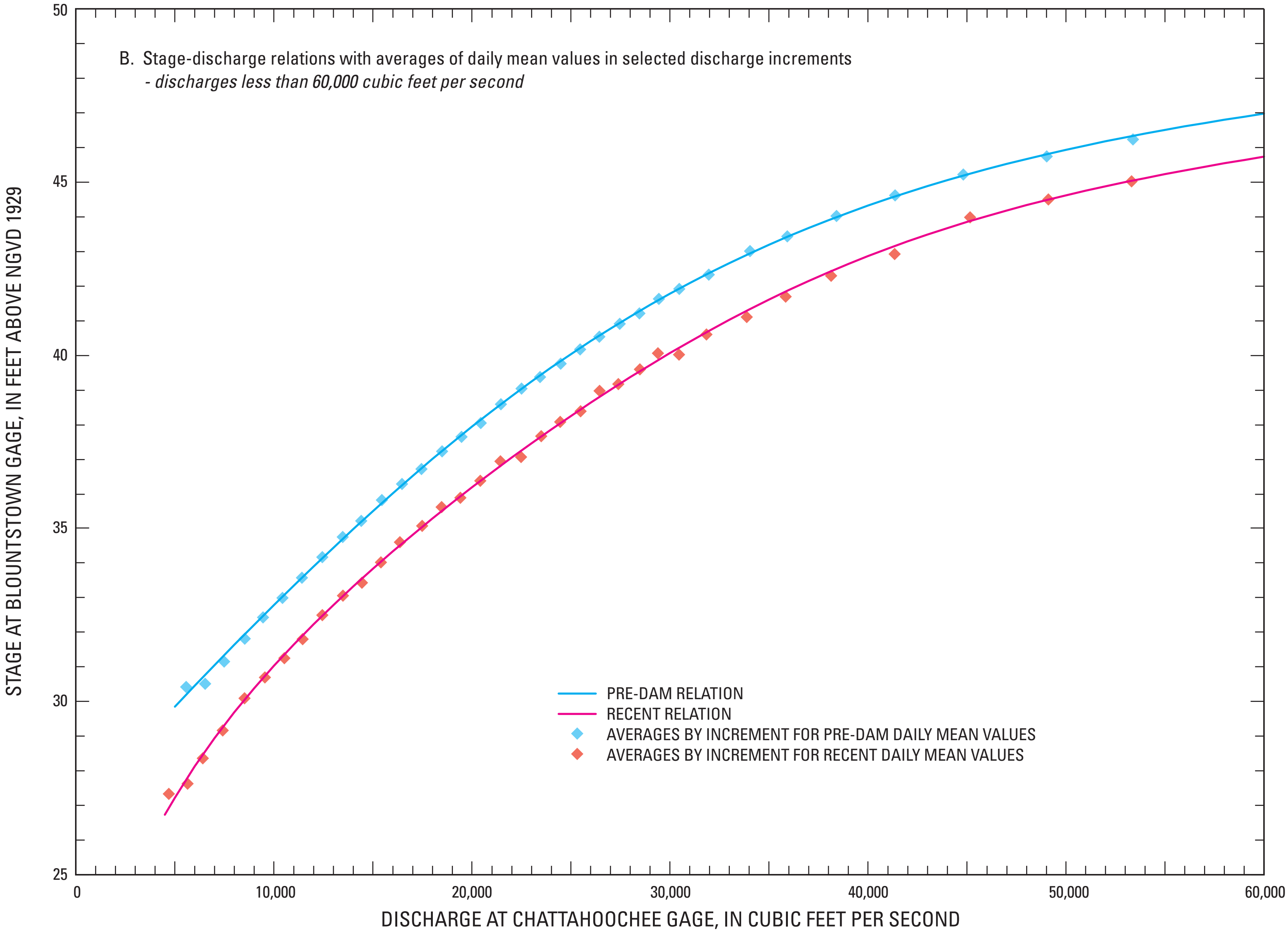
Appendix I. (Continued) Stage-discharge relations at the Chattahoochee streamgage in the Apalachicola River, Florida.



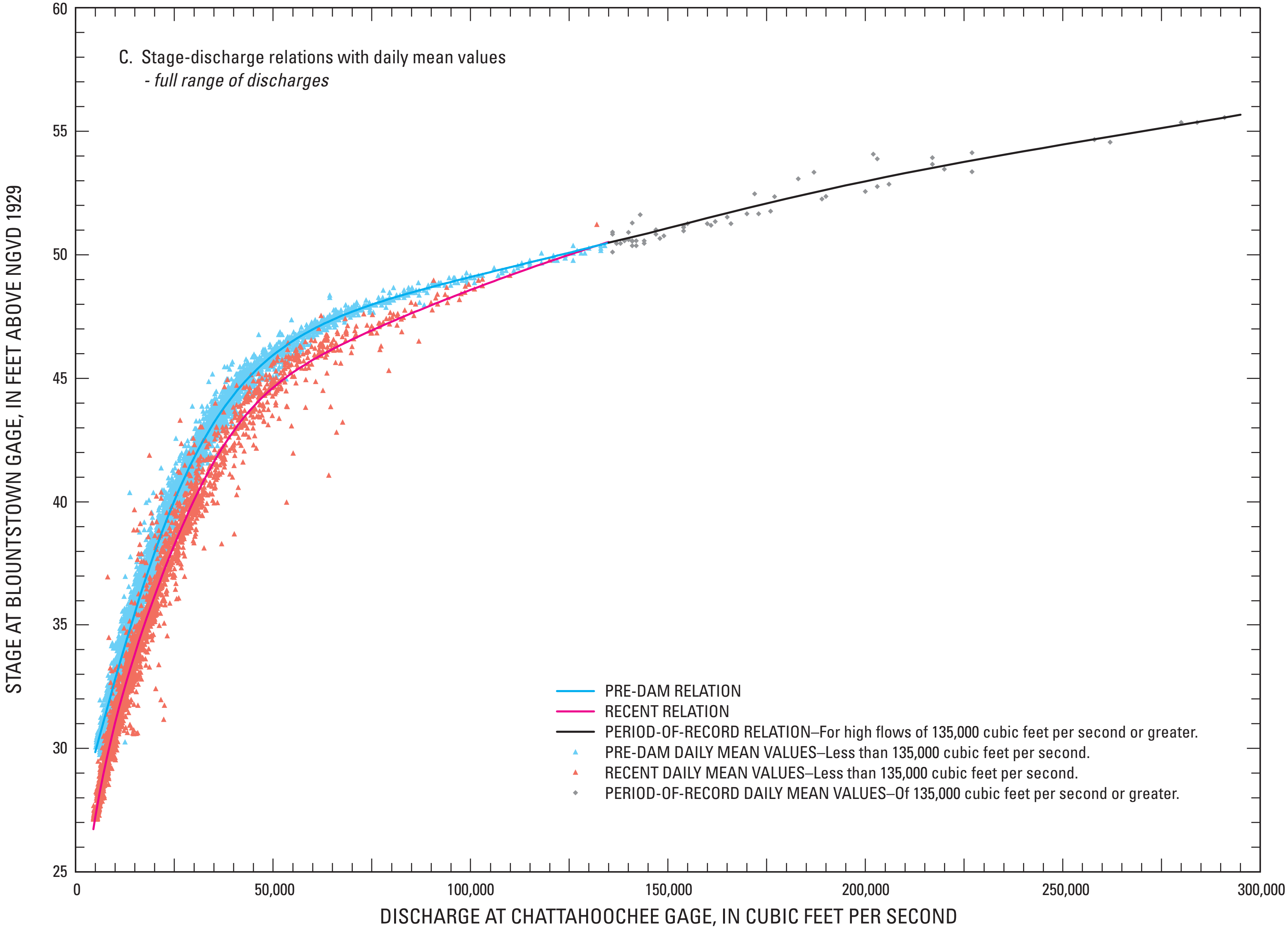
Appendix I. (Continued) Stage-discharge relations at the Chattahoochee streamgage in the Apalachicola River, Florida.



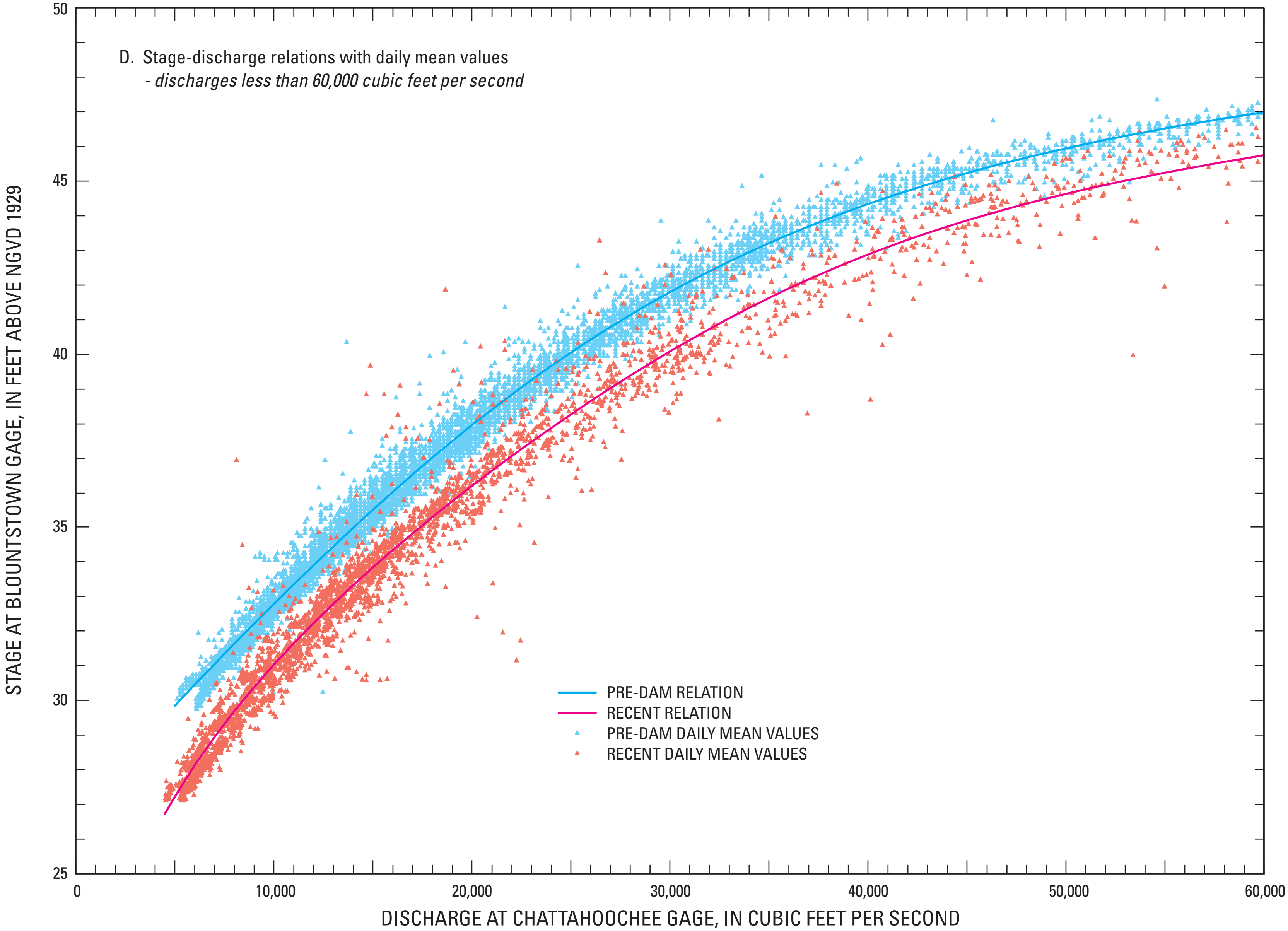
Appendix II. Stage at the Blountstown streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 1 day, as defined in glossary.



