HISTORICAL RIVER FLOW RATES FOR DOSE CALCULATIONS

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**WESTINGHOUSE SAVANNAH RIVER COMPANY
SAVANNAH RIVER LABORATORY**

June 10, 1991

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HISTORICAL RIVER FLOW RATES FOR DOSE CALCULATIONS

SUMMARY

Annual average river flow rates are required input to the LADTAP Computer Code for calculating offsite doses from liquid releases of radioactive materials to the Savannah River. The source of information on annual river flow rates used in dose calculations varies, depending on whether calculations are for retrospective releases or prospective releases. Examples of these types of releases are:

Retrospective - releases from routine operations (annual environmental reports) and short term release incidents that have occurred.

Prospective - releases that might be expected in the future from routine or abnormal operation of existing or new facilities (EIS's, EID's, SAR's, etc.)

This memorandum provides historical flow rates at the downstream gauging station at Highway 301 for use in retrospective dose calculations and derives flow rate data for the Beaufort-Jasper and Port Wentworth water treatment plants. For prospective calculations, an average flow rate of 10,500 cfs is established for maximum individuals (Highway 301) and a derived flow rate of 13,000 cfs for the Beaufort-Jasper and Port Wentworth water treatment plants. Minimum annual flow rates, for maximizing doses from routine operations, are 5,300 cfs and a derived flow rate of 6,600 cfs for the maximum individual and water treatment plants, respectively. The minimum daily flow rates for calculation of prospective doses for short-term release incidents are 3,900 cfs and a derived flow rate of 4,900 cfs for the maximum individual and water treatment plants, respectively.

INTRODUCTION

The LADTAP computer code is used for calculating doses to individuals and population groups from routine and nonroutine releases of radioactive materials to the Savannah River. Annual river flow rate data is required input to the code in order to calculate dilution of the released materials. The source of information on annual river flow rates used in dose calculations varies, depending on whether calculations are for retrospective releases (i.e., releases have occurred in the past) or prospective releases (hypothetical releases that might be expected in the future). Examples of these types of releases are:

Retrospective - releases from routine operations (annual environmental reports) and short term release incidents that have occurred.

Prospective - releases that might be expected in the future from routine or abnormal operation of existing or new facilities (EIS's, EID's, SAR's, etc.)

Retrospective dose calculations require actual river flow rates that occurred during the period of release. These can be measured flow rates for the period, or adjusted-measured flow rates in which actual flow rates are adjusted to reflect measured dilution of tritium in the river. Adjusted flow rates are used in calculations for the annual environmental reports so that calculated doses accurately reflect measured concentration data in the river. Prospective dose calculations use flow rates based on historical average and minimum annual flow, adjusted for dilution of water between the river gauging station and the point of interest.

In the past, the source of information on flow rates was the U.S Geological Survey (USGS) gauging station at the SRS boat dock (one-half mile downstream from the mouth of Upper Three Runs, on the South Carolina side of the river). This gauging station is not calibrated at flow rates exceeding 22,000 cfs because the river profile (cross-section) is not defined at the higher flow rates. Historical data recorded by the Environmental Monitoring Section (EMS) was obtained from gauge readings by the SRS Power Department, using extrapolation of the flow curve above 22,000 cfs when needed. This usually underestimates high flow rates based on comparison with more accurate USGS flow rates at Augusta, GA (New Savannah Lock and Dam). Between 1954 and 1988 (35 years), annual flow rates at the SRS boat dock recorded by the EMS and USGS were lower than at the upstream Augusta gauging station for 19 years (Table 1).

The probable underestimation of flow rates at the SRS boat dock during some years did not cause any offsite doses to be underestimated. However, in the interest of obtaining more accurate flow rate data, flow rates were analyzed at the downstream USGS gauging station at Highway 301. This station is considered accurate at all flow rates by the USGS.

SOURCE OF FLOW RATE DATA

A summary of annual average Savannah River flow rates was prepared from USGS sources to provide a data set for use in dose calculations for SRS releases.

The USGS measures Savannah River flow at 4 locations below Augusta, GA, i.e., New Savannah Lock and Dam at Bush Field (Augusta), Savannah River near Jackson (SRS Boat Dock), Millhaven, Ga (Highway 301), and at Clyo, GA. The SRS Boat Dock gauging station is not calibrated for flows greater than 22,000 cfs and daily flow rates are not reported by the USGS when the flow exceeds 22,000 cfs.

The USGS flow data for all gauging stations are recorded in both paper and digital formats. The USGS office located in each state issues an annual "Water Resources Data Report" for that state and data are also stored in a digital format at USGS headquarters in Reston, VA (Daily Values File). The annual flow data for this summary were obtained from the USGS daily values file for the years from 1950 to 1986 and flows for 1987 and 1988 were obtained from USGS state reports.

Annual flow data were available for the period 1950 through 1988 at Augusta and Clyo. USGS did not start recording flow data for the SRS boat dock until 1972. Prior to 1972, data from the EMS records were used. Between 1972 and 1988, USGS boat dock data were incomplete for 12 of the years because flow rates exceeded 22,000 cfs during parts of these years. Highway 301 flows were not measured in the 1971-1981 time period. A comparison of the flows at Augusta and Highway 301 in the years when data were available (Figure 1) show that the average flows during the missing years at Highway 301

could be estimated from the flows at Augusta (shown in Figure 2). A correlation coefficient of 0.98 was obtained when the data (Figure 1) were fitted to a simple linear equation, $y = mx + b$; where y is estimated flow at Highway 301, x is the measured flow at Augusta, and m & b are coefficients obtained from the regression analysis. The values for the regression coefficients and their standard errors are: $m = 1.1486 \pm 0.0330$ and $b = -202 \pm 298$. These coefficients and the Augusta flows were used to estimate the flow at Highway 301 for the 1971-1981 time period.

A summary of the flow rate data for 1950 - 1988 for the four gauging stations is shown in Table 1. A more detailed summary for each station is given by month and year in Appendix A. Detailed daily records are available from the Environmental Technology Section of SRL on compact disk and magnetic computer media. Table 1 includes a summary of maximum, average, and minimum annual flow rates and minimum and maximum monthly flow rates for the time period 1954 - 1988, the years of SRS operation. The Thurmond Lake Dam was in operation during this entire period.

SELECTED FLOW RATES FOR DOSE CALCULATIONS

During the period of SRS operation, the average annual flow rate for the period 1954 - 1988 was 10,500 cfs and the minimum annual average flow rate, which occurred in 1988, was 5,300 cfs at Highway 301 (Table 1 averages were rounded downward). These values will be used for prospective dose calculations for the maximum individual for annual releases. Previous values used were 10,400 cfs for average annual flow and 6,000 cfs for minimum annual flow. The minimum daily flow rate of 3960 cfs occurred on October 25, 1986. A value of 3,900 cfs will be used for prospective dose calculations for the maximum individual for short term releases, i.e., releases of one day or less.

River flow rates are not measured at the points where the water treatment plants pump water from the river. Beaufort-Jasper water is pumped from River Mile 39 into an eighteen-mile-long canal to the treatment plant. The Beaufort-Jasper treatment plant started operation in 1965. Port Wentworth water is pumped from Abercorn Creek at River Mile 29 and is piped about seven miles to the treatment plant. This plant was in operation before the startup of SRS operations. In order to develop flow rates for retrospective or prospective calculations of dose to customers of the two downstream water treatment plants, a relationship was developed for adjusting Highway 301 flow rates for additional dilution of non-river water to the river below Highway 301 and additional dilution in the pumping and transport system between the river and the water treatment plants. The method described in Hayes 1983, which is based on tritium concentrations at Highway 301 and at the water treatment plants, was used to develop percent dilution. It was necessary to update these data through 1990 to account for modifications to the water pumping and transport system put into effect at the Beaufort-Jasper water treatment plant in 1985. Table 2 shows the data for percent dilution for 1966 - 1990.

