Arkansas Department of Energy and Environment – Division of Environmental Quality
Water Quality Management Plan Summary

Date: May 3, 2024 Prepared by: Shane Byrum

☐ New Permit ☒ Renewal Permit ☐ Amended Permit

Type of Discharge: Industrial Wastewater

Facility Name: Georgia Pacific Consumer Operations, LLC

Permit No.: AR0001210 **Flow Rate (MGD):** 45 (SMS 002)

Receiving Stream: at the transition from Mossy Lake to Coffee Creek, thence to the Ouachita River

Assessment Unit: AR_08040202_902 **7Q10:** 802 cfs[1]

Planning Segment: 2D **County:** Ashley

SMS 002 Proposed 208 Plan Monthly Average Effluent Limits:

No changes from current effluent limits shown below.

SMS 002 Current 208 Plan Monthly Average Effluent Limits:

October – July:	8,000 lb/day	(BOD5)
August:	7,262 lb/day	(BOD5)
September:	5,911 lb/day	(BOD5)

Justification:

The BOD5 limits for SMS 002 shown above are from a study dated April 1999, which was performed to determine the available wasteload allocation for the Ouachita River from Felsenthal Lock and Dam (ORM 277) to Sterlington, Louisiana (ORM 192) which will meet water quality standards. In this study, a QUAL2E model was developed and calibrated for the Ouachita River from Felsenthal Dam to Sterlington, LA. The modeling analysis was prepared by AquAeTer and was technically accepted by EPA on June 14, 2002. The dissolved oxygen water quality standards for the modeled segment of the Ouachita River set forth in Reg. 2, page 32 of Appendix A, are as follows: 3 mg/L in June and July, 4.5 mg/L in August, and 5 mg/L in September through May. Reg. 2 also provides that these DO standards may be unattainable during or following naturally occurring high flows (i.e. river stage above 65 feet measured at the lower gauge at the Felsenthal Lock and Dam (Station No. 89-o), and also for the two weeks following the recession of flood waters below 65 feet), which occurs from May through August. Naturally occurring conditions which fail to meet criteria should not be interpreted as violations of these criteria.

[1] This is the lowest 7Q10 value (August 7Q10) for Ouachita River used in the AquAeTer TMDL/WLA modeling report dated April 1999, Table 4-1 on page 4-3 of report.

SMS 002 Location (Lat/Long): 33° 01’ 58” N; 92° 04’ 25” W

Remarks: This is for the reissuance of the discharge permit for this existing facility. There are no 208 Plan updates occurring with this permit renewal.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JUN 14 2002

Mr. Bob Singleton
Water Resources Specialist
Water Division
Arkansas Department of Environmental Quality
8001 National Drive
Little Rock, AR 72209

Re: April 2002 WQMP Update

Dear Mr. Singleton:

Sebastian Lake Utility Company, Inc., Ridges of Hot Springs POA, and Georgia Pacific Crossett Mill (as defined in EPA's letter dated Jan 11, 2002 to ADEQ which is enclosed) waste load allocations (WLAs) outlined in the enclosed table have been reviewed and are technically acceptable. I understand these WLAs are undergoing public participation as required by 40 CFR Part 25 and will be certified by the Arkansas Department of Environmental Quality (ADEQ) as updates to the Arkansas Water Quality Management Plan (WQMP).

The wasteload allocation and modeling submitted for Anthony Forest Products-Urbana Mill is technically unacceptable. This is a wet-deck facility currently permitted for 50 mg/l COD. The request is for 50 mg/l BOD_5 year-round. No correlation between COD and BOD_5 has been established. FTN has done several studies in the past and there is no one BOD_5 value that is equivalent to 50 mg/l COD. EPA believes a study needs to be conducted to determine the appropriate BOD_5 limits for this facility.

The wasteload allocation and modeling for Georgia Pacific Crossett Wet Deck and Georgia Pacific El Dorado Wet Deck are technically unacceptable. The COD and BOD_5 data submitted as the basis for changing from COD limits to BOD_5 limits do not justify the action requested. There is absolutely no correlation between these two parameters. I have spoken with Mayes Starke of Georgia Pacific, and he is submitting additional information for consideration.

Technical acceptance of the wasteload allocation and modeling for El Dorado Water Utilities cannot be determined at this time because of insufficient information. Please provide the permit numbers and limits for the two facilities proposed to be combined. The documentation in

support of this change should provide a discussion of any dischargers upstream or downstream of the proposed outfall location on the Ouachita River. If there are other dischargers to the Ouachita River in the area of the proposed discharge they should be factored into the model runs. This submittal should also include the data used as the basis for the upstream parameters proposed in the model. Additionally, the model shows a discharge BOD_5 of 25 mg/L while proposed limits are given as 30 mg/L as BOD_5. Please provide the necessary information and address discrepancies in the model.

EPA is currently reviewing the following waste load allocations. Model technical acceptability cannot be determined at this time for various reasons including incomplete submittals. Initial concerns are shown in parentheses and additional concerns and requests for information will be forthcoming as discovered. EPA's 30-day approval period does not begin until all the necessary information has been received.

Tyson Foods-Grannis (Water Quality Model Report missing; reaeration rate > 15)
Jacksonville (site map missing)
Camden (Water Quality Model Report Missing)
Bauxite (site map missing)
Ash Flat (site map missing)

If you have any questions or comments regarding this approval, please call me at (214) 665-7145. We look forward to working with you and others at ADEQ on future updates to the Arkansas Water Quality Management Plan.