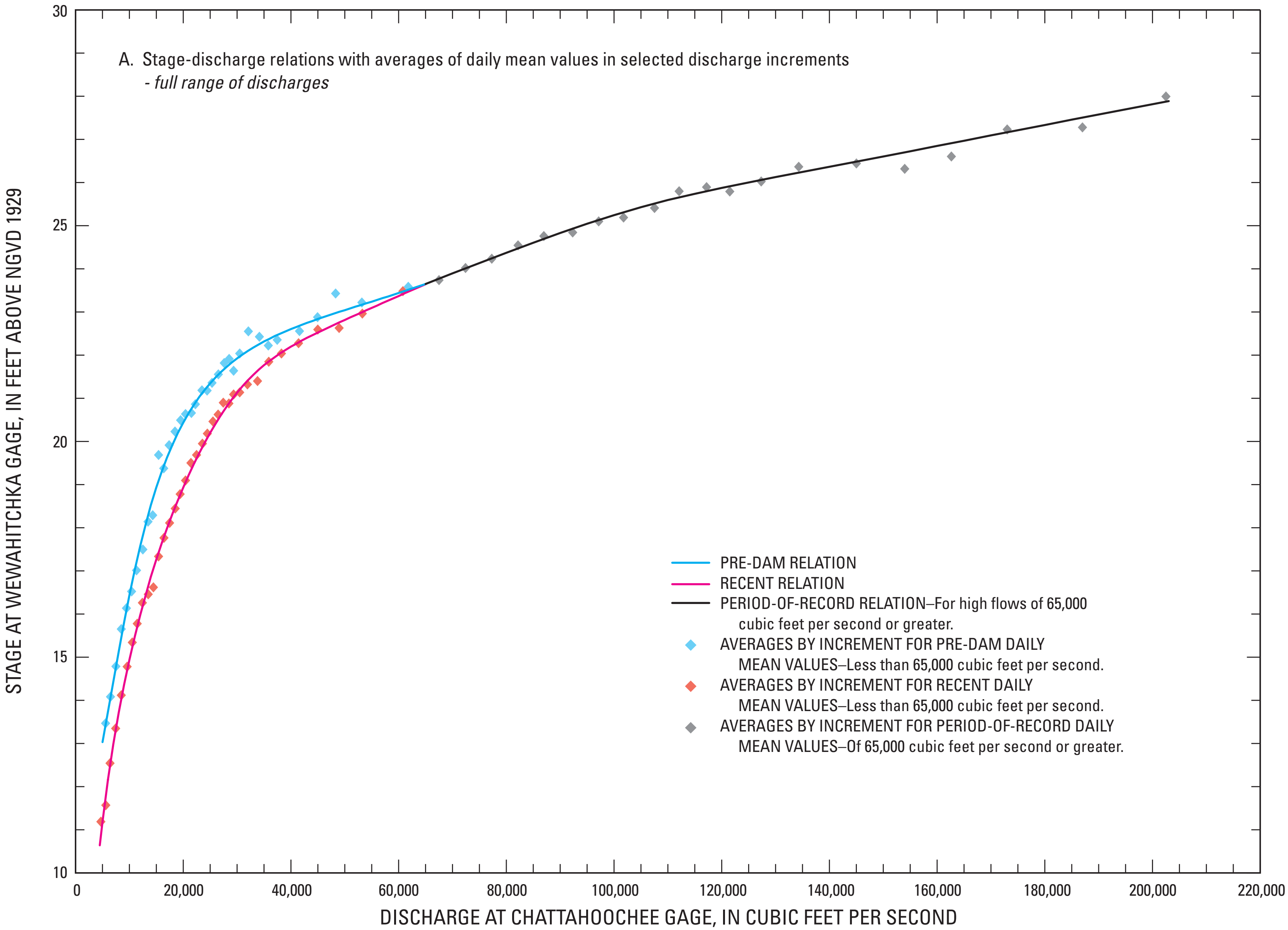
Appendix II. (Continued) Stage at the Blountstown streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 1 day, as defined in glossary.



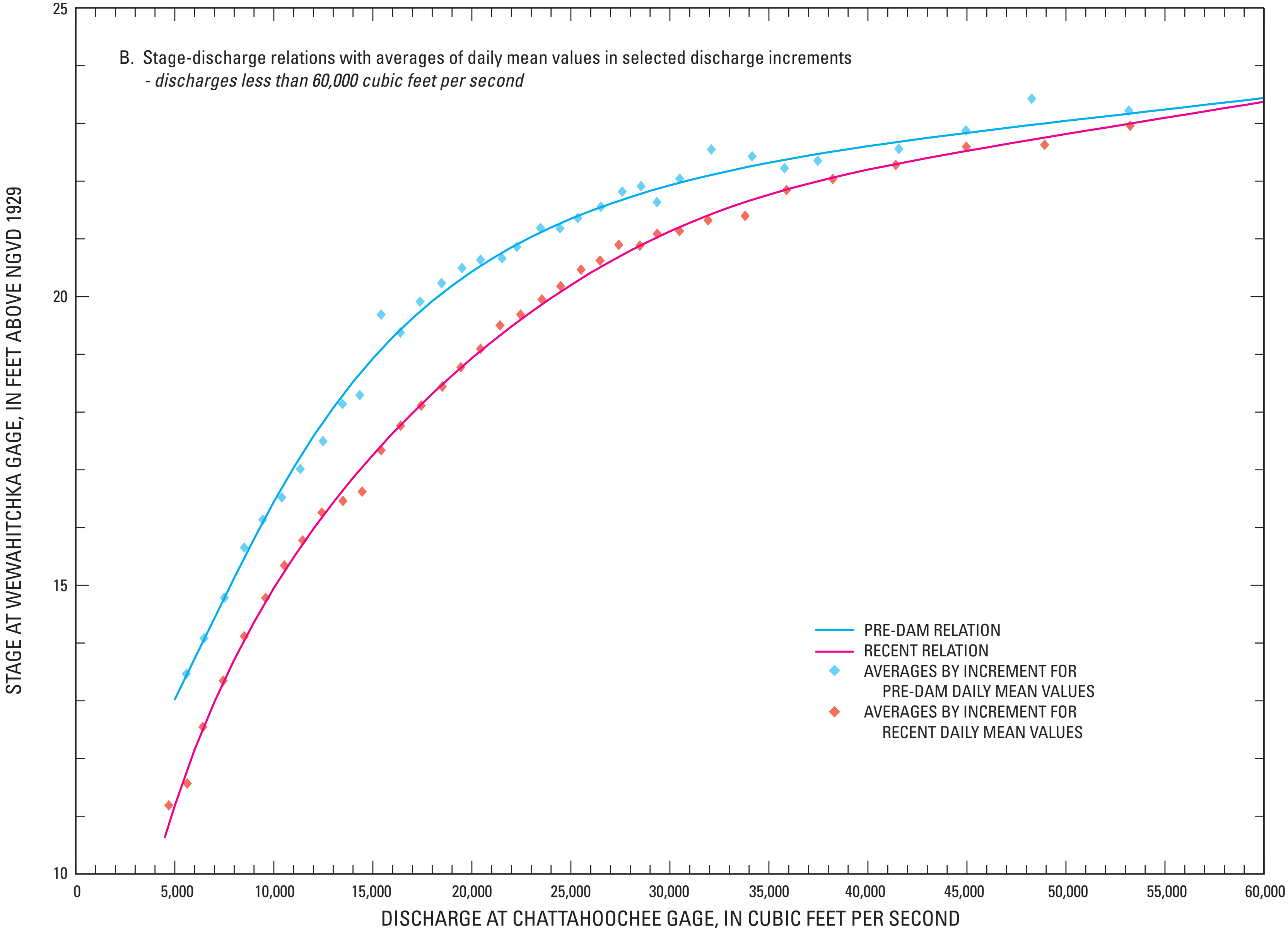
Appendix II. (Continued) Stage at the Blountstown streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 1 day, as defined in glossary.



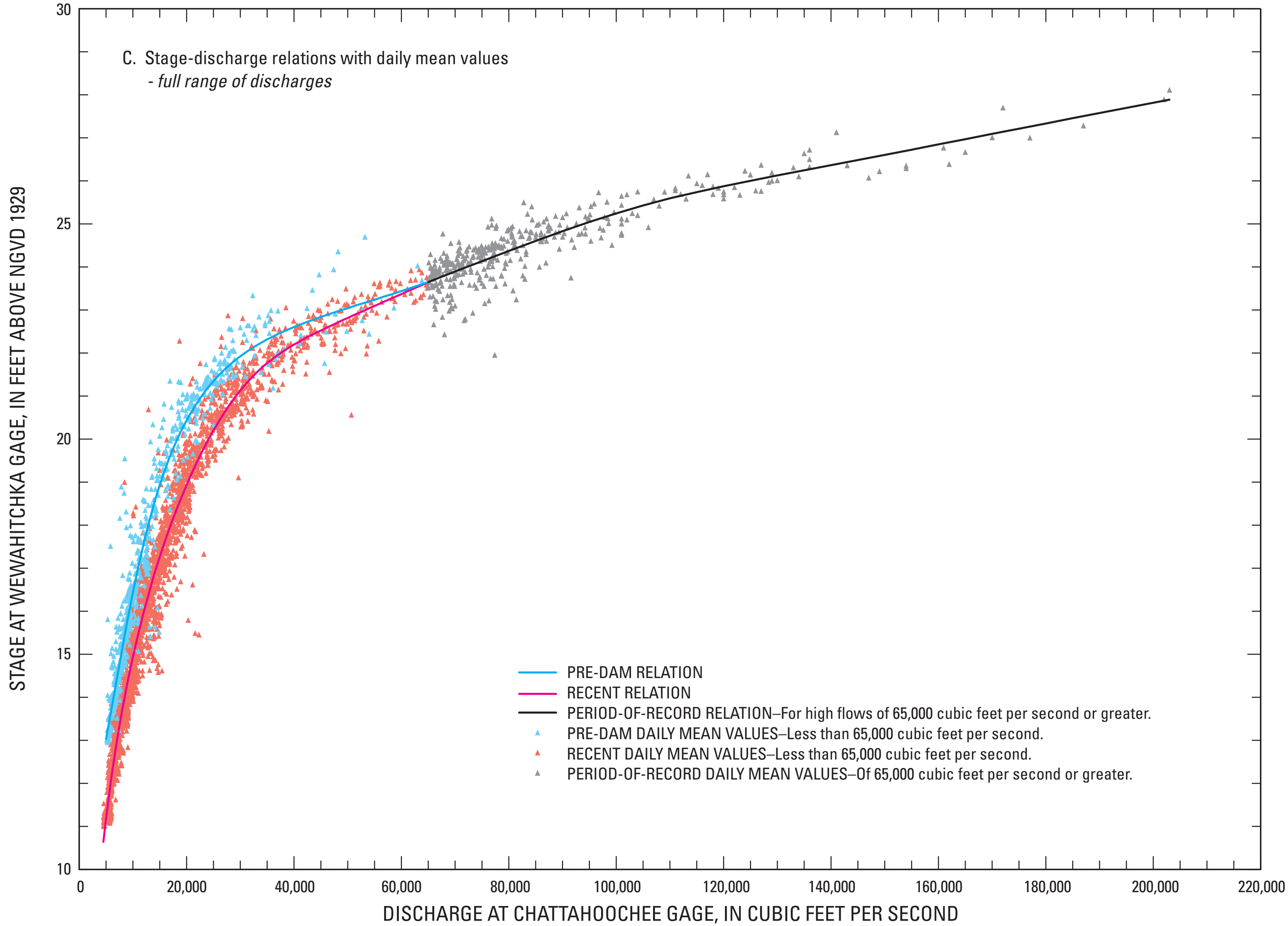
Appendix II. (Continued) Stage at the Blountstown streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 1 day, as defined in glossary.