From these data, a 121 percent average dilution was calculated for Beaufort-Jasper for 1966 - 1984 and 40 percent dilution for succeeding years. An average dilution of 26 percent was calculated for all years for the Port Wentworth plant. The higher dilution for the Beaufort-Jasper plant can be accounted for by additional dilution in the 18-mile canal system from rainfall (estimated at 4 percent) and ground and surface water. During the period 1965 - 1984, surface water was a large contributor to the dilution in the Beaufort-Jasper canal system. After 1984, surface water dilution was reduced by modifications to this system.

Table 3 shows the Highway 301 flow rate data for the period 1954 - 1988. Also shown are

derived flow rates to be used in retrospective dose calculation for Beaufort-Jasper and Port Wentworth, based on percent dilution of water downstream of Highway 301. It is emphasized that the derived flow rate data for Beaufort-Jasper and Port Wentworth are not true river flow rates but are numbers to be used in LADTAP computer code input to account for inflow to the river below Highway 301 and additional dilution in the pumping and transport system of the treatment plants. A summary of measured average and minimum flow rates at Highway 301 and derived values for the water treatment plants for prospective dose calculations is shown in Table 4.

REFERENCE

Hayes, D.W. 1983. "Examples of Savannah River Water Dilution Between the Savannah River Plant and the Beaufort-Jasper and Port Wentworth Water Treatment Plants", DPST-82-1076, January 12, 1983.

Figure 1. Savannah River Annual Average Flow Rate at Augusta and Highway 301

Figure 2. Annual Average River Flow at Augusta, SRS, Highway 301, and Clio

Table 1. SUMMARY OF MEASURED SAVANNAH RIVER MONTHLY AND ANNUAL FLOW RATES AT USGS GAUGING STATIONS - CALENDAR YEAR DATA

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

Year (a)	Augusta			SRS Boat Dock (b)			Highway 301 (c)			Clayo		
	Mo.Max	Ann.Avg	Mo.Min	Mo.Max	Ann.Avg	Mo.Min	Mo.Max	Ann.Avg	Mo.Min	Mo.Max	Ann.Avg	Mo.Min
1950	41400	7691	2850				25700	8764	3920	22200	9484	4680
1951	16400	6222	1710				14500	7010	2120	15200	7668	2860
1952L	38600	8221	2280				37800	9328	3060	41300	10409	3610
1953	34800	7372	3410				31800	8622	4840	35800	9743	5580
1954	22300	6944	4360		6796		17600	7382	4770	18800	8017	5310
1955	22400	5367	4180		5275		14800	5974	4860	15200	6812	5490
1956L	14600	5550	3580		5683		13600	6309	4590	14100	7145	5400
1957	24400	7646	5170		7013		18100	8312	5590	20400	9293	5760
1958	57100	10301	5000		9783		40600	11038	5500	45500	12540	5760
1959	28200	8569	5260		8653		27400	9748	5590	25500	11170	6060
1960L	33200	11106	5350		12214		36400	13112	6060	40300	14562	6610
1961	30300	9349	4930		9950		32400	10909	5700	34300	12086	6160
1962	27900	8746	4760		9878		26800	10580	6260	28200	11868	6760
1963	30600	10020	5350		10197		28600	11138	6350	29200	12649	7270
1964L	84500	18531	6560		18448		71700	20497	7400	83800	23167	8260
1965	30000	10802	6300		12038		32700	12785	7390	37800	15093	8070
1966	34500	9398	6120		9318		37000	11175	7110	42800	12321	7180
1967	22500	9152	5740		8767		22000	10573	6780	22500	11339	6970
1968L	32200	8281	5890		8621		26500	9624	6970	28000	10245	6920
1969	44100	9821	5800		9214		36900	10945	6710	39500	11732	7000
1970	23200	6967	5420		6908		17900	8208	6840	20800	8818	6720
1971	59700	9479	4460		9380			10686		52900	12924	8060
1972L	32700	9957	5460	20000	9347	6380		11235		36300	12232	7010
1973	38100	12739	5450	20100	11366	6330		14431		44400	17344	7500
1974	29300	9840	5810	20000	9518	6440		11101		32900	12289	7260
1975	43900	13590	6720	20000	12089	6760		15408		50700	17465	7870
1976L	31945	12289	6000	22000	11191	6768		13914		33400	14679	7660
1977	32200	10315	6530	22000	10427	6420		11646		32200	12440	6870
1978	41300	9336	6110	20900	8608	5800		10522		38400	10978	5670
1979	32500	11713	5940	21800	11441	5770		13252		36500	14311	7230
1980L	46000	11669	5900	19800	9296	5880		13201		58000	14668	5970
1981	15600	5921	2810	17000	8060	3220		6599		13400	6957	4420
1982	25500	7409	4650	20400	7509	5050	14300	7169	5386	19400	8783	5760
1983	64400	10988	4740	21900	10406	4900	58000	12348	5210	57900	13371	5720
1984L	33200	11224	5180	21900	10579	6340	33600	12759	5730	37500	13964	6170
1985	23700	6557	4750	20500	6751	4760	19500	7167	4830	19400	7725	5220
1986	15200	5803	3790	14800	5978	4120	13800	6175	3960	14700	6818	4730
1987	26800	8203	4050	21800	8519	4650	27500	8955	4300	29700	10084	5420
1988L	14600	4888	3880	13700	5213	4150	11600	5364	4000	10700	6033	4400
SUMMARY OF ANNUAL AVERAGE FLOW RATES FOR 1954 - 1988												
Maximum	84500	18531		20000	18448			20497			23167	
Average		9385			9212			10578			11769	
Minimum		4888			5213			5364			6033	
SUMMARY OF MONTHLY FLOW RATES FOR 1954 - 1988												
Maximum	84500			22000			71700			83800		
Minimum			2810			3220			3960			4400

a. The letter "L" following some years indicates leap years.

b. The gauging station at the SRS Boat Dock is not calibrated for flow rates above 22,000 cfs. The USGS did not start publishing data for this location until 1972. The mean flow rates shown for 1954 through 1971 are based on Environmental Monitoring Section records and some data may be inaccurate for the shaded years because data was extrapolated at flow rates above 22,000 cfs. The USGS data between 1972 and 1988 include some years in which data are incomplete because flow rates exceeded 22,000 cfs for parts of the year. Years which have incomplete data are shaded.

c. Flow rates at the Highway 301 gauging station were not recorded by USGS for the years 1971 through 1981. Mean flow rates for these years are based on flowrates at Augusta, GA.

**Table 2. DILUTION OF WATER BETWEEN WATER TREATMENT PLANTS AND THE RIVER
BELOW HIGHWAY 301 BASED ON TRITIUM CONCENTRATIONS (a)**

Year	Tritium Conc., pCi/ml			Percent Dilution Below 301	
	Highway 301	B-Jasper	Port Went.	B-Jasper	Port Went.
1966	11.3	7.0		64	
1967	9.8	4.8		109	
1968	9.4	5.5		73	
1969	7.9	4.0		101	
1970	5.9	1.9		232	
1971	5.6	1.5		312	
1972	6.1	2.6		144	
1973	6.6	4.2	5.8	61	15
1974	5.9	3.0	5.0	104	19
1975	4.0	2.1	3.3	101	23
1976	4.8	2.0	4.2	153	20
1977	4.8	2.9	3.7	70	31
1978	3.9	1.8	3.6	131	9
1979	3.1	1.3	2.4	164	32
1980	3.2	1.5	2.5	131	30
1981	4.1	2.4	3.2	77	30
1982	4.3	1.7	3.1	173	41
1983	3.3	3.2	2.8	3	19
1984	3.3	1.7	2.5	107	35
1985	3.7	2.9	3.0	30	25
1986	4.1	3.1	3.4	34	22
1987	3.3	2.3	2.4	48	41
1988	3.4	2.5	2.6	39	33
1989	2.9	2.3	2.3	29	29
1990	1.7	1.2	1.4	62	28
Average 1966-84 Beaufort-Jasper				121.5	+/- 68.3
Average 1985-90 Beaufort-Jasper				40.3	+/- 12.8
Average 1973-90 Port Wentworth					26.8 +/- 8.7

- a. These percent dilutions account for inflow of water to the river below Highway 301 and dilution in the intake and transport system between the river and the treatment plants.
- b. Beaufort-Jasper treatment plant began operation in 1965.

