TMDLS FOR DISSOLVED OXYGEN AND NUTRIENTS FOR BAYOU PETITE CAILLOU (SUBSEGMENT 120709)

DRAFT
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EXECUTIVE SUMMARY

Section 303(d) of the Federal Clean Water Act requires states to identify waterbodies that are not meeting water quality standards and to develop total maximum daily pollutant loads for those waterbodies. A total maximum daily load (TMDL) is the amount of pollutant that a waterbody can assimilate without exceeding the established water quality standard for that pollutant. Through a TMDL, pollutant loads can be distributed or allocated to point sources and nonpoint sources discharging to the waterbody. This report presents TMDLs that have been developed for dissolved oxygen (DO) and nutrients for Bayou Petite Caillou (subsegment 120709) in the Terrebonne basin in southern Louisiana.

Subsegment 120709 (Bayou Petite Caillou) is located south of Houma in southern Louisiana near the Gulf of Mexico This subsegment covers 28.4 square miles and the predominant land uses are open water (64.7%) and wetlands (33.1%). There are only two point source discharges in this subsegment, both of which are facilities involved in oil and gas exploration, production, and/or development.

Subsegment 120709 was cited as being impaired on the final 2004 303(d) list for Louisiana as not fully supporting the designated use of propagation of fish and wildlife. It was ranked as priority #2 for TMDL development. The cause for impairment cited in the 303(d) list was low DO. The DO criterion specified in the Louisiana water quality standards for this subsegment is 5 mg/L year round. There are no numeric criteria for nutrients in Louisiana.

A water quality model (LA-QUAL) was set up to simulate DO, carbonaceous biochemical oxygen demand (CBOD), ammonia nitrogen, and organic nitrogen in Bayou Petite Caillou. The model was set up and calibrated using LDEQ routine monitoring data and various other information for widths, depths, flows, decay rates, etc.

The summer and winter projection simulations were run at critical temperatures to address seasonality as required by the Clean Water Act. A 57% reduction of existing nonpoint source loads was required for the summer projection simulation to show the DO criterion of 5 mg/L being maintained. No nonpoint source load reductions were necessary for the winter

projection. In general, the modeling in this study was consistent with guidance in the Louisiana TMDL Technical Procedures Manual.

A TMDL for oxygen demanding substances (CBOD, ammonia nitrogen, organic nitrogen, and sediment oxygen demand) was calculated using the results of the summer and winter projection simulations. An implicit margin of safety (MOS) was established for the DO TMDL through the use of conservative assumptions in the water quality modeling. Additionally, 10% of the allowable loading was set aside as an explicit MOS and another 10% of the allowable loading was set aside for future growth (FG). Results of the DO TMDL calculations are summarized in Tables ES.1 and ES.2. The point source flows and concentrations used in the DO TMDL calculations are listed in Table ES.3.

A nutrient TMDL was developed for this subsegment using average nutrient concentrations from reference waterbodies as target concentrations. The TMDL was calculated using an average annual mass balance because insufficient data were available to simulate the full nutrient-algal cycle in the LA-QUAL model. The TMDL was calculated as the estimated average annual flow for subsegment 120709 multiplied times target concentrations of total phosphorus and total nitrogen. The nutrient TMDL included an implicit MOS (from conservative assumptions) and an explicit FG allowance (10% of the TMDL). The nutrient TMDL is summarized in Table ES.4.

Table ES.1. Summer DO TMDL for subsegment 120709.

	Oxygen Demand (kg/day) from:					Oxygen Demand (lbs/day) from:					Percent Reduction Needed
	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	
Point Sources											
WLA	NA	0.05	0	0	0.05	NA	0.11	0	0	0.11	0%
MOS	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
FG	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
Nonpoint Sources											
LA	2559.19	12040.00	0.73	0.11	14600	5642.0	26543.6	1.61	0.24	32187.5	57%
MOS	319.90	1505.00	0.09	0.01	1825	705.3	3318.0	0.20	0.02	4023.5	NA
FG	319.90	1505.00	0.09	0.01	1825	705.3	3318.0	0.20	0.02	4023.5	NA
TMDL	3198.99	15050.00	0.91	0.13	18250	7052.6	33179.6	2.01	0.28	40234.5	NA

Table ES.2. Winter DO TMDL for subsegment 120709.

	Oxygen Demand (kg/day) from:					Oxygen Demand (lbs/day) from:					Percent Reduction Needed
	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	
Point Sources											
WLA	NA	0.05	0	0	0.05	NA	0.11	0	0	0.11	0%
MOS	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
FG	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
Nonpoint Sources											
LA	2093.87	28000.00	0.73	0.11	30094.71	4616.3	61729.4	1.61	0.24	66347.6	0%
MOS	261.74	3500.00	0.09	0.01	3671.84	577.0	7716.2	0.20	0.02	8095.4	NA
FG	261.74	3500.00	0.09	0.01	3671.84	577.0	7716.2	0.20	0.02	8095.4	NA
TMDL	2617.35	35000.00	0.91	0.13	37618.39	5770.3	77161.8	2.01	0.28	82934.4	NA

Table ES.3. Flow, concentrations, and loads for point source included in DO TMDL.

Subseg. Number	NPDES Number	Name of discharger	Flow rate (gallons per day)	Concentrations			Loads*		
				BOD5 or CBOD5 (mg/L)	Ammonia nitrogen (mg/L)	Organic nitrogen (mg/L)	BOD5 or CBOD5 (lbs/day)	Ammonia nitrogen (lbs/day)	Organic nitrogen (lbs/day)
120709	LAG33A340	Burlington Resources	100	45	0	0	0.038	0	0
120709 Total Loads:							0.038	0	0

*Loads of organic nitrogen and ammonia nitrogen in this table represent loads of nitrogen, not oxygen demand.

Table ES.4. Nutrient TMDL for subsegment 120709.

Parameter	Loads, lbs/day					Percent Reduc.
	WLA	LA	MOS	FG	TMDL	
Total Phosphorus	0.005	52.19	Implicit	5.80	58.00	0%
Total Nitrogen	0.013	591.57	Implicit	65.73	657.31	0%

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

LIST OF APPENDICES

LIST OF TABLES

1.0 INTRODUCTION

This report presents total maximum daily loads (TMDLs) for dissolved oxygen (DO) and nutrients for the southern end of Bayou Petite Caillou, which is in subsegment 120709. This subsegment was included on the final 2004 303(d) list for Louisiana (Louisiana Department of Environmental Quality (LDEQ) 2005) as not fully supporting the designated use of propagation of fish and wildlife. The priority ranking and the suspected sources and suspected causes for impairment from the 303(d) list are presented in Table 1.1. The TMDLs in this report were developed in accordance with Section 303(d) of the Federal Clean Water Act and Environmental Protection Agency (EPA) regulations at 40 CFR 130.7.

The purpose of a TMDL is to determine the pollutant loading that a waterbody can assimilate without exceeding the water quality standard for that pollutant and to establish the load reduction that is necessary to meet the standard in a waterbody. The TMDL is the sum of the wasteload allocation (WLA), the load allocation (LA), and a margin of safety (MOS). The WLA is the load allocated to point sources of the pollutant of concern, and the LA is the load allocated to nonpoint sources (NPS). The MOS is a percentage of the TMDL that accounts for the uncertainty associated with the model assumptions, data inadequacies, and future growth.

Table 1.1. Summary of 303(d) listing for subsegment 120709.

Subsegment Number	Waterbody Description	Suspected Causes	Suspected Sources	Priority Ranking (1 = highest)
120709	Bayou Petite Caillou – From Houma Navigation Canal to Terrebonne Bay	Low DO	Unknown source	2

2.0 STUDY AREA DESCRIPTION

2.1 General Information

Bayou Petite Caillou (subsegment 120709) is located in southern Louisiana in the lower Terrebonne basin (see Figure A.1 in Appendix A). The confluence of Bayou Petite Caillou and the Houma Navigation Canal is located in the northeastern corner of the subsegment and Bayou Petite Caillou flows south through the eastern side of the subsegment.

Bayou Petite Caillou is a distributary of Bayou Terrebonne, branching off 4 miles southeast of Houma and flowing 35 miles south to the Gulf of Mexico. Subsegment 120709 is located towards the southern end of Bayou Petite Caillou and covers 28.4 mi^2 in southeastern Terrebonne Parish.

2.2 Land Use

Land use characteristics for subsegment 120709 were compiled from the United States Geological Survey (USGS) 2001 National Land Cover Database (USGS 2006). These data are the most recent land use data that are currently available for this area. The spatial distribution of these land uses is shown on Figure A.2 (located in Appendix A) and land use percentages are shown in Table 2.1. Almost all the subsegment is either water or wetlands.

Table 2.1. Land uses percentages for subsegment 120709.

Land Use Type	Percent of Total Area
Water	64.7%
Urban/Transportation	0.0%
Barren	2.2%
Forest	0.0%
Shrubland/Grassland	0.0%
Pasture/Hay	0.0%
Row Crops	0.0%
Small Grains	0.0%
Wetlands	33.1%
TOTAL	100.0%

2.3 Water Quality Standards

Water quality standards for Louisiana are included in the Title 33 Environmental Regulatory Code (LDEQ 2007). The designated uses for subsegment 120709 are primary contact recreation, secondary contact recreation, propagation of fish and wildlife, and oyster propagation. The primary numeric criteria for the TMDL presented in this report are the DO criterion of 5 mg/L (year round) and the temperature criterion of 32°C.

The Title 33 Environmental Regulatory Code does not include numeric criteria for nutrients, but it does include the following narrative criteria for nutrients (LAC 33: IX.1113.B.8):

> "The naturally occurring range of nitrogen-phosphorous ratios shall be maintained. This range shall not apply to designated intermittent streams. To establish the appropriate range of ratios and compensate for natural seasonal fluctuations, the administrative authority will use site-specific studies to establish limits for nutrients. Nutrient concentrations that produce aquatic growth to the extent that it creates a public nuisance or interferes with designated water uses shall not be added to any surface waters."

The Louisiana water quality standards also include an antidegradation policy (LAC 33:IX.1109.A). This policy states that waters exhibiting high water quality should be maintained at that high level of water quality. If this is not possible, water quality of a level that supports designated uses of the waterbody should be maintained. Changing the designated uses of a waterbody to allow a lower level of water quality can only be achieved through a use attainability study.

2.4 Point Sources

A list of point sources in selected portions of the Terrebonne basin was developed using data from LDEQ's internal point source databases with additional information obtained from LDEQ's Electronic Document Management System (EDMS). Using this information, two point sources were identified within subsegment 120709 (see Table 2.2). Both of these point sources are facilities involved in oil and gas exploration, production, and/or development. A review of permits, applications, and Discharge Monitoring Reports (DMRs) indicated that only the

Burlington Resources facility is actually discharging sanitary wastewater. The Burlington Resources discharge was therefore included in the TMDLs, but it was not included in the water quality model due to its very small flow rate (estimated to be 100 gallons per day). The Rapiere Resources discharge was not included in the water quality model or in the TMDLs because it does not appear to be discharging effluent with an oxygen demand.

Table 2.2. Point sources for subsegment 120709.

Permit	Facility	Facility Type	Discharge Type	Included in Model?	Included in TMDL?
LAG33A433 (AI = 91773)	Rapiere Resources Company - Bay St Elaine Field Production Facility	Oil/Gas Exp Prod & Dev	rainwater	No	No
LAG33A340 (AI = 33002)	Burlington Resources - Bay St Elaine Field Production Facility	Oil/Gas Exp Prod & Dev	sanitary wastewater	No	Yes

2.5 Nonpoint Sources

The 303(d) list did not cite any specific nonpoint sources as suspected sources of the DO impairment for subsegment 120709 (Table 1.1).

Individual nonpoint sources are not identified and quantified here because this TMDL focuses on total nonpoint source loading. Individual sources should be identified and quantified by state or local agencies if they develop an implementation plan.

2.6 Historical Data Summary

The only LDEQ routine water quality monitoring station in subsegment 120709 is station 956 (Bayou Petite Caillou at Tambour Bay, Louisiana). Data from this station are summarized for selected parameters in Table 2.3. Data from three other LDEQ stations were also used for boundary conditions in the model; these stations are 949 (Bayou Petite Caillou near Cocodrie), 952 (Houma Navigation Canal north of Bayou Petite Caillou) and 961 (Lake Pelto south of Cocodrie). A tabular listing of the data for all four of these LDEQ stations is shown in

Tables B.1 through B.4 in Appendix B. Their locations are shown in Figure A.1 in Appendix A. All four stations have only 2 years of data (2000 and 2005).

Table 2.3 Water quality data for LDEQ station 956.

Parameter	No. of values	Min. (mg/L)	Median (mg/L)	Average (mg/L)	Max. (mg/L)	Number of exceedances	Percent of exceedances
DO	23	3.66	6.05	6.41	10.35	5	21.7%
TOC	23	3.4	7.4	7.86	12.8	NA	NA
Total Phos.	23	0.08	0.13	0.13	0.23	NA	NA
TKN	23	0.33	0.85	0.95	2.92	NA	NA
NH_3-N	20	<0.10	0.12	0.12	0.17	NA	NA
NO_2+NO_3-N	19	0.04	0.09	0.11	0.26	NA	NA

2.7 Previous Studies

No previous studies were identified for subsegment 120709.

3.0 CALIBRATION OF WATER QUALITY MODEL

3.1 Model Setup

In order to evaluate the linkage between pollutant sources and water quality, a computer simulation model was used. The model used for these TMDLs was version 8.11 of LA-QUAL (Wiland and LeBlanc 2007), which was selected because it includes the relevant physical, chemical, and biological processes and it has been used successfully in the past for other TMDLs in Louisiana. The LA-QUAL model was set up to simulate organic nitrogen, ammonia nitrogen, CBODu, DO, salinity, and specific conductivity. The reason for simulating salinity and specific conductivity was to calibrate the dispersion and to allow the model to adjust DO saturation concentrations based on salinity.

Bayou Petite Caillou was divided into three reaches to represent varying depths and widths along the length of the subsegment. All three reaches were divided into smaller elements to take into account variations in water quality along their length. A diagram of the model layout is shown in Appendix C.

3.2 Calibration Period and Calibration Targets

The two conditions that usually characterize critical periods for DO are high temperatures and low flows. High temperatures decrease DO saturation values and increase rates for oxygen demanding processes (BOD decay, nitrification, and sediment oxygen demand (SOD)). In most systems, low flows cause reaeration rates to be lower. The purpose of selecting a critical period for calibration is so that the model will be calibrated as accurately as possible for making projection simulations for critical conditions.

Routine water quality monitoring data have been conducted at one LDEQ sampling station in this subsegment (station 956) in 2000 and 2005 (summarized in Table B.3). Several consecutive low DO values occurred during 7/11/2000 to 9/5/2000. This period was chosen as the calibration period. The calibration target (i.e., the concentration to which the model was calibrated) for each parameter was set equal to an average of concentrations measured by LDEQ during this time period. Organic nitrogen was estimated as the TKN concentration minus the

ammonia nitrogen concentration. CBODu was estimated from TOC by multiplying the TOC by a CBODu to TOC ratio. The data used to compute this ratio are shown in Appendix D.

3.3 Temperature Correction of Kinetics (Data Type 4)

The temperature correction factors used in the model were consistent with the Louisiana Technical Procedures Manual (the "LTP"; LDEQ 2006). These correction factors were:

- Correction for BOD decay: 1.047 (value in LTP is same as model default)
- Correction for SOD: 1.065 (value in LTP is same as model default)
- Correction for ammonia N decay: 1.070 (specified in Data Group 4)
- Correction for organic N decay: 1.020 (not specified in LTP; model default used)
- Correction for reaeration: automatically calculated by the model

3.4 Hydraulics and Dispersion (Data Types 9 and 10)

The hydraulics were specified in the input for the LA-QUAL model using the power functions (width = a * Q^b + c and depth = d * Q^e + f). The average width for each reach was estimated by setting "boundaries" to form the east and west sides of the simulated waterbody and then calculating the surface area of each reach and dividing by the length of each reach. These "boundaries" are shown on the LA-QUAL vector diagram in Appendix C. Depths were estimated from bathymetric contours for surrounding areas on 1:100,000 topographic maps. Widths and depths were entered as constants (i.e., independent of flow) because water levels in this subsegment are controlled by tides rather than by flow rates.

A dispersion coefficient of 18 m^2/sec was input for all three reaches. This value was adjusted during calibration to provide an acceptable match between predicted and observed values of salinity and specific conductivity at LDEQ station 956. The hydraulics input data and sources are shown in Tables E.1 and E.2 in Appendix E.

3.5 Initial Conditions (Data Type 11)

Because temperature is not being simulated in the model, the temperature for the reach was specified in the initial conditions for LA-QUAL. The temperature for all reaches was set to 30.8°C, which was the average of temperatures measured at the LDEQ station 956 during the

calibration period. The same method was used to determine the initial DO and ammonia concentrations. The input data and sources for the initial conditions are shown in Table E.3 in Appendix E.

For constituents not being simulated, the initial concentrations were set to zero. Otherwise the model would have assumed a fixed concentration of those constituents and the model would have included effects of the unmodeled constituents on the modeled constituents.

3.6 Water Quality Kinetics (Data Types 12 and 13)

Kinetic rates used in LA-QUAL include reaeration rates, CBOD decay rates, nitrification rates, and mineralization rates (organic nitrogen decay). The kinetic rates used in the model input are shown in Table E.4 in Appendix E.

For reaeration, the Louisiana Equation (option 15) was specified in the model because it was developed specifically for waterbodies in Louisiana and it has been used successfully in the past for other TMDLs in Louisiana. Although the advective velocity in this subsegment is lower than streams for which the Louisiana Equation was developed, this equation will still maintain a minimum reaeration that is equivalent to using a surface transfer coefficient of 0.664 m/day.

The CBOD decay and nitrification rates were set equal to the medians of 144 laboratory decay rates for various subsegments in the lower Terrebonne basin. These decay rates were from field surveys completed by LDEQ and are shown in Table D.1 in Appendix D.

The mineralization rate (organic nitrogen decay) in the model was set equal to 0.02/day for all reaches. This value was similar to the values shown in Table 5.3 of the "Rates, Constants, and Kinetics" publication (EPA 1985) for dissolved organic nitrogen being transformed to ammonia nitrogen. The literature values for mineralization rates are shown in Appendix F.

3.7 Nonpoint Source Loads (Data Type 19)

The nonpoint source loads that are specified in the model can be most easily understood as resuspended load from the bottom sediments and are modeled as SOD, benthic ammonia source rates, CBOD loads, and organic nitrogen loads. The SOD (specified in data type 12), the benthic ammonia source rates (specified in data type 13), and the mass loads of organic nitrogen

and CBODu (specified in data type 19) were all treated as calibration parameters; their values were adjusted until the model output was similar to the calibration target values. The nonpoint source load values used as model input are shown in Table E.5 in Appendix E.

3.8 Headwater Flow Rate (Data Type 20)

A headwater flow rate was specified for the model. Inflow to subsegment 120709 was estimated from flows reported at USGS gage 07381328 (Houma Navigation Canal at Dulac, LA). Flow data was not available for this gage during the calibration period. The minimum flow reported for the period July through September was used based on the fact that estimated runoff for the Terrebonne basin during July through September 2000 was significantly lower than the estimated runoff during July through September 2003. This flow was split at the junction between Houma Navigation Canal and Bayou Grand Caillou and at the junction between Houma Navigation Canal and Bayou Petite Caillou. At the junction with Grand Caillou, half the flow was assumed to stay in the Houma Navigation Canal. The flow entering subsegment 120709 at the junction between Houma Navigation Canal and Bayou Petite Caillou, was assumed to be equivalent to one-third of the remaining Houma Navigation Canal flow. These calculations are included at the end of Appendix E.

3.9 Headwater Water Quality (Data Types 20, 21, and 22)

Concentrations of conductivity, salinity, DO, CBODu, organic nitrogen, nitrate+nitrite nitrogen, and ammonia nitrogen were specified in the model for the headwater flow. Water quality for the headwater was set to the average of the concentrations measured from 7/11/2000 to 9/05/2000 at LDEQ station 952 (Houma Navigation Canal north of Bayou Petit Caillou). This station was chosen since some (if not most) of the inflow into Bayou Petite Caillou just north of subsegment 120709 comes from the Houma Navigation Canal. In addition, this station is relatively close to Bayou Petite Caillou, and the data at this station are similar to the data for Bayou Petite Caillou at station 949 (upstream, or northeast, of subsegment 120709).

Since LDEQ does not measure CBOD for its routine surveys, CBODu had to be estimated. CBODu was estimated from the TOC by multiplying the TOC by a TOC to CBODu

ratio. The ratio chosen was the median ratio for 144 values in the southern Terrebonne Basin (the same way the decay rates were chosen). The values used as model input are shown in Table E.6 in Appendix E and the CBODu and TOC data are shown in Table D.1 in Appendix D.