Sincerely yours,

Sharon Fancy Parrish

Sharon Fancy Parrish
Section Chief
Watershed Management Section (6WQ-EW)

Enclosures

cc: Bill Keith

Arkansas WQMP Updates

April 2002 (N=19)

5/24/2002

	WQMP	Permittee Name	NPDES Permit Number	Seg #	303(d) List for (DO)	Flow (MGD)	BOD5 (mg/L)	CBOD5 (mg/L)	TSS (mg/L)	NH3-N (mg/L)	DO (mg/L)	Approval / Comments	Action Date	Final Action Date	Reviewer	Approval
1	Apr-02	Anthony Forest Products -Urbana Mill	AR0047384	2D	no	0.07	50					year round & storm events **tech. unaccptable**	24-May-01		JF	
2	Apr-02	Ash Flat	AR0041742	4G	no	0.15	10	15	5	5		May - Oct	24-May-01		JF	pending
3	Apr-02	Ash Flat	AR0041742	4G	no	0.15	10	15	8	5		Nov-Apr	24-May-01		JF	pending
4	Apr-02	Bauxite	AR0049786	2C	no	0.13	15	20	6	5		May-Oct	24-May-01		JF	pending
5	Apr-02	Bauxite	AR0049786	2C	no	0.13	15	20	12			Nov-Apr	24-May-01		JF	pending
6	Apr-02	Camden	AR0022365	2D	no	3.5	20	20	5			year round	24-May-01		JF	pending
7	Apr-02	El Dorado water Utilities	AR0049743	2D	no	12	30	30				year round	24-May-01		JF	pending
8	Apr-02	GP Crossett Wet Deck	AR0048097	2D	no	1.5	40					year round & storm events **tech. unaccptable**	24-May-01		JF	
9	Apr-02	GP Eldorado Wet Deck	AR0036072	2D	no	0.4	40					year round & storm events **tech. unaccptable**	24-May-01		JF	
10	Apr-02	Georgia Pacific Crossett Mill	AR0001210	2D	no	45	7262 *					Aug * lbs/day	24-May-01	24-May-01	JF	TA
11	Apr-02	Georgia Pacific Crossett Mill	AR0001210	2D	no	45	5911 *					Sept * lbs/day	24-May-01	24-May-01	JF	TA
12	Apr-02	Georgia Pacific Crossett Mill	AR0001210	2D	no	45	8000*					Oct-Jul * lbs/day	24-May-01	24-May-01	JF	TA
13	Apr-02	Jacksonville	AR0041335	3B	no	12.31	10	15	4	6		year round	24-May-01		JF	pending
14	Apr-02	Ridges of Hot Springs POA	AR0049760	2F	no	0.05	15	20	5	3		May-Oct	24-May-01	24-May-01	JF	per MOA
15	Apr-02	Ridges of Hot Springs POA	AR0049760	2F	no	0.05	15	20	10			Nov-Apr	24-May-01	24-May-01	JF	per MOA
16	Apr-02	Sebastian Lake Utility Co.	AR0041165	3I	no	0.045	10	30	5	3		May-Oct	24-May-01	24-May-01	JF	per MOA
17	Apr-02	Sebastian Lake Utility Co.	AR0041165	3I	no	0.045	30	30				Nov-Apr	24-May-01	24-May-01	JF	per MOA
18	Apr-02	Tyson Foods-Grannis	AR0003018	1C	no	0.864	10	15	2	7		May-Oct	24-May-01		JF	pending
19	Apr-02	Tyson Foods-Grannis	AR0003018	1C	no	0.864	10	15	8	6		Nov-Apr	24-May-01		JF	pending

SPECIFIC STANDARDS: GULF COASTAL ECOREGION

(Plates GC-1, GC-2, GC-3, GC-4)

	Typical Streams	Spring Water Streams	Lakes and Reservoirs
Temperature °C (°F)*	30 (86)	30 (86)	32 (89.6)
Ouachita River (state line to Little Missouri River)	32 (89.6)		
Red River	32 (89.6)		
Turbidity (NTU) (base/all)	21/32	21/32	25/45
Red River (base/all)	50/150		
Minerals	see Reg. 2.511		see Reg. 2.511
Dissolved Oxygen (mg/L) **	Pri. Crit.		see Reg. 2.505
<10 mi^2 watershed	5 2		
10 mi^2 - 500 mi^2	5 3		
>500 mi^2 watershed	5 5		
All sizes (springwater influenced)		6 5	
All other standards	(same as statewide)		

*Increase over natural temperatures may not be more than 2.8°C (5°F).

