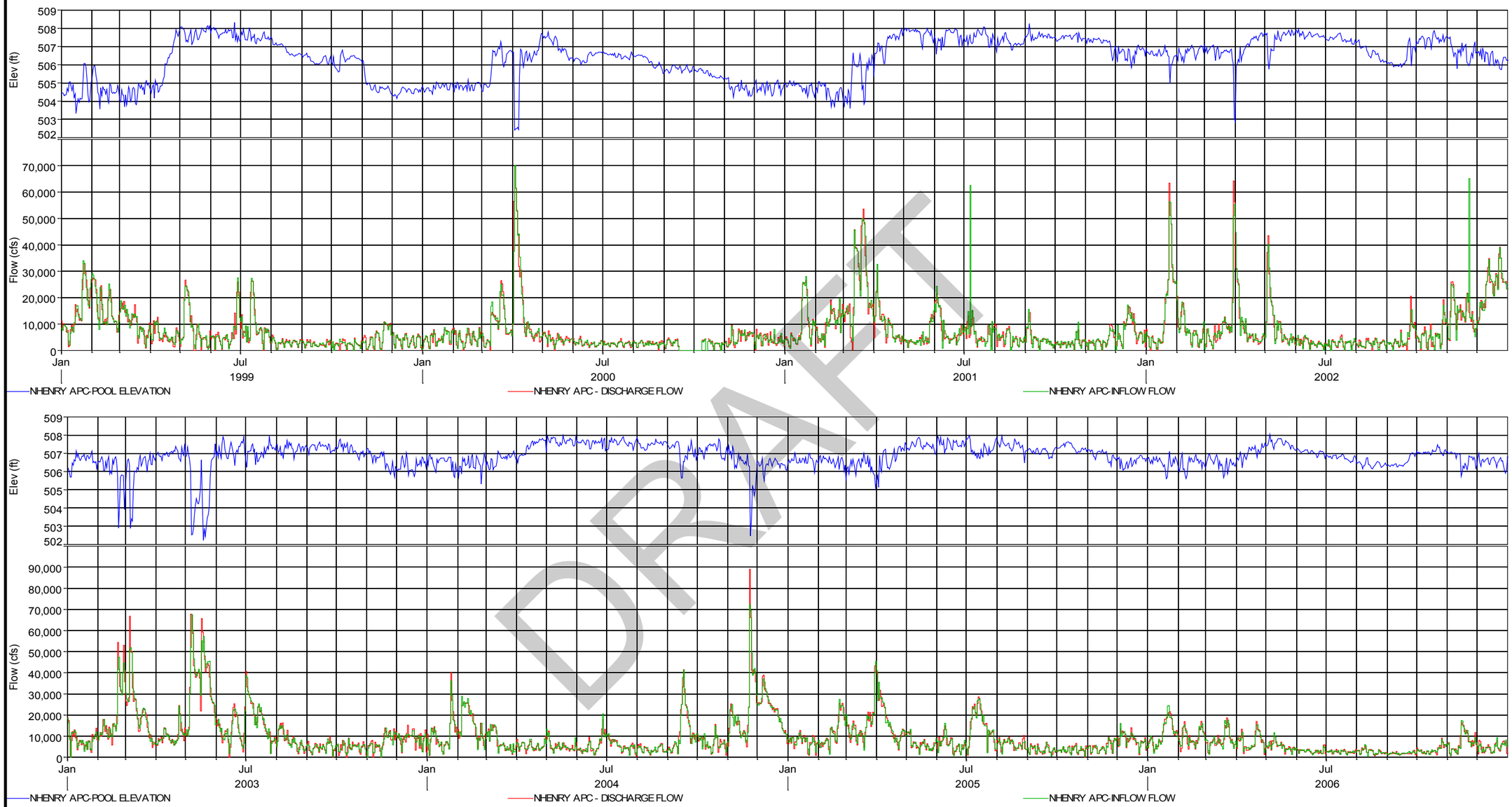

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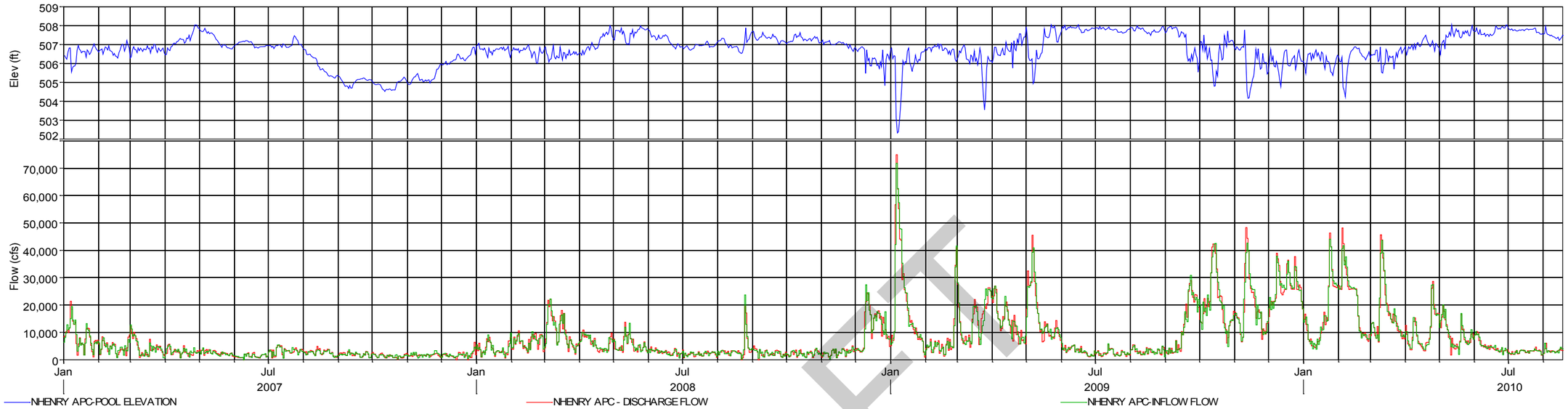
ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

INFLOW-OUTFLOW-POOL HYDROGRAPHS



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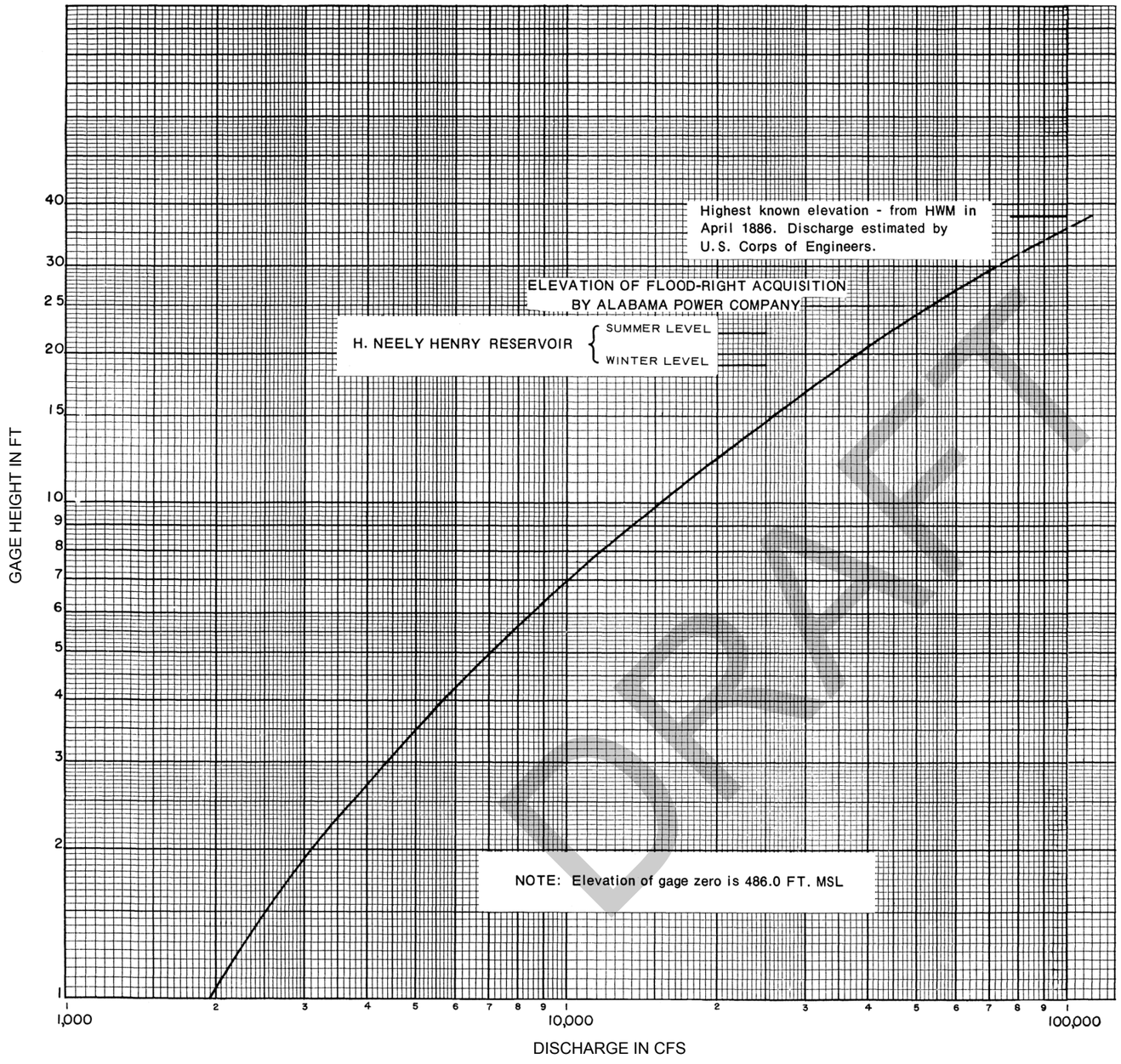
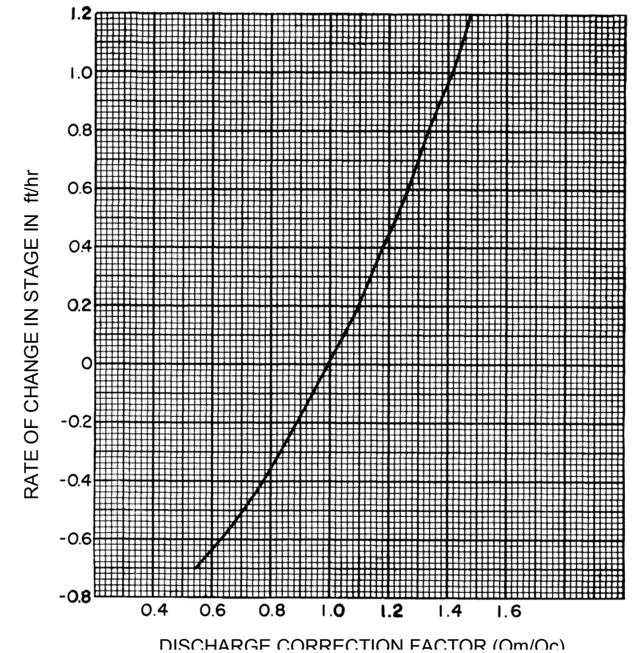
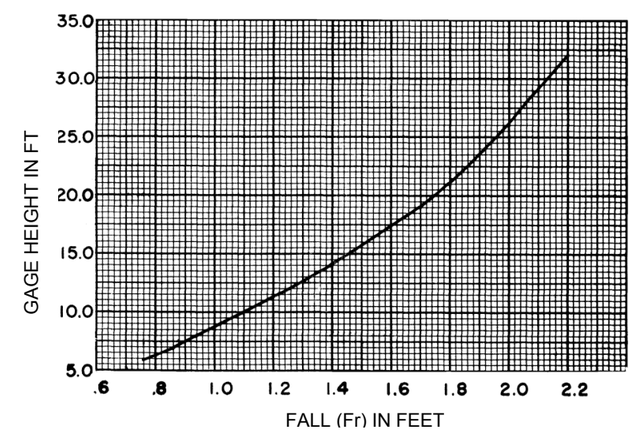
ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