3.10 Lower Boundary Conditions

Because subsegment 120709 is tidally influenced and dispersion was specified in the model, lower boundary conditions had to be included in the model. Data from LDEQ station 961 (Lake Pelto south of Cocodrie) was used to provide the inputs for lower boundary conditions. Station 961 was the closest LDEQ station to the downstream end of subsegment 120709. Each input was the average of the three values measured at the station during the calibration period (7/11/2000 to 9/05/2000). The CBODu was estimated from the TOC using the same method used for the headwater CBODu (see Section 3.9). The lower boundary inputs are shown in Table E.7 in Appendix E.

3.11 Model Results for Calibration

Plots of predicted and observed water quality for the calibration are presented in Appendix G and a printout of the LA-QUAL output file is included as Appendix H. The calibration was considered to be acceptable based on the amount of data that were available.

4.0 WATER QUALITY MODEL PROJECTION

EPA's regulations at 40 CFR 130.7 require the determination of TMDLs to take into account critical conditions for stream flow, loading, and water quality parameters. Therefore, the calibrated model was used to project water quality for critical conditions. The identification of critical conditions and the model input data used for critical conditions are discussed below.

4.1 Identification of Critical Conditions

Section 303(d) of the Federal Clean Water Act and EPA's regulations at 40 CFR 130.7 both require the consideration of seasonal variation of conditions affecting the constituent of concern and the inclusion of a MOS in the development of a TMDL. For the TMDL in this report, analyses of LDEQ long-term ambient data were used to determine critical seasonal conditions. Both an implicit MOS and an explicit MOS were used in developing the projection simulations.

Critical conditions for DO have been determined for Louisiana waterbodies in previous TMDL studies. The analyses concluded that the critical conditions for stream DO concentrations occur during periods with negligible nonpoint runoff, low stream flow, and high water temperature. For coastal waterbodies, though, critical conditions for DO tend to be correlated more closely to high water temperature than to flow rates during the critical periods. High temperatures cause DO saturation values to be lower and SOD, CBOD decay, and nitrification to be higher. High flow rates usually generate more reaeration in streams (due to increased velocity and turbulence), but changes in flow rates for coastal waters normally have little or no effect on reaeration because the advective velocities are very small. Periods of high nonpoint loading to Louisiana waterbodies tend to be cooler periods of the year because rainfall during summer usually creates less runoff due to evapotranspiration in the watershed. Therefore, periods of high nonpoint loading do not necessarily coincide with critical periods for DO.

LDEQ interprets this phenomenon in its TMDL modeling by assuming that the annual nonpoint loading, rather than loading for any particular day, is responsible for the accumulated benthic blanket of the waterbody, which is, in turn, expressed as SOD and/or resuspended BOD

in the model. This accumulated loading has its greatest impact on the waterbody during periods of higher temperature.

The projection simulations were run with the headwater flow rates set to the LTP default flows of 0.1 cfs (0.003 m^3/sec) for summer and 1.0 cfs (0.03 m^3/sec) for winter. These default values were used because DO values in coastal waterbodies typically are not correlated to flow rates, and because no data were available to calculate a critical flow. Temperatures in the projection simulations were set to 90th percentile seasonal temperatures in order to be conservative and to be consistent with the LTP.

The impact of various conservative assumptions regarding rates and loadings yields an implicit MOS that is not quantified. Over and above this implicit MOS, an explicit MOS of 10% was incorporated into the DO TMDL in this report to account for model uncertainty.

4.2 Temperature Inputs

The LTP (LDEQ 2006) specified that the critical temperature should be determined by calculating the 90th percentile seasonal temperature for the waterbody being modeled. The LDEQ water quality monitoring station on Bayou Petite Caillou is not a long term station, so there was not enough data to estimate 90th percentile seasonal temperatures. There is an LDEQ station on nearby Lake Palourde with a long term temperature record (station 0338). Therefore, data from Lake Palourde were used to estimate 90th percentile temperatures for Bayou Petite Caillou. The long term water temperature data collected by LDEQ at Station 0338 on Lake Palourde are summarized in Table I.2 in Appendix I. Calculations for 90th percentile temperatures were developed for this station for each season (summer and winter). These calculations are shown in Table I.2. These calculations resulted in 90th percentile temperatures of 30.7°C for summer and 13.8°C for winter (see Table I.2). These temperatures were adjusted based on differences between seasonal average temperatures taken at Bayou Petite Caillou (Stations 0956) and Lake Palourde (Station 0338) during their overlapping periods of record (2000 and 2005). These calculations are shown in Table I.1 in Appendix I. The 90th percentile temperatures used as model inputs for the projection simulations were 30.6°C for summer and 14.0°C for winter. These values were specified in Data Type 11.

4.3 Headwater Inputs

The inputs for the headwater for the projection simulation were based on guidance in the LTP. As specified in the LTP, the DO concentrations for the headwater inflows were set to 90% saturation at the seasonal critical temperatures. Headwater concentrations for other parameters were set to calibration values. The headwater inflows were set to the default values specified in the LTP; 0.1 cfs for the summer projection, and 1.0 cfs for the winter projection.

4.4 Point Source Inputs

As mentioned in Section 2.4, no point source discharges were included in the model.

4.5 Nonpoint Source Loads

Because the initial projection simulations were showing DO values below the 5 mg/L criterion, the nonpoint source loadings were reduced until all of the predicted DO values were equal to or greater than the water quality criterion of 5.0 mg/L. The same percent reduction was applied to the SOD and nonpoint mass loads of CBODu and organic nitrogen.

4.6 Other Inputs

The only model inputs that were changed from the calibration to the projection simulation were the inputs discussed above in Sections 4.2 through 4.5. Other model inputs (e.g., hydraulic coefficients, decay rates, reaeration equations, etc.) were unchanged from the calibration simulation.

4.7 Model Results for Projections

Plots of predicted water quality for the projections are presented in Appendix J and printouts of the LA-QUAL output files are included as Appendix K.

Oxygen demanding load reductions were required to meet the DO standard. A nonpoint source load reduction of approximately 57% was required to bring the predicted DO values up to

at least 5.0 mg/L for the summer projection. No load reductions were necessary for the winter projection.

These percent reductions for nonpoint source loads represent percentages of the entire nonpoint source loading, not percentages of the manmade nonpoint source loading. The nonpoint source loads in this report were not divided between natural and manmade because it would be difficult to estimate natural nonpoint source loads for the study area.

5.0 DO TMDL DEVELOPMENT

5.1 TMDL Calculations

A TMDL for DO was calculated for subsegment 120709 using the results of the summer and winter projection simulations. The DO TMDL is presented as oxygen demand from CBODu, organic nitrogen, ammonia nitrogen, and SOD. Summaries of the TMDL are presented in Tables 5.1 and 5.2.

The TMDL calculations were performed using a FORTRAN program that was written by FTN personnel. This program reads two files; one is the LA-QUAL output file from the projection simulation and the other is a small input file with miscellaneous information needed for the TMDL calculations (shown in Appendix L). The output files from the program are also shown in Appendix L for the summer and winter projections. The source code for the program is shown in Appendix M. A one-page summary of the methodology for the TMDL calculations is shown at the beginning of Appendix M.

The oxygen demand from organic nitrogen and ammonia nitrogen was calculated as 4.33 times the nitrogen loads (assuming that all organic nitrogen is eventually converted to ammonia). The value of 4.33 is the same ratio of oxygen demand to nitrogen that is used by the LA-QUAL model. For the SOD loads, a temperature correction factor was included in the calculations (in order to be consistent with LDEQ procedures).

5.2 Point Source Loads

The WLA for point sources for each season was calculated as the load from the Burlington Resources facility. The estimated flow from this facility was multiplied by 1.25 before the loads were calculated so that 20% of the resulting loads could be reserved for the MOS and FG. These loads were calculated using the FORTRAN program described above. Table 5.3 lists the flow, concentrations, and loads for the point source discharge that was included in the DO TMDL.

Table 5.1. Summer DO TMDL for subsegment 120709.

	Oxygen Demand (kg/day) from:					Oxygen Demand (lbs/day) from:					Percent Reduction Needed
	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	
Point Sources											
WLA	NA	0.05	0	0	0.05	NA	0.11	0	0	0.11	0%
MOS	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
FG	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
Nonpoint Sources											
LA	2559.19	12040.00	0.73	0.11	14600	5642.0	26543.6	1.61	0.24	32187.5	57%
MOS	319.90	1505.00	0.09	0.01	1825	705.3	3318.0	0.20	0.02	4023.5	NA
FG	319.90	1505.00	0.09	0.01	1825	705.3	3318.0	0.20	0.02	4023.5	NA
TMDL	3198.99	15050.00	0.91	0.13	18250	7052.6	33179.6	2.01	0.28	40234.5	NA

Table 5.2. Winter DO TMDL for subsegment 120709.

	Oxygen Demand (kg/day) from:					Oxygen Demand (lbs/day) from:					Percent Reduction Needed
	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	Total	
Point Sources											
WLA	NA	0.05	0	0	0.05	NA	0.11	0	0	0.11	0%
MOS	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
FG	NA	0.005	0	0	0.005	NA	0.011	0	0	0.011	NA
Nonpoint Sources											
LA	2093.87	28000.00	0.73	0.11	30094.71	4616.3	61729.4	1.61	0.24	66347.6	0%
MOS	261.74	3500.00	0.09	0.01	3671.84	577.0	7716.2	0.20	0.02	8095.4	NA
FG	261.74	3500.00	0.09	0.01	3671.84	577.0	7716.2	0.20	0.02	8095.4	NA
TMDL	2617.35	35000.00	0.91	0.13	37618.39	5770.3	77161.8	2.01	0.28	82934.4	NA

Table 5.3. Flow, concentrations, and loads for point source included in DO TMDL.

Subseg. Number	NPDES Number	Name of discharger	Flow rate (gallons per day)	Concentrations			Loads*		
				BOD5 or CBOD5 (mg/L)	Ammonia nitrogen (mg/L)	Organic nitrogen (mg/L)	BOD5 or CBOD5 (lbs/day)	Ammonia nitrogen (lbs/day)	Organic nitrogen (lbs/day)
120709	LAG33A340	Burlington Resources	100	45	0	0	0.038	0	0
120709 Total Loads:							0.038	0	0

*Loads of organic nitrogen and ammonia nitrogen in this table represent loads of nitrogen, not oxygen demand.

The nonconservative behavior of DO allows many small, remote point source discharges to be assimilated by the receiving waterbodies before they reach the modeled waterbody. These discharges are said to have little to no impact on the modeled waterbody and therefore, they are not included in the model and are not subject to any reductions based on this TMDL. These facilities are permitted in accordance with state regulation and policies that provide adequate protective controls. New similarly insignificant point sources will continue to be issued permits in this manner. Significant existing point source discharges are either included in the model or are determined to be insignificant by other modeling. New significant point source discharges would have to be evaluated individually to determine what impact they have on the impaired waterbody and the appropriate controls.

5.3 MOS and FG

The MOS accounts for any lack of knowledge or uncertainty concerning the relationship between pollutant loading and water quality. The model projections were run with the 90th percentile seasonal water temperatures (conservative values), and the calibration targets were set to the lowest DO values from the routine monitoring. These modeling procedures yield an implicit MOS, which is not quantified. In addition to the implicit MOS, the DO TMDL in this report includes an explicit MOS equal to 10% of the TMDL and an explicit allowance for FG that is also equal to 10% of the TMDL.

5.4 Seasonal Variation

As discussed in Section 4.1, critical conditions for DO in Louisiana waterbodies have been determined to be when there is negligible nonpoint runoff and low stream flow combined with high water temperatures. In addition, the model accounts for loadings that occur at higher flows by modeling SOD. Oxygen-demanding pollutants that enter the waterbodies during higher flows settle to the bottom and then exert the greatest oxygen demand during the high temperature seasons.

5.5 Ammonia Toxicity Calculations

Although subsegment 120709 is not on a 303(d) list for ammonia, the ammonia concentrations predicted in the projection simulations were checked to make sure that they did not exceed EPA criteria for ammonia toxicity (EPA 1999). The EPA criteria are dependent on temperature and pH. The water temperatures used to calculate the ammonia toxicity criteria for summer and winter for subsegment 120709 were the same as the critical temperatures used in the projection simulations. Average pH values for each season were calculated from routine monitoring data at LDEQ station 956. The resulting criteria for ammonia nitrogen were 1.68 mg/L for summer and 3.07 mg/L for winter. The ammonia nitrogen concentrations predicted by the LA-QUAL model were well below these criteria. This indicates that the ammonia nitrogen loadings that will maintain the DO standard are low enough that the EPA ammonia toxicity criteria will not be exceeded under critical conditions. The ammonia toxicity calculations are shown in Appendix N.

6.0 NUTRIENT TMDL DEVELOPMENT

6.1 Seasonality and Critical Conditions

EPA's regulations at 40 CFR 130.7 require the determination of TMDLs to take into account critical conditions for stream flow, loading, and water quality parameters. Also, both Section 303(d) of the Clean Water Act and regulations at 40 CFR 130.7 require TMDLs to consider seasonal variations for meeting water quality standards. Aquatic life impairments typically occur as a result of long term exposure to elevated nutrient concentrations rather than short-term fluctuations in nutrient concentrations. This nutrient TMDL was developed for average annual conditions. The most obvious result of nutrients is algal blooms. When the algae die, the resultant biological oxygen demand consumes oxygen, which adversely affects aquatic life. The effect occurs in a short time but the build-up of nutrients and the conditions to start the algal bloom may occur over an extended time.

6.2 Water Quality Targets

Target concentrations for the Bayou Petite Caillou nutrient TMDL were based on data from reference waterbodies because there are no numeric nutrient criteria in the Louisiana water quality standards. Five references sites in the lower Terrebonne basin were identified and sampled as part of study conducted under contract to EPA Region 6 by The Cadmus Group, Inc. and ARCADIS U.S., Inc., along with other team members (Cadmus Group 2007). Each site was sampled four times during 2005-2006. These data are shown in Appendix O. Target concentrations of total nitrogen (TKN plus nitrate plus nitrite) and total phosphorus were set to the overall averages of the values from all five sites for all four sampling events. This yielded target concentrations of 0.15 mg/L total phosphorus and 1.70 mg/L total nitrogen.

Using target concentrations based on data from reference waterbodies is considered conservative because some waterbodies in the same ecoregion may be able to maintain designated uses with nutrient concentrations that are slightly higher than reference waterbody values. Additional data collection may be necessary to develop site-specific nutrient criteria that

would incorporate site-specific factors that affect a waterbody's water quality and biological responses to nutrient loads.

6.3 Calculations for TMDL Components

The nutrient TMDL for subsegment 120709 was calculated using a conservative mass balance. The available data are not sufficient to perform accurate simulations of the full nutrient-algal cycle in a model such as LA-QUAL.

The TMDLs for total phosphorus and total nitrogen were estimated as the target concentrations multiplied by the estimated average annual flow for the subsegment. The average annual flow for the subsegment was estimated as the area of the subsegment multiplied by an average runoff coefficient that was used in previous TMDLs in this region (Tetra Tech 2007). The runoff coefficient was based on long term monthly water budget simulations conducted by the Louisiana Office of State Climatology using meteorological data for the Houma area. This yielded a value of 71.68 cfs, or 46.33 MGD, for the average annual flow. The resulting TMDLs were 58.00 lbs/day of total phosphorus and 657.31 lbs/day of total nitrogen. The nutrient TMDL calculations are shown in Appendix O.

An implicit MOS was established for this nutrient TMDL through the use of conservative assumptions, including the use of data from reference waterbodies for target concentrations, and the use of a conservative mass balance (i.e., neglecting nutrient losses due to settling, uptake by algae and macrophytes, etc.). No explicit MOS was used for this nutrient TMDL. Ten percent of the TMDL was set aside for a FG component.

The WLA for point sources was calculated as estimated effluent concentrations of total phosphorus and total nitrogen multiplied by the design flow of the Burlington Resources discharge (the only point source that was included in the TMDLs). The assumed effluent concentrations for sanitary wastewater were 6 mg/L of total phosphorus and 16 mg/L of total nitrogen. These concentrations were based on median values for various types of wastewater treatment systems reported in an EPA technical guidance manual (EPA 1997; Table A-17). These values were used as rough estimates of effluent concentrations; they should not be used as

permit limits without additional data collection to determine actual effluent concentrations and their impact on the water quality and biology of the receiving streams.

The LA for nonpoint sources was calculated as the TMDL minus the FG and WLA. The nutrient TMDL is summarized in Table 6.1 and the calculations for the nutrient TMDL are shown in Appendix O.

Table 6.1. Nutrient TMDL for subsegment 120709.

Parameter	Loads, lbs/day					Percent Reduc.
	WLA	LA	MOS	FG	TMDL	
Total Phosphorus	0.005	52.19	Implicit	5.80	58.00	0%
Total Nitrogen	0.013	591.57	Implicit	65.73	657.31	0%

6.4 Comparison of Target and Existing Concentrations

Existing nutrient concentrations were compared with target concentrations to calculate percent reductions that would be needed. This comparison was performed for informational purposes only; the results do not affect the allowable loads in the nutrient TMDL. Existing concentrations were estimated as averages of measured values in Bayou Petite Caillou at station 956 (0.13 mg/L of total phosphorus and 1.06 mg/L of total nitrogen; see Table 2.3). These existing values are already lower than the target concentrations (0.15 mg/L of total phosphorus and 1.70 mg/L of total nitrogen; see Section 6.2). Therefore no reductions of nutrient loads are needed for this TMDL.

7.0 SENSITIVITY ANALYSES

All modeling studies necessarily involve uncertainty and some degree of approximation. Therefore of value to consider the sensitivity of the model output to changes in model coefficients, and in the hypothesized relationships among the parameters of the model. The sensitivity analyses were performed by allowing the LA-QUAL model to vary one input parameter at a time while holding all other parameters to their original value. The calibration simulation was used as the baseline for the sensitivity analysis. The percent change of the model's minimum DO projections to each parameter is presented in Table 7.1. Each parameter was varied by $\pm 30\%$, except for temperature, which were varied ± 2ºC.

Values reported in Table 7.1 are sorted by percentage variation of minimum DO from smallest percentage variation to largest. Reaeration, depth, and SOD (benthal demand) were the parameters to which DO was most sensitive.

Table 7.1. Summary of results of sensitivity analyses.

Input Parameter	Parameter Change	Predicted minimum DO (mg/L)	Percent Change in Predicted DO (%)
Baseline	-	3.59	N/A
Reaeration	-30%	1.95	45.6
SOD	+30%	2.46	31.4
Velocity	-30%	2.56	28.6
Reaeration	+30%	4.54	26.6
Depth	+30%	2.73	23.9
Depth	-30%	4.40	22.5
Headwater flow	-30%	2.95	17.7
Initial temperature	+2°C	2.96	17.5
Initial temperature	-2°C	4.20	17.0
SOD	-30%	4.14	15.5
Headwater flow	+30%	3.92	9.1
Velocity	+30%	3.69	2.7
Wasteload flow	-30%	3.50	2.5
Wasteload flow	+30%	3.67	2.3
BOD decay rate	-30%	3.65	1.7
BOD decay rate	+30%	3.54	1.4
NH3 decay rate	-30%	3.59	<1
Organic N decay rate	+30%	3.59	<1
Organic N decay rate	-30%	3.59	<1
Wasteload BOD	+30%	3.58	<1
Wasteload BOD	-30%	3.60	<1
Wasteload NH3	+30%	3.59	<1
Wasteload NH3	-30%	3.59	<1
NH3 decay rate	+30%	3.59	0
Wasteload DO	+30%	3.59	0
Wasteload DO	-30%	3.59	0
Wasteload Organic N	+30%	3.59	0
Wasteload Organic N	-30%	3.59	0

8.0 OTHER RELEVANT INFORMATION

This TMDL has been developed to be consistent with the State antidegradation policy (LAC 33:IX.1109.A).

This TMDL report does not include an implementation plan. Implementation plans are not required for TMDLs under current federal regulations. Implementation plans can be developed most effectively and efficiently on the state and local level.

LDEQ will work with other agencies such as local Soil Conservation Districts to implement nonpoint source best management practices in the watershed through the 319 programs. LDEQ will also continue to monitor the waters to determine whether standards are being attained.

In accordance with Section 106 of the federal Clean Water Act, and under the authority of the Louisiana Environmental Quality Act, the LDEQ has established a comprehensive program for monitoring the quality of the State's surface waters. The LDEQ Surveillance Section collects surface water samples at various locations, utilizing appropriate sampling methods and procedures for ensuring the quality of the data collected. The objectives of the surface water monitoring program are to determine the quality of the State's surface waters, to develop a long-term data base for water quality trend analysis, and to monitor the effectiveness of pollution controls. The data obtained through the surface water monitoring program is used to develop the State's biennial 305(b) report (Water Quality Inventory) and the 303(d) list of impaired waters. This information is also utilized in establishing priorities for the LDEQ nonpoint source program.