**At water temperatures ≤10°C or during March, April and May when stream flows are 15 cfs and greater, the primary season dissolved oxygen standard will be 6.5 mg/L. When water temperatures exceed 22°C, the critical season dissolved oxygen standard may be depressed by 1 mg/L for no more than 8 hours during a 24-hour period

Site Specific Standards Variations Supported by Use Attainability Analysis

Loutre Creek - from headwaters to railroad bridge, critical season dissolved oxygen standard - 3 mg/L; primary season - 5 mg/L; from railroad bridge to mouth, critical season dissolved oxygen - 2 mg/L (GC-2, #1)

Unnamed tributary to Smackover Creek - headwaters to Smackover Creek, year round dissolved oxygen criteria - 2 mg/L (GC-2, #2)

Unnamed tributary to Flat Creek - from headwaters to Flat Creek, year round dissolved oxygen criteria - 2 mg/L (GC-2, #4)

Dodson Creek - from headwaters to confluence with Saline River, critical season dissolved oxygen standard - 3 mg/L (GC-4, #5)

Jug Creek - from headwaters to confluence with Moro Creek, critical season dissolved oxygen standard - 3 mg/L (GC-2, #6)

Lick Creek - from headwaters to Millwood Reservoir, critical season dissolved oxygen standard - 2 mg/L (GC-1, #7)

Coffee Creek and Mossy Lake - exempt from Reg. 2.406 and Chapter Five (GC-3, #8)

Red River from Oklahoma state line to confluence with Little River - total dissolved solids - 850 mg/L (GC-1, #9)

Bluff Creek and unnamed trib. - sulfates 651 mg/L; total dissolved solids 1033 mg/L (GC-1,#10)

Muddy Fork Little Missouri River - sulfates 250 mg/L; total dissolved solids 500 mg/L (GC-1,#24)

Little Missouri River - sulfates 90 mg/L; total dissolved solids 180 mg/L (GC-1,#25)

Mine Creek from Highway 27 to Millwood Lake - chlorides - 90 mg/L; sulfates - 65 mg/L; total dissolved solids - 700 mg/L (GC-1, #11)

Caney Creek - chlorides 113 mg/L; sulfates 283 mg/L; total dissolved solids 420 mg/L (GC-1,#12)
Bois d'Arc Creek from Caney Creek to Red River - chlorides 113 mg/L; sulfates 283 mg/L; total dissolved solids 420 mg/L (GC-1,#13)
Town Creek below Acme tributary - sulfates 200 mg/L; total dissolved solids 700 mg/L (GC-4,#14)
Unnamed trib. from Acme - sulfates 330 mg/L; total dissolved solids 830 mg/L (GC-4,#14)
Gum Creek - chlorides 104 mg/L; total dissolved solids 311 mg/L (GC-2,#15)
Bayou de Loutre from Gum Creek to State line - Chlorides 250 mg/L; total dissolved solids 750 mg/L (GC-2,#16)
Walker Branch - chlorides 180 mg/L; total dissolved solids 970 mg/L (GC-2,#17)
Ouachita River - from Ouachita River mile (ORM) 223 to the Arkansas-Louisiana border (ORM 221.1), site specific seasonal dissolved oxygen criteria: 3 mg/L June and July; 4.5 mg/L August; 5 mg/L September through May. These seasonal criteria may be unattainable during or following naturally occurring high flows,(i.e., river stage above 65 feet measured at the lower gauge at the Felsenthal Lock and Dam, Station No.89-o, and also for the two weeks following the recession of flood waters below 65 feet), which occurs from May through August. Naturally occurring conditions which fail to meet criteria should not be interpreted as violations of these criteria (GC-3, #26)
Alcoa unnamed trib. to Hurricane Cr. and Hurricane Cr. - see Reg. 2.511 (CG-4. #19)
Holly Creek - See Reg. 2.511 (CG-4, #20)
Saline River bifurcation - see Reg. 2.511 (GC-4, #23)
Dry Lost Creek and tributaries - see Reg. 2.511 (GC-4, #21)
Lost Creek - see Reg. 2.511 (GC-4, #22)
Albemarle unnamed trib (AUT) to Horsehead Creek - chlorides 137 mg/L; total dissolved solids 383 mg/L (GC-2,#27)
Horsehead Creek from AUT to mouth - chlorides 85 mg/L; total dissolved solids 260 mg/L(GC-2,#27)
Bayou Dorcheat - sulfates 16 mg/L (GC-2,#27)
Dismukes Creek – chlorides 26 mg/L; total dissolved solids 157 mg/L (GC-2, #28)
Big Creek from Dismukes to Bayou Dorcheat – chlorides 20 mg/L; total dissolved solids 200 mg/L (GC-2, #28)
Bayou de Loutre from Chemtura outfall to Loutre Creek – maximum water temperature 96°F (GC-2, #29)
Unnamed tributary of Lake June below Entergy Couch Plant to confluence with Lake June – maximum water temperature 95 degrees F (limitation of 5 degrees above natural temperature does not apply) (GC-1, #30).
Unnamed tributary to Flat Creek from EDCC Outfall 001 d/s to confluence with unnamed tributary A to Flat Creek Chloride 23 mg/L, Sulfate 125 mg/L, TDS 475 mg/L, (GC-2, #37) †
Unnamed tributary A to Flat Creek from mouth of EDCC 001 ditch to confluence with Flat Creek, Chloride 16 mg/L, Sulfate 80 mg/L, TDS 315 mg/L, (GC-2, #38) †
Boggy Creek from the discharge from Clean Harbors El Dorado LCC downstream to the confluence of Bayou de Loutre. Chloride, 631mg/L; Sulfate, 63 mg/L, total dissolved solids, 1360; Selenium, 15.6 u/L.
McGeorge Creek (headwaters to Willow Springs Branch) Sulfate, 250 mg/L; total dissolved solids, 432 mg/L (GC-4. #52)
Willow Springs Branch (McGeorge Creek to Little Fourche Creek) Sulfate, 112 mg/L; total dissolved solids 247 mg/L (GC-4. #53)
Little Fourche Creek (Willow Springs Branch to Fourche Creek) total dissolved solids, 179 mg/L (GC-4. #54)

† Not applicable for clean water act purposes until approved by EPA.