INFLOW-OUTFLOW-POOL HYDROGRAPHS







Note: Due to backwater effects caused by tributary inflow below the gage, discharge at this station is determined as follows:

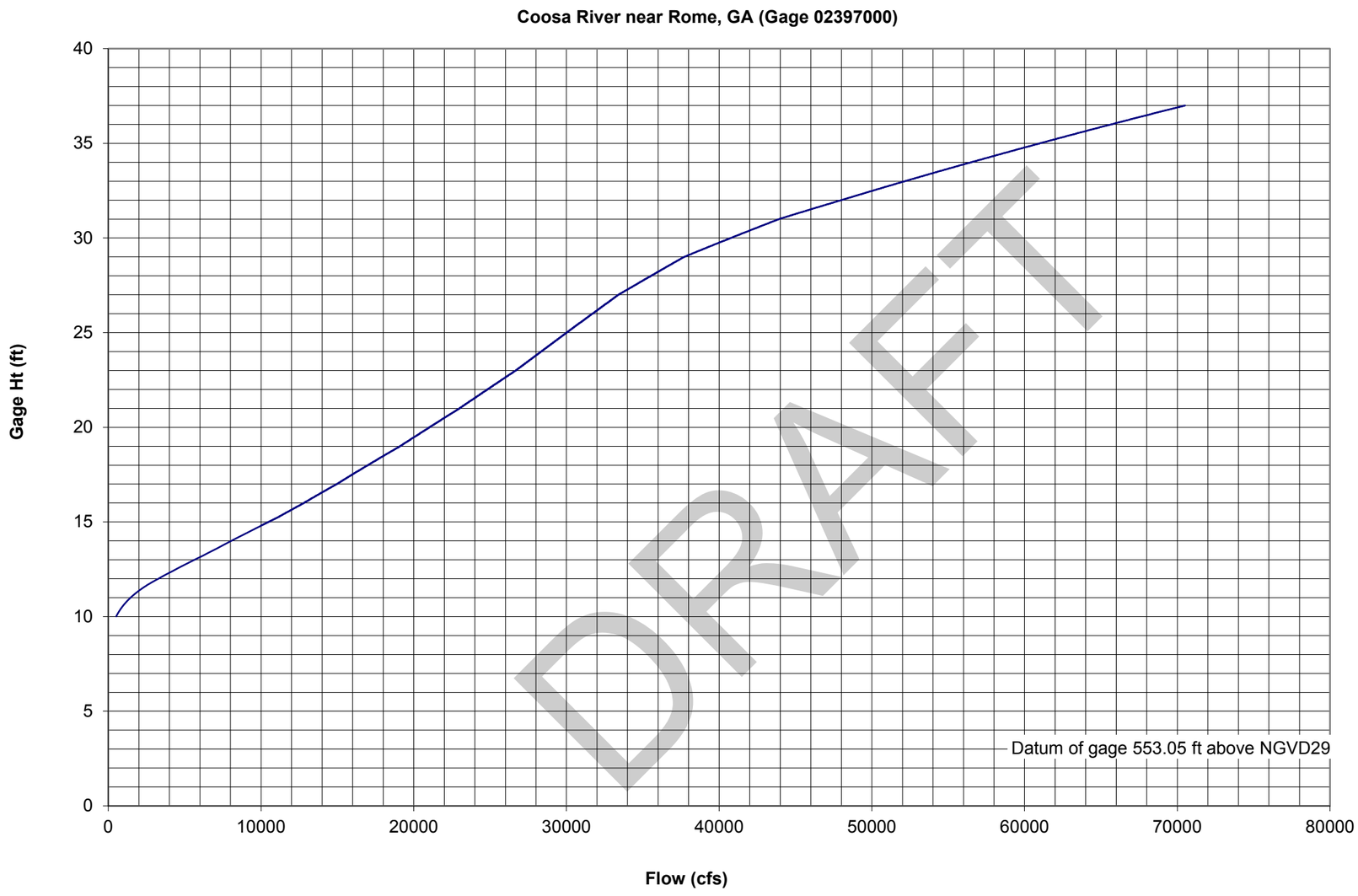
1. DISCHARGE LESS THAN 15,000 cfs --- If the rate of change in stage is less than 0.07 ft/hr, read the discharge directly from the rating curve. If the rate of change is 0.07 ft/hr or greater, multiply the value taken from the rating curve by the discharge correction factor from the Rate of change curve.

2. DISCHARGE GREATER THAN 15,000 cfs ---- Use the formula, Q=(F/Fr)^0.5 * Qc where F = Fall in feet between Alabama Power Co steam plant gage and the Gadsden gage.
   Fr = Fall from the Fall Curve
   Qc = Discharge from the rating curve

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

RATING CURVE FOR COOSA RIVER AT GADSDEN, AL



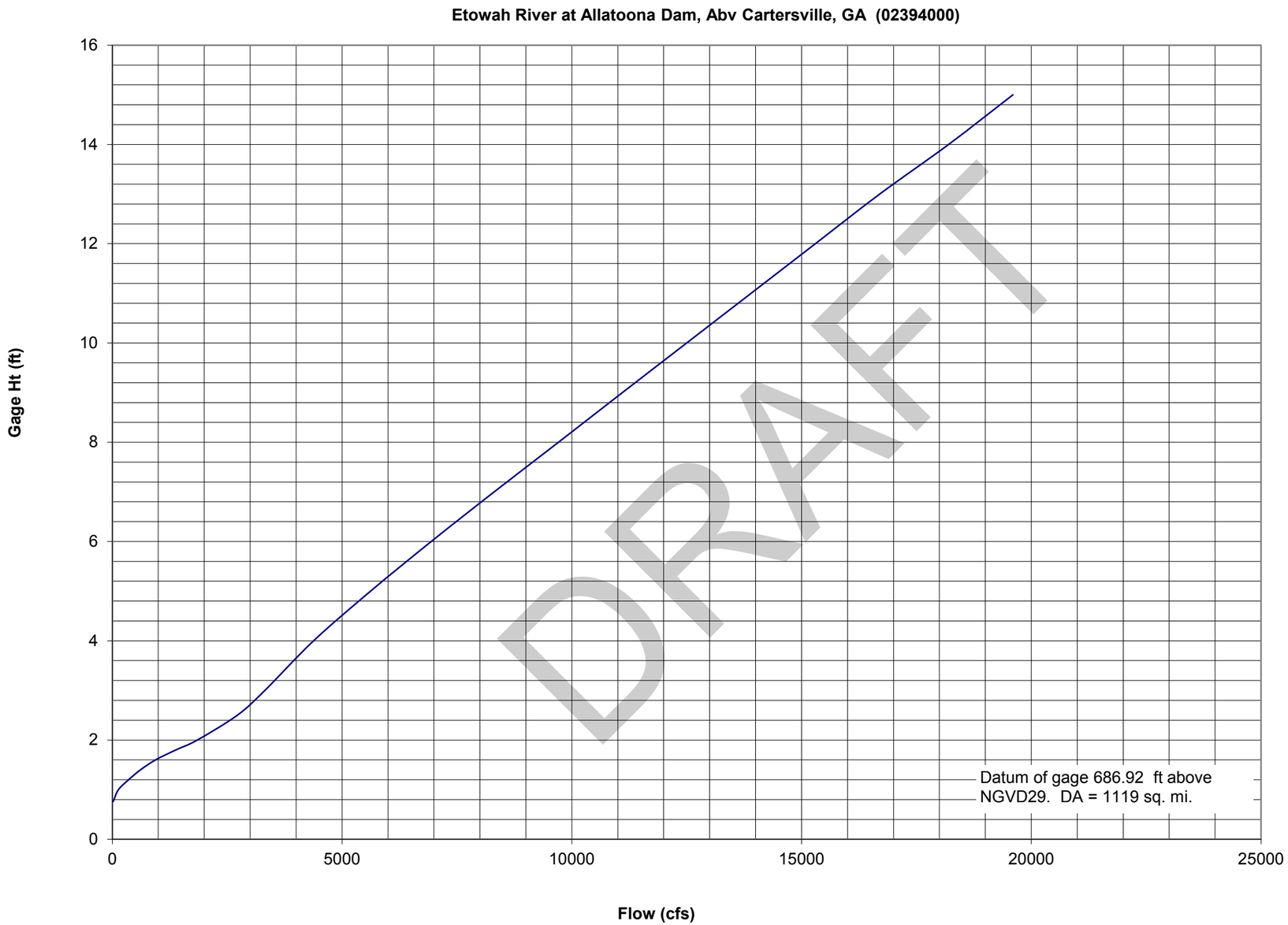
USGS GAGE 02397000

FLOW (cfs)	GAGE HT (ft)	FLOW	GAGE HT
		17000	18
510	10	21000	20
722	10.3	24800	22
894	10.5	28300	24
1090	10.7	31700	26
1450	11	33400	27
1890	11.3	35500	28
2230	11.5	37700	29
2610	11.7	40800	30
3280	12	48000	32
5640	13	56500	34
8050	14	65700	36
12800	16	70500	37