Table 3. SUMMARY OF MEASURED AND DERIVED ANNUAL FLOW RATES FOR
RETROSPECTIVE DOSE CALCULATIONS WITH LADTAP COMPUTER CODE (a)

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

Year	Measured Flow Rate	Derived Flow Rate for Computer Code Input	
	Max Individual Highway 301	Beaufort-Jasper (b)	Port Wentworth (c)
1954	7382	(d)	9301
1955	5974	(d)	7528
1956	6309	(d)	7949
1957	8312	(d)	10473
1958	11038	(d)	13908
1959	9748	(d)	12283
1960	13112	(d)	16521
1961	10909	(d)	13745
1962	10580	(d)	13331
1963	11138	(d)	14034
1964	20497	(d)	25826
1965	12785	28254	16109
1966	11175	18376	14080
1967	10573	22066	13322
1968	9624	16615	12126
1969	10945	22034	13790
1970	8208	27280	10342
1971	10686	43977	13464
1972	11235	27385	14156
1973	14431	23162	16544
1974	11101	22598	13182
1975	15408	30978	18987
1976	13914	35172	16660
1977	11646	19841	15306
1978	10522	24332	11450
1979	13252	34937	17469
1980	13201	30464	17219
1981	6599	11698	8579
1982	7169	19594	10135
1983	12348	12760	14723
1984	12759	26368	17196
1985	7167	9290	8959
1986	6175	8305	7526
1987	8955	13219	12619
1988	5364	7463	7152
Average 1965 - 1984	-----	24895	-----
Average 1985 - 1988	-----	9569	-----
Average 1954 - 1988	10578	-----	13314
Minimum 1965 - 1984	-----	11698	-----
Minimum 1985 - 1988	-----	7463	-----
Minimum 1954 - 1988	5364	-----	7152

- a. A derived flow rate is not a true river flow rate but a derived number that accounts for additional dilution between Highway 301 and the finished water product from the treatment plant. This number is not to be used as an indication of river flow rate at the treatment plant pump station located on the river. It is only used for LADTAP computer code input.
- b. For the period of 1966 - 1988, derived flow rate of water below Highway 301 is based on percent dilution for each year shown in Table 2. For 1965, a percent dilution of 121% was used, based on average for 1966 - 84.
- c. For the period 1973 - 1988, derived flow rate of water below Highway 301 is based on percent dilution for each year shown in Table 2. For 1954 - 71, a dilution of 26% was used based on average for 1973 - 90.
- d. The Beaufort-Jasper water treatment plant did not start operation until 1965.

Table 4. SUMMARY OF MEASURED AND DERIVED FLOW RATES FOR
LIQUID RELEASE PROSPECTIVE DOSE CALCULATIONS

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

Type of Calculation	Measured Flow Rate	Derived Flow Rate for Computer Code Input (a)	
	Max Individual Highway 301	Beaufort-Jasper	Port Wentworth
Average Annual	10500	13000	13000
Minimum Annual	5300	6600	6600
Minimum Daily	3900	4900	4900

- a. A derived flow rate is not a true river flow rate but a derived number that accounts for additional dilution between Highway 301 and the finished water product from the treatment plant. This number is not to be used as an indication of river flow rate at the treatment plant pump station located on the river. It is only used for LADTAP computer code input. The derived flow rates for Beaufort-Jasper and Port Wentworth are based on a 26% average inflow.

APPENDIX A

SAVANNAH RIVER FLOW RATES BY MONTH AND YEAR

SAVANNAH RIVER FLOW RATES BY MONTH AND YEAR

APPENDIX A

2197000

SAVANNAH RIVER AT AUGUSTA, GA (NEW SAVANNAH BLUFF DAM)

CALENDAR YEARS - JANUARY TO DECEMBER

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

	1950	1951	1952L	1953	1954	1955	1956L	1957	1958	1959	1960L	1961	1962	1963	1964L	1965	1966
ANNUAL																	
Max	41400	16400	38600	34800	22300	22400	14600	24400	57100	28200	33200	30300	27900	30600	84500	30000	34500
Mean	7691	6222	8221	7372	6944	5367	5550	7646	10301	8569	11106	9349	8746	10020	18531	10802	9398
Min	2850	1710	2280	3410	4360	4180	3580	5170	5000	5260	5350	4930	4760	5350	6560	6300	6120
MONTHLY MAX																	
Jan	15400	8030	14000	6730	8800	5640	5080	8580	18800	7390	26600	8150	27900	17800	23100	29200	14800
Feb	10800	10600	8910	13200	10700	12900	7710	8470	23300	15400	33200	28300	26300	15400	24100	16400	27200
Mar	21200	12900	38600	21600	22300	6730	13300	12600	25000	17200	28000	29500	25700	30600	55500	29600	34500
Apr	11100	16400	33200	8870	20400	22400	14600	14300	57100	11700	30800	30300	24700	13500	84500	30000	8920
May	10100	9390	13600	34800	9390	9030	8030	15200	26100	7040	22900	14200	12800	23400	50200	16800	12700
Jun	18000	7700	4900	6830	8470	5740	6990	7260	8910	28200	7880	18100	17400	20100	8210	23600	13200
Jul	18800	8080	4540	6930	7480	6330	5640	7160	17200	12200	10600	20000	6670	18500	19400	14700	8230
Aug	7160	4720	5170	6330	6030	6230	6630	8360	11000	9150	10800	17300	6780	11800	36700	12600	8340
Sep	28500	6030	4280	8910	6030	5550	11400	8030	7150	13500	8100	16700	7660	10200	32400	9860	8000
Oct	41400	4800	3920	8800	6730	5640	6330	14200	6530	24500	10500	6560	6890	9270	26300	9340	7290
Nov	6730	6030	5550	8030	6730	5840	6630	24400	6430	20000	6780	6450	6780	9150	14900	7870	7000
Dec	27000	15700	3920	10700	7020	6030	7610	21100	6430	12500	7110	28200	6450	15200	33000	8280	8510
MONTHLY MEAN																	
Jan	9481	6581	8654	4084	7247	4600	4418	6105	12783	6026	15069	6198	14960	9178	16358	17606	8783
Feb	8759	7451	5842	5889	7269	5278	4861	5988	14031	7395	28479	9951	9978	9885	16717	10115	13611
Mar	11572	9764	29085	11387	9420	5767	5668	6772	15120	7322	18659	11982	13175	18455	27513	17449	23613
Apr	7607	11436	21815	6460	11457	7119	6171	8225	23524	6721	18020	21765	15422	7675	43846	16368	7201
May	5907	6580	6782	15150	7306	5804	6031	9802	12255	5781	9029	7425	7963	14900	27045	9574	10477
Jun	7448	5963	4342	5778	6575	5227	5425	6138	6609	13059	6267	6783	8190	10091	7143	12759	9031
Jul	6916	4570	3627	5750	6230	5206	5266	6143	8796	6613	6414	8840	5676	11222	10967	7652	6830
Aug	4358	3465	3889	5696	5677	5226	5547	6171	7835	7070	7344	7700	5992	7875	11902	9027	6731
Sep	8250	3389	3332	7232	5584	4995	6189	6452	5879	8559	6538	7835	6050	7488	14477	7959	6896
Oct	8541	2728	3385	7172	5818	4976	5437	7347	5722	12677	6514	5680	5960	6559	17738	7057	6478
Nov	5166	4196	4017	6498	5846	5076	5622	9310	5675	12403	5867	5537	5852	6826	10946	6958	6478
Dec	8319	8662	3751	7115	4982	5150	5962	13126	5763	9298	5943	12700	5865	9818	17674	7060	6795
MONTHLY MIN																	
Jan	7430	5740	4360	3410	5740	4180	4010	5460	5550	5550	6560	5460	5060	5350	7220	7160	6600
Feb	6870	5930	4540	3410	5640	4180	3580	5260	6030	5550	21300	5350	4760	6450	10900	6790	7080
Mar	7550	5740	9750	6030	5930	4360	4440	5260	6950	5740	5460	5170	5160	6670	13500	8880	7960
Apr	5930	8580	7480	3740	6430	5260	4720	5460	8030	5740	6330	6330	7330	5460	8980	6600	6160
May	4460	4180	4360	5550	6230	5080	4800	5640	5460	5260	5570	5460	5790	5790	6560	6550	6810
Jun	3330	3820	4010	5260	6130	4360	5170	5460	5000	5360	5350	5240	5350	5460	6560	6530	6230
Jul	3410	3100	3100	5360	5740	4980	5170	5330	5460	5360	5570	4930	5240	5460	6670	6300	6240
Aug	2850	1890	3020	5550	5460	4900	5080	5360	5170	5640	5460	5030	5570	5680	6780	6310	6370
Sep	3580	1710	2280	5640	5460	4900	5170	5170	5550	5260	5790	5570	5570	6450	7000	6460	6250
Oct	3010	1770	3260	5550	5460	4720	5170	5260	5360	5460	5570	5350	5460	6120	8350	6410	6120
Nov	4260	3020	3260	5550	5360	4900	5170	5260	5360	6010	5570	5030	5130	6450	8220	6500	6230
Dec	4360	3020	3670	5740	4360	4900	5260	6930	5550	5900	5460	4930	5460	6670	11900	6500	6300