Variations Supported by Environmental Improvement Project
Holly Creek; Selenium, Chronic Standard, 17µg/L (GC-4, #1)

TOTAL MAXIMUM DAILY LOAD PROJECTIONS
OUACHITA RIVER

FELSENTHAL LOCK AND DAM, ARKANSAS
TO
STERLINGTON, LOUISIANA

VOLUME 1
REPORT

Prepared for:

ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY
LITTLE ROCK, ARKANSAS

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
BATON ROUGE, LOUISIANA

Prepared by:

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Crossett, Arkansas
Scott K. Bailey
Tom Gathright
Atlanta, Georgia
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AquAeTer, Inc.
Brentwood, Tennessee
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Douglas S. Smith, P.E.
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April 1999

optimizing environmental resources - water, air, earth

EXECUTIVE SUMMARY

Georgia-Pacific Corporation (Georgia-Pacific) operates a pulp and paper mill, a chemical plant, and a building products plant in Crossett, Arkansas, near the Arkansas-Louisiana state line. The facility employs a combined total of approximately 3,000 people. The pulp and paper mill consists of a Kraft pulp mill, bleach plant, and eight paper machines. The chemical plant consists of a resin plant and a tall oil plant, and the building products plant includes one plywood plant with seven lines and a stud mill.

The wastewater and process area stormwaters from the Georgia-Pacific Crossett Complex are collected and conveyed to an on-site industrial wastewater treatment system which treats the wastewaters using both physical-chemical and biological treatment technologies for removing solids and organics. The wastewater treatment system operates with an average treatment efficiency of 95 percent or greater for the removal of biochemical oxygen demand (BOD). The Crossett Mill wastewater treatment system effluent is discharged to the Ouachita River through Coffee Creek at Ouachita River Mile (ORM) 222, approximately 5 miles downstream from Felsenthal Lock and Dam. The effluent discharge is regulated by the Arkansas Department of Pollution Control and Ecology (ADPC&E) under a water-quality based effluent limit (WQBEL), National Pollutant Discharge Elimination System (NPDES) Permit. This permit limits the Mill to more restrictive treatment requirements than those required by Technology-Based Effluent Limit Guidelines required at similar mills.

This report presents a study which has been performed to determine the available wasteload allocation for the Ouachita River from Felsenthal Lock and Dam (ORM 227) to Sterlington, Louisiana (ORM 192) which will meet water quality standards. This determination is based on data from historical sources, including: **1)** the 1992 "Development of a Water Quality Model of the Ouachita River," HydroQual Report (HydroQual 1992a); **2)** Georgia-Pacific synoptic and diurnal River measurements; **3)** the United States Army Corps of Engineers (USACOE); **4)** the United States Geological Survey (USGS); and **5)** the United States Environmental Protection Agency (USEPA). In addition, the results of a November 1998 field study performed by Georgia-Pacific and **AquAeTer, Inc.** are used to evaluate the wasteload allocation. The field study provided confirmation that algae are present in the Ouachita River and that the algae are a contributing source of oxygen in the River system.

Based on the data resources listed above, additional literature sources, and engineering judgement, a QUAL2E model (Brown and Barnwell 1987) was developed and calibrated for the Ouachita River from Felsenthal Lock and Dam (ORM 227) to just downstream from Sterlington, Louisiana (ORM 190). The period of time used for the model calibration was August 27, 1998, the date on which synoptic water quality measurements were collected by Georgia-Pacific during a low-flow high-temperature period on the Ouachita River. The River flow during this period was 980 cubic feet per second (cfs), which is near the 7-day average flow with a 10-year recurrence interval (7Q10 and Q7-10 are equivalent in this report) for August of 802 cfs. The water temperature measured during this period and used in the calibration model was 31.5 °C. A sensitivity analysis was performed on the calibrated model and indicated that the critical model parameters were background temperature, the algae contribution to dissolved oxygen (DO), the reaeration rate, and

the sediment oxygen demand (SOD) rate. The calibrated and tested model was then used to project the available wasteload allocation in the River for ultimate carbonaceous biochemical oxygen demand ($CBOD_u$). The $CBOD_u$ values were converted to 5-day BOD (BOD_5) using a ratio of $CBOD_u$:BOD_5 equal to 4, as presented in the HydroQual Report (1992a).

Wasteload allocation predictions were made for the low-flow, high temperature period of June through September using the monthly 7Q10 flow and both monthly mean temperatures and monthly 90th percentile temperatures at the applicable DO standard, as presented in Tables E-1 and E-2.