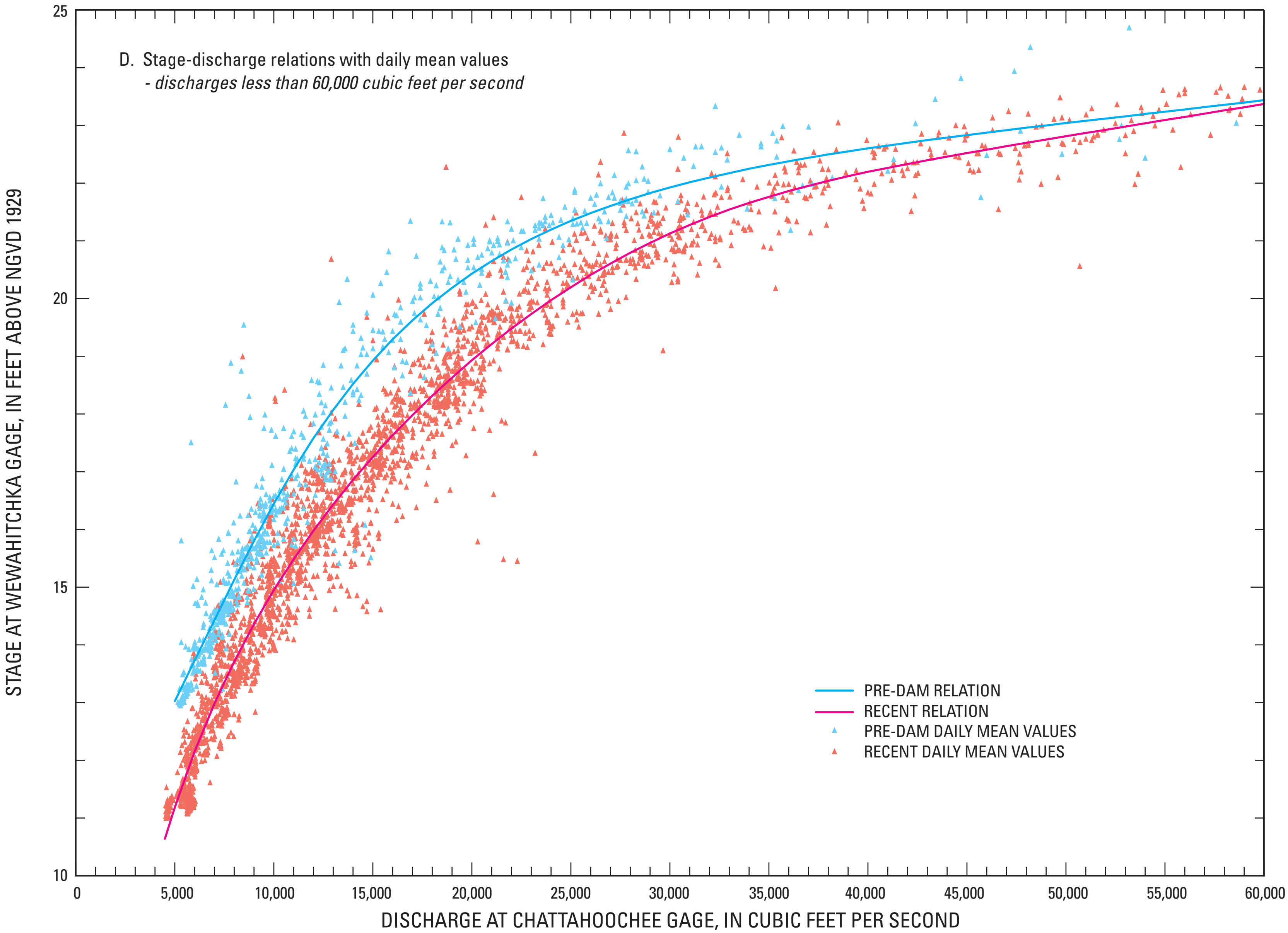
Appendix III. Stage at the Wewahitchka streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



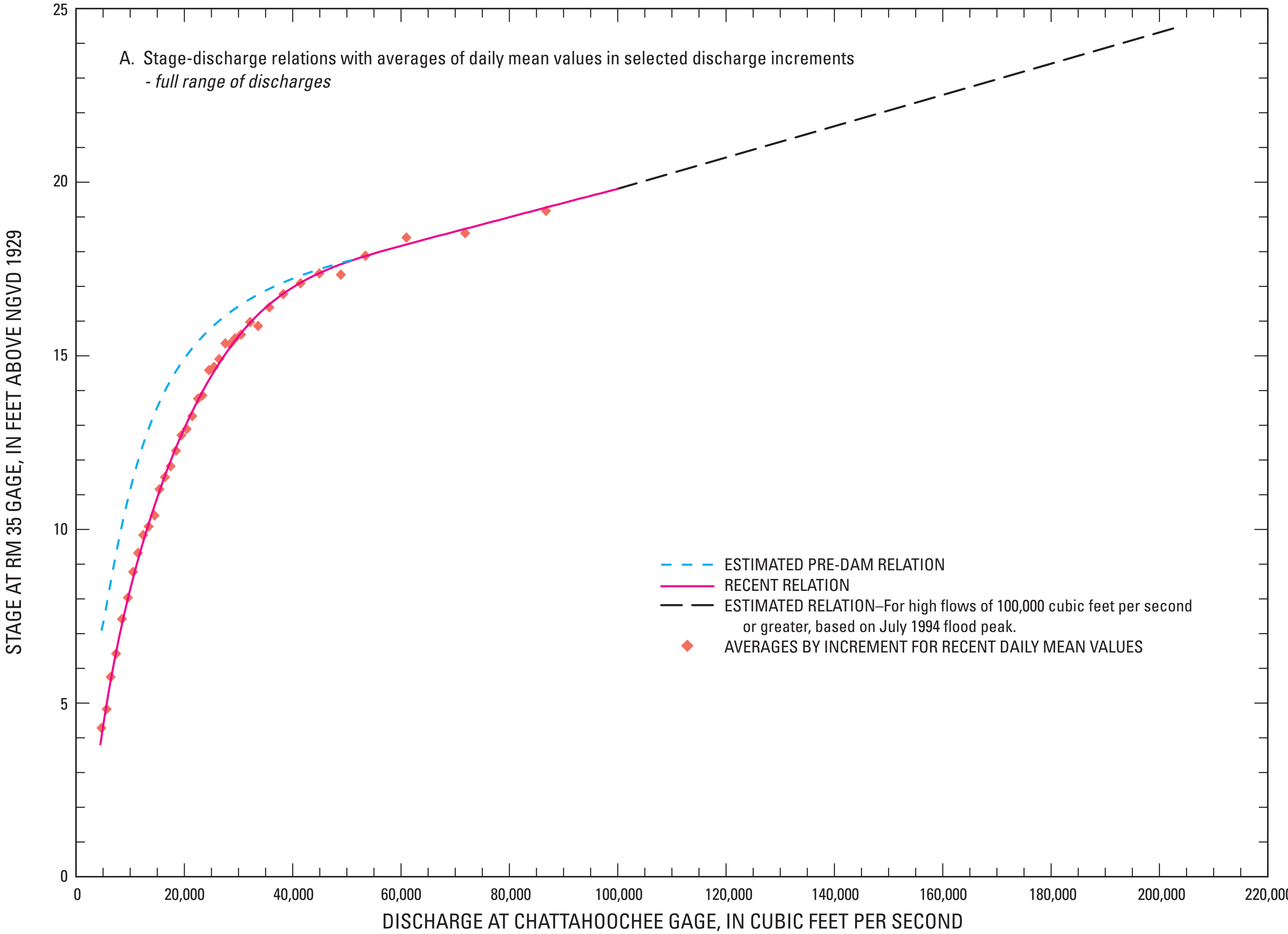
Appendix III. (Continued) Stage at the Wewahitchka streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