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

RATING CURVE FOR COOSA RIVER AT ROME, GA

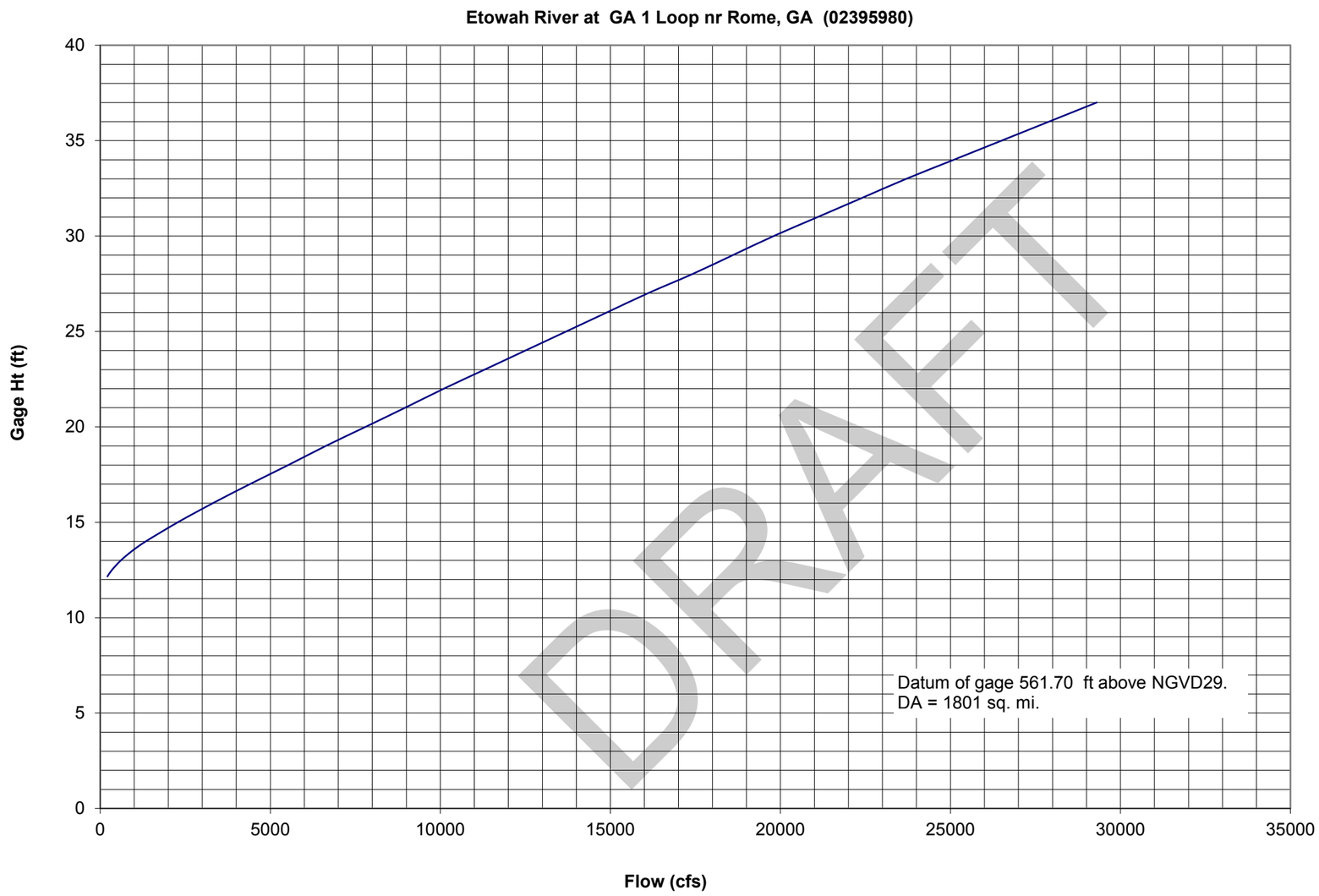


Flow	Gage Ht
18	0.76
133	1
354	1.2
613	1.4
941	1.6
1380	1.8
1850	2
2720	2.5
3320	3
4380	4
5620	5
6940	6
8310	7
9710	8
11100	9
12500	10
13900	11
15300	12
16700	13
18200	14
19600	15

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

RATING CURVE AT ETOWAH RIVER AT ALLATOONA DAM ABV CARTERSVILLE

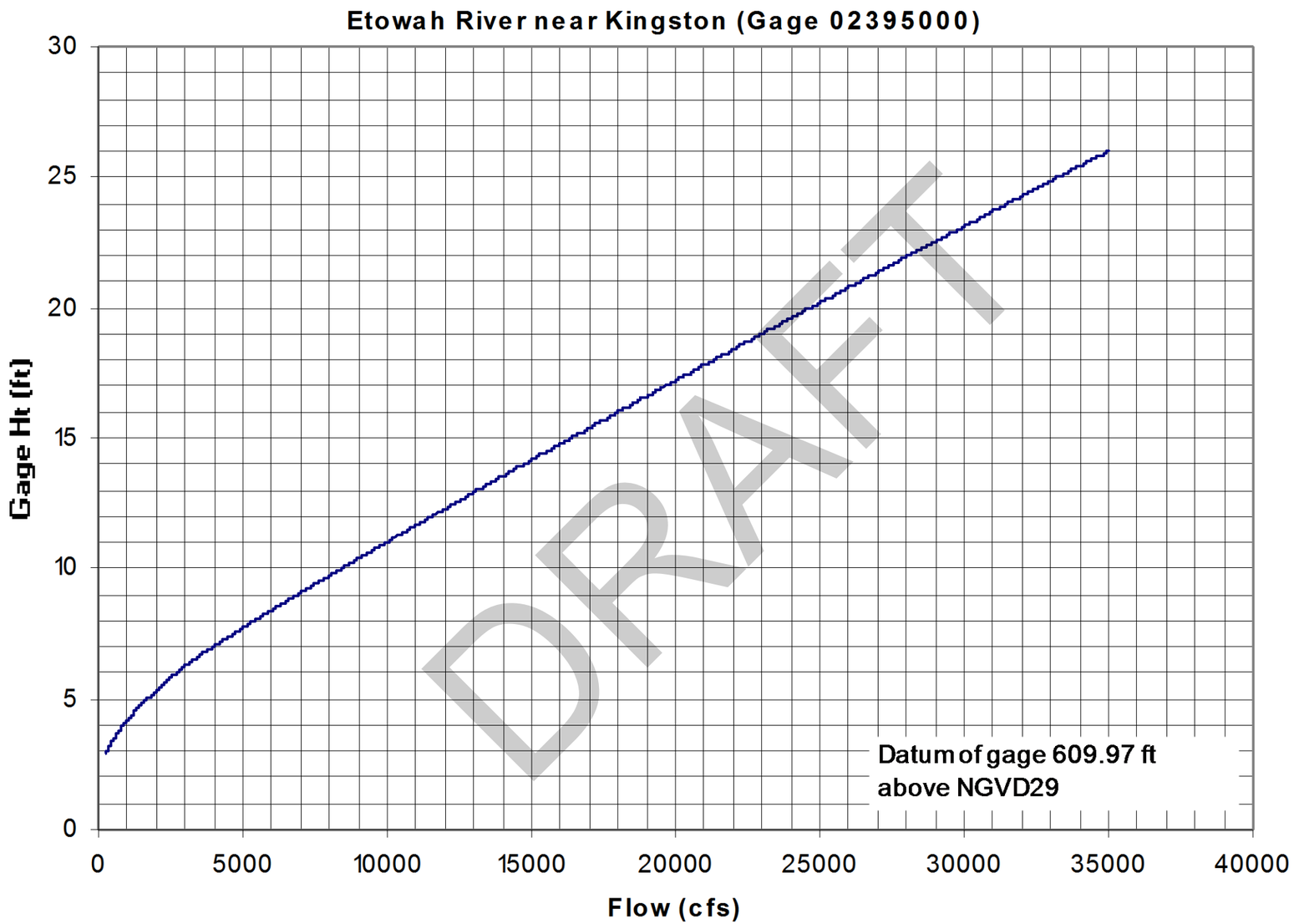


Flow	Gage Ht
210	12.16
343	12.5
604	13
938	13.5
1340	14
2280	15
3310	16
4400	17
5530	18
6630	19
7800	20
8960	21
10100	22
11300	23
12500	24
13700	25
14900	26
16100	27
17400	28
18600	29
19800	30
21100	31
22400	32
23700	33
25100	34
26500	35
27900	36
29300	37