The month of September was found to have the minimum assimilative capacity available for wasteload allocation. Both Arkansas and Louisiana will require a 10 percent safety factor built into the maximum model projections in order to establish the total maximum daily loads (TMDLs) for the River. The TMDL projections are presented for the most critical conditions that can occur during water-quality limited periods (low flows and high temperatures), and the monitored conditions from which the model parameters were developed also included periods of non-point source contributions to the Ouachita River system. The resultant TMDLs developed are as follows:

FOR AVERAGE WATER TEMPERATURE

MONTH	7Q10 (cfs)	AVERAGE WATER TEMPERATURE (°F/°C)	WLA BOD_5 (lbs/day)	TMDL BOD_5 (lbs/day)
June	1,049	80.6/27	30,212	27,190
July	894	86/30	19,797	17,817
August	802	86/30	11,071	9,964
September	829	80.6/27	8,163	7,346

FOR 90th PERCENTILE WATER TEMPERATURES

MONTH	7Q10 (cfs)	90th PERCENTILE TEMPERATURE (°F/°C)	WLA BOD_5 (lbs/day)	TMDL BOD_5 (lbs/day)
June	1,049	87.8/31	22,706	20,435
July	894	89.4/31.9	16,228	14,605
August	802	88.9/31.6	8,069	7,262
September	829	85.6/29.8	6,568	5,911

These are the limits in permit.

SECTION 4

WASTELOAD ALLOCATION PROJECTIONS

The assimilative capacity of the Ouachita River near Crossett, Arkansas has been modeled using the calibrated QUAL2E model presented in Section 3 of this report. The assimilative capacity allows for safely receiving effluent discharges while maintaining the regulatorily-required water quality standards, specifically DO. The assimilative capacity of the Ouachita River actually varies daily due to changes in flow and water temperature, but the regulations require that the DO standards be met during the critical 7Q10 flow at a representative water temperature for the low flow period. The most critical period on the Ouachita River occurs during August and September when the combination of low flows and high temperatures result in minimum assimilative capacity. NPDES dischargers must also meet certain technology treatment standards in order to receive an allocation of this assimilative capacity. For the Georgia-Pacific Crossett Mill, the effluent limits are determined by effluent limit guidelines (ELG) contained in 40 CFR 430.20 and by water quality limits.

The water quality limits require Georgia-Pacific to meet during the summer months a maximum effluent BOD_5 discharge of 8,000 lbs/day as a monthly average and 12,000 lbs/day as a daily maximum.

October through July limits in permit

Since the last permit was issued, Ouachita River water quality limit for DO in the River for both Arkansas and Louisiana are as follows:

a. DO = 3 mg/L June and July;

b. DO = 4.5 mg/L August; and

c. DO = 5 mg/L September through May;