The LDEQ has implemented a watershed approach to surface water quality monitoring. Through this approach, the entire state is sampled over a 4-year cycle. Long-term trend monitoring sites at various locations on the larger rivers and Lake Pontchartrain are sampled throughout the 4-year cycle. Sampling is conducted on a monthly basis to yield approximately 12 samples per site each year the site is monitored. Sampling sites are located where they are considered to be representative of the waterbody. Under the current monitoring schedule, approximately one half of the State's waters are newly assessed for each 305(b) and 303(d)

listing biennial cycle, with sampling occurring statewide each year. The 4-year cycle follows an initial 5-year rotation that covered all basins in the state according to the TMDL priorities. This will allow the LDEQ to determine whether there has been any improvement in water quality following implementation of the TMDLs. As the monitoring results are evaluated at the end of each year, waterbodies may be added to or removed from the 303(d) list.

9.0 PUBLIC PARTICIPATION

When EPA establishes a TMDL, federal regulations require EPA to publicly notice and seek comment concerning the TMDL. The TMDLs in this report were prepared under contract to EPA. EPA is seeking comments, information, and data from the general and affected public concerning these draft TMDLs. If comments, data, or information are submitted during the public comment period, EPA will address the comments and revise these TMDLs accordingly. EPA will then transmit the final TMDLs to LDEQ for implementation and for incorporation into LDEQ's current water quality management plan.

10.0 REFERENCES

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Downloaded from LDEQ web site
(www.deq.louisiana.gov/portal/Portals/0/planning/laqual.zip).

APPENDIX A

Maps of the Study Area

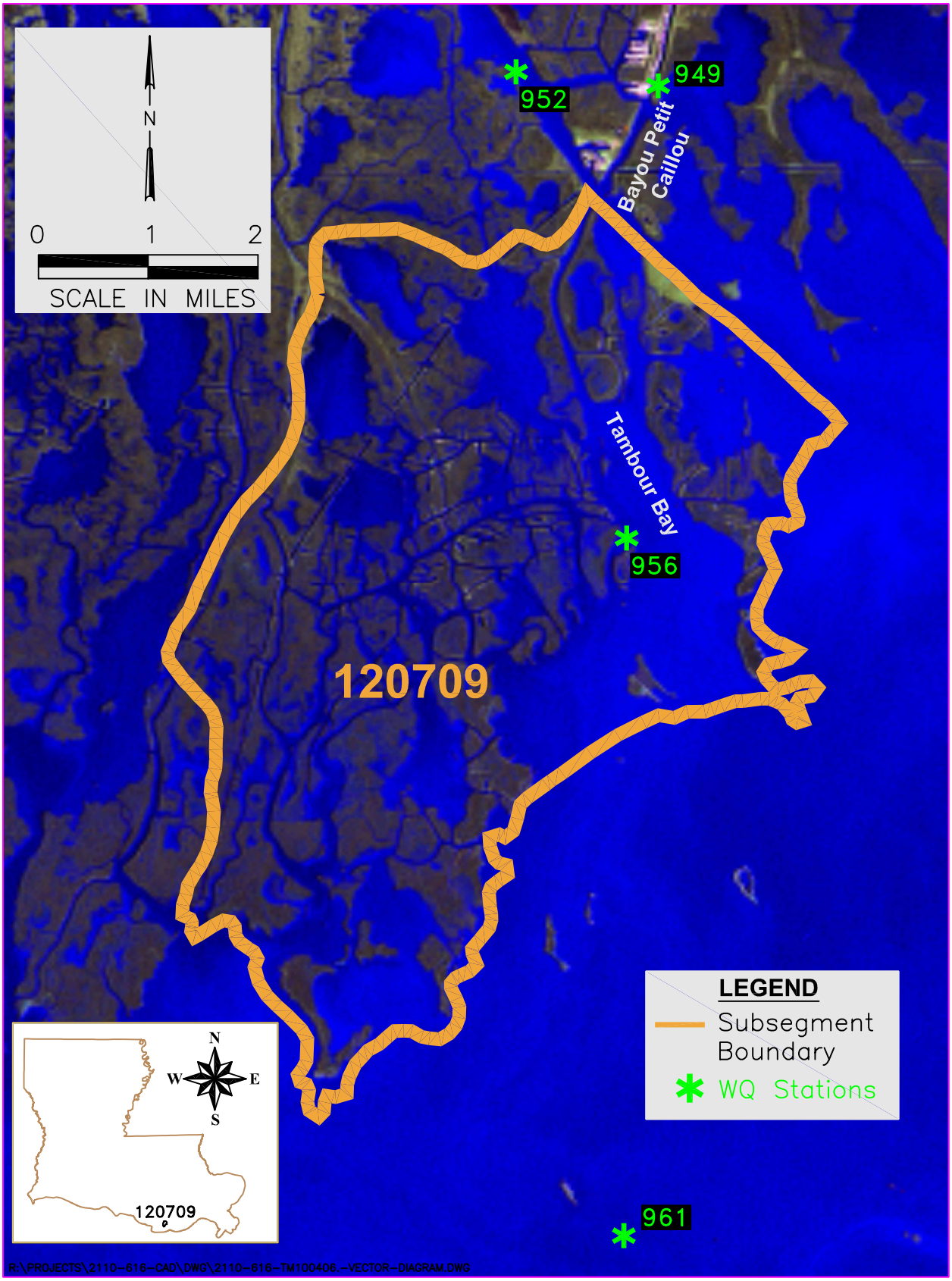

Figure A.1. General watershed map for subsegment 120709.

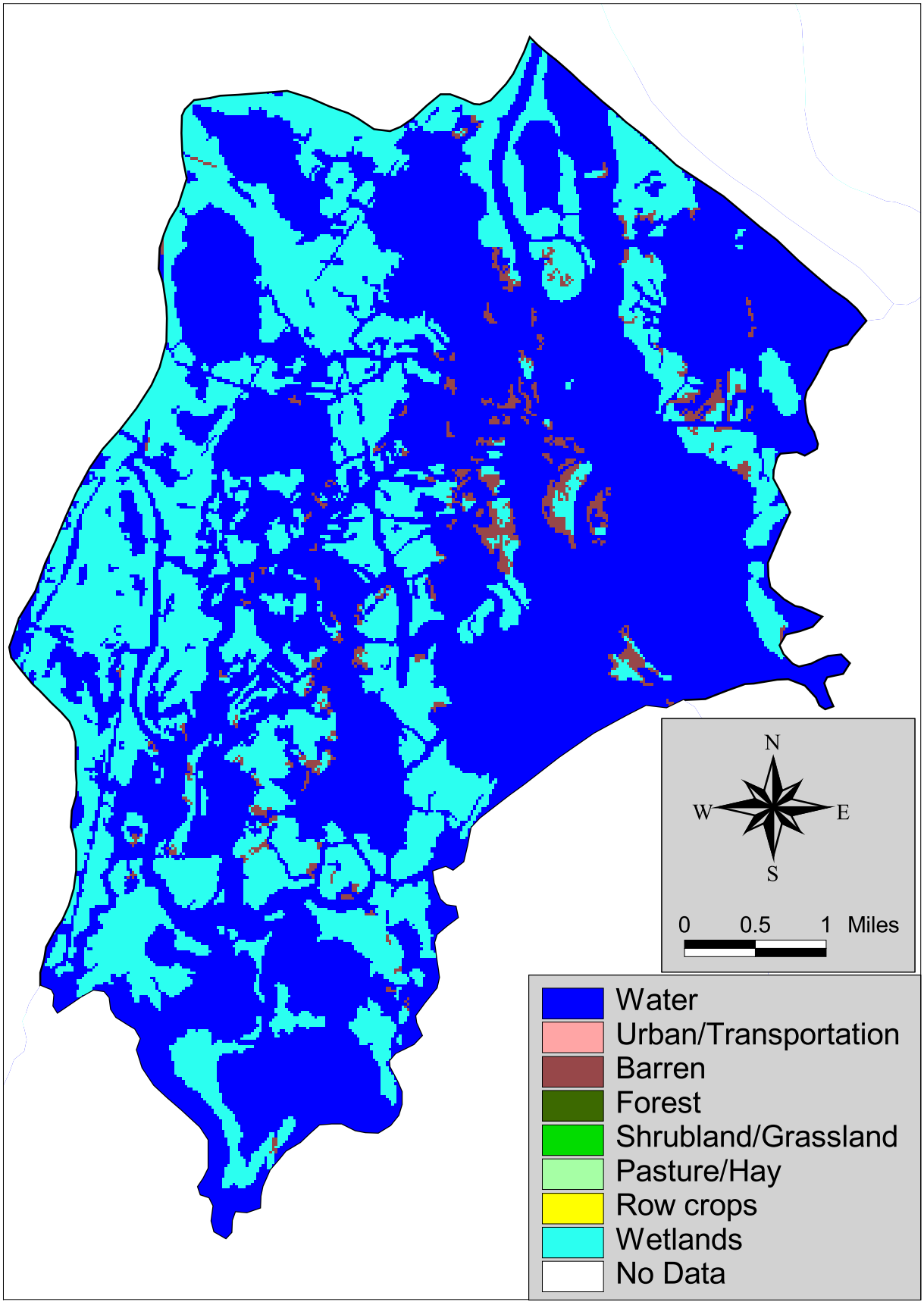

Figure A.2. Landuse / landcover for subsegment 120709.

APPENDIX B

LDEQ Routine Monitoring Data

Table B.1 Summary of data collected by LDEQ Station 949 (Bayou Petit Caillou at Cocodrie, Louisiana).

Date	Water Temp. (C)	Salinity (ppt)	Specific Cond (umhos/cm)	DO (mg/L)	TOC (mg/L)	Total Phosphorus (mg/L)[1]	TKN (mg/L)	Ammonia Nitrogen (mg/L)[2]	$NO_2 + NO_3$ (mg/L)[1]
04-Jan-00	19.00	22.2	35,300	6.20	8.3	0.33	1.92	0.14	0.07
01-Feb-00	9.44	21.3	32,090	9.14	8.5	0.08	0.85	0.24	0.11
29-Feb-00	19.19	68.6		5.27	10	0.09	0.39	0.22	0.08
05-Apr-00	18.43	12.9	20,810	7.25	9.3	0.11	0.74	0.16	0.39
02-May-00	23.42	21.1	34,400	6.50	8.6	0.13	1.41	< 0.1	0.05
30-May-00	30.18	12.7	21,100	6.05	10.4	0.12	1.12	< 0.1	0.12
27-Jun-00	29.29	9.8	16,900	5.77	9.7	0.16	1.14	0.2	0.14
15-Aug-00	**29.99**	**14.5**	**24,100**	**6.15**	**7.8**	**0.14**	**1.16**	**0.14**	**0.05**
29-Aug-00	**31.80**	**15.5**	**25,300**	**6.78**	**8.9**	**0.2**	**1.69**	**< 0.1**	**0.04**
26-Sep-00	24.62	12.9	21,800	6.08	9.5	0.24	1.24	0.15	0.14
24-Oct-00	23.61	25.1	38,300	6.92	7.9	0.2	1.16	< 0.1	0.08
28-Nov-00	14.98	13	21,700	7.01	10.3	0.16	0.86	0.25	0.14
10-Jan-05	19.70	12.2	20,310	6.63	8.8	0.11	1.11	ND	0.07
10-Feb-05	16.43	7.5	13,210	7.70	7	0.1	0.61	0.12	0.22
21-Feb-05	19.13	6	10,820	6.89	7.9	0.08	0.66	ND	0.12
14-Mar-05	20.43	1.5	2,890	7.60	14.5	0.12	0.81	ND	0.17
04-Apr-05	20.53	4.6	8,420	7.04	9.2	0.11	0.75	ND	0.25
02-May-05	20.50	7.1	12,470	6.73	6.8	0.11	0.78	0.16	0.26
16-May-05	25.40	8.34	14,800	5.36	8.6	0.09	0.47	0.26	0.2
20-Jun-05	28.90	9.7	16,500	5.10	10.8	ND	0.86	0.11	0.06
18-Jul-05	31.20	12.7	21,100	5.03	8.6	0.14	0.7	ND	0.06
01-Aug-05	31.23	9.47	16,100	4.72	8.3	0.14	0.77	ND	ND
22-Aug-05	31.40	13.6	22,600	4.41	9.2	0.18	0.77	ND	ND
Average[3] =	30.90	15.00	24,700	6.47	8.35	0.14	1.43	0.12	0.045

Notes:
1. A "ND" means the concentration was below detection limit, it just does not say what the detection limit was.
2. A "ND" means the same as note 1, a "<0.1" means it is below of 0.1 mg/L (the detection limit).
3. The averages shown here are for the calibration period of July 11, 2000 to September 5, 2000. However this is not a calibration or boundary station so they are shown here just for comparison.
4. Original data was sent to FTN via e-mail and found in "Bayou Petit Caillou and nearby stations data.xls".

FILE: R:\PROJECTS\2110-616\TECH\FTN REPORT\BAYOU PETIT CAILLOU\STATION SUMMARY TABLES.XLS

Table B.2 Summary of data collected by LDEQ Station 952 (Houma Navigation Canal north of Bayou Petit Caillou).

Date	Water Temp. (C)	Salinity (ppt)	Specific Cond (umhos/cm)	DO (mg/L)	TOC (mg/L)	Total Phosphorus (mg/L)	TKN (mg/L)	Ammonia Nitrogen (mg/L)[1]	$NO_2 + NO_3$ (mg/L)[2]
11-Jan-00	17.74	17.7	29,040	7.10	7.3	0.08	0.82	< 0.1	0.11
08-Feb-00	12.50	19.8	31,660	8.35	5.7	0.07	1.12	0.2	0.15
14-Mar-00	18.05	27.3	47,960	7.53	8	0.12	0.92	< 0.1	0.27
11-Apr-00	18.97			9.10	7.4	0.17	0.92	< 0.1	0.32
09-May-00	26.20	19.9	31,920	5.45	8.8	0.06	0.58	0.31	0.11
06-Jun-00	28.90	12.3	21,536	5.00	10.6	0.12	0.96	< 0.1	0.12
11-Jul-00	**31.20**	**10.8**	**18,250**	**6.49**	**10.7**	**0.14**	**0.67**	**< 0.1**	**0.32**
08-Aug-00	**30.00**	**20.8**	**33,000**	**5.27**	**8.6**	**0.12**	**0.85**	**< 0.1**	**0.04**
05-Sep-00	**31.62**	**17.9**	**29,450**	**5.18**	**10.2**	**0.16**	**1.17**	**< 0.1**	**0.05**
03-Oct-00	25.50	26.1	40,850	5.31	9.5	0.17	0.87	< 0.1	0.08
31-Oct-00	24.60	31.2	47,850	4.90	9.9	0.14	1.16	< 0.1	0.04
05-Dec-00	9.60	16.6	27,390	9.98	10.2	0.07	0.68	< 0.1	0.13
10-Jan-05	18.40	4.3	8,210	7.52	7.1	0.13	0.89	ND	0.27
10-Feb-05	12.85	0.9	1,740	9.13	5.7	0.20	1.11	ND	0.58
21-Feb-05	18.10	1.7	3,070	8.80	8.1	0.10	0.72	ND	0.06
14-Mar-05	16.21	1.9	3,400	9.93	13.4	0.09	0.78	ND	0.12
04-Apr-05	20.10	1.4	2,800	7.39	9.9	0.13	0.83	ND	0.31
02-May-05	21.00	6.7	12,380	6.91	6.5	0.09	0.58	0.21	0.35
16-May-05	25.90	6.8	11,920	5.97	12.1	0.08	0.51	0.24	0.24
20-Jun-05	28.70	15.1	26,100	5.05	9	0.13	0.68	0.14	0.07
18-Jul-05	30.30	17.3	28,000	5.71	6.8	0.14	0.8	ND	0.06
01-Aug-05	31.10	14.3	24,000	4.77	7.4	0.13	0.68	ND	ND
22-Aug-05	31.60	10.5	17,700	5.33	7.8	0.18	0.57	0.16	ND
Average[3] =	30.94	16.5	26,900	5.65	9.83	0.14	0.90	0.1	0.14

Notes: 1. A value of "< 0.1" meant the concentration is less than 0.1 mg/L (ie below detetcion limit), a "ND" means the concentration was below detection limit, it just does not say what the detection limit was.
2. The "ND"s here mean the same as in note 1.
3. The averages shown here are for the calibration period of July 11, 2000 to September 5, 2000.
4. Original data was sent to FTN via e-mail and found in "Bayou Petit Caillou and nearby stations data.xls".

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Table B.3 Summary of data collected by LDEQ Station 956 (Bayou Petit Caillou at Tambour Bay).

Date	Water Temp (C)	Salinity (ppt)	Specific Cond (umhos/cm)	DO (mg/L)	TOC (mg/L)	Total Phosphorus (mg/L)	TKN (mg/L)	Ammonia Nitrogen (mg/L)[1]	$NO_2 + NO_3$ (mg/L)[2]
11-Jan-00	18.21	21.90	34,950	5.86	6.4	0.09	0.85	0.13	0.08
08-Feb-00	13.40	22.40	35,540	8.20	4.4	0.18	0.44	0.14	0.11
14-Mar-00	18.02	26.60	41,610	7.56	3.4	0.1	0.99	< 0.1	0.04
11-Apr-00	19.28			8.67	5.9	0.23	1.18	0.13	0.13
09-May-00	26.10	29.90	46,080	6.01	10.4	0.13	1.22	0.15	0.04
06-Jun-00	27.80	26.30	40,820	5.28	9.6	0.15	1.16	< 0.1	0.06
11-Jul-00	**30.90**	**26.50**	**41,160**	**4.69**	**10.8**	**0.13**	**0.88**	**< 0.1**	**0.06**
08-Aug-00	**29.80**	**26.30**	**41,130**	**3.66**	**7.3**	**0.12**	**0.86**	**0.13**	**0.04**
05-Sep-00	**31.64**	**24.40**	**38,450**	**4.55**	**8.8**	**0.15**	**1.25**	**< 0.1**	**0.05**
03-Oct-00	25.60	29.00	44,890	5.69	6.8	0.15	2.92	< 0.1	0.09
31-Oct-00	24.50	32.60	49,800	4.60	8.5	0.13	1.10	< 0.1	0.05
05-Dec-00	10.20	15.00	24,780	10.35	8.6	0.1	0.33	0.11	0.14
10-Jan-05	19.00	9.80	16,780	6.07	8.1	0.11	0.85	0.16	0.15
10-Feb-05	14.68	6.30	11,070	9.01	6.3	0.2	1.20	0.12	0.26
21-Feb-05	19.74	10.50	18,570	7.69	6.1	0.1	0.74	0.11	0.13
14-Mar-05	20.80	13.20	22,040	7.10	11.0	0.08	0.65	ND	0.09
04-Apr-05	17.56	8.50	14,780	7.44	10.4	0.16	0.97	0.1	0.17
02-May-05	20.00	12.90	21,700	7.40	5.8	0.12	0.68	0.17	0.26
16-May-05	25.40	17.10	27,800	6.22	12.8	0.14	0.83	0.15	0.06
20-Jun-05	29.20	19.70	31,500	5.34	7.4	0.11	0.73	0.12	ND
18-Jul-05	30.60	21.20	33,600	6.05	5.5	0.13	0.57	ND	ND
01-Aug-05	31.34	18.91	30,300	5.48	6.7	0.12	0.65	ND	ND
22-Aug-05	30.80	19.10	30,600	4.42	9.8	0.16	0.76	0.1	ND
Count[3]	23	22	22	23	23	23	23	20	19
Min	10.20	6.30	11,070	3.66	3.40	0.08	0.33	0.10	0.04
Median	24.50	20.45	32,550	6.05	7.40	0.13	0.85	0.12	0.09
Average[4]	23.24	19.91	31,725	6.41	7.86	0.13	0.95	0.12	0.11
Max	31.64	32.60	49,800	10.35	12.80	0.23	2.92	0.17	0.26
CP Average[5] =	30.78	25.73	40,247	4.30	9.0	0.13	1.00	0.11	0.05

Notes:
1. A value of "< 0.1" meant the concentration is less than 0.1 mg/L (ie below detetcion limit), a "ND" means the concentration was below detection limit, it just does not say what the detection limit was.
2. The "ND"s here mean the same as in note 1.
3. The count here includes the the values below the detection limit.
4. The averages here include all the values. For those values below detection limit the detection limit was used.
5. The averages shown here are for the calibration period of July 11, 2000 to September 5, 2000.
6. Original data was sent to FTN via e-mail and found in "Bayou Petit Caillou and nearby stations data.xls".