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

RATING CURVE AT ETOWAH RIVER AT GA 1 LOOP NR ROME, GA



USGS GAGE 02395000

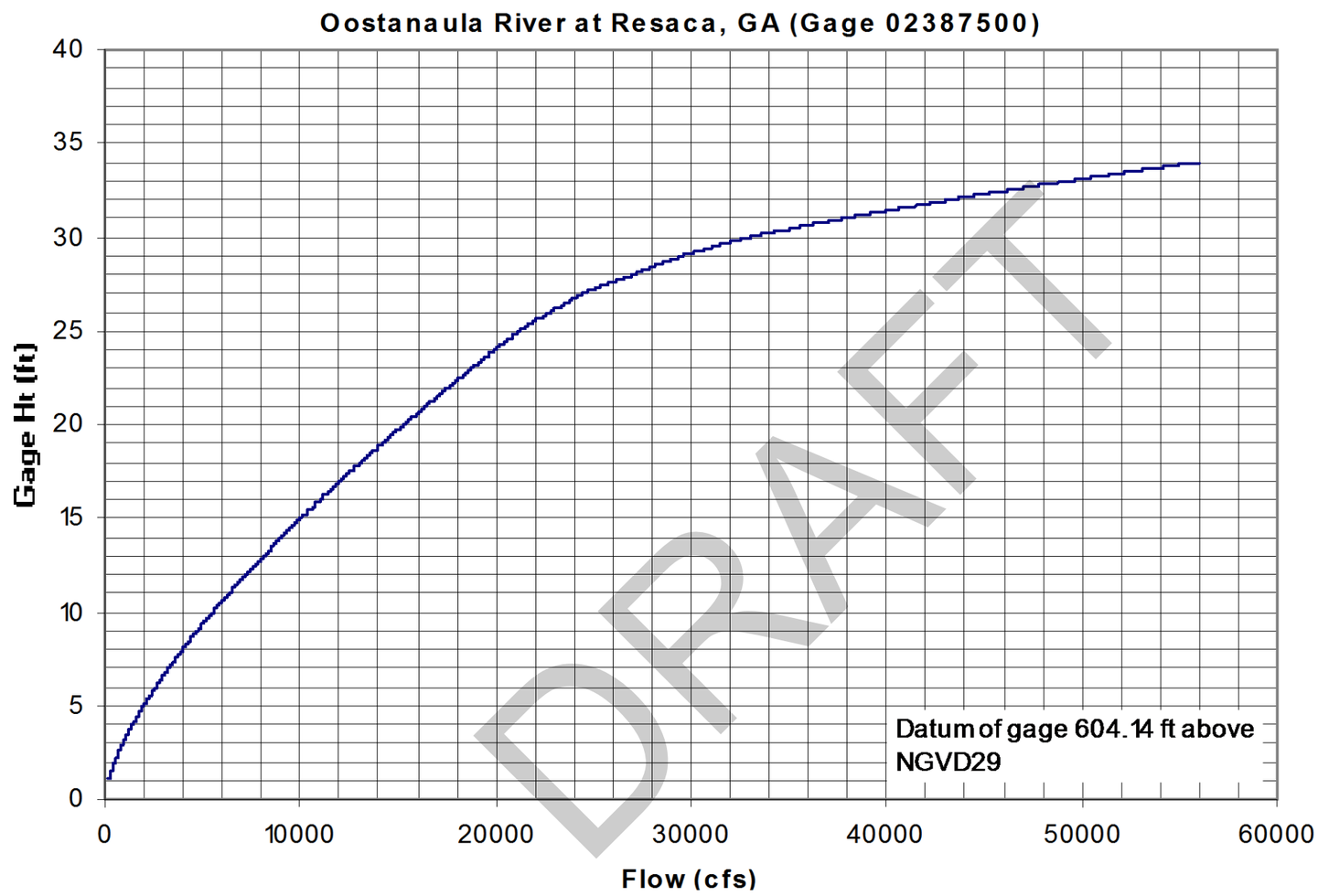
FLOW (cfs)	GAGE HT (ft)
256	2.9
300	3
550	3.5
860	4
1700	5
2700	6
3980	7
5400	8
6900	9
8420	10
11500	12
14700	14
18000	16
21300	18
24700	20
28100	22
31500	24
35000	26

USGS GAGE 02395000
ETOWAH RIVER NEAR KINGSTON
DA 1634 sq. mi. Datum 609.97 ft NGVD29

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

RATING CURVE FOR ETOWAH RIVER AT KINGSTON



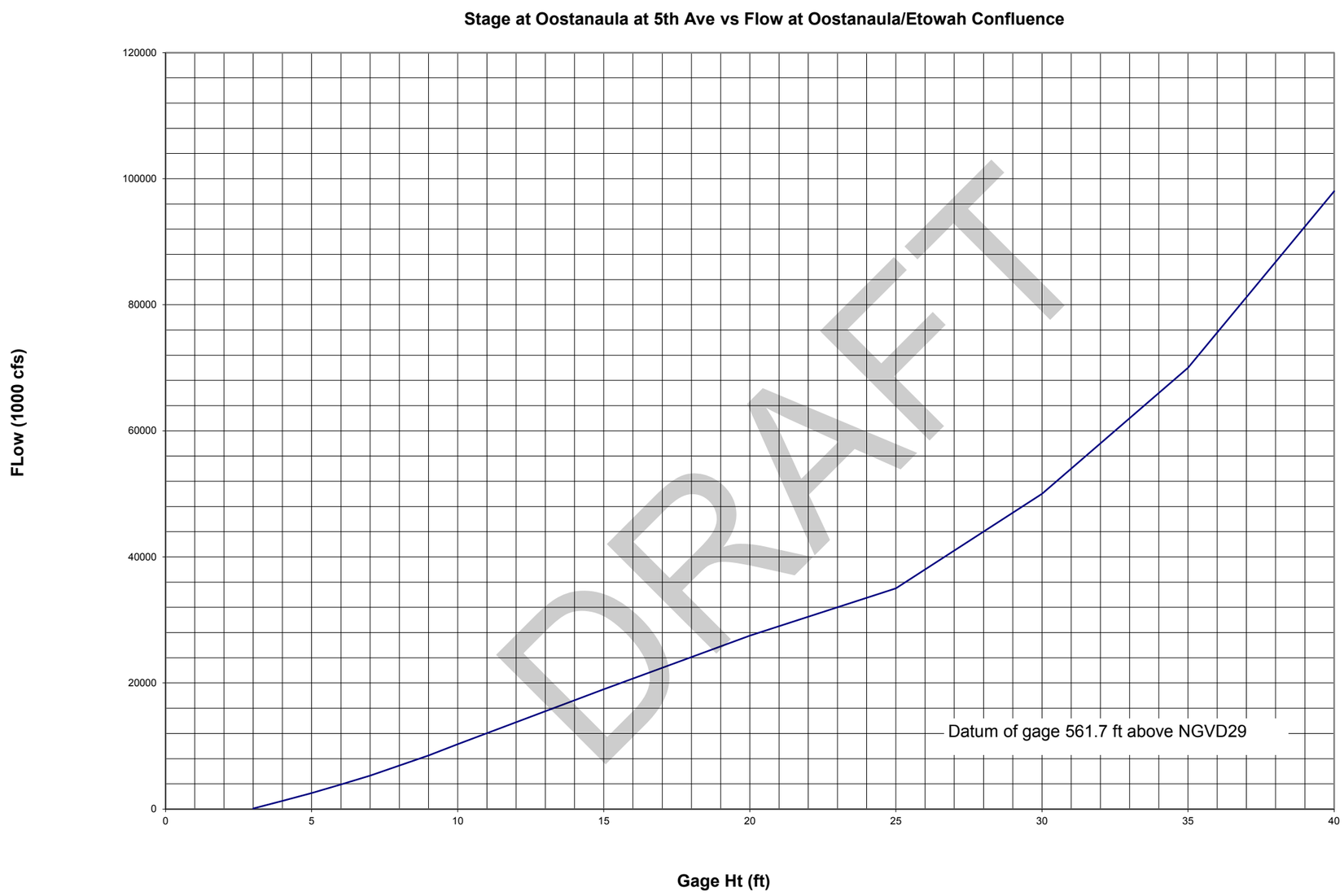
USGS GAGE 02387500		USGS GAGE 02387500	
FLOW (cfs)	GAGE HT (ft)	FLOW (cfs)	GAGE HT (ft)
190	1.04	9080	14
207	1.1	11000	16
329	1.5	13100	18
505	2	15300	20
704	2.5	17600	22
922	3	20000	24
1430	4	21200	25
1990	5	22800	26
2600	6	24500	27
3260	7	27000	28
3980	8	29600	29
4730	9	33000	30
5530	10	37900	31
6360	11	43400	32
7240	12	49400	33
		56000	34

USGS GAGE 02387500
OOSTANAULA RIVER AT RESACA
DA 1602 sq. mi. Datum 604.14 ft NGVD29