2197000

SAVANNAH RIVER AT AUGUSTA, GA (NEW SAVANNAH BLUFF DAM)

CALENDAR YEARS - JANUARY TO DECEMBER

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

	1967	1968L	1969	1970	1971	1972L	1973	1974	1975	1976L	1977	1978	1979	1980L	1981	1982	1983
ANNUAL																	
Max	22500	32200	44100	23200	59700	32700	38100	29300	43900	31945	32200	41300	32500	46000	15600	25500	64400
Mean	9152	8281	9821	6967	9479	9957	12739	9840	13590	12289	10315	9336	11713	11669	5921	7409	10988
Min	5740	5890	5800	5420	4460	5460	5450	5810	6720	6000	6530	6110	5940	5900	2810	4650	4740
MONTHLY MAX																	
Jan	11400	32200	20400	11600	13000	32700	24000	19400	19900	19752	23800	41300	11700	24200	7610	24000	18900
Feb	12700	15400	19500	8960	18000	21200	25900	29300	27800	16068	11800	25000	32500	21000	15600	25500	29400
Mar	17500	10400	19800	18700	59700	11200	30300	20000	43400	29500	27800	15300	30400	46000	7300	15500	26200
Apr	11100	9990	44100	23200	19300	11400	38100	28400	43900	22932	32200	9990	32200	40900	7120	19700	64400
May	14400	9980	29500	8020	19600	17100	30500	14400	18300	28556	10800	28400	29400	19100	6630	7480	13100
Jun	20900	22100	11800	7230	10100	21700	30000	9730	16100	31945	9700	10100	25100	19500	7390	6900	15800
Jul	15800	9090	10500	8500	9320	14300	12700	9760	12900	24169	9170	8330	9620	9510	6710	7880	9930
Aug	21900	11000	8800	7910	16800	11100	10200	12500	8530	7849	8600	7550	10400	9540	6340	8890	9030
Sep	16400	7340	8760	6930	8110	9170	7760	11000	9180	8758	7270	8780	10200	8760	6800	10300	8780
Oct	6840	7100	8190	14800	7790	6970	7270	6810	18020	19900	7920	6710	9870	7940	6170	9440	9970
Nov	11000	8790	7990	13900	10700	6870	6730	7470	17436	25100	15700	6760	16900	8960	7530	6510	10200
Dec	22500	7340	8740	14200	20000	26000	16800	7700	19680	31100	15400	6980	16100	8880	13800	15000	15700
MONTHLY MEAN																	
Jan	8718	18443	10213	6945	7152	19255	15261	16156	12172	12251	13210	16300	6821	13163	6670	9346	13780
Feb	8439	7175	13588	7092	7314	16162	19082	22346	18144	10413	8924	17994	11036	12517	7211	11615	17207
Mar	9228	7199	11352	8552	21579	8569	18184	8762	28494	16758	13022	9746	18693	23612	6390	7779	17229
Apr	6870	7555	20800	8093	8658	7737	25620	13899	21382	12599	20178	8012	24717	26747	6170	8098	26210
May	7036	7620	13677	6582	9374	9347	11034	7865	13426	11124	8396	12069	11801	10615	5691	6104	8244
Jun	14444	9607	7370	6548	7339	10392	22833	7093	9235	16942	7745	8532	14450	11586	6204	5985	9724
Jul	8713	7366	6942	7059	7248	8429	7906	7302	8231	13200	7612	7082	7629	7720	5587	5932	6489
Aug	8625	7500	7128	6889	8471	7129	7469	8181	7546	7380	7235	6833	7778	7196	5667	5988	6573
Sep	8740	6809	7177	6562	7306	7078	6345	7238	7882	7613	6909	6694	7317	7094	5840	6855	6467
Oct	6286	6649	6602	6460	7198	6561	6076	6451	11098	8880	7045	6470	8491	6535	5294	6697	6067
Nov	7593	6834	6587	6283	7504	6386	6153	6814	13147	9583	11938	6436	10798	6916	4624	5975	5534
Dec	15095	6469	6867	6536	14162	12552	7845	7044	12679	20529	11607	6452	11297	6560	5794	8855	9062
MONTHLY MIN																	
Jan	6430	9830	5800	6110	4460	7280	7000	7330	6740	7858	8790	8560	5940	6880	6130	5160	8980
Feb	6580	5890	6860	5970	5930	9270	10500	15000	8420	7300	7510	8440	6420	7910	5410	5410	10100
Mar	6490	6180	6210	6200	6110	7390	8500	6030	10100	7156	8030	7590	9990	7670	5800	5200	11500
Apr	5790	6260	6330	6250	5710	6900	12000	6210	7920	7138	9350	7130	11600	9020	5410	5000	12500
May	5740	6490	7500	5960	6230	6680	6720	6100	8090	6841	6990	7680	7200	6810	5390	4650	6380
Jun	6200	6450	6190	6160	6010	6260	15900	5940	7100	8182	6630	6780	9300	6750	5120	5370	6180
Jul	6400	6460	5920	6500	6130	6590	5970	6310	7130	7534	6920	6160	6520	6370	5170	5290	5150
Aug	5770	6600	6090	6260	6620	6220	6050	6400	6900	6823	6610	6360	6370	5970	5330	5180	5490
Sep	6150	6450	6210	5870	6690	6370	5740	5810	6720	6751	6530	6110	6150	6200	5420	5320	5620
Oct	6090	6300	5980	5560	6510	6180	5450	5830	6814	6000	6550	6290	6600	5900	4720	5840	5320
Nov	6100	6240	6020	5420	6640	5850	5790	6360	8209	6870	6660	6170	6700	6110	3100	5530	4740
Dec	8890	6020	6010	5620	7220	5460	5600	6600	8317	13900	8390	6110	7240	5920	2810	5080	5760

2197000

SAVANNAH RIVER AT AUGUSTA, GA (NEW SAVANNAH BLUFF DAM)