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Table B.4 Summary of data collected by LDEQ Station 961 (Lake Pelto south of Cocodrie).

Date	Water Temp (C)	Salinity (ppt)	Specific Cond (umhos/cm)	DO (mg/L)	TOC (mg/L)	Total Phosphorus (mg/L)[1]	TKN (mg/L)	Ammonia Nitrogen (mg/L)[1]	$NO_2 + NO_3$ (mg/L)[2]
11-Jan-00	16.77	35.80	54,140	7.26	2.3	0.11	0.57	< 0.1	0.08
08-Feb-00	12.40	30.80	47,260	9.22	2.0	0.22	0.40	< 0.1	0.11
14-Mar-00	19.19	29.40	48,100	7.54		0.22	1.56	< 0.1	0.04
11-Apr-00	19.54			6.61	3.1	0.09	1.05	< 0.1	0.13
09-May-00	26.20	31.10	47,720	5.96	3.9	0.10	1.10	< 0.1	0.04
06-Jun-00	28.70	33.40	50,920	5.40	3.8	0.10	0.87	< 0.1	0.06
11-Jul-00	**31.10**	**31.10**	**47,650**	**5.91**	**6.4**	**0.22**	**2.19**	**< 0.1**	**0.06**
08-Aug-00	**30.10**	**31.50**	**48,310**	**5.10**	**5.0**	**< 0.10**	**0.70**	**< 0.1**	**0.04**
05-Sep-00	**30.71**	**27.20**	**42,150**	**4.81**	**4.2**	**0.16**	**1.03**	**< 0.1**	**0.05**
03-Oct-00	25.60	35.70	53,970	5.91	2.6	0.11	2.62	< 0.1	0.09
31-Oct-00	24.40	36.10	54,570	5.94	3.3	0.08	0.87	< 0.1	0.05
05-Dec-00	12.60	34.30	52,130	8.45	2.5	0.07	1.03	< 0.1	0.14
10-Jan-05	14.30	20.30	35,890	10.24	12.6	0.08	0.47	ND	0.15
10-Feb-05	15.20	18.40	29,950	8.40	4.8	ND	1.08	0.14	0.26
21-Feb-05	17.86	22.20	35,180	9.89	5.4	0.08	0.34	ND	0.13
14-Mar-05	19.02	20.50	32,820	8.12	5.4	0.05	0.24	ND	0.09
04-Apr-05	19.91	24.50	38,630	5.96	4.0	0.06	0.68	ND	0.17
02-May-05	21.20	26.10	41,000	6.73	3.6	0.13	0.64	0.13	0.26
16-May-05	26.00	25.20	39,500	6.14	5.4	0.07	0.32	0.1	0.06
20-Jun-05	29.20	25.50	39,800	4.74	5.0	0.11	0.58	0.18	ND
18-Jul-05	30.70	24.40	38,200	6.62	4.4	0.12	0.46	ND	ND
01-Aug-05	31.27	26.73	41,600	5.68	3.7	0.07	0.19	ND	ND
22-Aug-05	31.40	26.50	41,100	4.38	4.1	0.11	0.83	ND	ND
Average[3] =	30.64	29.93	46,037	5.27	5.2	0.16	1.31	0.1	0.05

Notes: 1. A value of "< 0.10" or "< 0.1"meant the concentration is less than 0.1 mg/L (ie below detetcion limit), a "ND" means the concentration was below detection limit, it just does not say what the detection limit was.
2. The "ND"s here mean the same as in note 1.
3. The averages shown here are for the calibration period of July 11, 2000 to September 5, 2000.
4. Original data was sent to FTN via e-mail and found in "Bayou Petit Caillou and nearby stations data.xls".

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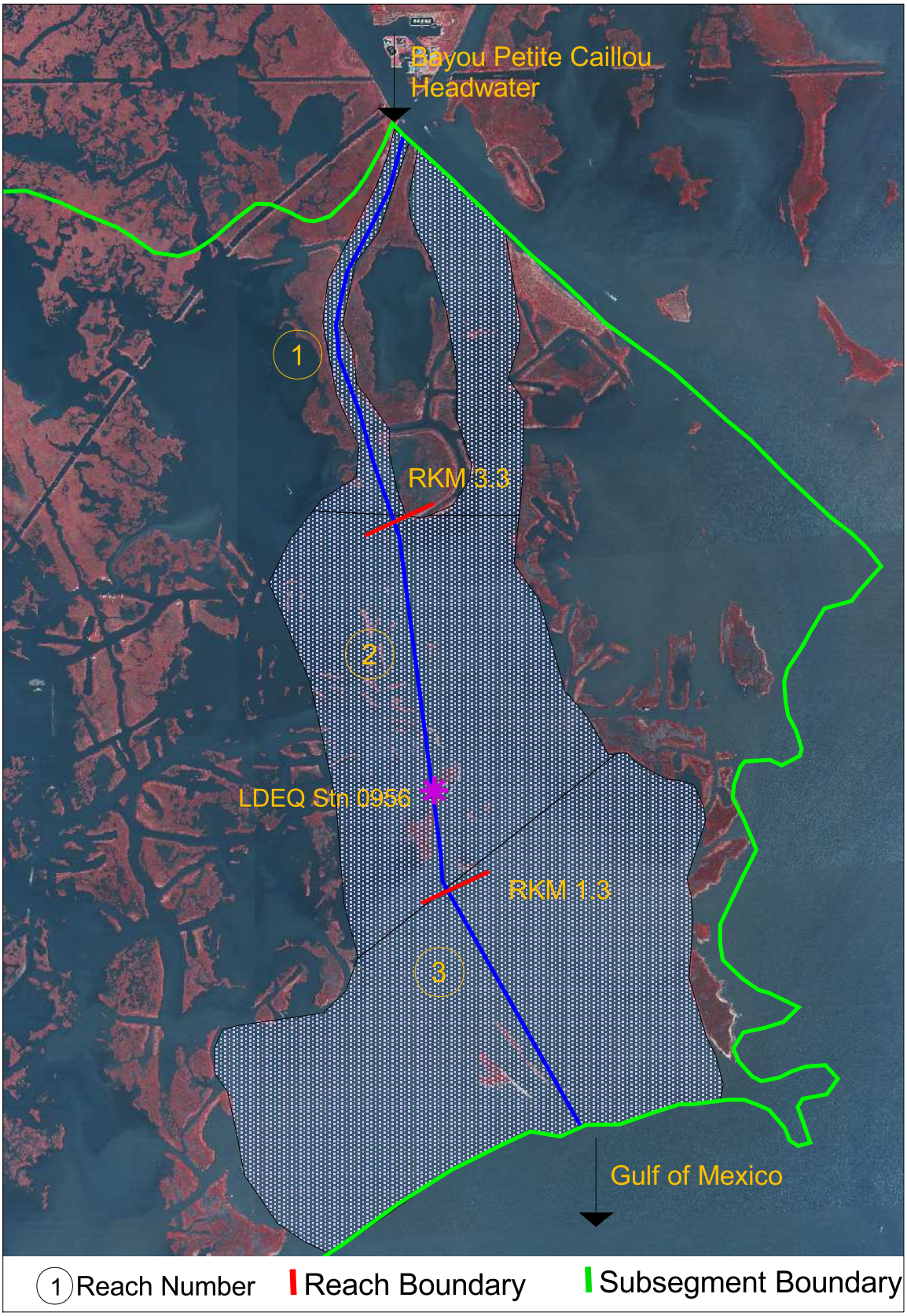
APPENDIX C

LA-QUAL Vector Diagram Map



LA-QUAL Vector Diagram for Bayou Petite Caillou.

APPENDIX D

LDEQ Decay Rates

Table D.1. Summary of GSBOD data collected by LDEQ in the Terrebonne basin.

Sample No.	NBODu (mg/L)	NBODu rate (1/day)	CBODu (mg/L)	CBODu rate (1/day)	TBODu (mg/L)	TOC (mg/L)	CBODu / TOC
CC-03	4.17	0.10	19.33	0.09	23.50	11.50	1.68
BLB-01	3.56	0.09	16.53	0.09	20.08	12.10	1.37
BLB-04	4.78	0.17	20.15	0.09	24.93	13.00	1.55
BLB-05	3.94	0.12	16.36	0.09	20.31	12.30	1.33
BLB-07	2.92	0.10	12.09	0.08	15.01	13.90	0.87
LL-02	4.99	0.13	21.31	0.10	26.29	11.70	1.82
LL-02FD	5.79	0.08	22.39	0.10	28.18	11.70	1.91
AC-01	3.32	0.09	7.80	0.07	11.12	6.80	1.15
UHC-02	3.18	0.10	9.19	0.09	12.37	6.70	1.37
TC-01	2.89	0.09	10.47	0.09	13.36	9.50	1.10
MCM-01	1.81	0.09	8.24	0.06	10.05	11.00	0.75
BCUT-07	2.23	0.10	9.60	0.06	11.82	12.50	0.77
DMC-01	2.84	0.10	10.97	0.08	13.81	16.30	0.67
LF-02	4.17	0.09	22.43	0.09	26.60	20.30	1.10
LF-02FD	4.45	0.10	23.73	0.09	28.17	20.80	1.14
UHC-01	0.84	0.12	7.12	0.05	7.96	11.50	0.62
BL-01	4.05	0.09	13.89	0.10	17.95	18.40	0.76
ICWW-02	2.81	0.06	8.99	0.08	11.81	12.30	0.73
AC-02	2.58	0.10	9.19	0.05	11.77	18.80	0.49
FA-01	6.87	0.21	11.61	0.09	18.48	18.60	0.62
TFC-01	4.64	0.11	10.11	0.06	14.75	17.10	0.59
ICWW-01	2.54	0.06	4.16	0.22	6.71	9.80	0.42
LHC-01	2.52	0.13	13.02	0.09	15.54	15.80	0.82
OFC-02	1.99	0.10	11.16	0.07	13.16	12.20	0.92
OFC-02FD	2.34	0.11	11.96	0.08	14.30	12.50	0.96
LV1	1.69	0.06	4.74	0.05	6.43	7.50	0.63
LV1FD	1.74	0.07	4.62	0.05	6.36	7.30	0.63
LGBY2	1.16	0.10	7.13	0.05	8.29	10.40	0.69
LGBY3	1.32	0.09	6.63	0.06	7.96	9.80	0.68
LGBY4	1.25	0.09	6.23	0.06	7.47	10.00	0.62
LGBY5	2.19	0.11	8.93	0.09	11.12	8.50	1.05
LV2	3.87	0.09	16.43	0.11	20.31	8.10	2.03
BYS1	3.85	0.11	13.64	0.10	17.49	8.90	1.53
MB1	1.01	0.08	6.32	0.05	7.33	10.20	0.62
MB1FD	1.01	0.08	5.93	0.05	6.94	10.20	0.58
BYC1	1.27	0.05	7.15	0.07	8.42	7.10	1.01
BYC2	2.28	0.11	10.54	0.08	12.82	9.40	1.12
PST1	1.94	0.08	10.48	0.08	12.42	10.20	1.03
BYCO1	0.78	0.09	4.97	0.06	5.76	8.90	0.56
BYCO1FD	0.77	0.09	4.97	0.05	5.75	8.90	0.56
UNC2	1.16	0.08	5.75	0.08	6.91	8.50	0.68
BA1	1.02	0.08	5.80	0.07	6.83	8.50	0.68
LBL1	0.75	0.09	6.09	0.07	6.84	9.20	0.66

Sample No.	NBODu (mg/L)	NBODu rate (1/day)	CBODu (mg/L)	CBODu rate (1/day)	TBODu (mg/L)	TOC (mg/L)	CBODu / TOC
WC1	2.54	0.09	8.20	0.09	10.74	8.60	0.95
WCL1	2.26	0.10	9.58	0.09	11.83	8.30	1.15
BC-05	3.24	0.13	17.05	0.07	20.29	21.20	0.80
BC-07	3.36	0.09	15.77	0.07	19.13	18.80	0.84
BC-09	3.16	0.12	14.97	0.07	18.13	17.20	0.87
LB-03	2.92	0.17	13.06	0.07	15.99	13.90	0.94
BB-02	4.45	0.06	18.21	0.08	22.66	0.00	
BC-01	2.55	0.10	9.15	0.10	11.71	18.30	0.50
BC-01,FD	2.80	0.10	10.10	0.10	12.90	18.00	0.56
BC-02	2.43	0.09	10.16	0.08	12.59	17.30	0.59
BC-03	1.90	0.13	11.46	0.06	13.37	21.50	0.53
BD01	2.96	0.11	10.90	0.08	13.86	12.90	0.84
CO1	5.64	0.20	10.74	0.06	16.39	21.30	0.50
CO2	4.87	0.29	13.35	0.08	18.22	21.10	0.63
CO3	2.80	0.09	12.40	0.04	15.19	29.80	0.42
CO4	4.57	0.21	12.51	0.07	17.07	15.40	0.81
CO5	3.03	0.13	10.36	0.06	13.38	21.60	0.48
DC01	4.24	0.09	19.48	0.07	23.72	19.40	1.00
LB01	3.42	0.09	16.10	0.06	19.52	17.60	0.92
LB02	3.47	0.09	15.13	0.07	18.60	14.90	1.02
LB06	3.27	0.09	17.86	0.05	21.13	17.30	1.03
LB09	3.28	0.17	20.06	0.05	23.34	15.40	1.30
LB09FD	3.33	0.13	19.79	0.05	23.13	14.60	1.36
LB11	2.08	0.09	12.64	0.04	14.71	11.20	1.13
LB11FD	2.25	0.09	13.30	0.04	15.55	10.00	1.33
MC01	2.31	0.10	11.31	0.06	13.62	10.60	1.07
NC01	3.28	0.09	20.05	0.05	23.33	14.00	1.43
PC01	3.63	0.11	15.52	0.06	19.14	13.60	1.14
PC02	2.36	0.10	10.19	0.05	12.55	9.60	1.06
SL01	2.09	0.19	15.44	0.05	17.53	25.10	0.62
SL02	1.73	0.18	15.16	0.04	16.89	19.50	0.78
GC1	3.12	0.29	10.88	0.04	14.01	9.10	1.20
GC2	5.12	0.42	10.29	0.07	15.41	6.90	1.49
GC3	3.46	0.23	6.08	0.07	9.54	7.50	0.81
GC3FD	3.56	0.23	6.14	0.07	9.70	8.80	0.70
GC4	2.66	0.24	7.37	0.07	10.02	9.10	0.81
GC5	1.78	0.15	6.80	0.06	8.58	8.30	0.82
GC6	2.37	0.15	13.51	0.09	15.88	21.40	0.63
GC7	1.46	0.09	9.17	0.05	10.64	15.50	0.59
UNC1	6.20	0.51	9.08	0.05	15.28	10.20	0.89
SLC1	1.92	0.35	14.27	0.04	16.19	32.60	0.44
BPC1	2.07	0.14	6.70	0.08	8.77	7.90	0.85
PC2	2.35	0.10	10.76	0.08	13.11	10.50	1.03
PC3	2.32	0.21	8.25	0.08	10.57	8.80	0.94
PC3A	1.38	0.10	6.44	0.06	7.82	8.10	0.79

Sample No.	NBODu (mg/L)	NBODu rate (1/day)	CBODu (mg/L)	CBODu rate (1/day)	TBODu (mg/L)	TOC (mg/L)	CBODu / TOC
PC4	1.61	0.07	24.97	0.01	26.58	8.10	3.08
PC5	1.52	0.14	7.04	0.07	8.56	10.10	0.70
PC6	2.04	0.13	6.93	0.09	8.97	9.90	0.70
PC6FD	2.29	0.11	7.21	0.10	9.50	9.90	0.73
BGT1B	2.01	0.16	5.89	0.06	7.90	7.10	0.83
BGT2	3.97	0.12	17.22	0.09	21.19	7.50	2.30
BGT3	3.23	0.11	15.41	0.07	18.64	12.40	1.24
BGT3FD	3.28	0.12	15.67	0.07	18.95	14.10	1.11
BGT4	3.96	0.10	19.23	0.09	23.18	13.80	1.39
BGT5	3.86	0.17	11.72	0.06	15.58	14.60	0.80
BGT5FD	3.92	0.15	12.23	0.06	16.15	17.90	0.68
BGT6	3.56	0.13	14.89	0.06	18.45	17.10	0.87
BGT7	2.58	0.13	13.95	0.05	16.53	19.20	0.73
BGT8	1.14	0.05	4.94	0.05	6.08	6.90	0.72
BGT9	2.46	0.09	7.89	0.11	10.35	5.00	1.58
BGT12	2.50	0.09	11.20	0.06	13.70	14.10	0.79
BGT13	1.85	0.08	12.99	0.04	14.85	17.60	0.74
BGT14	3.30	0.05	18.18	0.06	21.48	20.40	0.89
BGT15	2.78	0.09	13.60	0.05	16.38	20.90	0.65
BGT1A	1.87	0.11	5.33	0.05	7.20	8.20	0.65
BM1	5.58	0.04	21.49	0.08	27.08	11.10	1.94
BM2	3.75	0.19	13.03	0.06	16.78	13.70	0.95
BM3	3.35	0.09	18.83	0.08	22.18	13.70	1.37
BM4	2.32	0.09	10.15	0.07	12.46	11.60	0.87
BM4FD	2.19	0.12	9.22	0.07	11.41	8.00	1.15
BM5	2.95	0.10	14.32	0.08	17.26	6.90	2.08
BM6	2.71	0.12	15.02	0.08	17.74	6.10	2.46
BM7	2.81	0.16	10.18	0.06	12.99	8.50	1.20
PC-1	2.52	0.13	13.44	0.09	15.96	9.10	1.48
PC-2	1.77	0.10	9.66	0.08	11.43	19.00	0.51
PC-3	2.54	0.13	8.90	0.08	11.43	17.60	0.51
PC-5	2.79	0.28	9.70	0.06	12.49	16.50	0.59
PC-6	3.17	0.18	10.20	0.08	13.37	15.00	0.68
PC-7	2.49	0.18	11.35	0.08	13.84	15.50	0.73
BT1	5.02	0.11	21.33	0.10	26.35	18.80	1.13
BT2	2.46	0.11	7.50	0.06	9.97	13.50	0.56
BT3	8.87	0.24	3.05	0.51	11.92	8.60	0.35
BT4	1.06	0.06	6.57	0.07	7.63	14.30	0.46
BT5	1.24	0.07	6.40	0.07	7.64	13.00	0.49
BT5A	2.11	0.10	8.71	0.07	10.82	14.10	0.62
BT6	1.51	0.09	5.46	0.06	6.97	12.10	0.45
BT6FD	1.47	0.10	5.59	0.07	7.06	11.40	0.49
BT7	1.86	0.09	7.38	0.09	9.25	11.20	0.66
BT8	2.19	0.13	6.78	0.07	8.97	12.20	0.56
BT9	1.97	0.10	8.45	0.07	10.42	14.30	0.59