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

RATING CURVE FOR OOSTANAULA RIVER AT RESACA



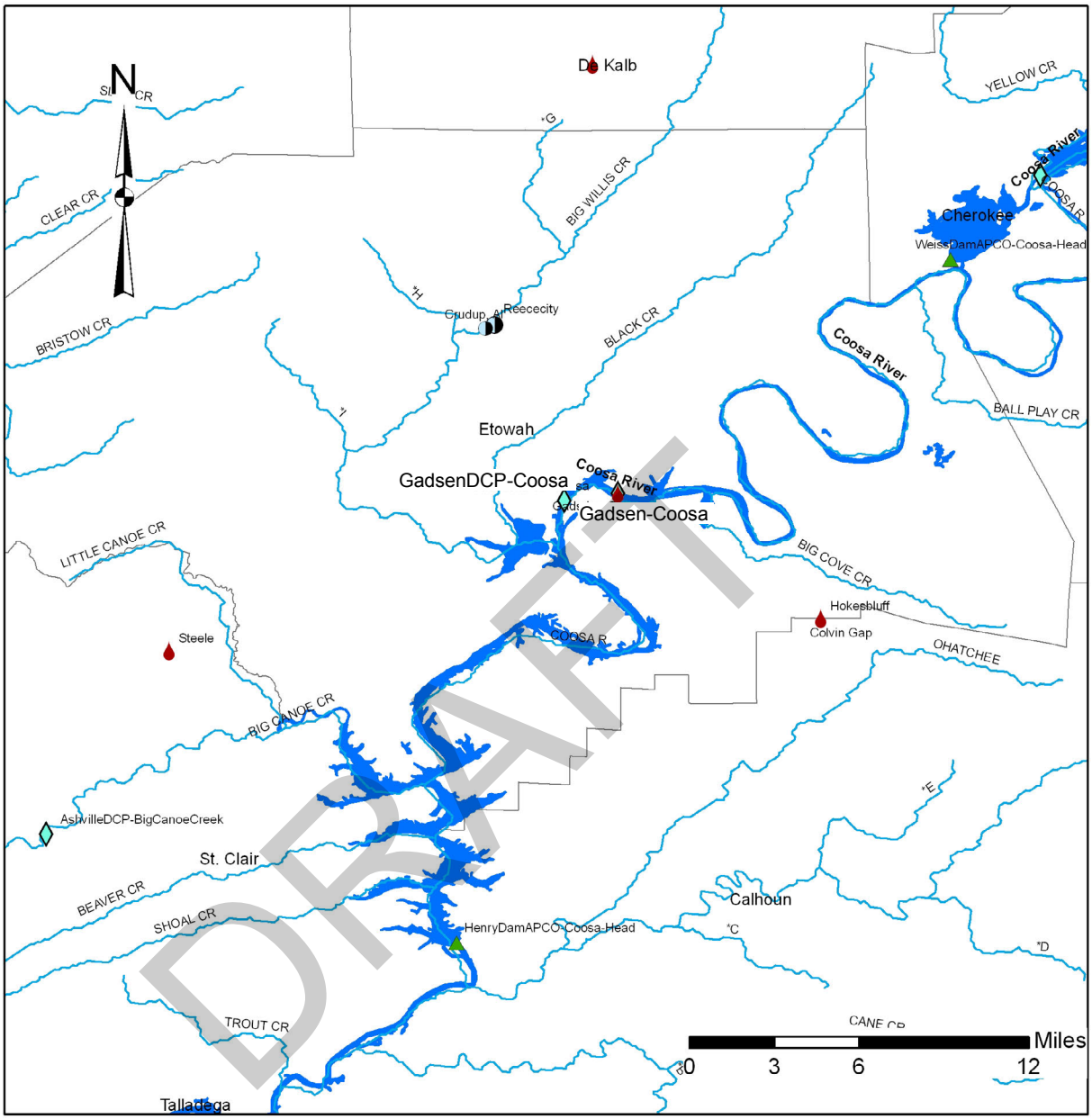
OOSTANAULA AT 5TH AVE vs STAGE AT OOSTANAULA/ETOWAH CONFLUENCE

FLOW (cfs)	GAGE HT (ft)
100	3
1300	4
2550	5
3900	6
5300	7
6900	8
8500	9
10300	10
19000	15
27500	20
35000	25
50000	30
70000	35
98000	40

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

RELATION OF STAGE AT OOSTANAULA RIVER AT 5TH AVE TO FLOW AT CONFLUENCE OF ETOWAH AND OOSTANAULA

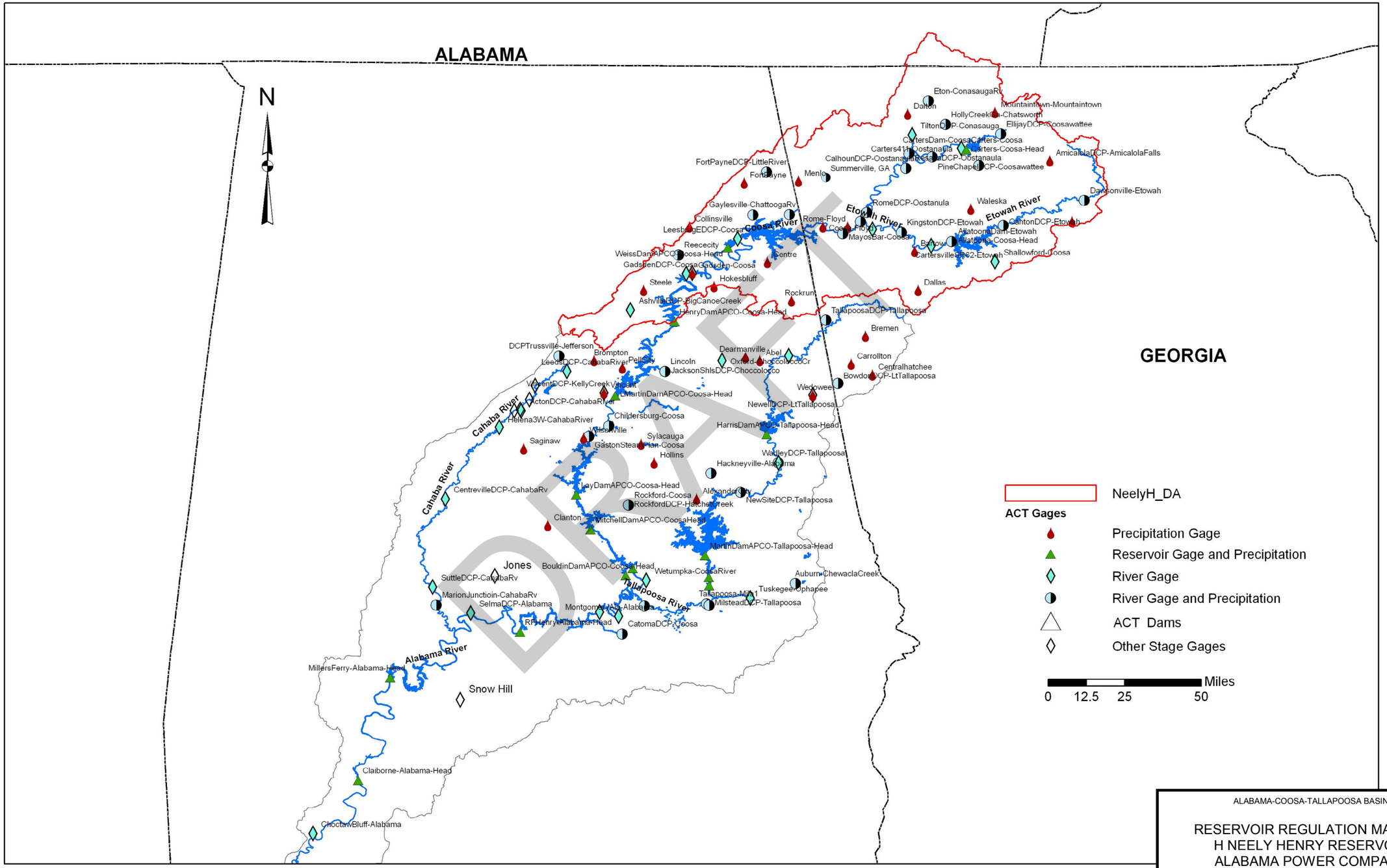


ACT Gages

- Precipitation Gage
- Reservoir Gage and Precipitation
- River Gage
- River Gage and Precipitation

ALABAMA-COOSA-TALLAPOOSA BASIN
RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

APC AUTOMATIC RADIO REPORTING HYDROLOGIC NETWORK



ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
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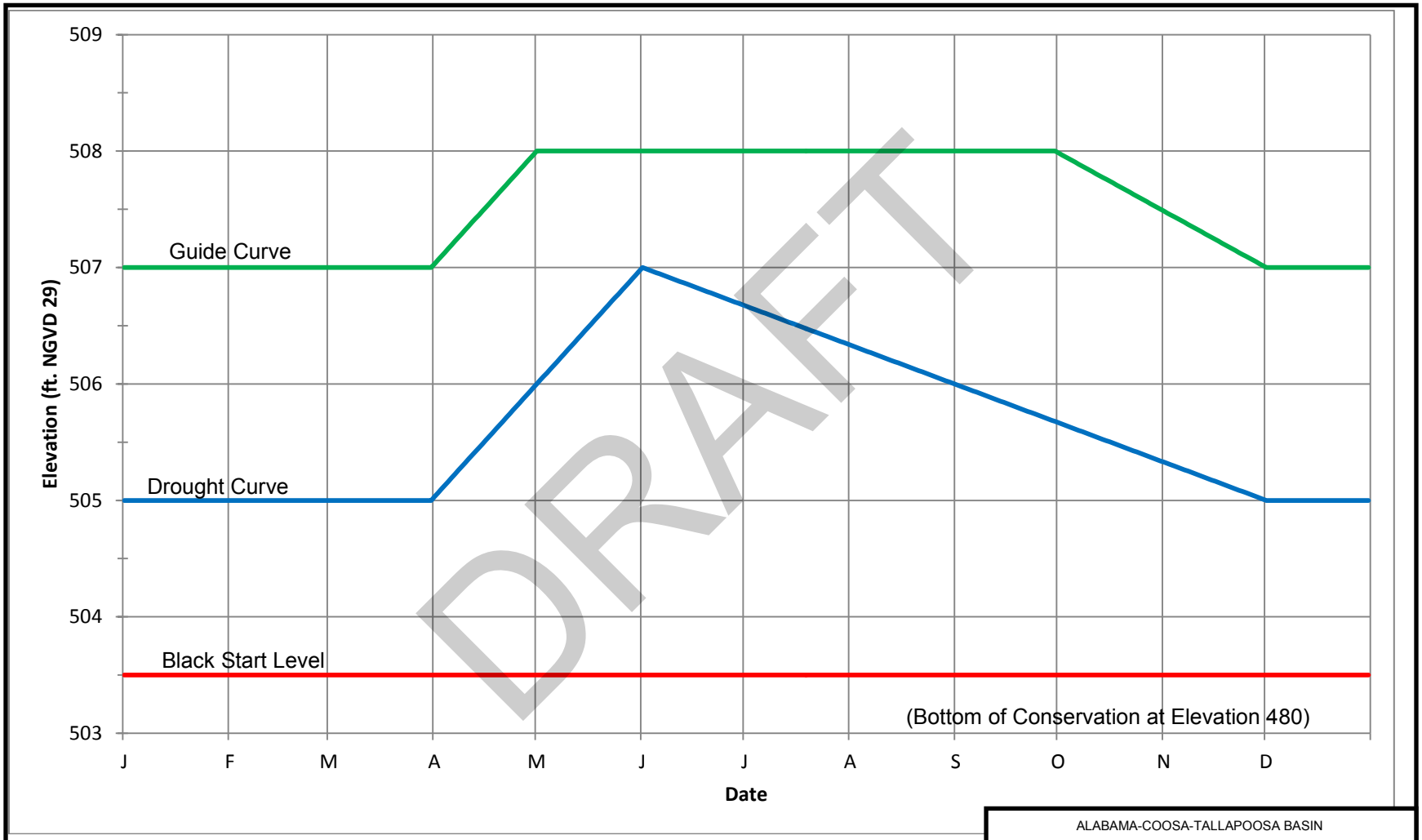
ALABAMA POWER COMPANY