CALENDAR YEARS - JANUARY TO DECEMBER

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

	1984L	1985	1986	1987	1988
ANNUAL					
Max	33200	23700	15200	26800	14600
Mean	11224	6557	5803	8203	4888
Min	5180	4750	3790	4050	3880
MONTHLY MAX					
Jan	25000	10800	9110	19800	7070
Feb	28900	23700	9830	16600	11300
Mar	33200	10000	15200	26800	7240
Apr	23400	7980	6160	15300	6690
May	32000	6520	7950	6880	4780
Jun	10900	5730	8490	6390	6310
Jul	22000	6400	7890	7270	5290
Aug	30500	6380	8990	13600	4780
Sep	10700	6240	7000	13900	8760
Oct	7670	16000	7210	11400	14600
Nov	7860	13700	6630	9060	5010
Dec	7440	11600	9860	8050	4690
MONTHLY MEAN					
Jan	12785	6252	7461	8365	5998
Feb	14162	12364	6609	10655	6118
Mar	19065	7050	6534	15294	5637
Apr	14187	6133	5557	9937	5172
May	17035	5515	5479	5639	4476
Jun	8252	5257	5834	5353	4271
Jul	8120	5715	5954	6136	4219
Aug	15574	5678	6092	8671	4320
Sep	7367	5575	5516	9440	4847
Oct	6239	6581	4514	7036	4939
Nov	6014	6636	4561	6284	4442
Dec	5789	6402	5546	5804	4305
MONTHLY MIN					
Jan	5510	5300	5670	4050	5280
Feb	5460	5950	5500	6460	4820
Mar	10000	5670	5240	6940	4990
Apr	7400	5350	5190	5200	4580
May	6480	5050	4900	4520	4220
Jun	5900	4750	5060	4490	3880
Jul	6350	5170	4750	5400	3880
Aug	6240	5410	4650	5620	4020
Sep	5190	5110	4590	5650	4050
Oct	5180	5170	3830	4990	4040
Nov	5290	5480	3790	4840	4100
Dec	5260	5060	4070	4750	4050

2197320

SAVANNAH RIVER NEAR JACKSON, S.C. (SRS BOAT DOCK)

CALENDAR YEARS - JANUARY TO DECEMBER

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

DATA INCOMPLETE FOR SHADED YEARS

	1972L	1973	1974	1975	1986L	1977	1978	1979	1980L	1981	1982	1983	1984L
ANNUAL													
Max	20000	20100	20000	20000	22000	22000	20900	21800	19800	17000	20400	21900	21900
Mean	9347	11366	9518	12089	11191	10427	8608	11441	9296	6050	7509	10406	10579
Min	6350	6330	6440	6760	6766	6420	5800	5770	5880	3220	5050	4900	5340
MONTHLY MAX													
Jan	20000	19500	19100	17900	18200	19400	19400	11000	19800	8120	19500	19100	19600
Feb	18900	20000	20000	20000	17600	12500	19400	19900	19600	17000	20400	21900	18700
Mar	11000	20100	19900	19300	19841	20500	16400	21700	18000	8040	16100	21700	21800
Apr	11100	20100	20000	19700	18536	22000	11700	21800	18300	8130	18400	21900	21300
May	15700	19000	13200	17800	17896	11600	20900	21000	19300	6390	13600	16700	21900
Jun	18000	20100	9560	16400	18991	8620	11200	21600	19800	8810	6630	15600	11300
Jul	17200	17700	9150	14200	19467	9570	7520	11100	10200	6590	7970	10500	16900
Aug	10600	10600	11100	8470	8064	9080	7470	11700	9720	6500	7430	9090	21500
Sep	8110	8140	9910	9980	10124	7730	8180	11400	8990	6520	9480	9640	11000
Oct	7110	7600	7540	17800	18100	8610	6500	10800	8610	5540	9560	9730	7620
Nov	7280	6980	7720	17900	22000	17100	7160	17000	8410	6330	6650	11300	7780
Dec	19800	14800	7980	18500	22000	17100	7600	17500	9410	12800	15700	15900	8200
MONTHLY MEAN													
Jan	13605	14806	16963	12839	13225	14865	13034	6737	11693	6803	10118	14781	12953
Feb	16348	18668	18847	17336	11643	9364	13347	8398	13594	7836	11570	17423	14238
Mar	8499	16200	9538	17293	9919	13764	11107	17485	11555	6898	8308	18127	17017
Apr	7641	18385	12178	14771	10340	17832	8677	19822	13875	6641	8070	18819	14559
May	9220	11175	8120	13932	10300	8704	13292	11832	11095	5680	6393	9075	14645
Jun	9777	19689	7244	9854	12112	7573	9101	16817	13027	6710	5926	10497	8859
Jul	9149	9275	7295	8653	13793	7368	6879	8685	7822	5465	5900	6951	8265
Aug	7106	8005	8364	7502	7397	7276	6830	8529	7242	5690	5959	6627	12913
Sep	6868	6852	7555	8194	7693	7133	6524	7794	7073	5656	6669	6701	7656
Oct	6682	6695	7206	11750	9382	7249	6180	8745	6927	5071	6714	6136	6500
Nov	6765	6692	7250	14573	9967	12906	6461	11460	7208	4563	6016	5798	6451
Dec	11710	8437	7406	13589	19875	13018	6387	12545	6655	5734	8753	9127	6084
MONTHLY MIN													
Jan	7140	7670	7160	7200	8310	9000	9470	5770	6620	6020	5690	8610	5430
Feb	10000	12300	16400	12000	7720	7410	9060	6220	7680	5800	5680	12000	6100
Mar	7430	9890	6840	12800	7470	8760	8330	13000	7570	6040	5440	14500	10500
Apr	6800	15500	6590	7410	7140	11000	7510	12900	11500	5720	5120	15600	9670
May	6730	7500	6610	7580	6854	7100	8260	7960	6880	5530	5410	6610	7340
Jun	6350	18500	6440	7150	9260	6420	6440	12800	7010	5680	5560	6750	6280
Jul	6630	6790	6450	7060	7976	6490	6070	7150	6330	5190	5320	5550	6700
Aug	6430	6680	6760	6760	6799	6580	6340	6880	5930	5310	5330	5620	6950
Sep	6420	6410	6720	6760	6766	6490	5800	6270	6240	5240	5140	5840	5340
Oct	6390	6330	6900	7090	6930	6460	5990	6690	6180	4660	5740	5380	5370
Nov	6560	6480	7030	8960	7260	6660	6110	6720	6290	3510	5640	4900	5770
Dec	6520	6480	7060	8450	17300	8380	5940	7200	5880	3220	5050	5930	5470

2197320

SAVANNAH RIVER NEAR JACKSON, S.C. (SRS BOAT DOCK)

CALENDAR YEARS - JANUARY TO DECEMBER

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

DATA INCOMPLETE FOR SHADED YEARS

	1985	1986	1987	1988
ANNUAL				
Max	20500	14800	21900	13700
Mean	6751	5978	8519	5213
Min	4760	4120	4650	4150
MONTHLY MAX				
Jan	11900	9440	19700	7180
Feb	20500	11100	17200	12500
Mar	10500	14800	21900	7170
Apr	7510	6200	16400	7080
May	6570	7350	7030	5220
Jun	6060	7480	6590	5570
Jul	6360	8010	7230	5470
Aug	6460	9670	13200	4880
Sep	6340	6810	14000	9680
Oct	13900	7260	12900	13700
Nov	15700	7230	9360	5360
Dec	12600	10400	7960	5030
MONTHLY MEAN				
Jan	6482	7601	9399	6160
Feb	13256	7170	11595	6231
Mar	7478	6904	14919	5728
Apr	6283	5751	11010	5461
May	5569	5403	5896	4720
Jun	5351	5739	5434	4560
Jul	5820	5869	6221	4530
Aug	5725	6354	8941	4628
Sep	5486	5555	9859	5423
Oct	6521	4859	7552	5487
Nov	6876	4582	6455	4958
Dec	6694	5986	5816	4750
MONTHLY MIN				
Jan	5520	5920	4690	5460
Feb	5720	5880	6870	5060
Mar	5940	5230	7570	5190
Apr	5490	5320	5560	4810
May	4980	4850	4730	4440
Jun	4760	5010	4650	4180
Jul	5260	4770	5460	4150
Aug	5390	5080	5870	4370
Sep	4920	4760	5980	4580
Oct	5000	4230	5370	4570
Nov	5340	4120	5100	4700
Dec	5120	4500	4920	4520