Table D.1

Sample No.	NBODu (mg/L)	NBODu rate (1/day)	CBODu (mg/L)	CBODu rate (1/day)	TBODu (mg/L)	TOC (mg/L)	CBODu / TOC
BT10	2.69	0.12	6.83	0.05	9.52	14.60	0.47
BT11	2.61	0.14	6.00	0.08	8.61	11.50	0.52
BT12	3.04	0.17	6.46	0.08	9.50	10.40	0.62
ICWW1	2.73	0.10	6.15	0.09	8.89	8.70	0.71
ICWW1FD	2.36	0.12	5.83	0.08	8.19	8.20	0.71
BC1	1.63	0.09	6.92	0.06	8.55	13.60	0.51
PAC06A	2.63	0.11	12.61	0.10	15.24	9.80	1.29
PAC07	5.33	0.29	15.53	0.08	20.85	14.60	1.06
PAC09	2.64	0.13	9.55	0.09	12.19	16.20	0.59
PAC10	2.05	0.14	7.71	0.07	9.75	16.70	0.46
PAC11	3.81	0.13	17.75	0.11	21.55	14.30	1.24
PAC12	3.23	0.09	14.48	0.08	17.71	19.00	0.76
PAC13	2.64	0.09	11.77	0.07	14.42	4.40	2.68
PAC13FD	2.69	0.09	12.19	0.07	14.88	22.20	0.55
UC1	2.66	0.21	8.22	0.10	10.88	8.90	0.92
SLC02	2.68	0.09	14.60	0.07	17.27	21.10	0.69
BDL1	3.38	0.05	24.93	0.07	28.31	20.60	1.21
BDL2	8.88	0.06	42.19	0.08	51.06	30.90	1.37
BDL3	2.42	0.08	15.07	0.06	17.49	21.80	0.69
BDL3FD	2.45	0.11	15.67	0.06	18.12	20.70	0.76
BDL4	3.94	0.17	19.37	0.07	23.31	20.50	0.95
BDL5	3.52	0.17	17.32	0.07	20.84	17.70	0.98
BDL6	3.39	0.15	19.21	0.07	22.60	19.50	0.99
BDL7	1.64	0.09	10.84	0.05	12.48	17.30	0.63
OBDL1	11.51	0.25	22.80	0.10	34.31	15.00	1.52
TPS1	3.00	0.11	16.12	0.07	19.12	19.60	0.82
MC1	1.91	0.17	11.65	0.05	13.56	18.60	0.63
GRB1	3.42	0.12	10.91	0.09	14.34	9.40	1.16
GRB2	2.26	0.10	10.34	0.08	12.60	10.80	0.96
GRB3	2.28	0.09	8.94	0.07	11.22	10.80	0.83
GRB4	2.44	0.09	10.63	0.08	13.07	10.60	1.00
GRB5	1.02	0.07	5.80	0.06	6.83	9.80	0.59
LGBY1	1.27	0.08	7.05	0.07	8.31	10.10	0.70
GRB6	1.11	0.08	6.48	0.05	7.58	10.30	0.63
EGB1	1.11	0.07	6.69	0.07	7.80	9.60	0.70
GRB7	0.84	0.08	5.99	0.06	6.82	9.10	0.66
GRB8	0.77	0.07	5.93	0.06	6.70	9.20	0.64
GRB9	1.05	0.07	6.81	0.06	7.86	9.20	0.74
BCUT01	2.43	0.07	8.54	0.06	10.96	8.30	1.03
BCUT02	2.75	0.09	9.13	0.08	11.88	8.60	1.06
BCUT03	2.96	0.09	8.99	0.06	11.95	8.00	1.12
BCUT04	1.87	0.10	9.11	0.05	10.98	12.60	0.72
BFOL03	1.74	0.10	7.60	0.05	9.34	10.60	0.72
BFOL02	2.53	0.10	11.17	0.07	13.70	11.70	0.95

Sample No.	NBODu (mg/L)	NBODu rate (1/day)	CBODu (mg/L)	CBODu rate (1/day)	TBODu (mg/L)	TOC (mg/L)	CBODu / TOC
BFOL01	1.76	0.12	9.84	0.07	11.60	12.70	0.78
CC01	3.03	0.09	16.11	0.09	19.13	13.00	1.24
CC02	4.13	0.09	18.99	0.10	23.11	12.50	1.52
CC03	4.15	0.11	18.88	0.10	23.03	12.10	1.56
PC1	2.52	0.13	13.44	0.09	15.96	13.3	1.01
PC2	1.77	0.10	9.66	0.08	11.43	14.6	0.66
PC3	2.54	0.13	8.90	0.08	11.43	16.4	0.54
PC4	3.99	0.14	10.65	0.08	14.63	17.5	0.61
PC4FD	4.35	0.15	11.51	0.08	15.86	16.3	0.71
PC5	2.79	0.28	9.70	0.06	12.49	17.2	0.56
PC6	3.17	0.18	10.20	0.08	13.37	19	0.54
COUNT	144	144	144	144	144	144	143
Min	0.77	0.05	3.05	0.01	6.70	0.00	0.35
Mean	2.97	0.13	11.96	0.08	14.93	14.08	0.88
Median	2.66	0.10	10.69	0.07	13.47	13.15	0.78
Max	11.51	0.51	42.19	0.51	51.06	32.60	3.08
StDev	1.51	0.07	5.43	0.04	6.36	5.10	0.40

FILE: R:\PROJECTS\2110-616\TECH\LDEQ_DATA\BOD DATA\TERREBONNE\LDEQ_BOD_TOC_TE

APPENDIX E

Calibration Model Input Data and Sources

APPENDIX E. BAYOU PETIT CAILLOU MODEL INPUTS FOR CALIBRATION

Table E.1. Model Set up constants (Data Type 3)

Parameter	Value used in model	Data Source / Comment
Headwater Exchange Ratio	0.5	Used as a tuning parameter
Hydraulic Calculation Method	2	Uses the equations: Width $= aQ^b + c$ Depth $= dQ^e + f$

Table E.2. Calibration Inputs for Hydraulics (Data Types 9 and 10).

Parameter name or description	Reach(es)	Value used in model	Data Source / Comment
Width coefficient, a	1-3	0	set to zero so width does not vary with flow
Width exponent, b	1-3	0	
Width constant, c	1	629	The was set equal to the surface area of each reach divided by the length of each reach.
	2	2,420	
	3	2,474	
Depth coefficient, c	1-3	0	set to zero so depth does not vary with flow
Depth exponent, d	1-3	0	
Depth constant, e	1	1.7	Assumed, based on field experience in other coastal bays and atlas depth contours.
	2	1.5	
	3	1.5	
Dispersion coefficient (m^2/sec)	1	18	Adjusted to match observed salinity and conductivity.
	2	18	
	3	18	

Table E.3. Calibration Inputs for Initial Conditions (Data Type 11).

Parameter name or description	Reach(es)	Value used in model	Data Source / Comment
Temperature	1-3	30.8 ^{o}C	average of 3 Temperature values from 7/11/00 to 9/5/00 for LDEQ 956
DO	1-3	4.3 mg/L	average of 3 DO values from 7/11/00 to 9/5/00 for LDEQ 956
Ammonia N	1-3	0.11 mg/L	average of 3 Ammonia Nitrogen values from 7/11/00 to 9/5/00 for LDEQ 956

Table E.4. Calibration Inputs for Kinetic Coefficients (Data Types 3, 6, 12 and 13).

Parameter name or description	Reach(es)	Value used in model	Data Source / Comment
Reaeration option	1 – 3	15	Louisiana Equation
CBODu decay rate	1 – 3	0.07/day	median of 144 decay rates measured in Terrebonne Basin and applicable to Bayou Petit Caillou
Organic N decay rate	1 – 3	0.02/day	value used in other previous DO modeling in southern Louisiana.
Ammonia N decay rate	1 – 3	0.10/day	median of 144 decay rates measured in Terrebonne Basin and applicable to Bayou Petit Caillou

Table E.5. Calibration Inputs for Nonpoint Source Loads (Data Types 12, 13 and 19).

Parameter name or description	Reach	Value used in model	Data Source / Comment
Sediment oxygen demand, g/m^2/day	1	0.4	These values were treated as calibration parameters by adjusting them to until the model output was similar to the calibration target values.
	2	0.4	
	3	0.0	
Benthic ammonia, g/m^2/day	1	0.0	
	2	0.0	
	3	0.0	
CBODu mass loads, kg/day	1	2000	
	2	8000	
	3	25000	
Organic nitrogen mass loads, kg/day	1	0.0	
	2	0.0	
	3	0.0	

Table E.6. Calibration Inputs for Headwater (Data Types 20, 21, and 22).

Parameter name	Value used in model	Data Source / Comment
Flow rate	8.28 m^3/sec	Estimated from flows reported on Houma Navigation Canal at Dulac (USGS 07381328)
Temperature	30.6ºC	average of 3 temperature values from 7/11/00 to 9/5/00 for LDEQ 952
salinity	16.5 ppt	average of 3 salinity concentrations from 7/11/00 to 9/5/00 for LDEQ 952
Specific conductivity	26,900 µmhos/cm	average of 3 specific conductivity values from 7/11/00 to 9/5/00 for LDEQ 952
DO	5.64 mg/L	average of 3 DO concentrations from 7/11/00 to 9/5/00 for LDEQ 952
CBODu	7.67 mg/L	average of 3 TOC concentrations from 7/11/00 to 9/5/00 for LDEQ 952 times the median CBODu/TOC ratio
Organic N	0.80 mg/L	average of 3 TKN concentrations from 7/11/00 to 9/5/00 minus the average Ammonia concentrations from 7/11/00 to 9/5/00 for LDEQ 952
Ammonia N	0.01 mg/L	average of 3 ammonia concentrations from 7/11/00 to 9/5/00 for LDEQ 952 (values below the detection limit were set equal to the detection limit)
$NO_2 + NO_3$	0.14 mg/L	average of 3 $NO_2 + NO_3$ concentrations from 7/11/00 to 9/5/00 for LDEQ 952

Table E.7. Calibration Inputs for Lower Boundary Conditions (Data Type 27).

Parameter name	**Value used in model**	**Data Source / Comment**
Temperature	30.6ºC	average of 3 Temperature values from 7/11/00 to 9/5/00 for LDEQ 961
Salinity	29.9 ppt	average of 3 salinity concentrations from 7/11/00 to 9/5/00 for LDEQ 961
Specific Conductivity	46,037 µmhos/cm	average of 3 specific conductivity values from 7/11/00 to 9/5/00 for LDEQ 961
DO	5.3 mg/L	average of 3 DO concentrations from 7/11/00 to 9/5/00 for LDEQ 961
CBODu	4.06 mg/L	average of 3 TOC concentrations from 7/11/00 to 9/5/00 for LDEQ 961 times the median CBODu/TOC ratio
Organic N	1.21 mg/L	average of 3 TKN concentrations from 7/11/00 to 9/5/00 minus the average Ammonia concentrations from 7/11/00 to 9/5/00 for LDEQ 961
Ammonia N	0.01 mg/L	average of 3 ammonia concentrations from 7/11/00 to 9/5/00 for LDEQ 961 (values below the detection limit were set equal to the detection limit)
$NO_2 + NO_3$	0.57 mg/L	average of 3 $NO_2 + NO_3$ concentrations from 7/11/00 to 9/5/00 for LDEQ 961
Chloropyhll a	0.00 mg/L	Has to have this in the model even if it is not used by the model

Gage	Description	Begin	End	Count	% complete	Min	Average	Median	Max
07381328	Houma Navigation Canal at Dulac, LA	10/2/2002	9/30/2005	1,048	95.71	-28,900.00	3,678.59	3,820.00	12,400.00

Average flow for July - September for this gage =	3,258.93	cfs, 2003
Average flow for July - September for this gage =	3,265.36	cfs, 2004
Average flow for July - September for this gage =	1,771.89	cfs, 2005
Minimum =	1,771.89	cfs

Proportion of flow to HNC at junction with Grand Caillou =	0.5	
Flow to Houma Navigation Canal at junction with Grand Caillou =	885.9432	cfs

Proportion of flow to Petit Caillou at junction with Houma Nav. Canal =	0.33	ft^2
Flow to Bayou Petit Caillou at junction with HNC =	292.3613	cfs

FILE: R:\PROJECTS\2110-616\TECH\LA-QUAL\PETIT CAILLOU\LA-QUAL_2003\BPETIT_CA.XLS

APPENDIX F

Literature Values for Mineralization Rates

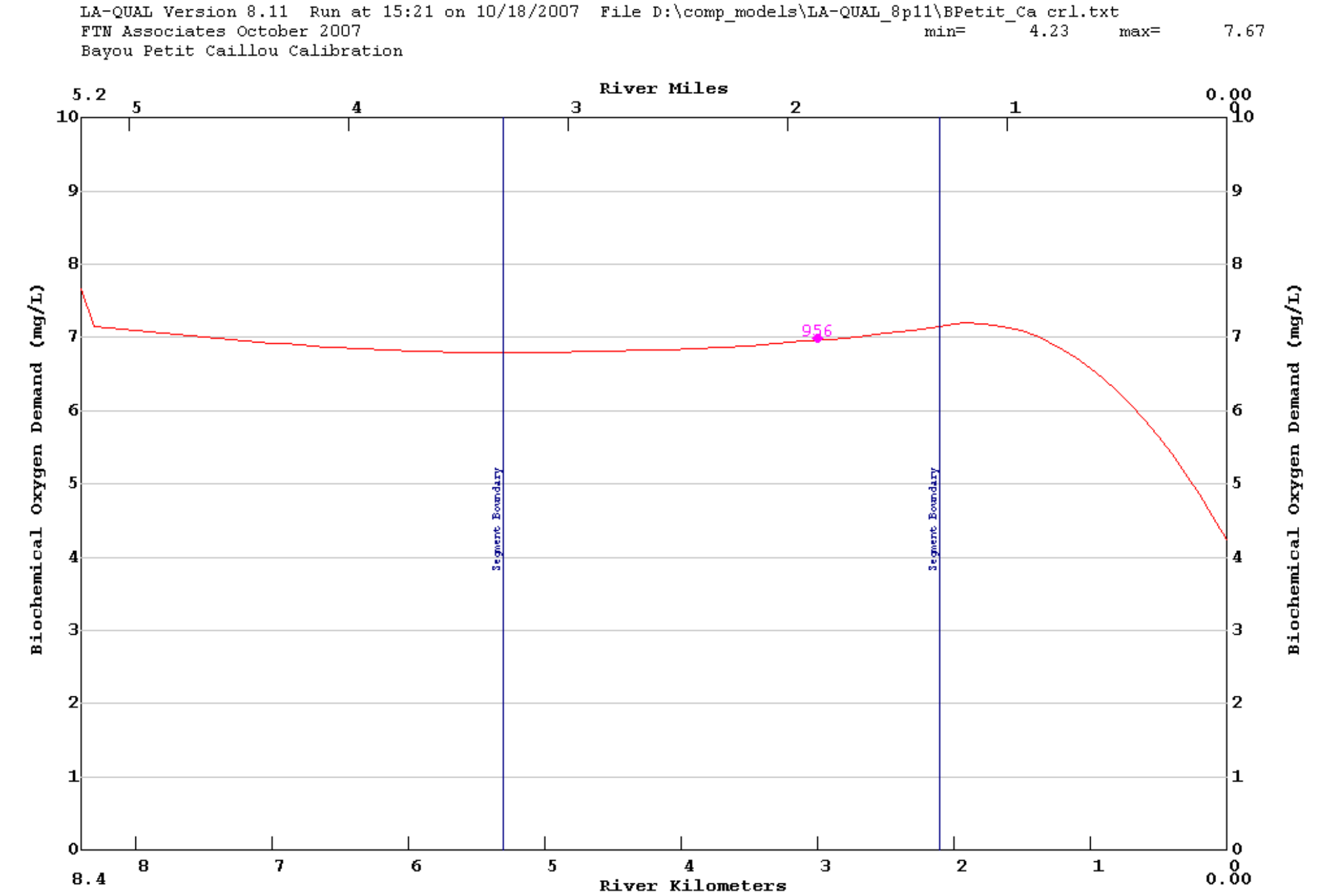
TABLE 5-3. RATE COEFFICIENTS FOR NITROGEN TRANSFORMATIONS

PON → DON		DON → NH_3		PON → NH_3		NH_3 → NO_2		NH_3 → NO_3		NO_2 → NO_3		SEDM → NH_3		References
K	θ	K	θ	K	θ	K	θ	K	θ	K	θ	K	θ	
								Calibration Values						
				0.035	(linear)			0.04	(linear)					Thomann et al. (1975)
				0.03**	1.08									Thomann et al. (1979)
				0.03***	1.08			0.12***	1.08			0.0025	1.08	Di Toro & Connolly (1980)
				0.03***	1.08			0.20	1.08					Di Toro & Matystik (1980)
				0.075	1.08			0.09-0.13***	1.08			0.0004	1.08	Thomann & Fitzpatrick (1982)
								0.025***	1.08					O'Connor et al. (1981)
				0.14	(linear)									Salas & Thomann (1978)
				0.001	1.02	0.003-0.03	1.02			0.09	1.02	0.001	1.02	Chen & Orlob (1972, 1975)
0.020	(linear)	0.020	(linear)											
0.020	(linear)	0.020	(linear)					0.060	(linear)					Scavia et al. (1976)
0.02	1.020	0.02	1.020					0.1	(linear)					Scavia (1980)
0.02	(linear)	0.024	(linear)					0.1	1.020					Bowie et al. (1980)
								0.16	(linear)					Canale et al. (1976)
				0.003	1.020	0.02	1.047			0.25	1.047	0.0015	1.047	Tetra Tech (1980)
				0.1	1.047	0.02	1.047			0.25	1.047	0.0015	1.047	Porcella et al. (1983)
				0.01**	Nl							0.95-1.8***	1.14	Nyholm (1978)
				0.005**	1.08									Bierman et al. (1980)
				0.1**	1.02									Jorgensen (1976)
				0.2**	1.072									Jorgensen et al. (1978)

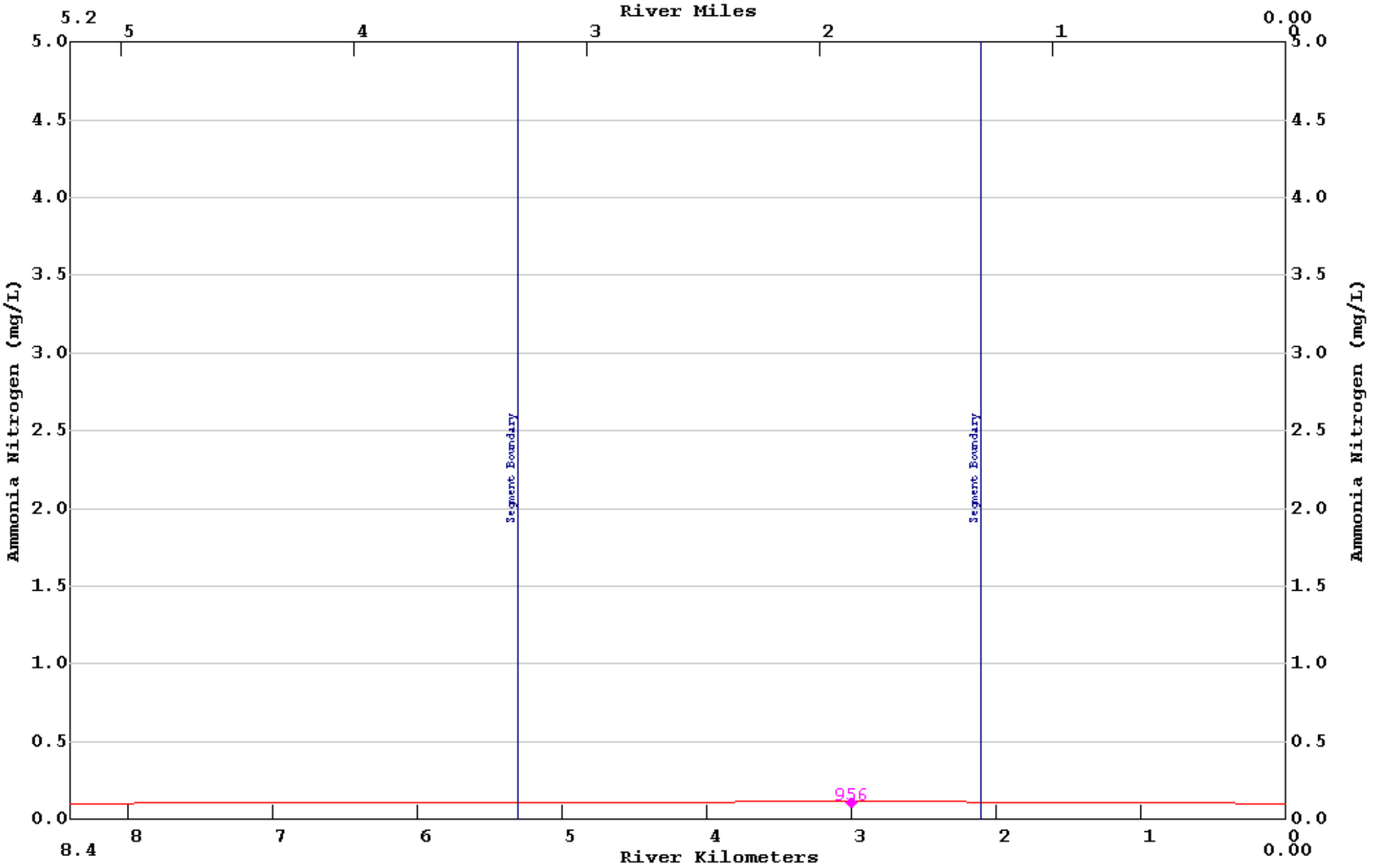
(continued)