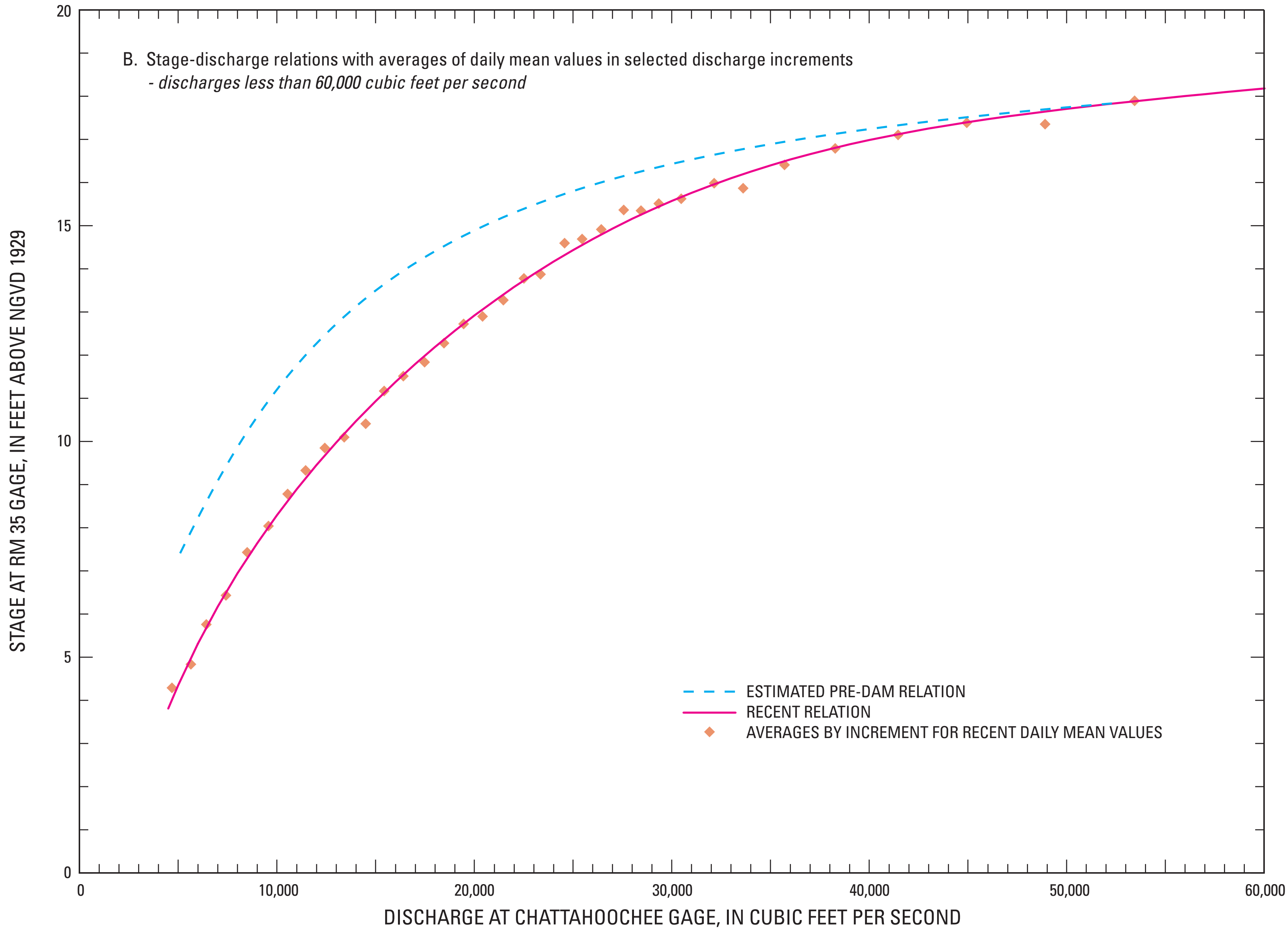
Appendix III. (Continued) Stage at the Wewahitchka streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



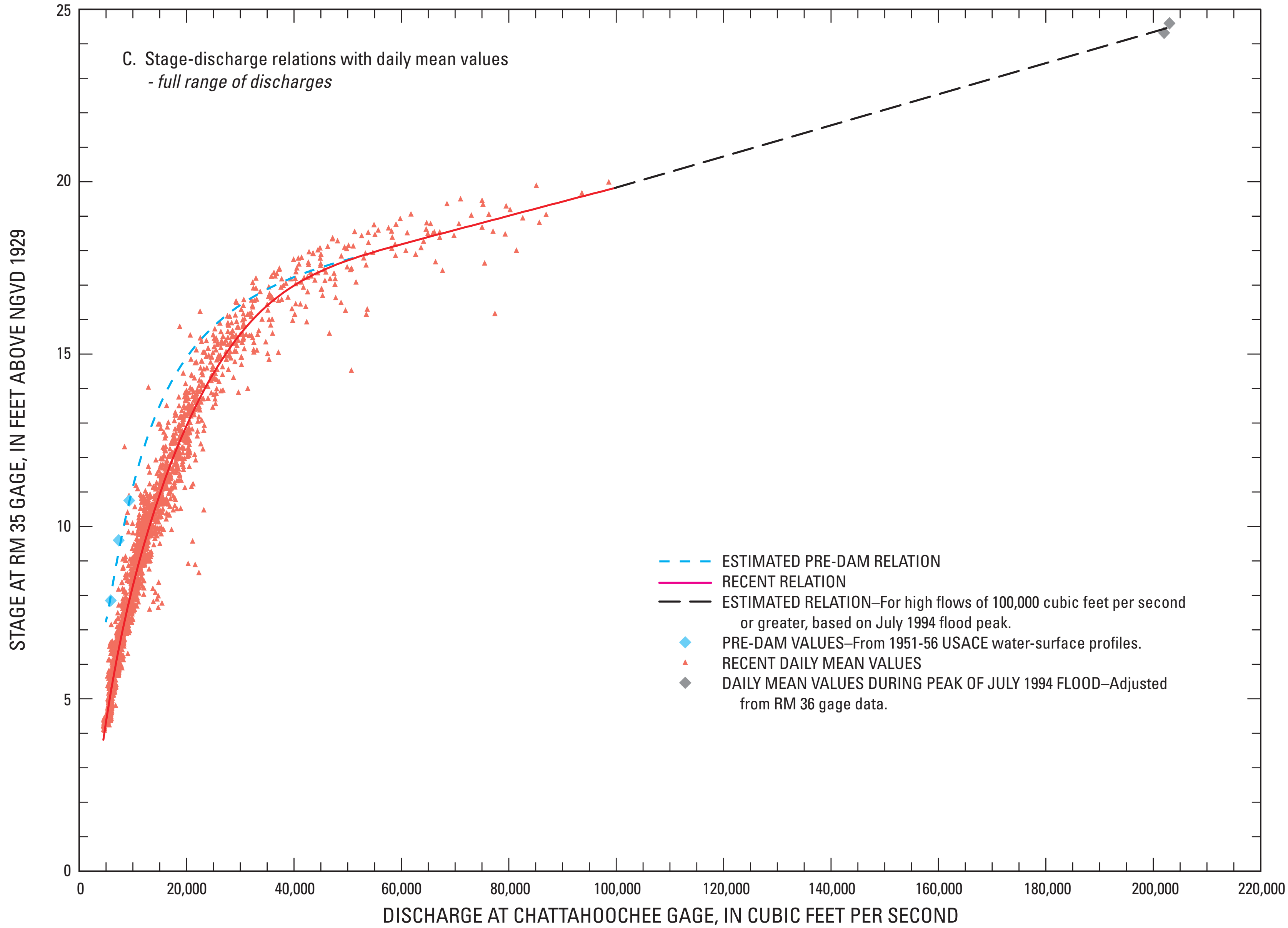
Appendix III. (Continued) Stage at the Wewahitchka streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



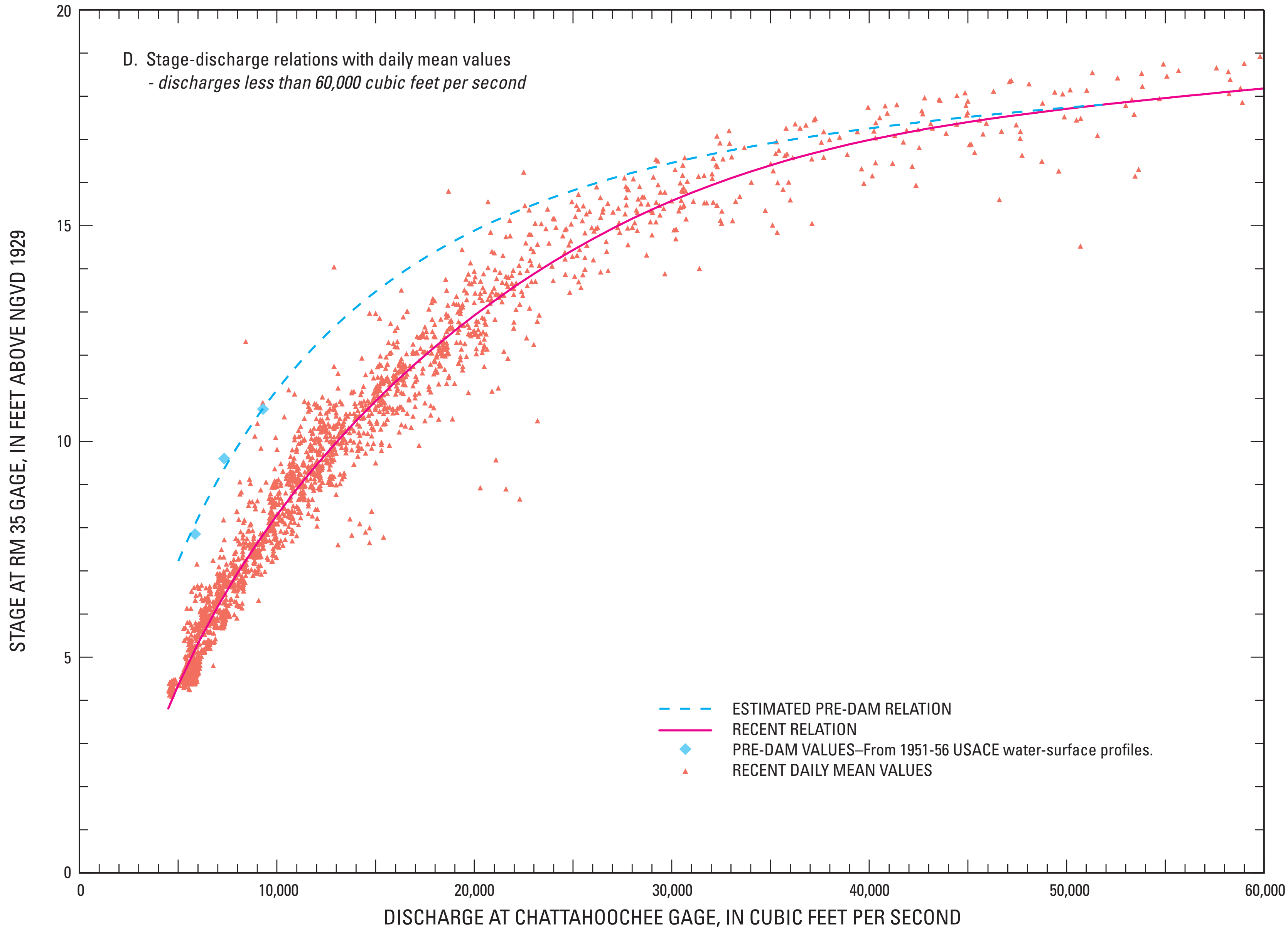
Appendix IV. Stage at the RM 35 streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