2197500

SAVANNAH RIVER AT BURTONS FERRY BRIDGE NEAR MILLHAVEN, GA (HIGHWAY 301)

CALENDAR YEARS - JANUARY TO DECEMBER

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

DATA INCOMPLETE FOR SHADED YEARS (NA)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
ANNUAL																	
Max	25700	14500	37800	31800	17600	14800	13600	18100	40600	27400	36400	32400	26800	28600	71700	32700	37000
Mean	8764	7010	9328	8622	7382	5974	6309	8312	11038	9748	13112	10909	10580	11138	20497	12785	11175
Min	3920	2120	3060	4840	4770	4860	4590	5590	5500	5590	6060	5700	6260	6350	7400	7390	7110
MONTHLY MAX																	
Jan	13800	9940	13300	8140	10500	6540	5780	7940	16600	8490	19200	8930	26800	18000	24600	29400	14600
Feb	11700	10800	9200	12600	10800	11400	9920	9150	20200	14100	36400	18400	21700	16400	23200	17500	23200
Mar	16300	13300	37800	18400	11600	7340	13600	12400	21200	14200	35700	26200	24600	28600	40600	30200	37000
Apr	13500	14500	35000	17400	17600	14800	13200	13900	40600	12600	35700	32400	22100	23700	71700	32700	11800
May	10400	9830	14500	31800	9810	9260	8930	13700	20000	8270	17600	22000	16000	22400	46200	17100	15500
Jun	13000	8330	5260	7840	8380	6350	7740	9590	9000	27400	9370	12200	14400	17100	9920	22300	14400
Jul	12400	7480	5440	7540	7340	6260	6100	7240	14400	11000	10000	16400	7140	19200	20200	14300	9460
Aug	7860	5470	6280	6940	6160	6440	6440	8050	10100	8930	11100	14800	7640	12400	21200	13400	8850
Sep	15500	7380	4930	12000	5970	6350	11100	8710	6840	13100	8710	16900	9040	9780	34400	10300	8840
Oct	25700	5920	4660	10200	6440	5680	6740	15200	6260	22100	10100	6900	8600	11700	25800	10200	7950
Nov	8600	6820	6100	8820	6740	6440	6640	16400	6740	23000	7040	7200	8410	8770	21500	8750	7810
Dec	16600	14500	5020	11600	6540	6440	7840	18100	7240	14400	7840	23700	8060	15000	28000	8790	9950
MONTHLY MEAN																	
Jan	11066	7864	9916	5650	8609	5594	5067	6522	13656	6972	15610	7255	18763	10635	17852	21177	10128
Feb	10445	8425	7315	7137	8011	6256	6192	6820	15275	9057	32428	9672	11856	11921	20038	12768	13291
Mar	12582	10552	28713	13346	9425	6401	7343	7753	16665	8823	24516	16133	17823	17984	27084	19013	30184
Apr	9574	12733	26620	8969	12665	8094	7745	8958	24313	7847	23493	24197	18267	10670	46240	21870	9741
May	6944	7483	8170	16645	7786	6331	7098	10452	13976	6365	11246	10902	9399	15476	29982	11773	12855
Jun	8663	6615	4705	6878	6591	5648	5942	7001	7559	13985	7593	7414	9320	10134	8418	13642	11025
Jul	7730	5233	4178	6571	6422	5604	5531	6497	9066	7128	7535	10651	6808	13258	11135	9797	8041
Aug	5609	4147	4628	6314	5844	5630	5890	6433	8178	7198	8249	8817	6866	8787	13307	10579	7988
Sep	8917	3861	4091	8059	5742	5523	6665	7137	5881	9130	7261	9717	6834	8462	20013	8836	7777
Oct	8696	3598	4074	7910	5880	5233	5842	8660	5811	14245	7253	6181	6812	7695	20148	8121	7530
Nov	6109	5095	4813	7320	6198	5579	5887	8769	6080	15652	6478	6540	7032	7566	14237	7934	7543
Dec	8939	8658	4677	8412	5524	5859	6528	14555	6394	10755	6685	13442	7275	10892	17700	7940	7920
MONTHLY MIN																	
Jan	9300	6730	6370	4840	7240	5040	4590	5880	9040	6160	10400	6160	8650	6700	8410	11800	7580
Feb	9100	7000	6100	5020	6640	4860	4590	5970	10600	6350	20800	6640	7300	7730	17800	9450	8610
Mar	8800	6730	10000	9700	6940	5040	5500	6160	14600	6740	12100	7510	10800	7950	19600	12500	12900
Apr	7380	10200	12000	6740	8380	6150	5970	6440	15800	5970	14200	10700	13200	7000	17900	10000	8640
May	5710	5110	4940	8050	6350	5400	5880	6440	7570	5590	7040	7200	6840	6640	8030	8140	9570
Jun	4540	4570	4220	6350	6060	5220	5590	5970	6280	6350	6540	6500	7040	6350	7400	7760	7740
Jul	4450	4210	3680	6160	5880	5130	5220	5780	6280	6060	6540	6800	6350	6940	7840	7950	7380
Aug	4120	2460	3680	6060	5680	5130	5400	5590	6440	5880	6640	7100	6350	6600	8050	7750	7320
Sep	4540	2120	3060	6260	5500	5040	5880	5680	5500	6440	6440	6400	6350	7510	9040	7600	7110
Oct	3920	2550	3850	6440	5500	5040	5500	6350	5500	8490	6350	5700	6260	6900	10100	7390	7140
Nov	5170	3850	3850	6350	5880	5130	5590	6160	5590	8160	6060	6200	6260	7200	11100	7450	7240
Dec	5170	3850	4390	6440	4770	5500	5780	10400	5970	7740	6060	6300	7000	7400	12500	7470	7460

2197500

SAVANNAH RIVER AT BURTONS FERRY BRIDGE NEAR MILLHAVEN, GA (HIGHWAY 301)

CALENDAR YEARS - JANUARY TO DECEMBER

FLOW RATE IN CUBIC FEET PER SECOND (cfs)