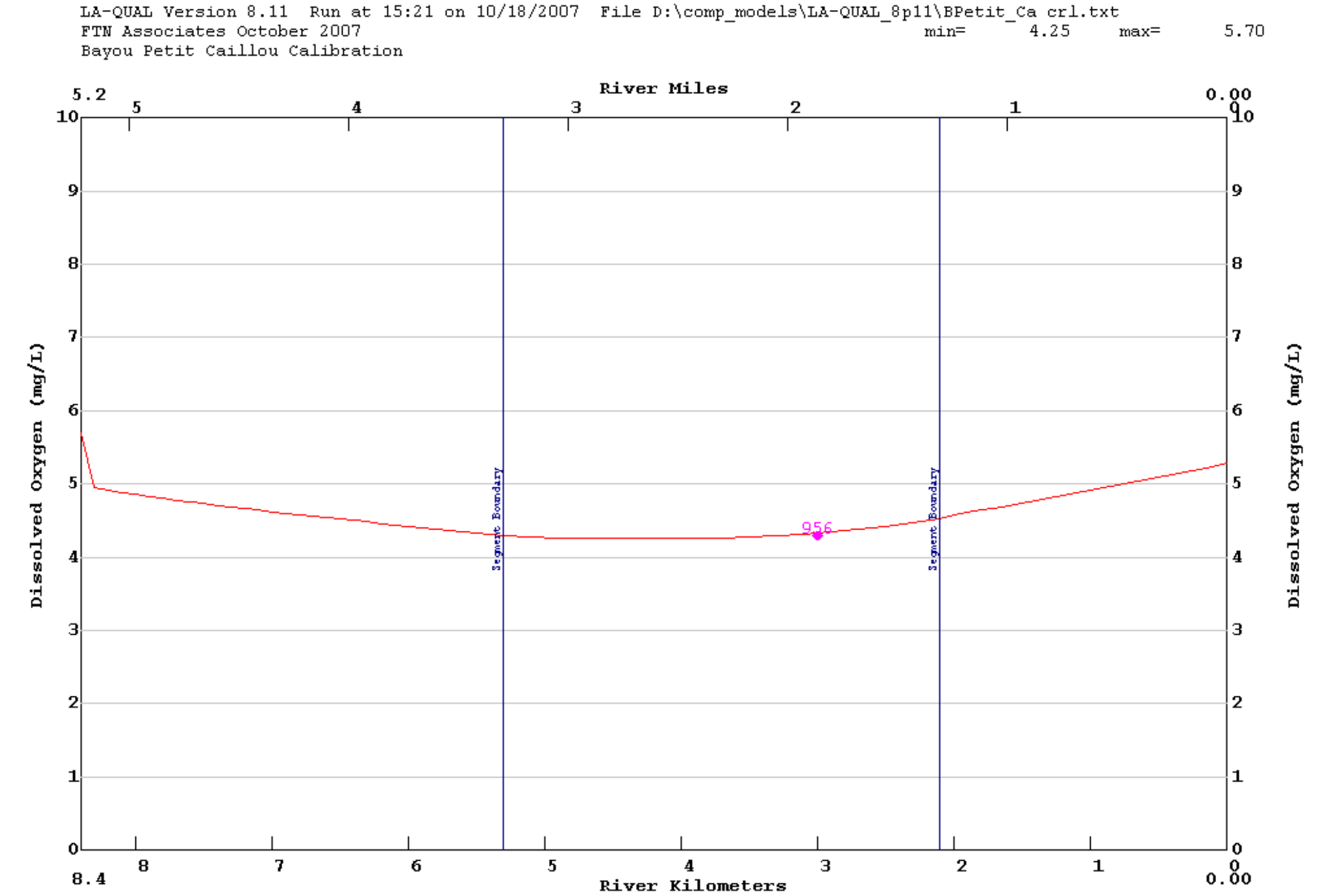
APPENDIX G

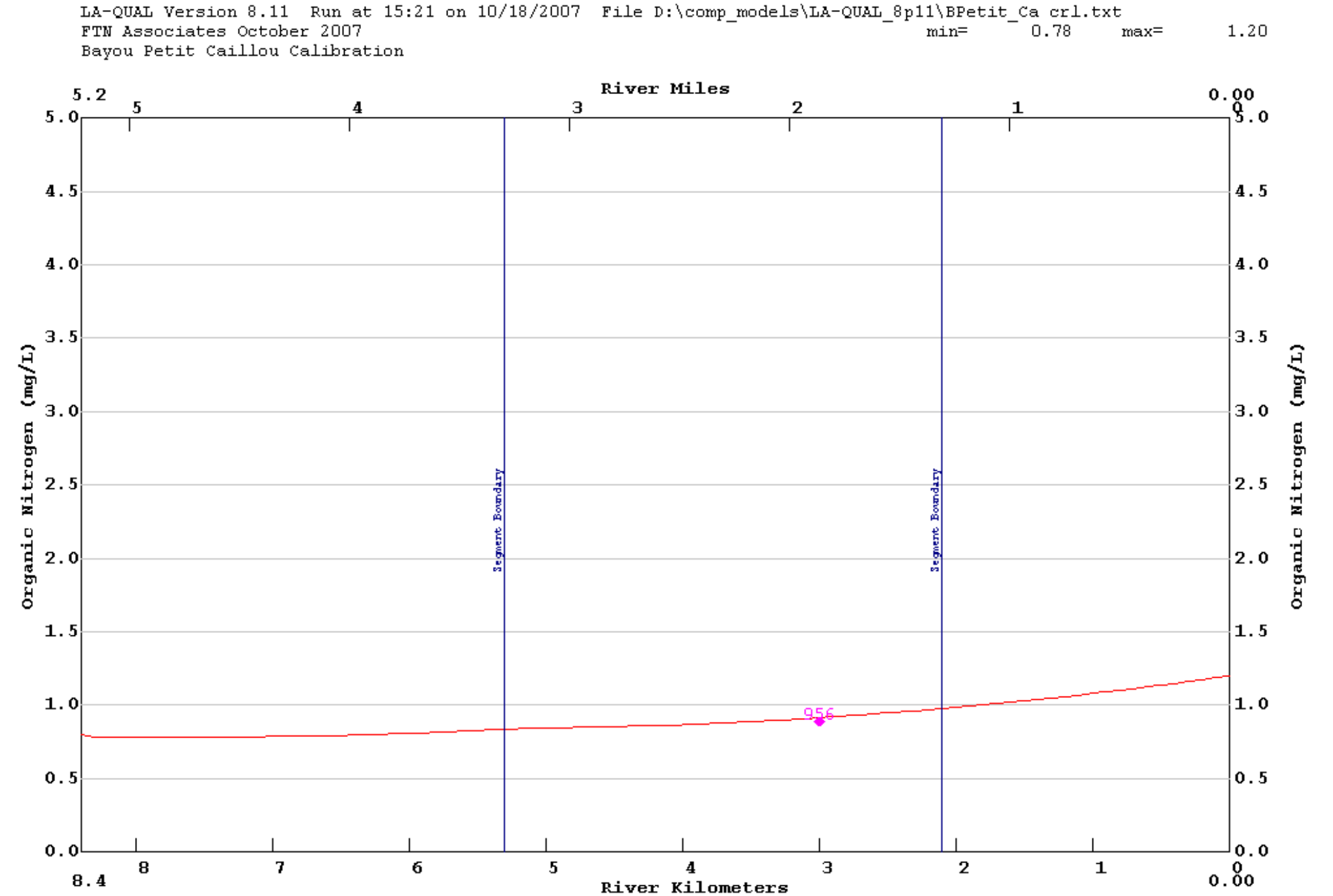
Plots of Predicted and Observed Water Quality


LA-QUAL Version 8.11 Run at 15:21 on 10/18/2007 File D:\comp_models\LA-QUAL_8p11\BPetit_Ca crl.txt
FTN Associates October 2007
min= 4.23 max= 7.67
Bayou Petit Caillou Calibration
River Miles
5.2
0.00
Biochemical Oxygen Demand (mg/L)
956
Segment Boundary
Segment Boundary
River Kilometers
8.4
0.00

LA-QUAL Version 8.11 Run at 15:21 on 10/18/2007 File D:\comp_models\LA-QUAL_8p11\BPetit_Ca crl.txt
FTN Associates October 2007 min= 0.10 max= 0.11
Bayou Petit Caillou Calibration




LA-QUAL Version 8.11 Run at 15:21 on 10/18/2007 File D:\comp_models\LA-QUAL_8p11\BPetit_Ca crl.txt
FTN Associates October 2007
min= 4.25 max= 5.70
Bayou Petit Caillou Calibration
River Miles
5.2
0.00
Dissolved Oxygen (mg/L)
Segment Boundary
Segment Boundary
956
River Kilometers
8.4
0.00


LA-QUAL Version 8.11 Run at 15:21 on 10/18/2007 File D:\comp_models\LA-QUAL_8p11\BPetit_Ca crl.txt
FTN Associates October 2007
min= 0.78 max= 1.20
Bayou Petit Caillou Calibration
River Miles
5.2
5
4
3
2
1
0.00
0
Organic Nitrogen (mg/L)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Segment Boundary
Segment Boundary
956
8.4
8
7
6
5
4
3
2
1
0
0.00
River Kilometers

APPENDIX H

Printout of Model Output for Calibration

```
LA-QUAL Version 8.11
Louisiana Department of Environmental Quality

Input file is D:\laqual\BPetit_Ca.txt
Output produced at 16:06 on 10/18/2007

$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$

CARD TYPE       CONTROL TITLES

TITLE01         LA-QUAL Model for Bayou Petit Caillou
TITLE02         FTN Associates October 2007
CNTROL03   NO   SEQU                        <warning: legacy control - line ignored>
CNTROL04  YES   METR
CNTROL05  YES   OXYG                        <warning: legacy control - line ignored>
ENDATA01

$$$ DATA TYPE 2 (MODEL OPTIONS) $$$

CARD TYPE       MODEL OPTION

MODOPT01   NO   TEMPERATURE
MODOPT02  YES   SALINITY
MODOPT03  YES   CONSERVATIVE MATERIAL #1 = Spec Cond            UNITS = umhos/cm
MODOPT03   NO   CONSERVATIVE MATERIAL #2 =                      UNITS =
MODOPT05  YES   DISSOLVED OXYGEN
MODOPT06  YES   BOD1 BIOCHEMICAL OXYGEN DEMAND #1
MODOPT07   NO   BOD2 BIOCHEMICAL OXYGEN DEMAND #2
MODOPT08  YES   NITROGEN SERIES
MODOPT09   NO   PHOSPHORUS
MODOPT10   NO   CHLOROPHYLL A
MODOPT11   NO   MACROPHYTES
MODOPT12   NO   COLIFORMS
MODOPT13   NO   NONCONSERVATIVE MATERIAL                        UNITS =
ENDATA02

$$$ DATA TYPE 3 (PROGRAM CONSTANTS) $$$

CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE

PROGRAM         HYDRAULIC CALCULATION METHOD       =        2.00000 (widths and depths)
PROGRAM         HEADWATER EXCHANGE RATIO           =        0.00000
ENDATA03

$$$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) $$$

 CARD TYPE     RATE CODE     THETA VALUE

TEHTA        NH3 DECA       1.07000
ENDATA04
```

$$$ CONSTANTS TYPE 5 (TEMPERATURE DATA) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA05

$$$ DATA TYPE 6 (ALGAE CONSTANTS) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA06

$$$ DATA TYPE 7 (MACROPHYTE CONSTANTS) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA07

$$$ DATA TYPE 8 (REACH IDENTIFICATION DATA) $$$

CARD TYPE	REACH ID	NAME	BEGIN REACH km		END REACH km	ELEM LENGTH km	REACH LENGTH km	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1 PC	Bayou Petit Caillou	8.40	TO	5.30	0.1000	3.10	31	1	31
REACH ID	2 PC	Bayou Petit Caillou	5.30	TO	2.10	0.2000	3.20	16	32	47
REACH ID	3 PC	Bayou Petit Caillou	2.10	TO	0.00	0.1000	2.10	21	48	68

ENDATA08

$$$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1 PC	0.000	0.000	629.000	0.000	0.000	1.700	0.00000	0.000
HYDR-1	2 PC	0.000	0.000	2420.000	0.000	0.000	1.500	0.00000	0.000
HYDR-1	3 PC	0.000	0.000	2474.000	0.000	0.000	1.500	0.00000	0.000

ENDATA09

$$$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR	1 PC	0.00	18.000	0.000	0.000	0.000
HYDR	2 PC	0.00	18.000	0.000	0.000	0.000
HYDR	3 PC	0.00	18.000	0.000	0.000	0.000

ENDATA10

$$$ DATA TYPE 11 (INITIAL CONDITIONS) $$$

CARD TYPE REACH ID TEMP SALIN DO NH3 NO3+2 PHOS CHL A MACRO

```
INITIAL          1   PC      30.80     0.00     4.30     0.11     0.00     0.00     0.00     0.00
INITIAL          2   PC      30.80     0.00     4.30     0.11     0.00     0.00     0.00     0.00
INITIAL          3   PC      30.80     0.00     4.30     0.11     0.00     0.00     0.00     0.00
ENDATA11

$$$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) $$$

                                                                                  BOD      ANAER                          BOD2     ANAER
CARD     RCH  RCH  K2                    K2       K2       K2    BKGRND       BOD        BOD      CONV     ANAER BOD2    BOD2      BOD2     CONV     BOD2
TYPE     NUM   ID  OPT                  "A"      "B"      "C"      SOD     DECAY       SETT    TO SOD     BOD2 DECAY DECAY     SETT    TO SOD    DECAY
                                                                 g/m²/d   per day       m/d              per day per day      m/d              per day

COEFF-1    1   PC  15 LOUISIANA       0.000    0.000    0.000    0.400     0.070     0.000     0.000     0.000    0.000    0.000    0.000     0.000
COEFF-1    2   PC  15 LOUISIANA       0.000    0.000    0.000    0.400     0.070     0.000     0.000     0.000    0.000    0.000    0.000     0.000
COEFF-1    3   PC  15 LOUISIANA       0.000    0.000    0.000    0.000     0.070     0.000     0.000     0.000    0.000    0.000    0.000     0.000
ENDATA12

$$$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) $$$

CARD TYPE      REACH  ID       ORG-N     ORG-N   ORGN CONV      NH3       NH3      PHOS     DENIT
                                DECA      SETT  TO NH3 SRCE     DECA      SRCE      SRCE      RATE

COEFF-2          1   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
COEFF-2          2   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
COEFF-2          3   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
ENDATA13

$$$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) $$$

CARD TYPE      REACH  ID       SECCHI    ALGAE:     ALGAE    ALG CONV     ALGAE     ALGAE     MACRO     MACRO
                               DEPTH     CHL A      SETT     TO SOD      GROW      RESP      GROW      RESP   SHADING

ENDATA14

$$$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) $$$

CARD TYPE      REACH  ID    COLIFORM       NCM       NCM    NCM CONV
                            DIE-OFF     DECAY      SETT     TO SOD

ENDATA15

$$$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE      REACH  ID       OUTFLOW      INFLOW      TEMP     SALIN      CM-I     CM-II   IN/DIST  OUT/DIST

ENDATA16

$$$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE      REACH  ID          DO       BOD     ORG-N     NH3-N     NO3-N     BOD#2
```

ENDATA17

$$$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE	REACH ID	PHOS	CHL A	COLI	NCM

ENDATA18

$$$ DATA TYPE 19 (NONPOINT SOURCE DATA) $$$

CARD TYPE	REACH	ID	BOD#1	ORG-N	COLI	NCM	DO	BOD#2
NONPOINT	1	PC	2000.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	2	PC	8000.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	3	PC	25000.00	0.00	0.00	0.00	0.00	0.00

ENDATA19

$$$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m^3/s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I umhos/cm	CM-II	
HDWTR-1	1	Bayou Petit Caillou	0	8.28000	292.373	30.90	16.50	26900.000	0.000	0.00

ENDATA20

$$$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	BOD#2 mg/L
HDWTR-2	1	Bayou Petit Caillou	5.70	7.67	0.80	0.10	0.14	0.00

ENDATA21

$$$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L

ENDATA22

$$$ DATA TYPE 23 (JUNCTION DATA) $$$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME

ENDATA23

$$$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m^3/s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I umhos/cm	CM-II

```
ENDATA24

$$$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) $$$
                                                                  % BOD                          %
CARD TYPE     ELEMENT   NAME                          DO       BOD      RMVL     ORG-N     NH3-N    NITRIF     NO3-N     BOD#2
                                                     mg/L      mg/L               mg/L      mg/L                 mg/L      mg/L

ENDATA25

$$$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE     ELEMENT   NAME                        PHOS     CHL A      COLI       NCM
                                                    mg/L      mg/L      mg/L      mg/L

ENDATA26

$$$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) $$$

CARD TYPE    CONSTITUENT                    CONCENTRATION

LOWER BC     TEMPERATURE                       =     30.600     deg C
LOWER BC     SALINITY                          =     29.900     ppt
LOWER BC     CONSERVATIVE MATERIAL #1          =  46037.000     umhos/cm
LOWER BC     DISSLOVED OXYGEN                  =      5.300     mg/L
LOWER BC     BIOCHEMICAL OXYGEN DEMAND         =      4.060     mg/L
LOWER BC     ORGANIC NITROGEN                  =      1.210     mg/L
LOWER BC     AMMONIA NITROGEN                  =      0.100     mg/L
LOWER BC     NITRATE NITROGEN                  =      0.050     mg/L
LOWER BC     CHLOROPHYLL A                     =      0.000     µg/L
ENDATA27

$$$ DATA TYPE 28 (DAM DATA) $$$

CARD TYPE     ELEMENT   NAME                EQN      "A"       "B"       "H"

ENDATA28

$$$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) $$$

CARD TYPE       PARAMETER     COL 1     COL 2     COL 3     COL 4     COL 5     COL 6     COL 7     COL 8

ENDATA29

$$$ DATA TYPE 30 (PLOT CONTROL CARDS) $$$


NUMBER OF PLOTS =  1
NUMBER OF REACHES IN PLOT 1 =   3
PLOT RCH  1  2  3
ENDATA30
```

$$$ DATA TYPE 31 (OVERLAY PLOT DATA) $$$

OVERLAY 1 Petit1.ovl :Bayou Petit Caillou Calibration
ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 2 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
.....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11

INTERMEDIATE REPORT
Dissolved Oxygen
mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	4.95	4.92	4.89	4.86	4.83	4.81	4.78	4.76	4.73	4.71
PC	1	11	4.69	4.66	4.64	4.62	4.60	4.58	4.56	4.54	4.52	4.50
PC	1	21	4.48	4.46	4.44	4.42	4.41	4.39	4.37	4.35	4.33	4.31
PC	1	31	4.29									
PC	2	32	4.28	4.27	4.26	4.25	4.25	4.25	4.26	4.27	4.28	4.30
PC	2	42	4.32	4.34	4.38	4.42	4.47	4.52				
PC	3	48	4.58	4.61	4.64	4.68	4.71	4.74	4.77	4.81	4.84	4.87
PC	3	58	4.91	4.94	4.98	5.02	5.05	5.09	5.13	5.16	5.20	5.24
PC	3	68	5.28									

INTERMEDIATE REPORT
Effective BOD
mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	7.15	7.13	7.11	7.09	7.07	7.05	7.04	7.02	7.00	6.98
PC	1	11	6.97	6.95	6.94	6.92	6.91	6.90	6.89	6.87	6.86	6.85
PC	1	21	6.84	6.83	6.83	6.82	6.81	6.81	6.80	6.80	6.80	6.80
PC	1	31	6.80									
PC	2	32	6.80	6.80	6.80	6.81	6.82	6.84	6.85	6.87	6.89	6.92
PC	2	42	6.95	6.98	7.01	7.05	7.10	7.15				
PC	3	48	7.19	7.20	7.19	7.17	7.14	7.09	7.02	6.94	6.84	6.72
PC	3	58	6.59	6.44	6.27	6.08	5.88	5.65	5.41	5.15	4.86	4.56
PC	3	68	4.23									

INTERMEDIATE REPORT
Biochemical Oxygen Demand
mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	7.15	7.13	7.11	7.09	7.07	7.05	7.04	7.02	7.00	6.98
PC	1	11	6.97	6.95	6.94	6.92	6.91	6.90	6.89	6.87	6.86	6.85
PC	1	21	6.84	6.83	6.83	6.82	6.81	6.81	6.80	6.80	6.80	6.80
PC	1	31	6.80									
PC	2	32	6.80	6.80	6.80	6.81	6.82	6.84	6.85	6.87	6.89	6.92
PC	2	42	6.95	6.98	7.01	7.05	7.10	7.15				
PC	3	48	7.19	7.20	7.19	7.17	7.14	7.09	7.02	6.94	6.84	6.72
PC	3	58	6.59	6.44	6.27	6.08	5.88	5.65	5.41	5.15	4.86	4.56
PC	3	68	4.23									

INTERMEDIATE REPORT
Organic Nitrogen
mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
PC	1	11	0.78	0.78	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.80
PC	1	21	0.80	0.80	0.80	0.81	0.81	0.81	0.82	0.82	0.83	0.83
PC	1	31	0.84									
PC	2	32	0.84	0.84	0.85	0.85	0.86	0.87	0.87	0.88	0.89	0.90
PC	2	42	0.91	0.92	0.93	0.95	0.96	0.98				
PC	3	48	0.99	0.99	1.00	1.01	1.02	1.03	1.04	1.05	1.06	1.07
PC	3	58	1.08	1.09	1.10	1.11	1.13	1.14	1.15	1.16	1.18	1.19
PC	3	68	1.20									