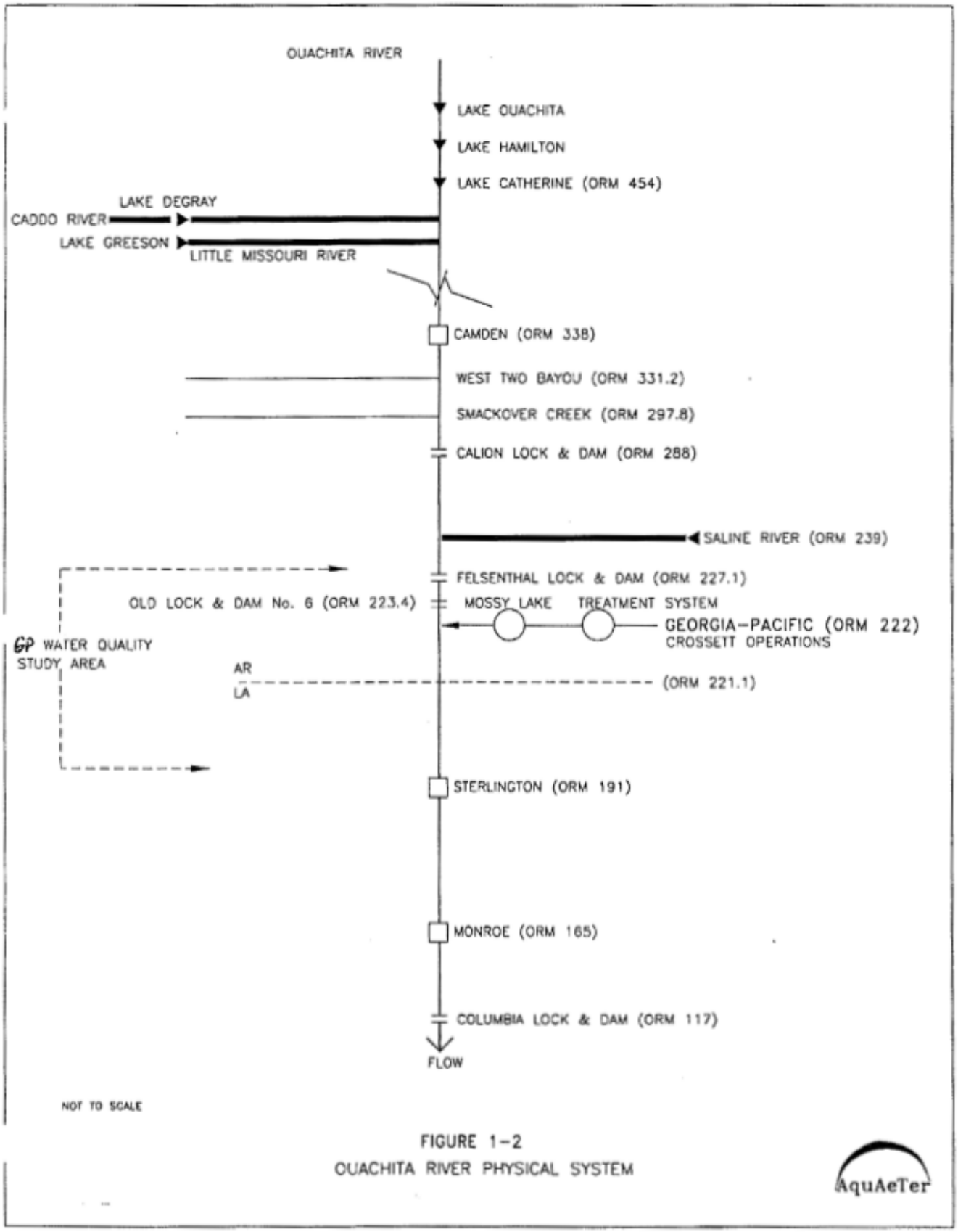


FIGURE 1-2
OUACHITA RIVER PHYSICAL SYSTEM

AquAeTer

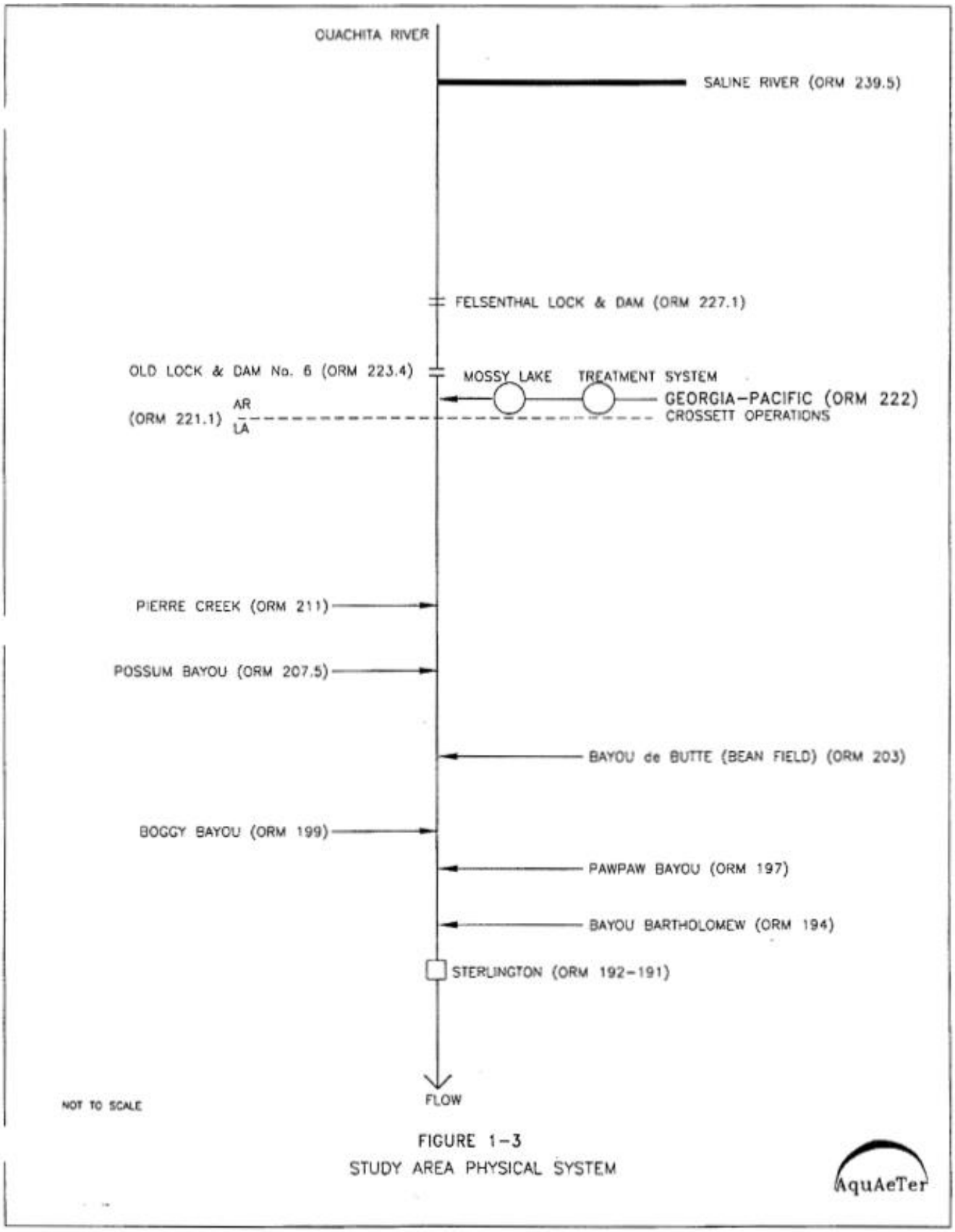


FIGURE 1-3
STUDY AREA PHYSICAL SYSTEM

AquAeTer

TABLE 4-1. MONTHLY 7Q10 FLOW ANALYSIS
OUACHITA RIVER NEAR CROSSETT, ARKANSAS

MONTH	OUACHITA RIVER 7Q10 FLOW AT CROSSETT, ARKANSAS (cfs)
January	2,658
February	5,269
March	4,037
April	2,436
May	1,591
June	1,049
July	894
August	802
September	829
October	822
November	1,231
December	2,059

Source: Taylor, et.al. (1993)