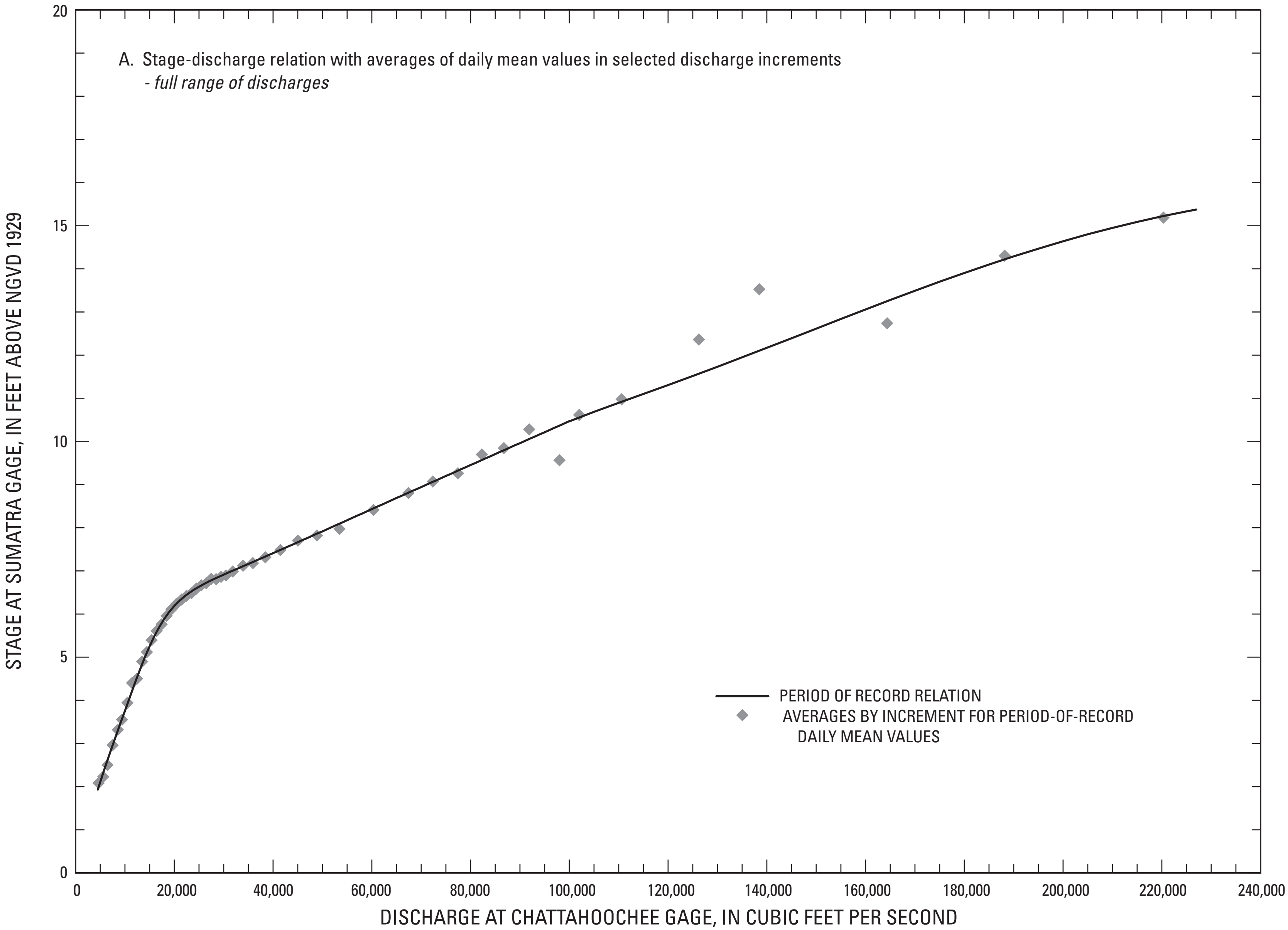
Appendix IV. (Continued) Stage at the RM 35 streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



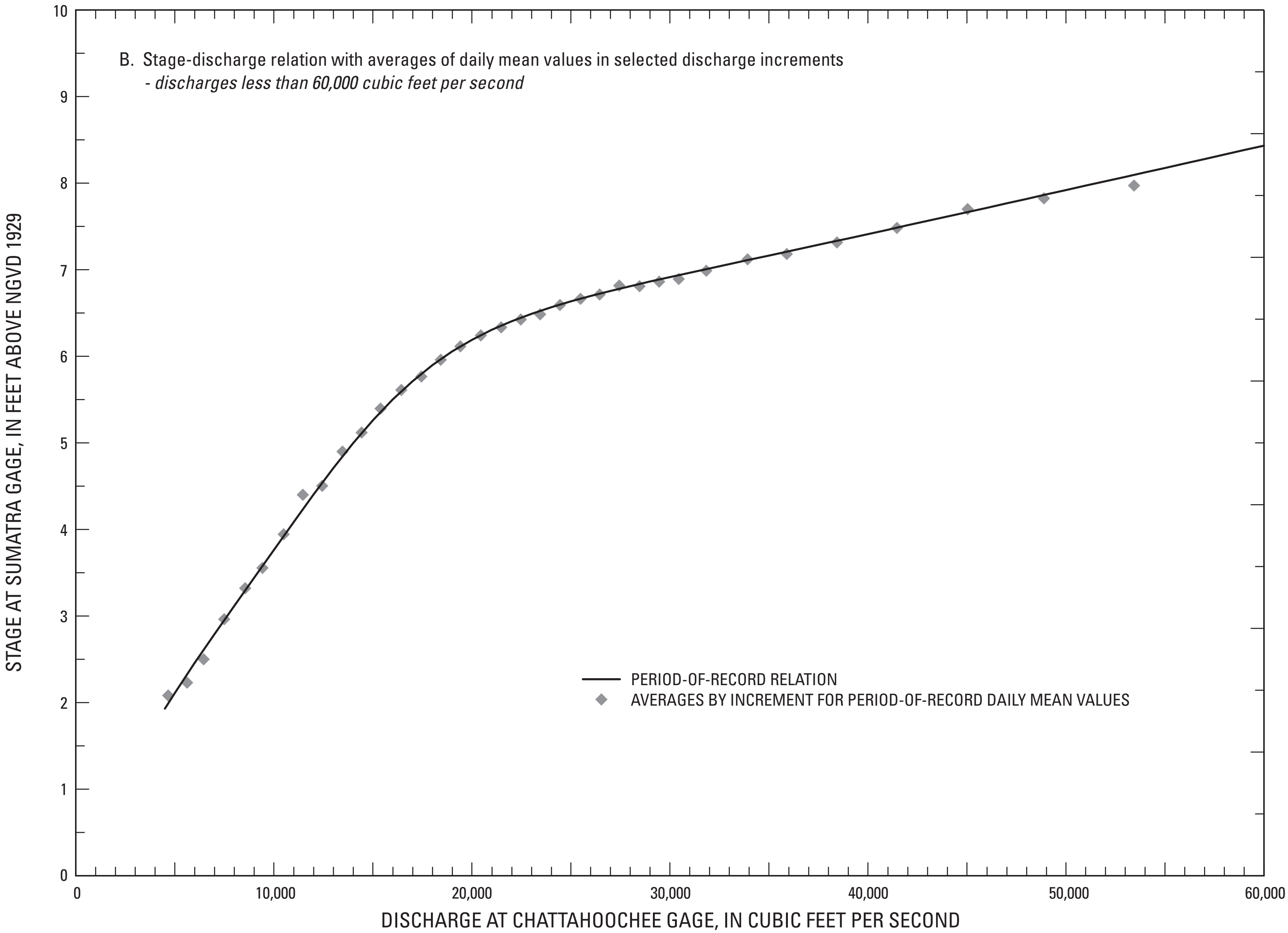
Appendix IV. (Continued) Stage at the RM 35 streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



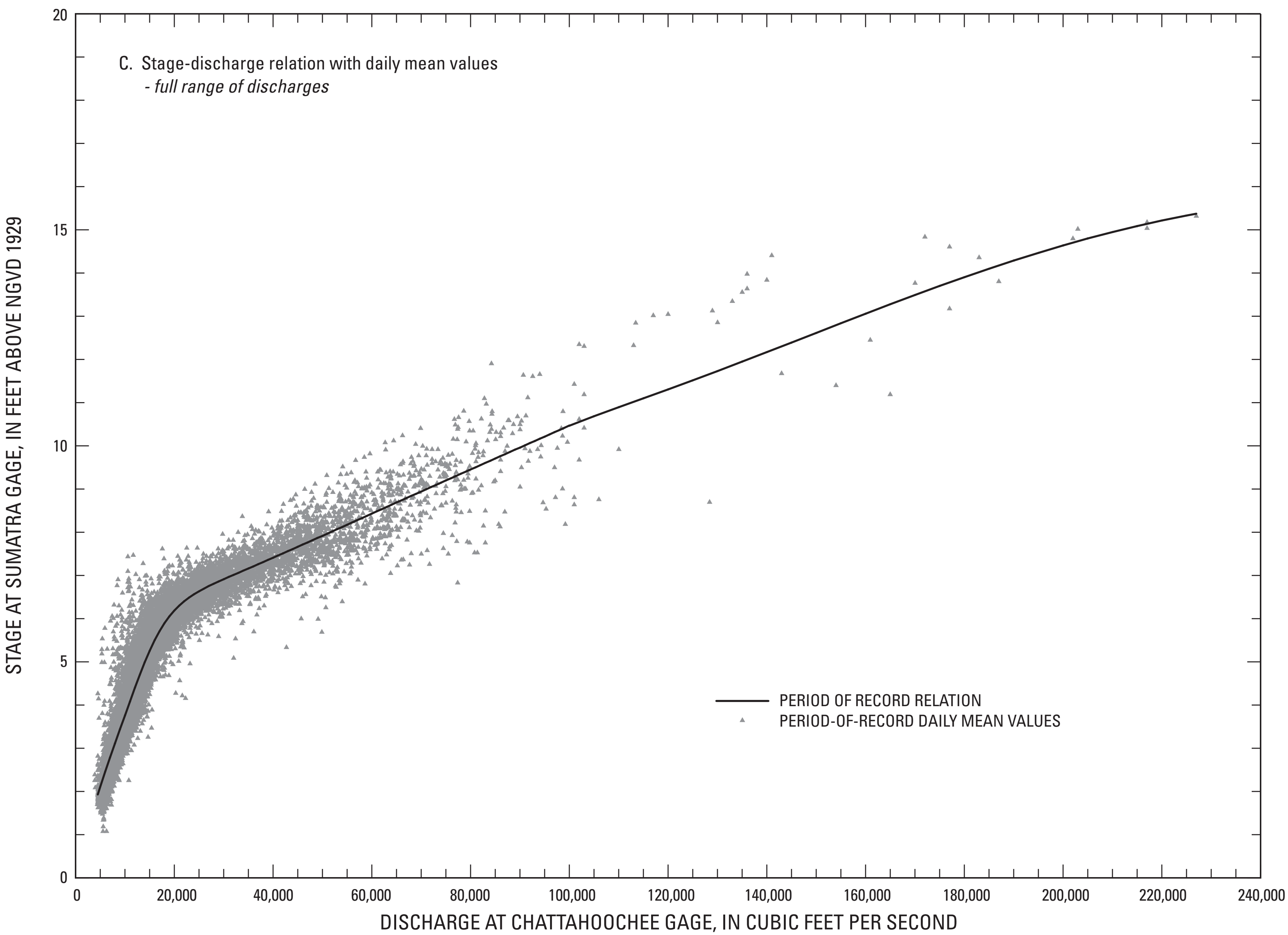
Appendix IV. (Continued) Stage at the RM 35 streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 2 days, as defined in glossary.