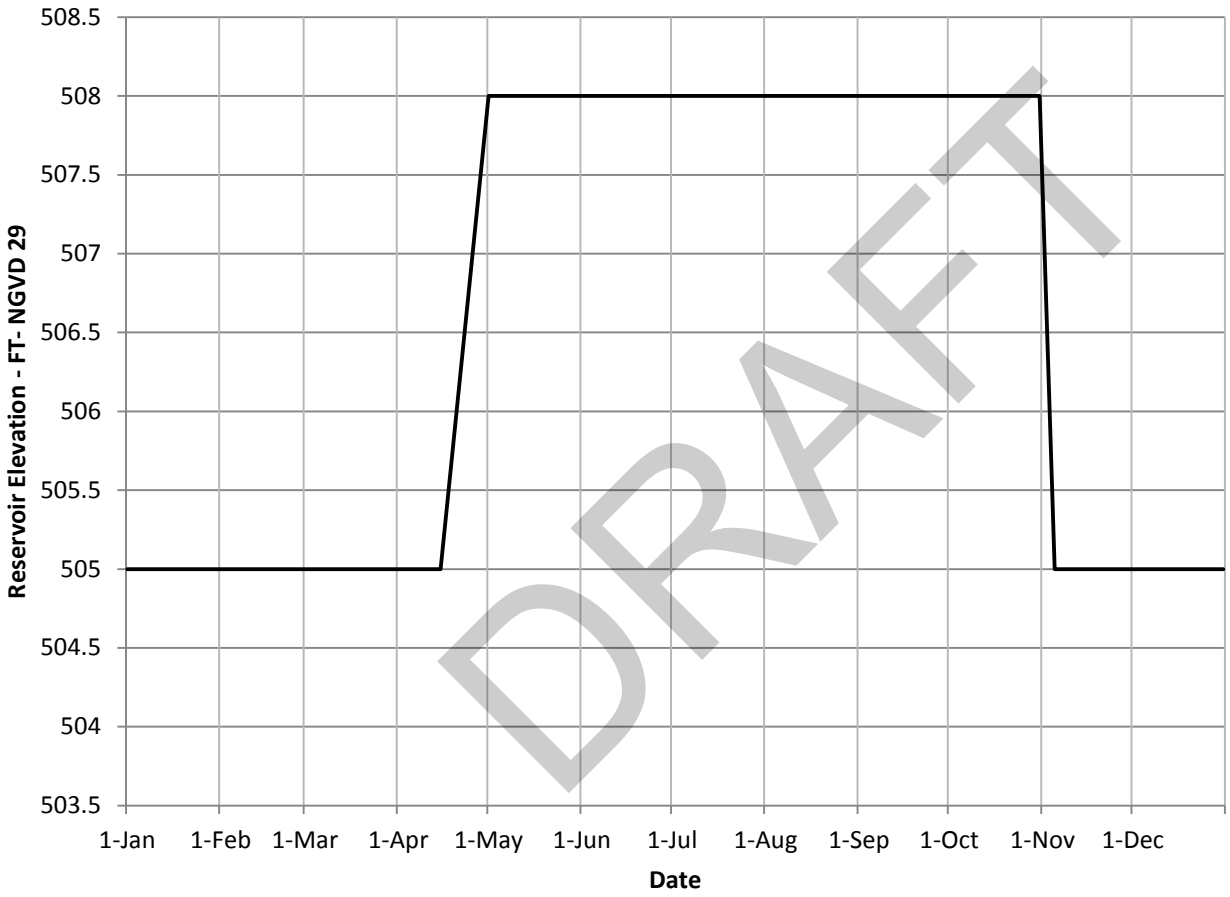
ACT REPORTING STATIONS



ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

GUIDE CURVE



Dates	Elevations
1-Jan	505
15-Apr	505
1-May	508
31-Oct	508
5-Nov	505
31-Dec	505

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ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

GUIDE CURVE

Regulation No.	Reservoir Operations	Stage Conditons	Flow Conditions	Evacuation Rate
1	Evacuation from 508 - 507	Gadsden Gauge is below 508.5 and Neely Henry pool elevation is between 508 and 505	When the discharge required at Weiss to remain below Weiss' rule curve, added to estimated inflows between Weiss and Gadsden equals or exceeds 28,500 cfs at Gadsden. Evacuation may be stopped when the Gadsden Gauge stops rising and is below elevation 510.5.	Twice the rate of rise of Gadsden Gauge or 0.33 ft/hr, whichever is less.
2	Evacuation from 507 - 506	Gadsden Gauge is below 508.5 and Neely Henry pool elevation is between 508 and 505	When the discharge required at Weiss to remain below Weiss' rule curve, added to estimated inflows between Weiss and Gadsden equals or exceeds 33,000 cfs at Gadsden. Evacuation may be stopped when the Gadsden Gauge stops rising and is below elevation 510.5.	Twice the rate of rise of Gadsden Gauge or 0.33 ft/hr, whichever is less.
3	Evacuation from 506 - 505	Gadsden Gauge is below 508.5 and Neely Henry pool elevation is between 508 and 505	When the discharge required at Weiss to remain below Weiss' rule curve, added to estimated inflows between Weiss and Gadsden equals or exceeds 37,000 cfs at Gadsden. Evacuation may be stopped when the Gadsden Gauge stops rising and is below elevation 510.5.	Twice the rate of rise of Gadsden Gauge or 0.33 ft/hr, whichever is less.
4	Evacuation from 505 - 502.5		When the discharge required at Weiss to remain below Weiss' rule curve, added to estimated inflows between Weiss and Gadsden equals or exceeds 40,500 cfs at Gadsden, or when there is a forecast of a discharge greater than 40,000 cfs from Weiss.	0.4 ft/hr
5	Stable Pool At Evacuation Level	Pool elevation 505.0 or 502.5		Operate to maintain constant pool elevation. While maintaining the stage at elev 502.5 or while unavoidable surcharging above this level, the reservoir outflow rate shall be limited to the capacity of the spillway and turbines.
6	Refilling	Weiss pool elev is at 565 and falling; or is on the storage delineation curve and the rate of inflow to Weiss is decreasing, and the stage of the Coosa Rivier at Gadsden Steam Plant is below elev 511 and falling		
7	Priority		Note: The evacuation regulations above shall apply during refilliing if conditions warrant.	

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ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
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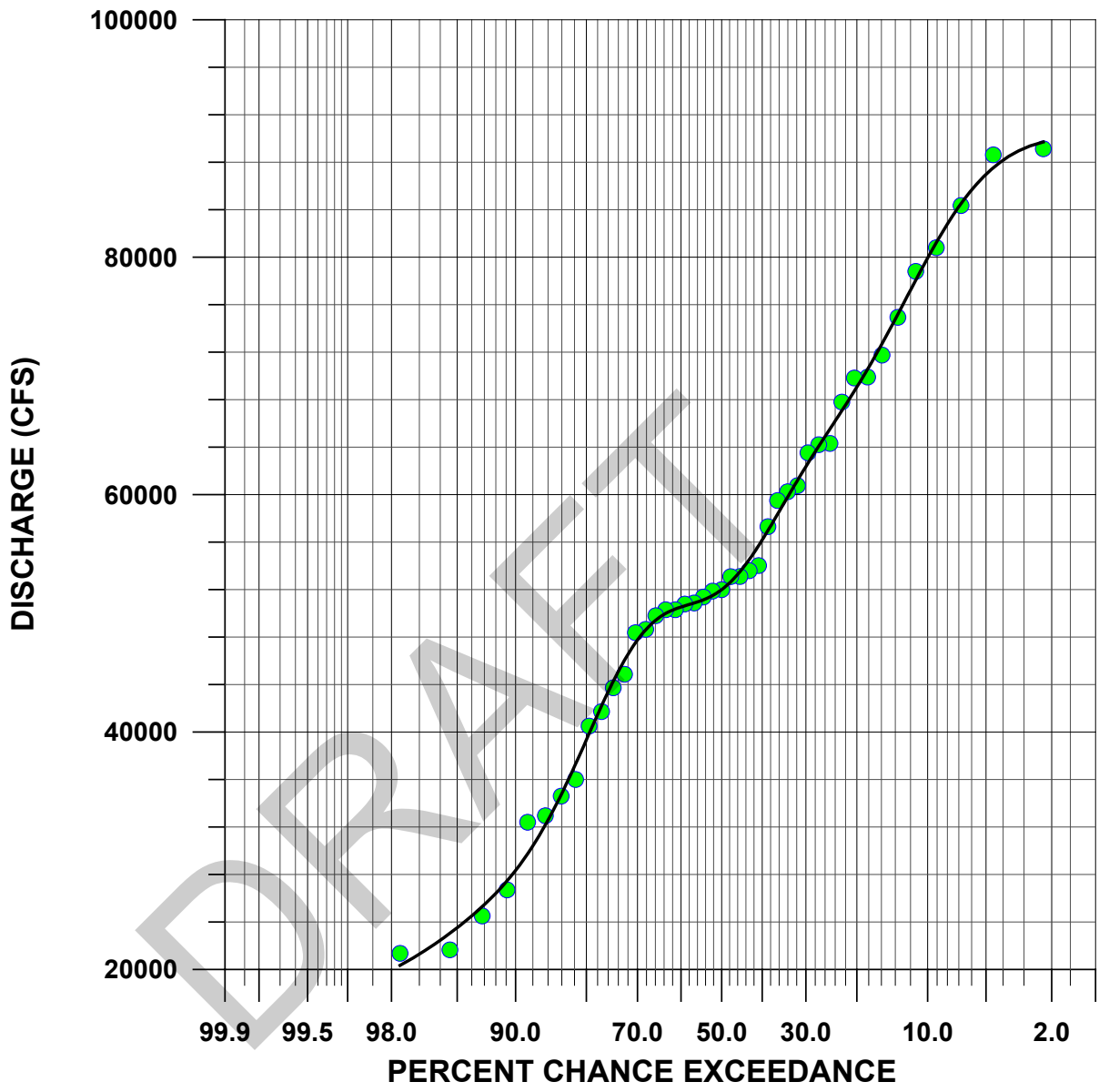
ALABAMA POWER COMPANY