INTERMEDIATE REPORT
Ammonia Nitrogen
mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
PC	1	11	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	1	21	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	1	31	0.11									
PC	2	32	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	2	42	0.11	0.11	0.11	0.11	0.11	0.11				

PC	3	48	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	3	58	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10
PC	3	68	0.10									

INTERMEDIATE REPORT
Nitrate+Nitrite Nitrogen
mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.20	0.20	0.20	0.21	0.21	0.21	0.21	0.21	0.22	0.22
PC	1	11	0.22	0.22	0.23	0.23	0.23	0.23	0.23	0.24	0.24	0.24
PC	1	21	0.24	0.24	0.24	0.25	0.25	0.25	0.25	0.25	0.25	0.25
PC	1	31	0.26									
PC	2	32	0.26	0.26	0.26	0.25	0.25	0.25	0.25	0.25	0.24	0.24
PC	2	42	0.23	0.23	0.22	0.21	0.20	0.20				
PC	3	48	0.19	0.18	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.14
PC	3	58	0.13	0.13	0.12	0.11	0.10	0.10	0.09	0.08	0.07	0.06
PC	3	68	0.05									

INTERMEDIATE REPORT
Total Nitrogen
mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	1.09	1.09	1.09	1.09	1.09	1.10	1.10	1.10	1.10	1.11
PC	1	11	1.11	1.11	1.12	1.12	1.12	1.13	1.13	1.13	1.14	1.14
PC	1	21	1.15	1.15	1.16	1.16	1.17	1.17	1.18	1.18	1.19	1.20
PC	1	31	1.20									
PC	2	32	1.21	1.21	1.22	1.22	1.23	1.23	1.23	1.24	1.24	1.25
PC	2	42	1.26	1.26	1.27	1.27	1.28	1.28				
PC	3	48	1.29	1.29	1.29	1.30	1.30	1.30	1.31	1.31	1.31	1.32
PC	3	58	1.32	1.32	1.33	1.33	1.34	1.34	1.34	1.35	1.35	1.35
PC	3	68	1.36									

INTERMEDIATE REPORT
Temperature
deg C

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80
PC	1	11	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80
PC	1	21	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80

PC	1	31	30.80								
PC	2	32	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80	30.80
PC	2	42	30.80	30.80	30.80	30.80	30.80	30.80				
PC	3	48	30.79	30.78	30.77	30.76	30.75	30.74	30.73	30.72	30.71	30.70
PC	3	58	30.70	30.69	30.68	30.67	30.66	30.65	30.64	30.63	30.62	30.61
PC	3	68	30.60									

INTERMEDIATE REPORT
Salinity
ppt

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	18.44	18.52	18.61	18.70	18.79	18.89	18.99	19.10	19.21	19.33
PC	1	11	19.45	19.58	19.71	19.85	19.99	20.14	20.30	20.46	20.63	20.81
PC	1	21	20.99	21.19	21.39	21.60	21.82	22.05	22.29	22.54	22.79	23.07
PC	1	31	23.35									
PC	2	32	23.52	23.70	23.88	24.07	24.26	24.45	24.66	24.86	25.07	25.29
PC	2	42	25.51	25.74	25.98	26.22	26.46	26.72				
PC	3	48	26.91	27.04	27.17	27.30	27.43	27.57	27.71	27.85	27.99	28.13
PC	3	58	28.27	28.42	28.57	28.72	28.87	29.02	29.18	29.33	29.49	29.65
PC	3	68	29.82									

INTERMEDIATE REPORT
Spec Cond UNIT
umhos/cm

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	29664.13	29783.04	29907.07	30036.43	30171.35	30312.08	30458.87	30611.96	30771.65	30938.20
PC	1	11	31111.92	31293.11	31482.10	31679.21	31884.81	32099.25	32322.92	32556.21	32799.53	33053.32
PC	1	21	33318.02	33594.12	33882.09	34182.45	34495.73	34822.49	35163.30	35518.78	35889.55	36276.27
PC	1	31	36679.62									
PC	2	32	36922.67	37176.70	37437.16	37704.23	37978.08	38258.87	38546.78	38841.99	39144.68	39455.05
PC	2	42	39773.30	40099.61	40434.20	40777.28	41129.05	41489.75				
PC	3	48	41765.07	41949.37	42135.95	42324.84	42516.07	42709.68	42905.68	43104.11	43305.01	43508.39
PC	3	58	43714.30	43922.75	44133.80	44347.46	44563.77	44782.75	45004.46	45228.91	45456.14	45686.20
PC	3	68	45919.11									

INTERMEDIATE REPORT
River Distance
km

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9

PC	1	1	8.	8.	8.	8.	8.	8.	8.	8.	7.	7.
PC	1	11	7.	7.	7.	7.	7.	7.	7.	7.	6.	6.
PC	1	21	6.	6.	6.	6.	6.	6.	6.	6.	6.	5.
PC	1	31	5.									
PC	2	32	5.	5.	5.	5.	4.	4.	4.	4.	4.	3.
PC	2	42	3.	3.	3.	3.	2.	2.				
PC	3	48	2.	2.	2.	2.	2.	1.	1.	1.	1.	1.
PC	3	58	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
PC	3	68	0.									

INTERMEDIATE REPORT
Flow
m^3/s

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PC	1	11	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PC	1	21	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PC	1	31	8.3									
PC	2	32	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PC	2	42	8.3	8.3	8.3	8.3	8.3	8.3				
PC	3	48	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PC	3	58	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PC	3	68	8.3									

INTERMEDIATE REPORT
Dispersion
m^2/s

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
PC	1	11	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
PC	1	21	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
PC	1	31	18.0									
PC	2	32	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
PC	2	42	18.0	18.0	18.0	18.0	18.0	18.0				
PC	3	48	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
PC	3	58	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
PC	3	68	18.0									

INTERMEDIATE REPORT
Advective Velocity
m/s

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC	1	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC	1	21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC	1	31	0.0									
PC	2	32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC	2	42	0.0	0.0	0.0	0.0	0.0	0.0				
PC	3	48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC	3	58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC	3	68	0.0									

INTERMEDIATE REPORT
Depth
m

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PC	1	11	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PC	1	21	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PC	1	31	1.7									
PC	2	32	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PC	2	42	1.5	1.5	1.5	1.5	1.5	1.5				
PC	3	48	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PC	3	58	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PC	3	68	1.5									

INTERMEDIATE REPORT
Width
m

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0
PC	1	11	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0
PC	1	21	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0	629.0
PC	1	31	629.0									
PC	2	32	2420.0	2420.0	2420.0	2420.0	2420.0	2420.0	2420.0	2420.0	2420.0	2420.0
PC	2	42	2420.0	2420.0	2420.0	2420.0	2420.0	2420.0				
PC	3	48	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0
PC	3	58	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0	2474.0
PC	3	68	2474.0									

INTERMEDIATE REPORT

Cross-Sectional Area
m^2

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3
PC	1	11	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3
PC	1	21	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3	1069.3
PC	1	31	1069.3									
PC	2	32	3630.0	3630.0	3630.0	3630.0	3630.0	3630.0	3630.0	3630.0	3630.0	3630.0
PC	2	42	3630.0	3630.0	3630.0	3630.0	3630.0	3630.0				
PC	3	48	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0
PC	3	58	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0	3711.0
PC	3	68	3711.0									

INTERMEDIATE REPORT
Reaeration Rate
per day

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551
PC	1	11	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551	0.551
PC	1	21	0.551	0.551	0.551	0.551	0.550	0.550	0.550	0.550	0.550	0.550
PC	1	31	0.550									
PC	2	32	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563
PC	2	42	0.563	0.563	0.563	0.563	0.563	0.563				
PC	3	48	0.562	0.562	0.562	0.562	0.562	0.562	0.562	0.562	0.561	0.561
PC	3	58	0.561	0.561	0.561	0.561	0.561	0.561	0.560	0.560	0.560	0.560
PC	3	68	0.560									

INTERMEDIATE REPORT
BOD Decay Rate
per day

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	1	11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	1	21	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	1	31	0.11									
PC	2	32	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	2	42	0.11	0.11	0.11	0.11	0.11	0.11				
PC	3	48	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	3	58	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
PC	3	68	0.11									

INTERMEDIATE REPORT
BOD Settling Rate
per day

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	1	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	1	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	1	31	0.00									
PC	2	32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	2	42	0.00	0.00	0.00	0.00	0.00	0.00				
PC	3	48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	3	58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	3	68	0.00									

INTERMEDIATE REPORT
Ammonia Decay Rate
per day

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
PC	1	11	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18
PC	1	21	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
PC	1	31	0.18									
PC	2	32	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
PC	2	42	0.18	0.18	0.18	0.18	0.18	0.18				
PC	3	48	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
PC	3	58	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
PC	3	68	0.19									

INTERMEDIATE REPORT
Sediment Oxygen Demand
$g/m^2/d$

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

ID	RCH	ELEM	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PC	1	1	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
PC	1	11	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
PC	1	21	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
PC	1	31	0.79									
PC	2	32	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
PC	2	42	0.79	0.79	0.79	0.79	0.79	0.79				

PC	3	48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	3	58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC	3	68	0.00									

CONDENSED CAPSULE SUMMARY FOR Bayou Petit Caillou

DIST	FLOW	TEMP	SALN	DO	EBOD1	EBOD2	ORGN	NH3	CHLA	REAER RATE	BOD1 DECA	BOD1 SETT	BOD2 DECA	BOD2 SETT	NH3 DECA	SOD
km	m^3/s	deg C	ppt	mg/L	mg/L	mg/L	mg/L	µg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	$g/m^2/d$
HDWTR	8.28000	30.90	16.50	5.70	7.67	0.00	0.80	0.10	0.00							
8.30	8.28000	30.80	18.44	4.95	7.15	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
8.20	8.28000	30.80	18.52	4.92	7.13	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
8.10	8.28000	30.80	18.61	4.89	7.11	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
8.00	8.28000	30.80	18.70	4.86	7.09	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.90	8.28000	30.80	18.79	4.83	7.07	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.80	8.28000	30.80	18.89	4.81	7.05	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.70	8.28000	30.80	18.99	4.78	7.04	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.60	8.28000	30.80	19.10	4.76	7.02	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.50	8.28000	30.80	19.21	4.73	7.00	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.40	8.28000	30.80	19.33	4.71	6.98	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.30	8.28000	30.80	19.45	4.69	6.97	0.00	0.78	0.10	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.20	8.28000	30.80	19.58	4.66	6.95	0.00	0.78	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.10	8.28000	30.80	19.71	4.64	6.94	0.00	0.79	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
7.00	8.28000	30.80	19.85	4.62	6.92	0.00	0.79	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.19	0.79
6.90	8.28000	30.80	19.99	4.60	6.91	0.00	0.79	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.80	8.28000	30.80	20.14	4.58	6.90	0.00	0.79	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.70	8.28000	30.80	20.30	4.56	6.89	0.00	0.79	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.60	8.28000	30.80	20.46	4.54	6.87	0.00	0.79	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.50	8.28000	30.80	20.63	4.52	6.86	0.00	0.79	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.40	8.28000	30.80	20.81	4.50	6.85	0.00	0.80	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.30	8.28000	30.80	20.99	4.48	6.84	0.00	0.80	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.20	8.28000	30.80	21.19	4.46	6.83	0.00	0.80	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.10	8.28000	30.80	21.39	4.44	6.83	0.00	0.80	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
6.00	8.28000	30.80	21.60	4.42	6.82	0.00	0.81	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.90	8.28000	30.80	21.82	4.41	6.81	0.00	0.81	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.80	8.28000	30.80	22.05	4.39	6.81	0.00	0.81	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.70	8.28000	30.80	22.29	4.37	6.80	0.00	0.82	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.60	8.28000	30.80	22.54	4.35	6.80	0.00	0.82	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.50	8.28000	30.80	22.79	4.33	6.80	0.00	0.83	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.40	8.28000	30.80	23.07	4.31	6.80	0.00	0.83	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.30	8.28000	30.80	23.35	4.29	6.80	0.00	0.84	0.11	0.00	0.55	0.11	0.00	0.00	0.00	0.18	0.79
5.10	8.28000	30.80	23.52	4.28	6.80	0.00	0.84	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
4.90	8.28000	30.80	23.70	4.27	6.80	0.00	0.84	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
4.70	8.28000	30.80	23.88	4.26	6.80	0.00	0.85	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
4.50	8.28000	30.80	24.07	4.25	6.81	0.00	0.85	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
4.30	8.28000	30.80	24.26	4.25	6.82	0.00	0.86	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
4.10	8.28000	30.80	24.45	4.25	6.84	0.00	0.87	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
3.90	8.28000	30.80	24.66	4.26	6.85	0.00	0.87	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
3.70	8.28000	30.80	24.86	4.27	6.87	0.00	0.88	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79

3.50	8.28000	30.8025.07	4.28	6.89	0.00	0.89	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
3.30	8.28000	30.8025.29	4.30	6.92	0.00	0.90	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
3.10	8.28000	30.8025.51	4.32	6.95	0.00	0.91	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
2.90	8.28000	30.8025.74	4.34	6.98	0.00	0.92	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
2.70	8.28000	30.8025.98	4.38	7.01	0.00	0.93	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
2.50	8.28000	30.8026.22	4.42	7.05	0.00	0.95	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
2.30	8.28000	30.8026.46	4.47	7.10	0.00	0.96	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
2.10	8.28000	30.8026.72	4.52	7.15	0.00	0.98	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.79
2.00	8.28000	30.7926.91	4.58	7.19	0.00	0.99	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.18	0.00
1.90	8.28000	30.7827.04	4.61	7.20	0.00	0.99	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.80	8.28000	30.7727.17	4.64	7.19	0.00	1.00	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.70	8.28000	30.7627.30	4.68	7.17	0.00	1.01	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.60	8.28000	30.7527.43	4.71	7.14	0.00	1.02	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.50	8.28000	30.7427.57	4.74	7.09	0.00	1.03	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.40	8.28000	30.7327.71	4.77	7.02	0.00	1.04	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.30	8.28000	30.7227.85	4.81	6.94	0.00	1.05	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.20	8.28000	30.7127.99	4.84	6.84	0.00	1.06	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.10	8.28000	30.7028.13	4.87	6.72	0.00	1.07	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
1.00	8.28000	30.7028.27	4.91	6.59	0.00	1.08	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.90	8.28000	30.6928.42	4.94	6.44	0.00	1.09	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.80	8.28000	30.6828.57	4.98	6.27	0.00	1.10	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.70	8.28000	30.6728.72	5.02	6.08	0.00	1.11	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.60	8.28000	30.6628.87	5.05	5.88	0.00	1.13	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.50	8.28000	30.6529.02	5.09	5.65	0.00	1.14	0.11	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.40	8.28000	30.6429.18	5.13	5.41	0.00	1.15	0.10	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.30	8.28000	30.6329.33	5.16	5.15	0.00	1.16	0.10	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.20	8.28000	30.6229.49	5.20	4.86	0.00	1.18	0.10	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.10	8.28000	30.6129.65	5.24	4.56	0.00	1.19	0.10	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00
0.00	8.28000	30.6029.82	5.28	4.23	0.00	1.20	0.10	0.00	0.56	0.11	0.00	0.00	0.00	0.19	0.00

EXPANDED CAPSULE SUMMARY FOR Bayou Petit Caillou

IOR	REACH	DIST km	FLOW m³/s	TEMP deg C	SALN ppt	DO mg/L	EBOD1 mg/L	EBOD2 mg/L	ORG-N mg/L	NH3 mg/L	CHLA µg/L	DISP m²/s	DEPTH m	WIDTH m	ADVEC VELO m/s	MEAN VELO m/s	DO SAT mg/L	REAER RATE 1/da	BOD1 DECA 1/da	BOD1 SETT 1/da	BOD2 DECA 1/da	BOD2 SETT 1/da	NH3 DECA 1/da	SOD g/m²/d
		HDWTR	8.280	30.9	16.5	5.7	7.7	0.0	0.8	0.1	0.0													
1	PC 1	8.30	8.280	30.8	18.4	4.9	7.2	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
2	PC 1	8.20	8.280	30.8	18.5	4.9	7.1	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
3	PC 1	8.10	8.280	30.8	18.6	4.9	7.1	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
4	PC 1	8.00	8.280	30.8	18.7	4.9	7.1	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
5	PC 1	7.90	8.280	30.8	18.8	4.8	7.1	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
6	PC 1	7.80	8.280	30.8	18.9	4.8	7.1	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
7	PC 1	7.70	8.280	30.8	19.0	4.8	7.0	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
8	PC 1	7.60	8.280	30.8	19.1	4.8	7.0	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
9	PC 1	7.50	8.280	30.8	19.2	4.7	7.0	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
10	PC 1	7.40	8.280	30.8	19.3	4.7	7.0	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
11	PC 1	7.30	8.280	30.8	19.4	4.7	7.0	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
12	PC 1	7.20	8.280	30.8	19.6	4.7	7.0	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
13	PC 1	7.10	8.280	30.8	19.7	4.6	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
14	PC 1	7.00	8.280	30.8	19.8	4.6	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.19	0.79
15	PC 1	6.90	8.280	30.8	20.0	4.6	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.18	0.79
16	PC 1	6.80	8.280	30.8	20.1	4.6	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.18	0.79
17	PC 1	6.70	8.280	30.8	20.3	4.6	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.18	0.79
18	PC 1	6.60	8.280	30.8	20.5	4.5	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.18	0.79
19	PC 1	6.50	8.280	30.8	20.6	4.5	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.18	0.79
20	PC 1	6.40	8.280	30.8	20.8	4.5	6.9	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.7	0.551	0.11	0.00	0.00	0.00	0.18	0.79
21	PC 1	6.30	8.280	30.8	21.0	4.5	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.551	0.11	0.00	0.00	0.00	0.18	0.79
22	PC 1	6.20	8.280	30.8	21.2	4.5	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.551	0.11	0.00	0.00	0.00	0.18	0.79
23	PC 1	6.10	8.280	30.8	21.4	4.4	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.551	0.11	0.00	0.00	0.00	0.18	0.79
24	PC 1	6.00	8.280	30.8	21.6	4.4	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.551	0.11	0.00	0.00	0.00	0.18	0.79
25	PC 1	5.90	8.280	30.8	21.8	4.4	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.550	0.11	0.00	0.00	0.00	0.18	0.79
26	PC 1	5.80	8.280	30.8	22.0	4.4	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.550	0.11	0.00	0.00	0.00	0.18	0.79
27	PC 1	5.70	8.280	30.8	22.3	4.4	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.550	0.11	0.00	0.00	0.00	0.18	0.79
28	PC 1	5.60	8.280	30.8	22.5	4.3	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.550	0.11	0.00	0.00	0.00	0.18	0.79
29	PC 1	5.50	8.280	30.8	22.8	4.3	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.550	0.11	0.00	0.00	0.00	0.18	0.79
30	PC 1	5.40	8.280	30.8	23.1	4.3	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.550	0.11	0.00	0.00	0.00	0.18	0.79
31	PC 1	5.30	8.280	30.8	23.3	4.3	6.8	0.0	0.8	0.1	0.0	18.0	1.70	629.0	0.008	0.008	6.6	0.550	0.11	0.00	0.00	0.00	0.18	0.79
32	PC 2	5.10	8.280	30.8	23.5	4.3	6.8	0.0	0.8	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.6	0.563	0.11	0.00	0.00	0.00	0.18	0.79
33	PC 2	4.90	8.280	30.8	23.7	4.3	6.8	0.0	0.8	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
34	PC 2	4.70	8.280	30.8	23.9	4.3	6.8	0.0	0.8	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
35	PC 2	4.50	8.280	30.8	24.1	4.3	6.8	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
36	PC 2	4.30	8.280	30.8	24.3	4.3	6.8	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
37	PC 2	4.10	8.280	30.8	24.5	4.3	6.8	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
38	PC 2	3.90	8.280	30.8	24.7	4.3	6.9	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
39	PC 2	3.70	8.280	30.8	24.9	4.3	6.9	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
40	PC 2	3.50	8.280	30.8	25.1	4.3	6.9	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
41	PC 2	3.30	8.280	30.8	25.3	4.3	6.9	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
42	PC 2	3.10	8.280	30.8	25.5	4.3	6.9	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
43	PC 2	2.90	8.280	30.8	25.7	4.3	7.0	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
44	PC 2	2.70	8.280	30.8	26.0	4.4	7.0	0.0	0.9	0.1	0.0	18.0	1.50	2420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79