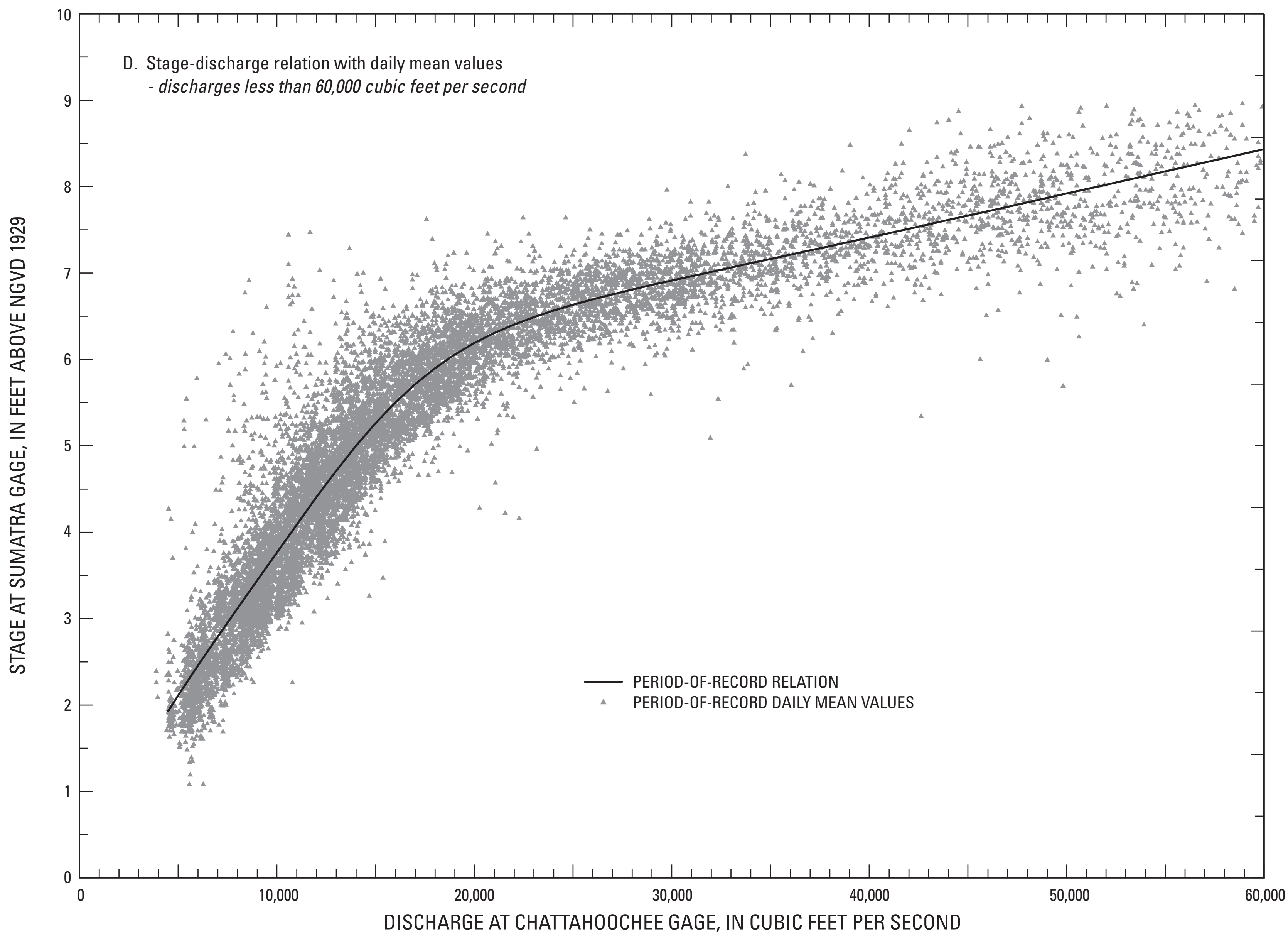
Appendix V. Stage at the Sumatra streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 3 days, as defined in glossary.



Appendix V. (Continued) Stage at the Sumatra streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 3 days, as defined in glossary.



Appendix V. (Continued) Stage at the Sumatra streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 3 days, as defined in glossary.



Appendix V. (Continued) Stage at the Sumatra streamgage in relation to discharge at the Chattahoochee streamgage in the Apalachicola River, Florida. Relations were developed using a lag time of 3 days, as defined in glossary.

Appendix VI. Formulas defining stage-discharge relations developed from long-term streamgage data on the Apalachicola River, Florida.

[Stage-discharge relations developed for this report relate stage at all gages to discharge at Chattahoochee gage using lag times as defined in glossary. A hand-drawn line was fitted through the averages of daily mean values in selected discharge increments (shown in graphs A and B of appendixes I-V). The points defining the hand-drawn line were entered into a curve-fitting software program to generate the formulas shown here. NOTE: Relations were developed only for the specific range of discharges indicated. Symbols used in formulas: y, stage at gage site; x, discharge at Chattahoochee; LN, natural logarithm of; ^, raised to the power of; *, times; /, divided by; SQRT, square root of. ft^3/s, cubic feet per second]

Name of stage-discharge relation	Range of discharges for indicated relation, in ft^3/s	Formula that defines indicated relation (first formula, in bold italics, emphasizes form of equation and depicts coefficients using letters a through h; second formula includes appropriate numeric values for coefficients; other symbols explained in header)
Chattahoochee pre-dam	5,000 to 188,000	***y=(a+cLNx+e(LNx)^2+g(LNx)^3)/(1+bLNx+d(LNx)^2+f(LNx)^3)*** y=(36.46419+-8.759358*LN(x)+ 0.7013277*LN(x)*LN(x)+-0.01857202*(LN(x))^3)/(1+-0.2476923*LN(x)+0.0205087*LN(x)*LN(x)+-0.0005656828*(LN(x))^3)
Chattahoochee recent	5,000 to 188,000	***y=(a+cLNx+e(LNx)^2+g(LNx)^3)/(1+bLNx+d(LNx)^2+f(LNx)^3)*** y=(32.70129+-7.959521*LN(x)+ 0.6462684*LN(x)*LN(x)+-0.01726782*(LN(x))^3)/(1+-0.2506587*LN(x)+0.0210629*LN(x)*LN(x)+-0.0005899609*(LN(x))^3)
Chattahoochee period of record (discharges greater than 188,000 ft^3/s)	188,000 to 291,000	***y=a+bx^(1.5)+cLNx/x^2*** y=71.502+0.000000063368*x*SQRT(x)+-6145800000*LN(x)/(x*x)
Blountstown pre-dam	5,000 to 135,000	***y=(a+cx^(0.5)+ex)/(1+bx^(0.5)+dx+fx^(1.5))*** y=(25.7675+-0.169116*SQRT(x)+0.000707624*x)/ (1+-0.00795382*SQRT(x)+0.0000301019*x+-0.0000000195457*x*SQRT(x))
Blountstown recent	5,000 to 135,000	***y=(a+cx^(0.5)+ex+gx^(1.5))/(1+bx^(0.5)+dx+fx^(1.5))*** y=(16.2468+0.0838415*SQRT(x)+-0.00158704*x+ 0.00000505012*x*SQRT(x))/(1+-0.00602802*SQRT(x)+-0.0000013423*x+0.0000000613884*x*SQRT(x))
Blountstown period of record (discharges greater than 135,000 ft^3/s)	135,000 to 291,000	***y=a+bx+c/x^(0.5)+dLNx/x+e/x*** y=-319.484+0.000164829*x+452543/SQRT(x)+-38552700*LN(x)/x+336092000/x
Wewahitchka pre-dam	5,000 to 65,000	***y=a+b/LNx+c/(LNx)^2+d/(LNx)^3+e/(LNx)^4+f/(LNx)^5*** y=36019.307+-1730956/LN(AI3)+33161881/(LN(AI3))^2+ -316295790/(LN(AI3))^3+1501669600/(LN(AI3))^4+-2839282900/(LN(AI3))^5
Wewahitchka recent	5,000 to 65,000	***y=(a+cx^(0.5)+ex+gx^(1.5))/(1+bx^(0.5)+dx+fx^(1.5))*** y=(-6.04395+0.407601*SQRT(x)+-0.00355355*x+ 0.00000911464*x*SQRT(x))/(1+-0.000205626*SQRT(x)+-0.0000679837*x+0.000000255263*x*SQRT(x))
Wewahitchka period of record (discharges greater than 65,000 ft^3/s	65,000 to 203,000	***y=(a+cLNx+e(LNx)^2+g(LNx)^3)/(1+bLNx+d(LNx)^2+f(LNx)^3)*** y=(14.23322839+-3.115040943*LN(x)+0.2199988079*LN(x)*LN(x)+-0.004930216433*(LN(x))^3)/ (1+-0.2360226768*LN(x)+0.0184113499*LN(x)*LN(x)+-0.0004736537139*(LN(x))^3)
RM 35 estimated pre-dam	5,000 to 52,000	***y=a+bx+cx^2+dx^2lnx+ex^(2.5)*** y=-0.041366+0.0021784*x+-0.00000072654*x*x+0.000000071414*x*x*LN(x)+-0.0000000003694*x*x*SQRT(x)
RM 35 recent	5,000 to 100,000	***y=(a+cx^(0.5)+ex+gx^(1.5))/(1+bx^(0.5)+dx+fx^(1.5))*** y=(-9.0383+0.28127*SQRT(x)+-0.0018663*x+ 0.0000042952*x*SQRT(x))/(1+-0.0033541*SQRT(x)+-0.000020966*x+0.00000011465*x*SQRT(x))
RM 35 estimated high flow	100,000 to 203,000	***y=a+bx*** y=15.307+0.000045139*x
Sumatra period of record (discharges less than 100,000 ft^3/s)	5,000 to 100,000	***y=(a+cx^(0.5)+ex+gx^(1.5))/(1+bx^(0.5)+dx+fx^(1.5)+hx^2)*** y=(-2.03362+0.0956435*SQRT(x)+-0.00105982*x+0.00000394975*x*SQRT(x))/ (1+-0.00806881*SQRT(x)+-0.0000393046*x+0.000000489282*x*SQRT(x)+-0.000000000548872*x*x)
Sumatra period of record (discharges greater than 100,000 ft^3/s)	100,000 to 227,000	***y=a+bx+c/LNx+d/x+e/x^(1.5)*** y=2317.753+-0.0003114299*x+-29250.1/LN(x)+42348710/x+-5028014000/(x*SQRT(x))

Appendix VII. Formulas used to interpolate stage between gages in relation to discharge at the Chattahoochee gage in the Apalachicola River, Florida.