PRE-FLOOD EVACUATION SCHEDULE



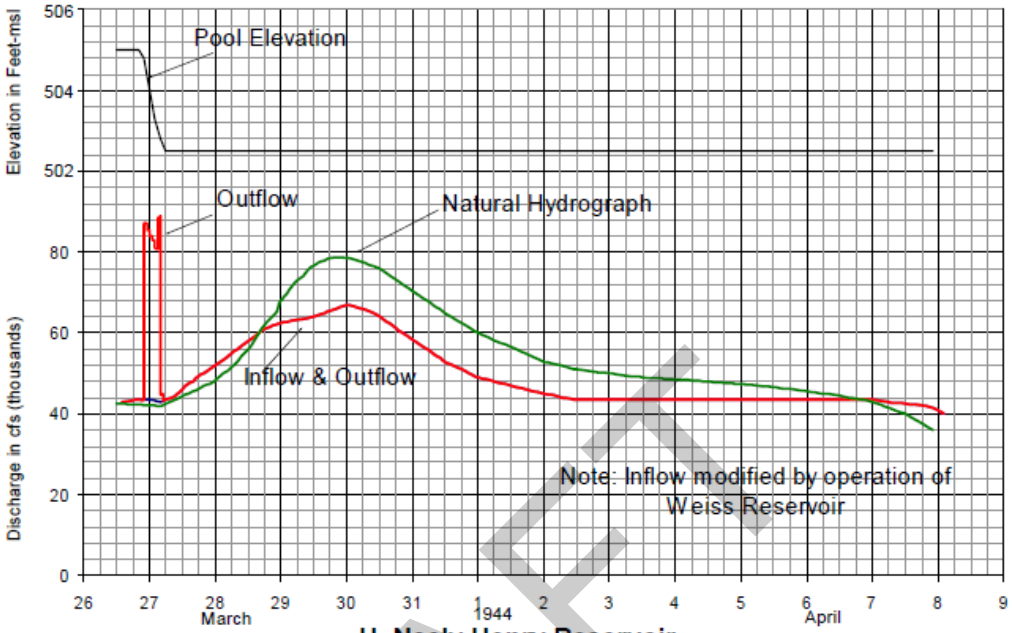
Data from APC midnight instantaneous values from 1967 to 2009

ALABAMA-COOSA-TALLAPOOSA BASIN

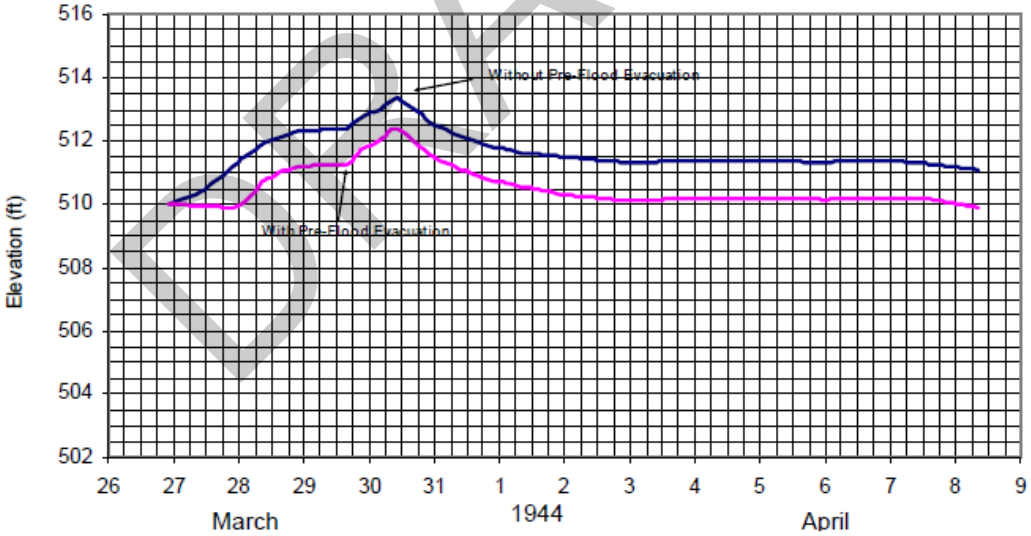
RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

DISCHARGE PERCENT CHANCE EXCEEDANCE CURVE

Effect of Reservoir Regulation
Flood of March & April, 1944



H. Neely Henry Reservoir



Gadsden, Alabama

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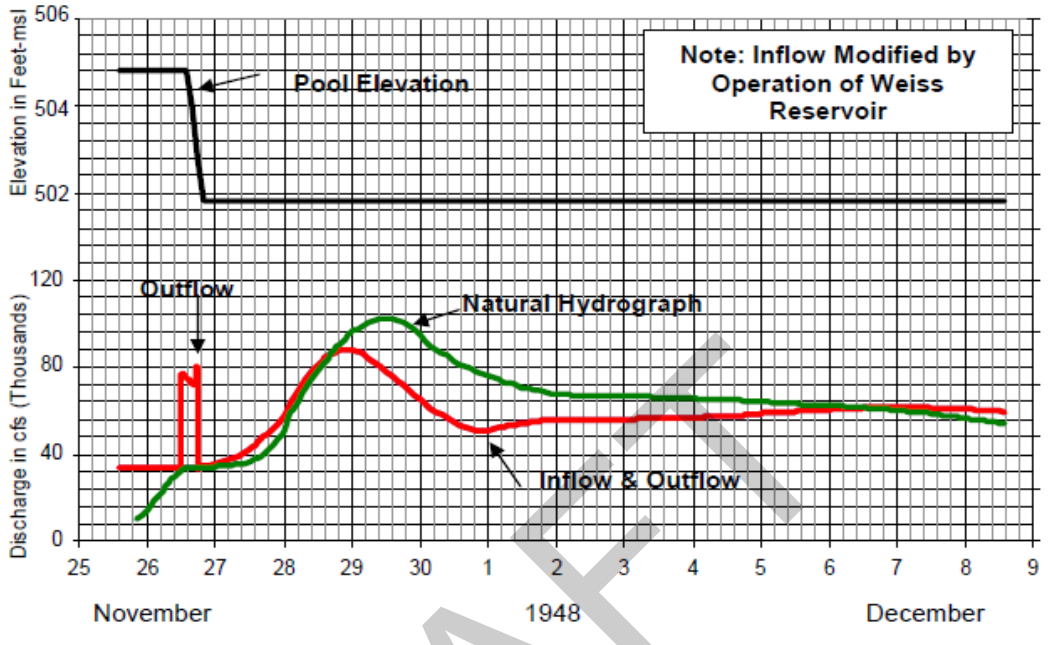
ALABAMA-COOSA-TALLAPOOSA BASIN

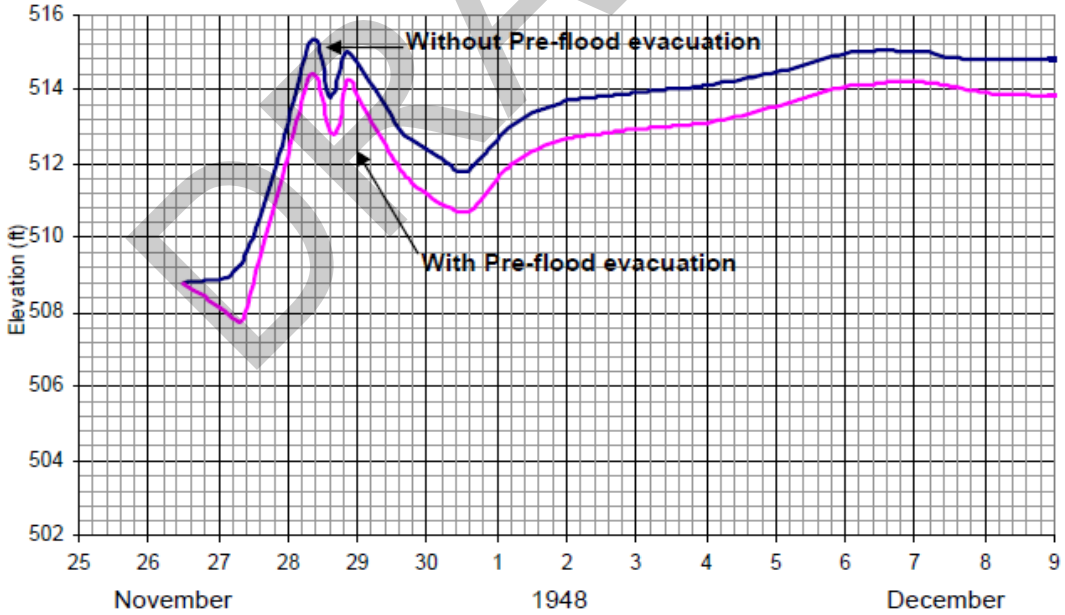
RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