DATA INCOMPLETE FOR SHADED YEARS

	1967	1968	1969	1970	1982	1983	1984	1985	1986	1987	1988	1989
ANNUAL												
Max	22000	26500	36900	17900	14300	58000	33600	19500	13800	27500	11600	14800
Mean	10573	9624	10945	8208	7169	12348	12759	7167	6175	8955	5364	6309
Min	6780	6970	6710	6840	5386	5210	5730	4830	3960	4300	4000	4100
MONTHLY MAX												
Jan	12200	26500	18700	11100	NA	20400	19400	10500	9550	19900	7490	6490
Feb	12800	19000	21100	10100	NA	26100	20100	19500	11000	16800	10900	13000
Mar	16700	11500	17900	16900	NA	25800	33000	10300	13800	27500	7610	14400
Apr	12000	10500	36900	17900	NA	58000	24800	7680	6480	15900	7310	12800
May	14000	10200	32400	8880	NA	16000	33600	6870	7260	7710	5690	7330
Jun	22000	17800	11000	7990	NA	15000	12300	6460	7380	7460	5720	10300
Jul	15900	9830	9960	9230	7949	10600	12300	6880	7390	7240	5490	9960
Aug	15500	10500	10200	8510	7850	9010	30200	7030	8970	11900	4750	9960
Sep	17000	7970	10100	7530	9259	9280	10500	7210	6920	13200	9730	14800
Oct	7810	8380	8730	NA	9380	8940	7920	12800	6980	11800	11600	NA
Nov	11800	9190	8390	NA	7000	10500	7760	15100	6990	8840	5410	NA
Dec	21400	8650	10100	NA	14300	14600	8090	12100	9620	7620	5220	NA
MONTHLY MEAN												
Jan	10457	22200	10502	7954	NA	15613	13775	6987	8158	9893	6502	5419
Feb	9752	10073	17050	8308	NA	19668	14750	13720	8178	11699	6549	5785
Mar	11233	8643	12711	9695	NA	20723	23539	7813	7888	17784	6089	7108
Apr	8155	8535	18966	10069	NA	29540	15580	6530	5915	11652	5853	6855
May	8282	8479	17910	7660	NA	9621	21304	5873	5481	6243	4994	5053
Jun	15963	10499	8366	7457	NA	10464	9361	5779	5953	5640	4856	5296
Jul	10531	8075	7751	7685	6906	7268	8470	6156	5650	6298	4510	6718
Aug	9677	8093	7910	7794	6483	6930	17805	6098	6153	8660	4484	5694
Sep	10584	7524	8092	7268	6955	7027	7924	5658	5559	9573	5469	8867
Oct	7252	7459	7342	NA	7158	6408	6849	6413	4657	7495	5337	NA
Nov	8632	7937	7434	NA	6356	6150	6770	7681	4529	6596	4981	NA
Dec	16316	7870	7864	NA	8959	9597	6551	7830	6087	6117	4839	NA
MONTHLY MIN												
Jan	8020	18800	7250	7260	NA	10100	6240	6000	6400	4450	5890	4750
Feb	7700	7550	10200	7260	NA	16000	7300	6620	6950	7060	5400	4310
Mar	8090	7610	8060	7190	NA	15900	13400	6230	6350	8690	5440	4880
Apr	6880	7390	7960	7390	NA	17600	11000	5710	5410	6040	5140	4720
May	6780	7320	9040	7000	NA	7060	8250	5320	4950	4900	4680	4160
Jun	7410	7340	7280	6890	NA	7290	6980	5150	5050	4300	4510	4100
Jul	7940	7240	6930	7180	6530	5870	7110	5450	4390	5520	4000	4630
Aug	7480	7240	6900	7360	5771	5880	7600	5580	4870	5890	4210	4430
Sep	7160	6970	7150	6840	5386	6240	5780	4830	4460	6600	4440	4140
Oct	6950	7040	6710	NA	6240	5560	5730	4840	3960	5400	4490	NA
Nov	7070	7040	6850	NA	5950	5210	6180	5860	3960	5650	4620	NA
Dec	11100	7390	6860	NA	6120	6250	6020	6020	4430	5470	4280	NA

2198500
 SAVANNAH RIVER NEAR CLYO, GA
 CALENDAR YEARS - JANUARY TO DECEMBER
 FLOW RATE IN CUBIC FEET PER SECOND (cfs)

	1950	1951	1952L	1953	1954	1955	1956L	1957	1958	1959	1960L	1961	1962	1963	1964L	1965	1966
ANNUAL																	
Max	22200	15200	41300	35800	18800	15200	14100	20400	45500	25500	40300	34300	28200	29200	83800	37800	42800
Mean	9484	7668	10409	9743	8017	6812	7145	9293	12540	11170	14562	12086	11868	12649	23167	15093	12321
Min	4680	2860	3610	5580	5310	5490	5400	5760	5760	6060	6610	6160	6760	7270	8260	8070	7180
MONTHLY MAX																	
Jan	13300	11400	15000	8980	11400	7160	6360	8500	17700	8860	19200	10000	28200	23700	28200	31900	15400
Feb	12500	11200	11200	12700	10900	11200	10900	9760	23100	15500	40300	16800	17100	23200	28200	24000	22200
Mar	16000	14100	39700	18400	12500	7930	14100	12300	23600	16000	38500	27200	26700	29200	36700	29400	42800
Apr	13300	15200	41300	19200	18800	15200	12900	13700	45500	14100	39700	34300	23200	29200	83800	37800	22100
May	10200	12000	14500	35800	11400	9900	10300	14800	28500	8380	17200	29200	19100	23200	55800	19000	18600
Jun	12100	8740	7240	11500	8860	7490	7820	10900	9620	25500	9870	9480	14500	17800	12500	22800	18000
Jul	11400	7820	5600	7240	7600	7380	6260	7820	13700	10300	10000	15300	7930	21600	18400	22900	11000
Aug	11200	5760	6460	7490	6360	7270	6960	7930	10200	9620	11600	14900	8040	12900	20900	14800	9690
Sep	15200	7490	5580	12500	6160	8040	10200	8860	8040	12900	8890	16100	9340	10000	33100	11000	9040
Oct	21300	7060	5400	12900	6360	6160	9340	16500	6460	22400	10300	7160	10300	12000	27200	10600	8280
Nov	22200	7160	6460	9220	6860	7060	7060	14500	6660	25200	7650	7600	8860	9220	24700	9460	7870
Dec	14800	14300	5580	12900	6760	7160	8980	20400	7820	15600	8610	23700	5620	15500	22800	9330	8830
MONTHLY MEAN																	
Jan	11645	9156	11589	6547	9814	6347	5853	7585	15371	7992	15361	8483	21529	11833	19639	24661	11874
Feb	11264	9259	8907	8321	8484	7318	7483	7735	18671	11879	34459	9986	12202	16139	24552	17346	14282
Mar	13397	11084	27932	16126	10878	7049	9142	8519	19535	12077	29471	19679	21132	17339	29168	22303	33668
Apr	10612	14047	31153	11537	14117	9750	9039	10133	27590	9964	27133	25570	19950	14633	55677	27777	11645
May	7500	8288	10042	18161	8950	7209	7892	11976	17314	6771	13500	15179	11900	16541	33894	14060	13382
Jun	9273	6783	5836	7511	7089	6307	6287	8119	8492	14070	8239	7815	9994	11539	9415	13391	13757
Jul	7871	5737	4635	6698	6646	6232	6015	6923	9977	7813	8072	11234	7241	16538	11081	13204	9072
Aug	6318	4793	5019	6556	5960	6248	6325	6679	8645	7963	9083	9997	7319	9582	15664	12613	8773
Sep	10331	4209	4500	8196	5893	6570	6897	7619	6353	9826	7573	11024	7293	8932	23517	9692	7970
Oct	8080	4207	4776	9262	5919	5824	6918	10223	6028	14397	7645	6560	8029	8658	21155	8875	7648
Nov	8253	5869	5330	7899	6470	6217	6617	8609	6207	19283	7039	6934	7833	8270	16730	8696	7664
Dec	9456	8742	5258	9841	6075	6776	7309	17161	6844	12342	7587	12452	7942	11892	18006	8684	8035
MONTHLY MIN																	
Jan	10300	7570	7160	5580	8780	5760	5490	6960	13700	7380	11600	7530	12500	8040	9900	20600	8550
Feb	10200	7570	7380	6360	7350	5760	5400	6660	15500	8260	20000	7770	8500	10500	20600	12400	10800
Mar	10300	7570	10600	13300	8150	5860	6860	6760	15800	8860	22000	9620	16600	10600	24700	19000	23400
Apr	8010	12300	15500	8620	11200	6760	6760	7380	18400	7060	17800	10000	17100	7820	23700	14900	8960
May	6500	5700	6100	8980	7160	5860	6360	6960	9100	6060	8130	8980	7710	8260	15100	9420	9470
Jun	5200	4800	5000	6600	6360	5580	5860	6760	7270	7060	7210	7160	7600	7270	8500	8680	9150
Jul	5000	4770	4080	6200	5960	5490	5760	5960	7270	6560	7010	7820	6760	8620	8260	9500	7890
Aug	4860	3690	4170	6100	5760	5670	6060	5760	7270	6860	7210	8260	6760	7490	9340	9280	7640
Sep	5760	2860	3610	6560	5760	5670	6160	5960	5960	7380	6810	6960	6860	8150	12800	8380	7260
Oct	4680	3140	4410	7160	5580	5580	6360	6960	5760	10400	6710	6160	7160	7710	10900	8080	7180
Nov	5900	4680	4410	6960	6060	5860	6260	6560	5860	11700	6610	6660	6960	7930	13000	8070	7390
Dec	5700	4860	5040	7060	5310	6260	6360	13500	6360	9730	7010	6860	7710	8860	13800	8140	7640