Acronyms used in formulas

Location-related terms:

BGS (between-gage site for which interpolated stage-discharge relation is being calculated)

BGSStg (stage at BGS)

USG (closest upstream gage to between-gage site)

USGStg (stage at USG derived from stage-discharge relations based on long-term gage records)

DSG (closest downstream gage to between-gage site)

DSGStg (stage at DSG derived from stage-discharge relations based on long-term gage records)

RM (river mile)

Terms related to slope proportions:

WSP (water-surface profile)

WSPP (slope proportion calculated from stage in WSP)

WSPPStg (stage calculated using WSPP)

DISTP (slope proportion based on straight-line RM distance)

DISTPStg (stage calculated using DISTP)

Other terms:

JP (joining point flow)

JPS (stage at JP)

AVGP&R (average of pre-dam and recent)

DIFF9300 (Difference between DISTPStg and WSPPStg at 9,300 ft^3/s)

A. Calculation of BGSStg in low flow range (Chattahoochee flows of 9,300 ft^3/s or less)

Step 1.

Pre-dam WSPP for BGS =
((USGStg at 9,300 ft^3/s) - (BGSStg at 9,300 ft^3/s derived from 1956 WSP)) /
((USGStg at 9,300 ft^3/s) - (DSGStg at 9,300 ft^3/s))

Step 2.

Recent WSPP for BGS =
((USGStg at 9,300 ft^3/s) - (BGSStg at 9,300 ft^3/s derived from 1995 WSP)) /
((USGStg at 9,300 ft^3/s) - (DSGStg at 9,300 ft^3/s))

Step 3 (final step for pre-dam stage).

Pre-dam WSPPStg at BGS for given discharge = (pre-dam USGStg at given discharge) -
((pre-dam WSPP for BGS) x ((pre-dam USGStg at given discharge) - (pre-dam DSGStg at given discharge)))

Step 4 (final step for recent stage).

Recent WSPPStg at BGS for given discharge = (recent USGStg at given discharge) -
((recent WSPP for BGS) x ((recent USGStg at given discharge) - (recent DSGStg at given discharge)))

B. Calculation of BGSStg in high flow range (Chattahoochee flows greater than or equal to JP)

Step 1.

DISTP for BGS = ((RM of USG) - (RM of BGS)) / ((RM of USG) - (RM of DSG))

Step 2.

Pre-dam DISTPStg at BGS for given discharge = (pre-dam USGStg at given discharge) -
((DISTP at BGS) x ((pre-dam USGStg at given discharge) - (pre-dam DSGStg at given discharge)))

Step 3.

Recent DISTPStg at BGS for given discharge = (recent USGStg at given discharge) -
((DISTP at BGS) x ((recent USGStg at given discharge) - (recent DSGStg at given discharge)))

Step 4 (final step).

AVP&R DISTPStg at BGS for given discharge =
((pre-dam DISTPStg at BGS for given discharge) + (recent DISTPStg at BGS for given discharge)) / 2

Appendix VII. (Continued) Formulas used to interpolate stage between gages in relation to discharge at the Chattahoochee gage in the Apalachicola River, Florida.

C. Calculation of BGSStg in intermediate flow range (Chattahoochee flows between 9,300 ft^3/s and JP)

Step 1. (same as B.1.)

DISTP for BGS = ((RM of USG) - (RM of BGS)) / ((RM of USG) - (RM of DSG))

Step 2.

Pre-dam DISTPStg at BGS for 9,300 ft^3/s = (pre-dam USGStg at 9,300 ft^3/s) -
((DISTP at BGS) x ((pre-dam USGStg at 9,300 ft^3/s) - (pre-dam DSGStg at 9,300 ft^3/s)))

Step 3.

Recent DISTPStg at BGS for 9,300 ft^3/s = (recent USGStg at 9,300 ft^3/s) -
((DISTP at BGS) x ((recent USGStg at 9,300 ft^3/s) - (recent DSGStg at 9,300 ft^3/s)))

Step 4.

Pre-dam DIFF9300 at BGS =
(pre-dam DISTPStg at BGS for 9,300 ft^3/s) - (pre-dam BGSStg for 9,300 ft^3/s derived from 1956 WSP)

Step 5.

Recent DIFF9300 at BGS =
(recent DISTPStg at BGS for 9,300 ft^3/s) - (recent BGSStg for 9,300 ft^3/s derived from 1995 WSP)

Step 6.

Pre-dam JPS at BGS = (pre-dam JPS at USG) - ((DISTP at BGS) x ((pre-dam JPS at USG) - (pre-dam JPS at DSG)))

Step 7.

Recent JPS at BGS = (recent JPS at USG) - ((DISTP at BGS) x ((recent JPS at USG) - (recent JPS at DSG)))

Step 8.

AVGP&R JPS at BGS = ((pre-dam JPS at BGS) + (recent JPS at BGS)) / 2

Step 9.

JP for BGS = (JP at USG) - ((DISTP for BGS) x ((JP at USG) - (JP at DSG)))

NOTE: Our calculations were made for selected discharge increments. Therefore, this step includes a process similar to rounding, in which a lookup formula selects the largest discharge increment that is less than or equal to the resulting discharge from this formula

Step 10. (final step for pre-dam stage)

Pre-dam BGSStg for given discharge (smoothed from pre-dam BGSStg at 9,300 ft^3/s from 1956 WSP to AVGP&R JPS) =
pre-dam DISTPStg at BGS for given discharge -
(((JP for BGS - given discharge)/(JP for BGS - 9300)) x (pre-dam DIFF9300 at BGS)) -
(((given discharge - 9300)/(JP for BGS - 9300)) x ((pre-dam JPS at BGS) - (AVGP&R JPS at BGS)))

Step 11. (final step for recent stage)

Recent BGSStg for given discharge (smoothed from recent BGSStg at 9,300 ft^3/s from 1995 WSP to AVGP&R JPS) =
recent DISTPStg at BGS for given discharge -
(((JP for BGS - given discharge)/(JP for BGS - 9300)) x (recent DIFF9300 at BGS)) -
(((given discharge - 9300)/(JP for BGS - 9300)) x ((recent JPS at BGS) - (AVGP&R JPS at BGS)))

NOTE: A minor adjustment was made in the 1995 WSP data in a 1.5 rm reach from rm 22.2 to 20.7. In that reach (just upstream of Sumatra gage), stage in the 1956 WSP was slightly less than the stage in the 1995 WSP. The differences ranged from 0.02 to 0.11 feet. At the Sumatra gage, both the 1956 and 1995 WSP's were higher (by about 0.3 or 0.4 ft) than the stage at 9,300 ft^3/s that was determined from long-term gage data. Because the 1956 water-surface profile more closely matched the long-term gage data, it was assumed to be more accurate at that location, and 1995 WSP data were adjusted to match the 1956 values in this 1.5 rm reach.

Appendix VIII. Description of attached digital files of stage-discharge relations at all streamgages and between gage sites on the Apalachicola River, Florida.

A. Annotated example of contents of contents of attached digital files.

[Tables below show example data from pre-dam files for two subreaches. Relations were developed using lag times as defined in glossary. rm, river mile; Chatt, Chattahoochee; Blount, Blountstown; Q, discharge; ft^3/s, cubic feet per second. Separate pre-dam and recent files were created for each of the following subreaches (file size in parentheses includes some duplicate relations at gages)]

Upper1 - rm 105.7-91.7 (141 relations with 506 points each)
Upper2 - rm 91.6-77.5 (142 relations with 506 points each)
Middle1 - rm 77.5-59.7 (179 relations with 488 points each)
Middle2 - rm 59.6-41.8 (179 relations with 488 points each)
Lower1 - rm 41.8-35.3 (66 relations with 488 points each)
Lower2 - rm 35.3-20.6 (148 relations with 488 points each)

ChattQ, in ft^3/s

Column headings are river miles at 0.1 increments

The first and/or last relation in each reach file is at a gage

Discharge increments, in ft^3/s (total of 506 discharge values in upper reach files): 100; 500; 1,000; 5,000

Upper1_Pre-dam

ChattQ 105.7	Chatt gage 105.7	105.6	. . .	91.8	91.7	Chatt Q
4,500						4,500
4,600						4,600
4,700						4,700
4,800						4,800
4,900						4,900
5,000	44.07	43.41	. . .	36.76	36.72	5,000
5,100	44.13	43.48	. . .	36.83	36.79	5,100
⋮	⋮	⋮		⋮	⋮	⋮
29,900	55.13	54.56	. . .	48.25	48.22	29,900
30,000	55.17	54.59	. . .	48.29	48.25	30,000
30,500	55.34	54.76	. . .	48.45	48.41	30,500
⋮	⋮	⋮		⋮	⋮	⋮
99,500	67.99	67.62	. . .	58.44	58.38	99,500
100,000	68.03	67.67	. . .	58.47	58.41	100,000
101,000	68.13	67.76	. . .	58.54	58.48	101,000
⋮	⋮	⋮		⋮	⋮	⋮
187,000	74.45	74.37	. . .	63.64	63.56	187,000
188,000	74.52	74.45	. . .	63.70	63.62	188,000
190,000	74.68	74.60	. . .	63.81	63.73	190,000
195,000	74.99	74.91	. . .	64.05	63.98	195,000
⋮	⋮	⋮		⋮	⋮	⋮
285,000	80.19	80.11	. . .	67.97	67.88	285,000
290,000	80.48	80.39	. . .	68.18	68.09	290,000
291,000	80.54	80.45	. . .	68.22	68.14	291,000

Relations start at 5,000 ft^3/s for pre-dam and 4,500 ft^3/s for recent

Upper1 stops here and Upper2 picks up 0.1 rm downstream

Values in body of table are stage, in feet

ChattQ repeated at end of each file to accommodate EXCEL's lookup formula

Upper2_Pre-dam

ChattQ 105.7	91.6	91.5	. . .	77.6	Blount gage 77.5	Chatt Q
4,500						4,500
4,600						4,600
4,700						4,700
4,800						4,800
4,900						4,900
5,000	36.68	36.64	. . .	29.93	29.85	5,000
5,100	36.75	36.71	. . .	29.99	29.91	5,100
⋮	⋮	⋮		⋮	⋮	⋮
29,900	48.18	48.14	. . .	41.81	41.74	29,900
30,000	48.21	48.17	. . .	41.84	41.77	30,000
30,500	48.38	48.34	. . .	42.00	41.93	30,500
⋮	⋮	⋮		⋮	⋮	⋮
99,500	58.32	58.25	. . .	49.16	49.08	99,500
100,000	58.35	58.29	. . .	49.18	49.10	100,000
101,000	58.42	58.35	. . .	49.22	49.14	101,000
⋮	⋮	⋮		⋮	⋮	⋮
187,000	63.48	63.41	. . .	52.60	52.52	187,000
188,000	63.54	63.47	. . .	52.64	52.56	188,000
190,000	63.66	63.58	. . .	52.71	52.63	190,000
195,000	63.90	63.82	. . .	52.88	52.80	195,000
⋮	⋮	⋮		⋮	⋮	⋮
285,000	67.79	67.71	. . .	55.48	55.40	285,000
290,000	68.00	67.92	. . .	55.62	55.53	290,000
291,000	68.05	67.96	. . .	55.65	55.56	291,000

Blank spaces from 4,500 to 4,900 ft^3/s in pre-dam file allow for row-to-row comparisons with recent file.