EFFECT OF RESERVOIR REGULATION FLOOD OF NOV/DEC 1944

Effect of Reservoir Regulation
Flood of November & December 1948



H. Neely Henry Reservoir



Gadsden, Alabama

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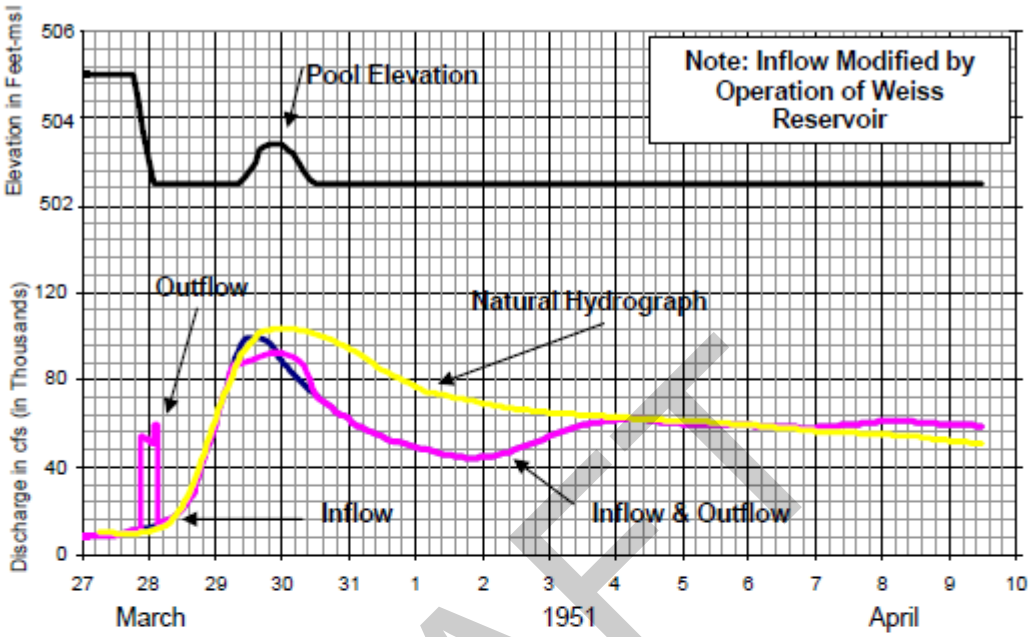
ALABAMA-COOSA-TALLAPOOSA BASIN

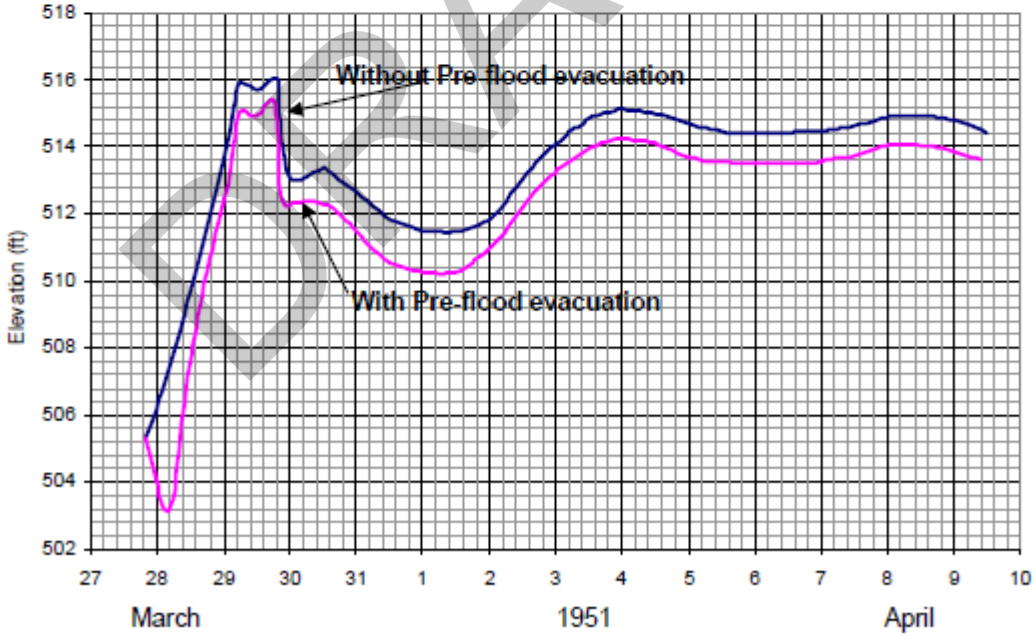
RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

EFFECT OF RESERVOIR REGULATION FLOOD OF NOV/DEC 1948

Effect of Reservoir Regulation
Flood of March & April 1951



H. Neely Henry Reservoir



Gadsden, Alabama

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ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

EFFECT OF RESERVOIR REGULATION
FLOOD OF NOV/DEC 1951

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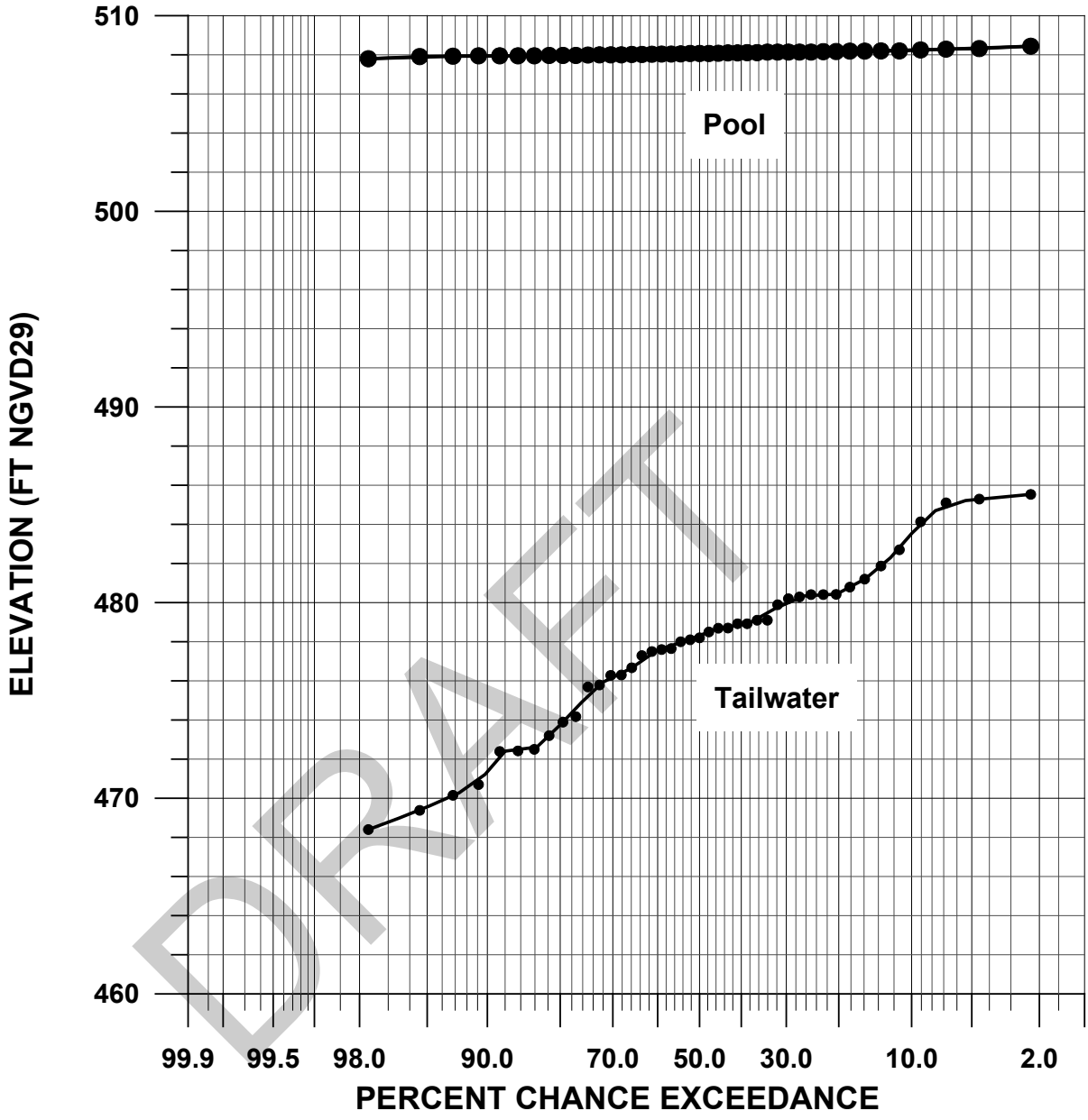
ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H.NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

INFLOW-OUTFLOW-POOL HYDROGRAPHS SPILLWAY DESIGN FLOOD



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Data from APC midnight instantaneous values from 1967 to 2009

ALABAMA-COOSA-TALLAPOOSA BASIN

RESERVOIR REGULATION MANUAL
H. NEELY HENRY RESERVOIR
ALABAMA POWER COMPANY

POOL-TAILWATER FREQUENCY CURVES