2198500
 SAVANNAH RIVER NEAR CLYO, GA
 CALENDAR YEARS - JANUARY TO DECEMBER
 FLOW RATE IN CUBIC FEET PER SECOND (cfs)

	1967	1968L	1969	1970	1971	1972L	1973	1974	1975	1976L	1977	1978	1979	1980L	1981	1982	1983
ANNUAL																	
Max	22500	28000	39500	20800	52900	36300	44400	32900	50700	33400	32200	38400	36500	58000	13400	19400	57900
Mean	11339	10245	11732	8818	12924	12232	17344	12289	17465	14679	12440	10978	14311	14668	6957	8783	13371
Min	6970	6920	7000	6720	8060	7010	7500	7260	7870	7660	6870	5670	7230	5970	4420	5760	5720
MONTHLY MAX																	
Jan	14100	28000	15800	11600	14600	36300	24800	22500	19600	16600	23700	29300	11100	22400	8560	19400	18000
Feb	13900	23200	20600	10700	16000	31800	31400	32900	30200	18600	14900	38400	18100	25500	13400	19100	28500
Mar	17800	11600	17200	17400	52900	20300	33500	32800	50700	30300	24500	15400	35800	49500	8900	19100	27900
Apr	11000	10600	39500	20800	23300	13400	44400	28500	49100	29700	32200	14100	36500	58000	10900	13400	57900
May	13100	10300	37500	9080	15700	15400	24500	13000	20400	19700	15600	18200	35600	26100	6690	16200	26300
Jun	22500	16200	11100	9360	11500	16800	37500	13100	20300	33400	9440	12900	22100	18700	9970	8310	14000
Jul	16300	10000	9400	8860	10300	20700	26600	9960	17900	19900	8930	9290	14800	11000	6690	8430	11300
Aug	14500	9880	10700	8620	17700	10900	13600	12500	11600	9990	9600	8230	11200	8750	7330	8270	9000
Sep	16800	8140	12100	8080	11500	8640	10000	10900	11500	10500	8030	8850	13400	9090	6820	9250	8940
Oct	8340	8620	9370	9800	11300	8130	9260	7950	15300	15100	8850	6930	12400	10200	6130	9240	8840
Nov	12100	9250	8840	11300	11300	8720	8560	8300	16300	15460	15100	7380	15500	8770	6570	7200	10100
Dec	21100	8850	10700	12900	23600	19600	14700	9560	16800	33100	16800	8460	16800	9200	11100	12400	13400
MONTHLY MEAN																	
Jan	12542	23890	9775	8850	10877	20845	20755	18068	13828	13868	20068	15839	8234	12548	7782	12376	15168
Feb	11060	12783	18586	9532	11171	26321	27082	26957	22414	14785	11453	26911	10359	20041	9345	12479	21175
Mar	12977	9299	13290	11361	25635	12497	22968	17174	32400	15735	16210	12542	26287	27643	8161	11464	23803
Apr	8413	9110	17879	12723	15423	10374	34870	17232	36977	18367	25917	10222	24153	41753	8159	8554	31450
May	8941	8946	22565	7843	12557	10889	15042	9475	16984	11542	9938	14047	19830	13158	6232	8855	12829
Jun	15981	10919	9194	7529	9685	10518	27773	8934	14348	21743	8043	9955	17850	15418	7618	7276	10647
Jul	12147	8397	8082	7728	9215	13130	14665	8318	11857	16487	7667	7835	9815	8497	6075	7233	7893
Aug	9586	8103	8667	7988	12259	8400	10648	9853	9414	8664	8189	7531	9105	7202	6729	7169	7142
Sep	12181	7542	9381	7505	9745	7864	8633	8671	9700	8629	7619	7181	9358	6920	6176	7199	7393
Oct	7680	7642	7709	7716	9469	7407	8303	7582	11469	11211	7668	6696	10251	7845	5630	7660	6715
Nov	8877	8175	7785	8421	9463	7704	8200	7848	15347	10667	11994	6820	11885	7975	5315	6584	6593
Dec	15655	8130	8453	8720	19177	11343	10455	8568	15529	24474	14545	7381	14421	7789	6480	8724	10487
MONTHLY MIN																	
Jan	10100	21400	7510	8120	9060	10100	12900	9810	8880	10400	16100	11100	7230	8640	7210	8210	12100
Feb	8610	8360	13900	8540	9320	21000	15400	22600	19000	9960	9350	17300	7980	10600	7580	7330	18400
Mar	9380	8260	9980	8310	14700	10300	17000	10100	19900	9480	10900	10500	16400	9860	7260	7190	19400
Apr	7000	7940	9180	8050	9560	8650	25700	9500	18300	7740	17500	9020	16400	27600	6710	6650	18700
May	6970	7660	11500	7020	9370	8500	10000	8290	12800	7660	7930	9670	9900	8470	5810	6520	7900
Jun	8270	7760	7900	6870	8470	7660	12900	7560	9660	15900	7280	7900	14300	9050	6070	6810	7810
Jul	8580	7460	7240	7100	8200	8110	9510	7590	8700	10800	6980	6820	7840	6800	5770	6330	6470
Aug	7770	7300	7400	7200	9360	7530	8660	7800	7870	8030	7570	6860	7510	6110	5930	6410	6290
Sep	7280	6920	8050	7220	8760	7460	8000	7450	8300	7680	7020	5670	7590	5970	5730	5760	6260
Oct	7330	7080	7030	6720	8060	7010	7580	7260	8750	8390	6870	6540	7770	6810	5390	6700	6040
Nov	7480	7240	7090	7260	8490	7400	7500	7300	13200	8670	7420	6570	7680	7310	4710	6220	5720
Dec	12100	7600	7000	7240	11200	8110	8000	7760	11400	15600	11000	6740	9760	7100	4420	6280	7130

2198500
 SAVANNAH RIVER NEAR CLYO, GA
 CALENDAR YEARS - JANUARY TO DECEMBER
 FLOW RATE IN CUBIC FEET PER SECOND (cfs)

	1984L	1985	1986	1987	1988
ANNUAL					
Max	37500	19400	14700	29700	10700
Mean	13964	7725	6818	10084	6033
Min	6170	5220	4730	5420	4400
MONTHLY MAX					
Jan	20800	9620	10300	24600	8320
Feb	20800	19400	14700	19000	10500
Mar	36800	11200	13400	29700	8730
Apr	21600	7980	7540	16400	8800
May	37500	7020	6840	8250	7660
Jun	14200	6360	7170	7870	5540
Jul	11100	6820	6990	7720	5240
Aug	32200	7280	8570	11000	5090
Sep	10200	7970	7550	12800	10100
Oct	8080	11700	6760	11300	10700
Nov	7710	15700	6990	8560	5810
Dec	8240	13600	9480	8030	5720
MONTHLY MEAN					
Jan	13767	7246	8790	12095	7314
Feb	16466	14491	9996	14446	7533
Mar	27394	8804	8832	20906	7043
Apr	16900	7087	6664	13726	6699
May	25329	6106	5861	6945	5830
Jun	10566	5850	6216	6305	4925
Jul	8918	6159	5810	6725	4696
Aug	18856	6373	6294	8697	4879
Sep	8262	6115	6062	10061	6520
Oct	7075	6600	5191	7894	6006
Nov	6900	8554	5196	6895	5550
Dec	6870	9857	7114	6625	5512
MONTHLY MIN					
Jan	7500	6250	6810	6120	6290
Feb	10600	6830	7620	10400	6350
Mar	17100	7080	6630	13100	6380
Apr	13400	6140	6020	7150	5850
May	10500	5550	5490	5660	5090
Jun	7640	5430	5610	5420	4580
Jul	7580	5670	4950	5940	4400
Aug	8580	5740	5330	6260	4690
Sep	6400	5260	5170	7220	5000
Oct	6170	5220	4730	5940	5140
Nov	6430	5880	4750	6210	5200
Dec	6320	6890	5760	5950	5400

END

**DATE
FILMED**

12/27/93