TABLE 4-4. MAXIMUM CAPACITY WASTELOAD ALLOCATION (WLA) PROJECTIONS
OUACHITA RIVER NEAR CROSSETT, ARKANSAS
90TH PERCENTILE TEMPERATURES

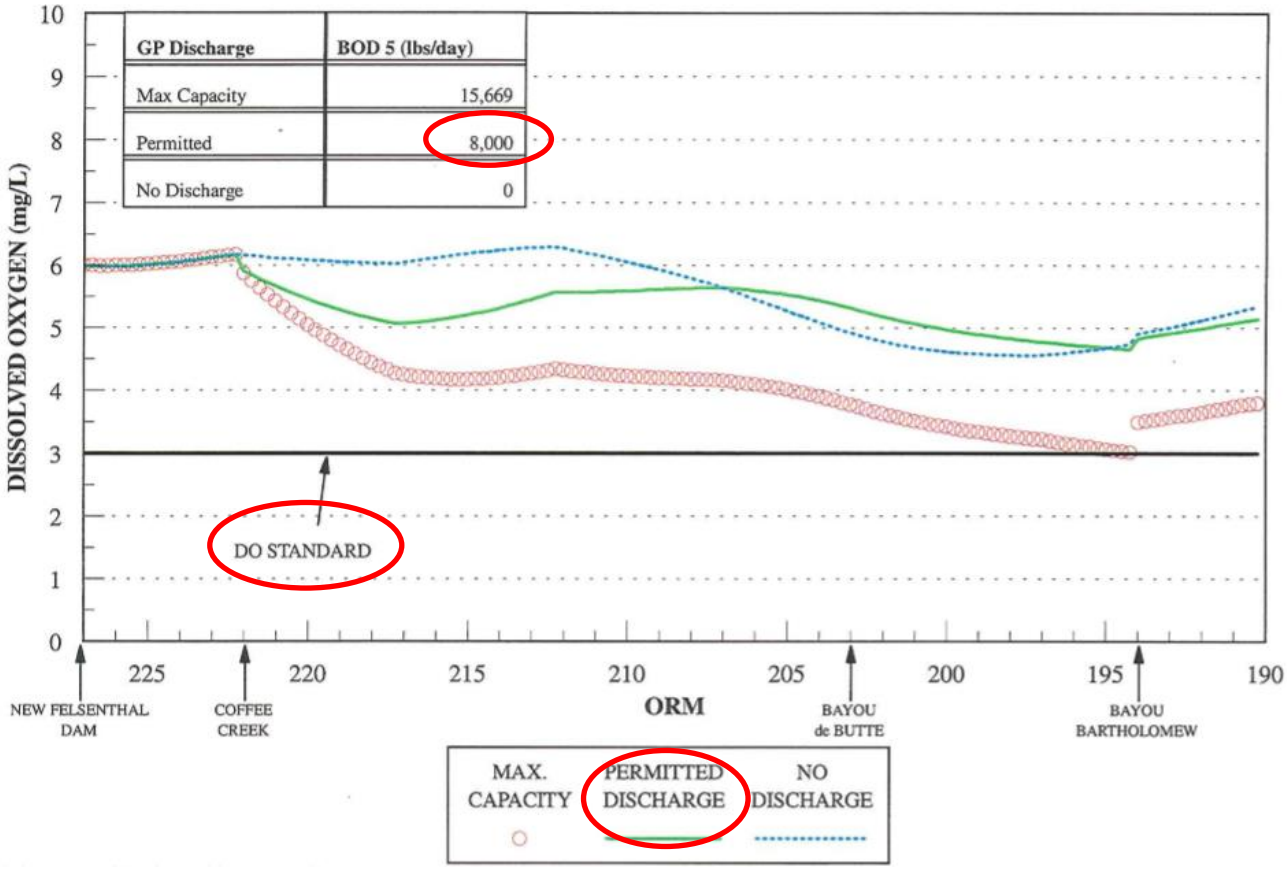
MONTH (1)	TEMP. (°F/°C)	MONTHLY Q7-10 FLOW (cfs)	DO SAT (mg/L)	OUACHITA HEADWATER DO (mg/L) (1)	WLA CBODu (mg/L) (2)	WLA CBODu (lbs/day) (2)	5-DAY BOD (mg/L) (3)	5-DAY BOD (lbs/day) (3)	5-DAY BOD 10% SF (lbs/day) (3)	DO STANDARD (mg/L)
June	87.8 / 31	1049	7.43	6.09	242	90,823	61	22,706	20,435	3
July	89.4 / 31.9	894	7.32	6.00	167	64,913	42	16,228	14,605	3
August	88.9 / 31.6	802	7.36	6.03	86	32,276	22	8,069	7,262	4.5
September	85.6 / 29.8	829	7.59	6.22	70	26,271	18	6,568	5,911	5

NOTES:
1) Ouachita River headwater DO equals 82 percent of saturation.
2) Values determined at Georgia-Pacific flow = 45 mgd.
3) Assume CBODu:CBOD5 = 4.