B. Organization of files in EXCEL format (1 file with 12 worksheets named as follows)

1. Upper1_Pre-dam
2. Upper1_Recent
3. Upper2_Pre-dam
4. Upper2_Recent
5. Middle1_Pre-dam
6. Middle1_Recent
7. Middle2_Pre-dam
8. Middle2_Recent
9. Lower1_Pre-dam
10. Lower1_Recent
11. Lower2_Pre-dam
12. Lower2_Recent

C. Organization of files in flat file format (12 separate files named as follows)

1. Upper1_Pre-dam
2. Upper1_Recent
3. Upper2_Pre-dam
4. Upper2_Recent
5. Middle1_Pre-dam
6. Middle1_Recent
7. Middle2_Pre-dam
8. Middle2_Recent
9. Lower1_Pre-dam
10. Lower1_Recent
11. Lower2_Pre-dam
12. Lower2_Recent

NOTE: Pre-dam and recent relations in this appendix include values above the joining point that were derived from period-of-record data. Thus all points above the joining point flow in each pair of pre-dam and recent files in this appendix give exactly the same stage.

Appendix IX. Water-level decline, at various discharges, that occurred at streamgages and within reaches along the nontidal Apalachicola River, Florida, as a result of long-term changes in stage-discharge relations from 1954 to 2004.

[Data in this table are the same as shown in figure 17. Physical changes in the river channel caused the changes in stage-discharge relations; thus, the decline is greatest at low discharges when all streamflow is contained within the channel, and least at high discharges when much of the runoff is flowing over the floodplain. ft^3/s, cubic feet per second]

Selected discharge, in ft^3/s	Change in water level, in feet, at selected discharge								
	At gages					Averaged by reach			
	Chatta-hoochee	Blounts-town	Wewa-hitchka	RM 35	Sumatra	Upper reach	Middle reach	Nontidal lower reach	Entire nontidal river
5,000	-4.8	-2.6	-1.8	-2.9	0.0	-3.4	-1.9	-1.5	-2.3
10,000	-4.8	-1.8	-1.5	-2.9	0.0	-3.0	-1.3	-1.4	-1.9
15,000	-4.6	-1.7	-1.7	-2.6	0.0	-2.9	-1.3	-1.3	-1.8
20,000	-4.5	-1.8	-1.5	-2.0	0.0	-2.9	-1.3	-1.0	-1.8
25,000	-4.4	-1.8	-1.1	-1.4	0.0	-2.8	-1.1	-0.7	-1.6
30,000	-4.3	-1.7	-0.8	-0.9	0.0	-2.8	-0.9	-0.4	-1.4
40,000	-4.2	-1.5	-0.4	-0.2	0.0	-2.6	-0.6	-0.1	-1.1
50,000	-4.1	-1.3	-0.2	0.0	0.0	-2.4	-0.5	0.0	-1.0
60,000	-3.9	-1.2	-0.1	0.0	0.0	-2.3	-0.4	0.0	-0.9
80,000	-3.4	-0.9	0.0	0.0	0.0	-1.9	-0.2	0.0	-0.7
100,000	-2.7	-0.5	0.0	0.0	0.0	-1.4	-0.1	0.0	-0.5
120,000	-2.1	-0.2	0.0	0.0	0.0	-0.9	0.0	0.0	-0.3
150,000	-1.1	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	-0.1
180,000	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix X. Equivalent-stage discharges, corresponding percent exceedance values, and approximate decreases in percent duration of inundation, at various discharges, calculated at gages and within reaches along the nontidal Apalachicola River, Florida, as a result of long-term changes in stage-discharge relations from 1954 to 2004.

[This is a three-part table with the first two parts (A and B) providing data upon which the final data in part C are based. Data in part C are the same as shown in figure 19. Equivalent-stage discharges are provided in part A and corresponding percent exceedance values for those discharges are listed in part B. Steps for determining equivalent-stage discharge are illustrated in figure 13. Percent exceedance is the percent of time a specified discharge is equaled or exceeded during a given time period. Percent duration of inundation is numerically equivalent to percent exceedance in this report (see discussion in text). The time period used to calculate exceedance values in part B and approximate decreases in duration of inundation in part C is the recent period 1995-2004 (October 1, 1994 – September 30, 2004). ft^3/s, cubic feet per second]

A. Equivalent-stage discharge that would be required in the recent period to replicate pre-dam stage

Selected discharge, in ft^3/s *This is the discharge in step 1 of figure 13 used to determine pre-dam stage*	Equivalent-stage discharge, in ft^3/s *This is the discharge in step 4 of figure 13 that would be required in the recent period to replicate the pre-dam stage of a selected discharge.*								
	At gages					Averaged by reach			
	Chatta-hoochee	Blounts-town	Wewa-hitchka	RM 35	Sumatra	Upper reach	Middle reach	Nontidal lower reach	Entire nontidal river
5,000	13,900	8,200	7,100	8,400	5,000	10,300	7,100	7,000	8,100
10,000	19,900	13,000	13,000	15,500	10,000	15,700	12,300	12,800	13,600
15,000	25,700	18,500	20,000	21,700	15,000	21,300	18,200	18,600	19,400
20,000	31,500	24,200	26,100	26,900	20,000	27,000	23,900	24,000	24,900
25,000	37,500	29,900	31,500	31,500	25,000	32,700	29,100	28,500	30,100
30,000	43,500	35,500	36,500	35,000	30,000	38,600	34,100	32,600	35,200
40,000	56,500	48,000	46,500	42,500	40,000	51,300	44,400	41,400	45,900
50,000	70,000	62,000	54,000	50,500	50,000	64,700	54,700	50,500	57,000
60,000	82,500	75,500	61,500	60,000	60,000	77,400	64,500	60,000	67,700
80,000	105,000	94,500	80,000	80,000	80,000	98,000	83,400	80,000	87,400
100,000	124,000	109,000	100,000	100,000	100,000	114,300	101,400	100,000	105,300
120,000	139,000	123,000	120,000	120,000	120,000	129,000	120,000	120,000	123,000
150,000	161,000	150,000	150,000	150,000	150,000	153,000	150,000	150,000	151,000
180,000	182,000	180,000	180,000	180,000	180,000	179,000	180,000	180,000	180,000

B. Percent exceedance in recent period (1995-2004) for selected and equivalent-stage discharge values

Selected discharge, in ft^3/s	Percent exceed-ance for selected discharge	Percent exceedance for equivalent-stage discharge listed in part A								
		At gages					Averaged by reach			
		Chatta-hoochee	Blounts-town	Wewa-hitchka	RM 35	Sumatra	Upper reach	Middle reach	Nontidal lower reach	Entire nontidal river
5,000	99.1	50.6	78.5	84.7	77.5	99.1	67.5	84.6	85.6	78.7
10,000	68.6	29.3	55.3	55.3	42.8	68.6	41.9	59.2	56.5	52.8
15,000	45.3	20.6	33.7	29.0	25.7	45.3	26.4	34.5	33.1	30.7
20,000	29.0	14.1	22.0	20.1	19.2	29.0	19.1	22.4	22.3	21.4
25,000	21.4	10.9	16.0	14.1	14.1	21.4	13.2	16.8	17.4	15.8
30,000	15.9	8.6	11.9	11.4	12.3	15.9	10.5	12.6	13.2	12.2
40,000	10.2	4.3	6.8	7.3	9.0	10.2	5.7	8.3	9.5	7.6
50,000	6.2	1.9	3.3	4.9	6.0	6.2	2.6	4.7	6.0	4.2
60,000	3.7	1.0	1.5	3.5	3.7	3.7	1.3	2.6	3.7	2.2
80,000	1.1	0.3	0.5	1.1	1.1	1.1	0.4	0.9	1.1	0.8
100,000	0.4	0.2	0.3	0.4	0.4	0.4	0.2	0.3	0.4	0.3
120,000	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
150,000	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
180,000	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Appendix X. (Continued) Equivalent-stage discharges, corresponding percent exceedance values, and approximate decreases in percent duration of inundation, at various discharges, calculated at gages and within reaches along the nontidal Apalachicola River, Florida, as a result of long-term changes in stage-discharge relations from 1954 to 2004.

[This is a three-part table with the first two parts (A and B) providing data upon which the final data in part C are based. Data in part C are the same as shown in figure 19. Equivalent-stage discharges are provided in part A and corresponding percent exceedance values for those discharges are listed in part B. Steps for determining equivalent-stage discharge are illustrated in figure 13. Percent exceedance is the percent of time a specified discharge is equaled or exceeded during a given time period. Percent duration of inundation is numerically equivalent to percent exceedance in this report (see discussion in text). The time period used to calculate exceedance values in part B and approximate decreases in duration of inundation in part C is the recent period 1995-2004 (October 1, 1994 – September 30, 2004). ft^3/s, cubic feet per second]

C. Approximate decrease in percent duration of inundation as a result of long-term changes in stage-discharge relations

Selected discharge, in ft^3/s	Percent exceedance for selected discharge	Approximate change in percent duration of inundation (Percent exceedance for equivalent-stage discharge minus percent exceedance for selected discharge)								
		At gages					Averaged by reach			
		Chattahoochee	Blountstown	Wewahitchka	RM 35	Sumatra	Upper reach	Middle reach	Nontidal lower reach	Entire nontidal river
5,000	99.1	-48.5	-20.6	-14.4	-21.6	0.0	-31.6	-14.4	-13.5	-20.4
10,000	68.6	-39.3	-13.3	-13.3	-25.8	0.0	-26.7	-9.4	-12.1	-15.8
15,000	45.3	-24.7	-11.6	-16.3	-19.6	0.0	-18.9	-10.8	-12.2	-14.6
20,000	29.0	-14.9	-7.0	-8.9	-9.8	0.0	-9.9	-6.6	-6.7	-7.6
25,000	21.4	-10.4	-5.4	-7.3	-7.3	0.0	-8.2	-4.5	-3.9	-5.6
30,000	15.9	-7.3	-4.0	-4.5	-3.6	0.0	-5.4	-3.3	-2.7	-3.7
40,000	10.2	-5.9	-3.4	-2.8	-1.1	0.0	-4.4	-1.8	-0.7	-2.5
50,000	6.2	-4.3	-2.8	-1.3	-0.2	0.0	-3.6	-1.5	-0.2	-2.0
60,000	3.7	-2.7	-2.2	-0.2	0.0	0.0	-2.3	-1.1	0.0	-1.5
80,000	1.1	-0.9	-0.7	0.0	0.0	0.0	-0.7	-0.2	0.0	-0.4
100,000	0.4	-0.2	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1
120,000	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150,000	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180,000	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0