FIGURE 4-4

JULY PREDICTED - 90TH PERCENTILE TEMPERATURE

OUACHITA RIVER NEAR CROSSETT, AR



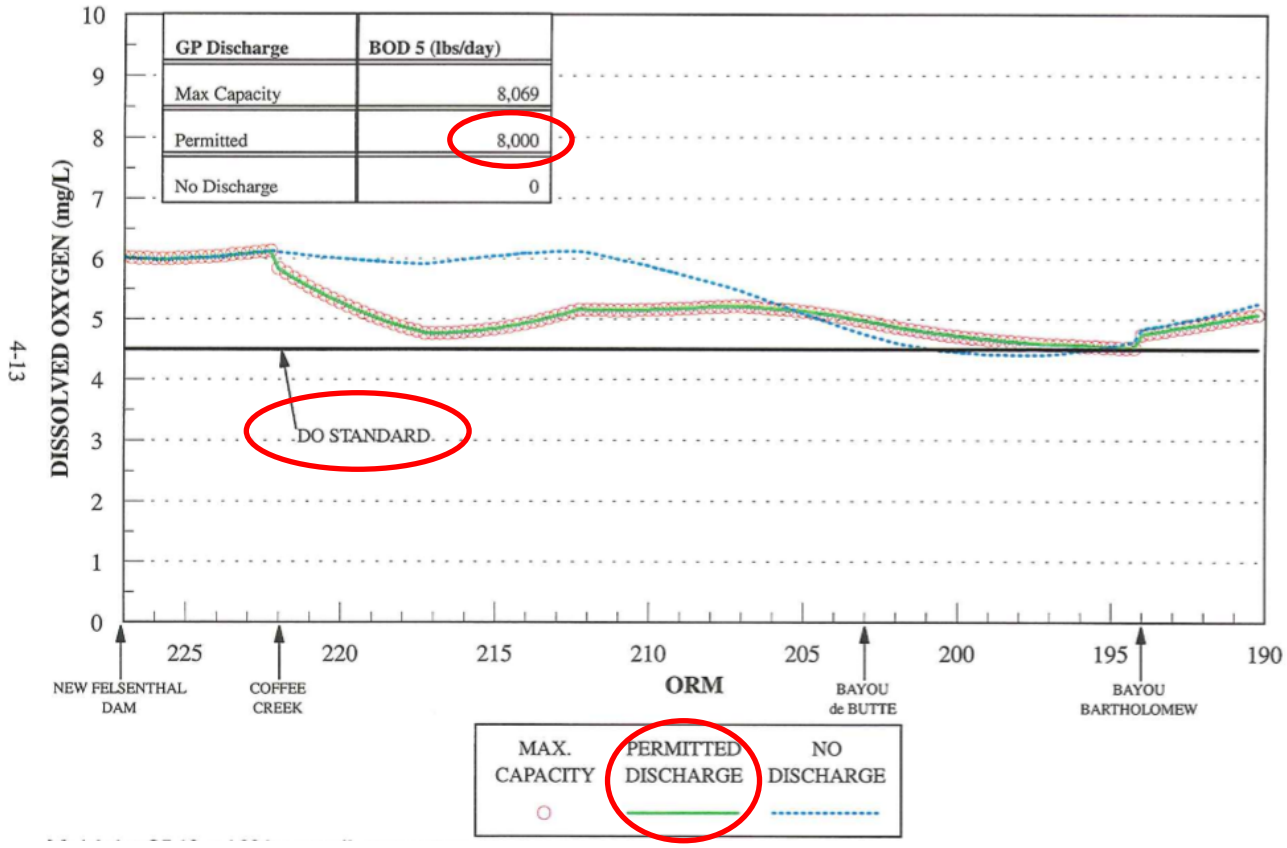
4-11

October through July permit limit is 8,000 lb/day, which meets DO standard applicable during June and July.

FIGURE 4-6

AUGUST PREDICTED DO - 90TH PERCENTILE TEMPERATURE

OUACHITA RIVER NEAR CROSSETT, AR



4-13

August effluent limit is 7,262 lb/day, which is less than 8,000 lb/day which was modeled.

As discussed previously, the River conditions have changed significantly since the initiation of releasing water over the Dam. Therefore, an analysis of DO percent saturation from 1996 to the present is appropriate. It is also important to point out that the average percent saturation is based on measurements from both low-flow events and high stage or substantial nonpoint source inflows into the Ouachita River. The Arkansas and Louisiana DO standard for each month was also used in the analyses.

The minimum assimilative capacity available for wasteload allocation occurred during 7Q10 conditions in September. The current Georgia-Pacific Crossett Mill permitted discharge of 8,000 lbs/day BOD_5 was also input in to the model for the months of June through October, as presented in Figures 4-1 through 4-8 to show the impact of that loading on the stream. The permitted loading was not input into the model for the month of September due to the maximum capacity loading equaling less than 8,000 lbs/day BOD_5. In addition, the model was run with no Georgia-Pacific discharge to show the effects in the lower reaches of the stream, due to a nutrient deficiency when the Georgia-Pacific discharge is removed.

The maximum capacity BOD_5 projections in Tables 4-3 and 4-4 are also shown with a 10 percent safety factor reduction. This safety factor was agreed upon by USEPA, LDEQ, and ADPC&E during a November 4, 1998 conference call between those parties, Georgia-Pacific, and **AquAeTer**. With the 10 percent safety factor, the minimum BOD_5 loading available, using the mean temperature scenario, is predicted to be 7,346 lbs/day BOD_5 during the month of September. When the 90th percentile flow event, the 90th percentile temperature, and the 10 percent safety factor are used, the minimum BOD_5 loading available is predicted to be 5,911 lbs/day BOD_5 during the month of September.