45	PC	2	2.50	8.280	30.8	26.2	4.4	7.1	0.0	0.9	0.1	0.0	18.0	1.502420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
46	PC	2	2.30	8.280	30.8	26.5	4.5	7.1	0.0	1.0	0.1	0.0	18.0	1.502420.0	0.002	0.002	6.5	0.563	0.11	0.00	0.00	0.00	0.18	0.79
47	PC	2	2.10	8.280	30.8	26.7	4.5	7.1	0.0	1.0	0.1	0.0	18.0	1.502420.0	0.002	0.002	6.4	0.563	0.11	0.00	0.00	0.00	0.18	0.79
48	PC	3	2.00	8.280	30.8	26.9	4.6	7.2	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.18	0.00
49	PC	3	1.90	8.280	30.8	27.0	4.6	7.2	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.19	0.00
50	PC	3	1.80	8.280	30.8	27.2	4.6	7.2	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.19	0.00
51	PC	3	1.70	8.280	30.8	27.3	4.7	7.2	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.19	0.00
52	PC	3	1.60	8.280	30.8	27.4	4.7	7.1	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.19	0.00
53	PC	3	1.50	8.280	30.7	27.6	4.7	7.1	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.19	0.00
54	PC	3	1.40	8.280	30.7	27.7	4.8	7.0	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.19	0.00
55	PC	3	1.30	8.280	30.7	27.8	4.8	6.9	0.0	1.0	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.562	0.11	0.00	0.00	0.00	0.19	0.00
56	PC	3	1.20	8.280	30.7	28.0	4.8	6.8	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
57	PC	3	1.10	8.280	30.7	28.1	4.9	6.7	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
58	PC	3	1.00	8.280	30.7	28.3	4.9	6.6	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
59	PC	3	0.90	8.280	30.7	28.4	4.9	6.4	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
60	PC	3	0.80	8.280	30.7	28.6	5.0	6.3	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
61	PC	3	0.70	8.280	30.7	28.7	5.0	6.1	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
62	PC	3	0.60	8.280	30.7	28.9	5.1	5.9	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
63	PC	3	0.50	8.280	30.6	29.0	5.1	5.7	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.561	0.11	0.00	0.00	0.00	0.19	0.00
64	PC	3	0.40	8.280	30.6	29.2	5.1	5.4	0.0	1.1	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.560	0.11	0.00	0.00	0.00	0.19	0.00
65	PC	3	0.30	8.280	30.6	29.3	5.2	5.1	0.0	1.2	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.560	0.11	0.00	0.00	0.00	0.19	0.00
66	PC	3	0.20	8.280	30.6	29.5	5.2	4.9	0.0	1.2	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.560	0.11	0.00	0.00	0.00	0.19	0.00
67	PC	3	0.10	8.280	30.6	29.7	5.2	4.6	0.0	1.2	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.560	0.11	0.00	0.00	0.00	0.19	0.00
68	PC	3	0.00	8.280	30.6	29.8	5.3	4.2	0.0	1.2	0.1	0.0	18.0	1.502474.0	0.002	0.002	6.4	0.560	0.11	0.00	0.00	0.00	0.19	0.00

SPECIAL REPORT: Bayou Petit Caillou
WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
1	8.300	30.80	18.4	29664.1	0.0	4.95	7.15	0.00	7.15	0.00	0.78	0.10	0.20	1.09	0.00	0.0	0.0	0.	0.00
2	8.200	30.80	18.5	29783.0	0.0	4.92	7.13	0.00	7.13	0.00	0.78	0.10	0.20	1.09	0.00	0.0	0.0	0.	0.00
3	8.100	30.80	18.6	29907.1	0.0	4.89	7.11	0.00	7.11	0.00	0.78	0.10	0.20	1.09	0.00	0.0	0.0	0.	0.00
4	8.000	30.80	18.7	30036.4	0.0	4.86	7.09	0.00	7.09	0.00	0.78	0.10	0.21	1.09	0.00	0.0	0.0	0.	0.00
5	7.900	30.80	18.8	30171.4	0.0	4.83	7.07	0.00	7.07	0.00	0.78	0.10	0.21	1.09	0.00	0.0	0.0	0.	0.00
6	7.800	30.80	18.9	30312.1	0.0	4.81	7.05	0.00	7.05	0.00	0.78	0.10	0.21	1.10	0.00	0.0	0.0	0.	0.00
7	7.700	30.80	19.0	30458.9	0.0	4.78	7.04	0.00	7.04	0.00	0.78	0.10	0.21	1.10	0.00	0.0	0.0	0.	0.00
8	7.600	30.80	19.1	30612.0	0.0	4.76	7.02	0.00	7.02	0.00	0.78	0.10	0.21	1.10	0.00	0.0	0.0	0.	0.00
9	7.500	30.80	19.2	30771.6	0.0	4.73	7.00	0.00	7.00	0.00	0.78	0.10	0.22	1.10	0.00	0.0	0.0	0.	0.00
10	7.400	30.80	19.3	30938.2	0.0	4.71	6.98	0.00	6.98	0.00	0.78	0.10	0.22	1.11	0.00	0.0	0.0	0.	0.00
11	7.300	30.80	19.4	31111.9	0.0	4.69	6.97	0.00	6.97	0.00	0.78	0.10	0.22	1.11	0.00	0.0	0.0	0.	0.00
12	7.200	30.80	19.6	31293.1	0.0	4.66	6.95	0.00	6.95	0.00	0.78	0.11	0.22	1.11	0.00	0.0	0.0	0.	0.00
13	7.100	30.80	19.7	31482.1	0.0	4.64	6.94	0.00	6.94	0.00	0.79	0.11	0.23	1.12	0.00	0.0	0.0	0.	0.00
14	7.000	30.80	19.8	31679.2	0.0	4.62	6.92	0.00	6.92	0.00	0.79	0.11	0.23	1.12	0.00	0.0	0.0	0.	0.00
15	6.900	30.80	20.0	31884.8	0.0	4.60	6.91	0.00	6.91	0.00	0.79	0.11	0.23	1.12	0.00	0.0	0.0	0.	0.00
16	6.800	30.80	20.1	32099.3	0.0	4.58	6.90	0.00	6.90	0.00	0.79	0.11	0.23	1.13	0.00	0.0	0.0	0.	0.00
17	6.700	30.80	20.3	32322.9	0.0	4.56	6.89	0.00	6.89	0.00	0.79	0.11	0.23	1.13	0.00	0.0	0.0	0.	0.00
18	6.600	30.80	20.5	32556.2	0.0	4.54	6.87	0.00	6.87	0.00	0.79	0.11	0.24	1.13	0.00	0.0	0.0	0.	0.00
19	6.500	30.80	20.6	32799.5	0.0	4.52	6.86	0.00	6.86	0.00	0.79	0.11	0.24	1.14	0.00	0.0	0.0	0.	0.00

20	6.400	30.80	20.8	33053.3	0.0	4.50	6.85	0.00	6.85	0.00	0.80	0.11	0.24	1.14	0.00	0.0	0.0	0.	0.00
21	6.300	30.80	21.0	33318.0	0.0	4.48	6.84	0.00	6.84	0.00	0.80	0.11	0.24	1.15	0.00	0.0	0.0	0.	0.00
22	6.200	30.80	21.2	33594.1	0.0	4.46	6.83	0.00	6.83	0.00	0.80	0.11	0.24	1.15	0.00	0.0	0.0	0.	0.00
23	6.100	30.80	21.4	33882.1	0.0	4.44	6.83	0.00	6.83	0.00	0.80	0.11	0.24	1.16	0.00	0.0	0.0	0.	0.00
24	6.000	30.80	21.6	34182.4	0.0	4.42	6.82	0.00	6.82	0.00	0.81	0.11	0.25	1.16	0.00	0.0	0.0	0.	0.00
25	5.900	30.80	21.8	34495.7	0.0	4.41	6.81	0.00	6.81	0.00	0.81	0.11	0.25	1.17	0.00	0.0	0.0	0.	0.00
26	5.800	30.80	22.0	34822.5	0.0	4.39	6.81	0.00	6.81	0.00	0.81	0.11	0.25	1.17	0.00	0.0	0.0	0.	0.00
27	5.700	30.80	22.3	35163.3	0.0	4.37	6.80	0.00	6.80	0.00	0.82	0.11	0.25	1.18	0.00	0.0	0.0	0.	0.00
28	5.600	30.80	22.5	35518.8	0.0	4.35	6.80	0.00	6.80	0.00	0.82	0.11	0.25	1.18	0.00	0.0	0.0	0.	0.00
29	5.500	30.80	22.8	35889.6	0.0	4.33	6.80	0.00	6.80	0.00	0.83	0.11	0.25	1.19	0.00	0.0	0.0	0.	0.00
30	5.400	30.80	23.1	36276.3	0.0	4.31	6.80	0.00	6.80	0.00	0.83	0.11	0.25	1.20	0.00	0.0	0.0	0.	0.00
31	5.300	30.80	23.3	36679.6	0.0	4.29	6.80	0.00	6.80	0.00	0.84	0.11	0.26	1.20	0.00	0.0	0.0	0.	0.00
32	5.100	30.80	23.5	36922.7	0.0	4.28	6.80	0.00	6.80	0.00	0.84	0.11	0.26	1.21	0.00	0.0	0.0	0.	0.00
33	4.900	30.80	23.7	37176.7	0.0	4.27	6.80	0.00	6.80	0.00	0.84	0.11	0.26	1.21	0.00	0.0	0.0	0.	0.00
34	4.700	30.80	23.9	37437.2	0.0	4.26	6.80	0.00	6.80	0.00	0.85	0.11	0.26	1.22	0.00	0.0	0.0	0.	0.00
35	4.500	30.80	24.1	37704.2	0.0	4.25	6.81	0.00	6.81	0.00	0.85	0.11	0.25	1.22	0.00	0.0	0.0	0.	0.00
36	4.300	30.80	24.3	37978.1	0.0	4.25	6.82	0.00	6.82	0.00	0.86	0.11	0.25	1.23	0.00	0.0	0.0	0.	0.00
37	4.100	30.80	24.5	38258.9	0.0	4.25	6.84	0.00	6.84	0.00	0.87	0.11	0.25	1.23	0.00	0.0	0.0	0.	0.00
38	3.900	30.80	24.7	38546.8	0.0	4.26	6.85	0.00	6.85	0.00	0.87	0.11	0.25	1.23	0.00	0.0	0.0	0.	0.00
39	3.700	30.80	24.9	38842.0	0.0	4.27	6.87	0.00	6.87	0.00	0.88	0.11	0.25	1.24	0.00	0.0	0.0	0.	0.00
40	3.500	30.80	25.1	39144.7	0.0	4.28	6.89	0.00	6.89	0.00	0.89	0.11	0.24	1.24	0.00	0.0	0.0	0.	0.00
41	3.300	30.80	25.3	39455.1	0.0	4.30	6.92	0.00	6.92	0.00	0.90	0.11	0.24	1.25	0.00	0.0	0.0	0.	0.00
42	3.100	30.80	25.5	39773.3	0.0	4.32	6.95	0.00	6.95	0.00	0.91	0.11	0.23	1.26	0.00	0.0	0.0	0.	0.00
43	2.900	30.80	25.7	40099.6	0.0	4.34	6.98	0.00	6.98	0.00	0.92	0.11	0.23	1.26	0.00	0.0	0.0	0.	0.00
44	2.700	30.80	26.0	40434.2	0.0	4.38	7.01	0.00	7.01	0.00	0.93	0.11	0.22	1.27	0.00	0.0	0.0	0.	0.00
45	2.500	30.80	26.2	40777.3	0.0	4.42	7.05	0.00	7.05	0.00	0.95	0.11	0.21	1.27	0.00	0.0	0.0	0.	0.00
46	2.300	30.80	26.5	41129.1	0.0	4.47	7.10	0.00	7.10	0.00	0.96	0.11	0.20	1.28	0.00	0.0	0.0	0.	0.00
47	2.100	30.80	26.7	41489.7	0.0	4.52	7.15	0.00	7.15	0.00	0.98	0.11	0.20	1.28	0.00	0.0	0.0	0.	0.00
48	2.000	30.79	26.9	41765.1	0.0	4.58	7.19	0.00	7.19	0.00	0.99	0.11	0.19	1.29	0.00	0.0	0.0	0.	0.00
49	1.900	30.78	27.0	41949.4	0.0	4.61	7.20	0.00	7.20	0.00	0.99	0.11	0.18	1.29	0.00	0.0	0.0	0.	0.00
50	1.800	30.77	27.2	42135.9	0.0	4.64	7.19	0.00	7.19	0.00	1.00	0.11	0.18	1.29	0.00	0.0	0.0	0.	0.00
51	1.700	30.76	27.3	42324.8	0.0	4.68	7.17	0.00	7.17	0.00	1.01	0.11	0.17	1.30	0.00	0.0	0.0	0.	0.00
52	1.600	30.75	27.4	42516.1	0.0	4.71	7.14	0.00	7.14	0.00	1.02	0.11	0.17	1.30	0.00	0.0	0.0	0.	0.00
53	1.500	30.74	27.6	42709.7	0.0	4.74	7.09	0.00	7.09	0.00	1.03	0.11	0.16	1.30	0.00	0.0	0.0	0.	0.00
54	1.400	30.73	27.7	42905.7	0.0	4.77	7.02	0.00	7.02	0.00	1.04	0.11	0.16	1.31	0.00	0.0	0.0	0.	0.00
55	1.300	30.72	27.8	43104.1	0.0	4.81	6.94	0.00	6.94	0.00	1.05	0.11	0.15	1.31	0.00	0.0	0.0	0.	0.00
56	1.200	30.71	28.0	43305.0	0.0	4.84	6.84	0.00	6.84	0.00	1.06	0.11	0.15	1.31	0.00	0.0	0.0	0.	0.00
57	1.100	30.70	28.1	43508.4	0.0	4.87	6.72	0.00	6.72	0.00	1.07	0.11	0.14	1.32	0.00	0.0	0.0	0.	0.00
58	1.000	30.70	28.3	43714.3	0.0	4.91	6.59	0.00	6.59	0.00	1.08	0.11	0.13	1.32	0.00	0.0	0.0	0.	0.00
59	0.900	30.69	28.4	43922.8	0.0	4.94	6.44	0.00	6.44	0.00	1.09	0.11	0.13	1.32	0.00	0.0	0.0	0.	0.00
60	0.800	30.68	28.6	44133.8	0.0	4.98	6.27	0.00	6.27	0.00	1.10	0.11	0.12	1.33	0.00	0.0	0.0	0.	0.00
61	0.700	30.67	28.7	44347.5	0.0	5.02	6.08	0.00	6.08	0.00	1.11	0.11	0.11	1.33	0.00	0.0	0.0	0.	0.00
62	0.600	30.66	28.9	44563.8	0.0	5.05	5.88	0.00	5.88	0.00	1.13	0.11	0.10	1.34	0.00	0.0	0.0	0.	0.00
63	0.500	30.65	29.0	44782.8	0.0	5.09	5.65	0.00	5.65	0.00	1.14	0.11	0.10	1.34	0.00	0.0	0.0	0.	0.00
64	0.400	30.64	29.2	45004.5	0.0	5.13	5.41	0.00	5.41	0.00	1.15	0.10	0.09	1.34	0.00	0.0	0.0	0.	0.00
65	0.300	30.63	29.3	45228.9	0.0	5.16	5.15	0.00	5.15	0.00	1.16	0.10	0.08	1.35	0.00	0.0	0.0	0.	0.00
66	0.200	30.62	29.5	45456.1	0.0	5.20	4.86	0.00	4.86	0.00	1.18	0.10	0.07	1.35	0.00	0.0	0.0	0.	0.00
67	0.100	30.61	29.7	45686.2	0.0	5.24	4.56	0.00	4.56	0.00	1.19	0.10	0.06	1.35	0.00	0.0	0.0	0.	0.00
68	0.000	30.60	29.8	45919.1	0.0	5.28	4.23	0.00	4.23	0.00	1.20	0.10	0.05	1.36	0.00	0.0	0.0	0.	0.00

SPECIAL REPORT: Bayou Petit Caillou
BIOLOGICAL AND PHYSICAL COEFFICIENTS

ELEM NO.	ENDING DIST km	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#1 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	FULL SOD *	CORR SOD *	ORG-N DECAY 1/da	ORG-N SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
1	8.300	6.74	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8.200	6.74	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	8.100	6.73	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	8.000	6.73	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	7.900	6.73	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	7.800	6.72	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	7.700	6.72	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	7.600	6.72	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	7.500	6.71	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	7.400	6.71	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	7.300	6.70	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	7.200	6.70	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	7.100	6.69	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	7.000	6.69	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	6.900	6.68	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	6.800	6.68	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	6.700	6.67	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	6.600	6.67	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	6.500	6.66	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	6.400	6.65	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	6.300	6.65	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	6.200	6.64	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	6.100	6.63	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	6.000	6.63	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	5.900	6.62	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	5.800	6.61	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	5.700	6.60	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	5.600	6.59	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	5.500	6.58	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	5.400	6.57	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	5.300	6.56	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	5.100	6.56	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	4.900	6.55	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	4.700	6.54	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	4.500	6.54	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	4.300	6.53	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	4.100	6.52	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	3.900	6.52	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	3.700	6.51	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	3.500	6.50	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	3.300	6.49	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	3.100	6.49	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	2.900	6.48	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	2.700	6.47	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

45	2.500	6.46	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	2.300	6.45	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	2.100	6.44	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	2.000	6.44	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	1.900	6.43	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	1.800	6.43	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	1.700	6.43	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	1.600	6.42	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	1.500	6.42	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	1.400	6.41	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	1.300	6.41	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	1.200	6.41	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	1.100	6.40	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	1.000	6.40	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	0.900	6.39	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.800	6.39	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	0.700	6.39	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	0.600	6.38	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	0.500	6.38	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	0.400	6.37	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.300	6.37	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	0.200	6.36	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	0.100	6.36	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68	0.000	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPECIAL REPORT: Bayou Petit Caillou
HYDRAULIC PARAMETER VALUES

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m^3/s	ADVCTV VELO m/s	DEPTH m	WIDTH m	VOLUME m^3	SURFACE AREA m^2	X-SECT AREA m^2	TIDAL PRISM m^3	TIDAL VELO m/s	DISPRSN m^2/s	MEAN VELO m/s
1	8.40	8.30	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
2	8.30	8.20	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
3	8.20	8.10	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
4	8.10	8.00	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
5	8.00	7.90	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
6	7.90	7.80	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
7	7.80	7.70	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
8	7.70	7.60	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
9	7.60	7.50	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
10	7.50	7.40	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
11	7.40	7.30	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
12	7.30	7.20	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
13	7.20	7.10	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
14	7.10	7.00	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
15	7.00	6.90	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
16	6.90	6.80	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
17	6.80	6.70	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
18	6.70	6.60	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008

19	6.60	6.50	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
20	6.50	6.40	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
21	6.40	6.30	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
22	6.30	6.20	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
23	6.20	6.10	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
24	6.10	6.00	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
25	6.00	5.90	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
26	5.90	5.80	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
27	5.80	5.70	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
28	5.70	5.60	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
29	5.60	5.50	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
30	5.50	5.40	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
31	5.40	5.30	8.2800	0.008	1.70	629.0	106930.	62900.0	1069.3	0.	0.000	18.000	0.008
32	5.30	5.10	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
33	5.10	4.90	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
34	4.90	4.70	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
35	4.70	4.50	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
36	4.50	4.30	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
37	4.30	4.10	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
38	4.10	3.90	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
39	3.90	3.70	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
40	3.70	3.50	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
41	3.50	3.30	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
42	3.30	3.10	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
43	3.10	2.90	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
44	2.90	2.70	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
45	2.70	2.50	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
46	2.50	2.30	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
47	2.30	2.10	8.2800	0.002	1.50	2420.0	726000.	484000.0	3630.0	0.	0.000	18.000	0.002
48	2.10	2.00	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
49	2.00	1.90	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
50	1.90	1.80	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
51	1.80	1.70	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
52	1.70	1.60	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
53	1.60	1.50	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
54	1.50	1.40	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
55	1.40	1.30	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
56	1.30	1.20	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
57	1.20	1.10	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
58	1.10	1.00	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
59	1.00	0.90	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
60	0.90	0.80	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
61	0.80	0.70	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
62	0.70	0.60	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
63	0.60	0.50	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
64	0.50	0.40	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
65	0.40	0.30	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
66	0.30	0.20	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
67	0.20	0.10	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002
68	0.10	0.00	8.2800	0.002	1.50	2474.0	371100.	247400.0	3711.0	0.	0.000	18.000	0.002

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
1	HDWTR	8.28000	30.90	16.50	26900.00	0.00	5.70	7.67	0.00	7.67	0.00	0.80	0.10	0.14	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	8.40	8.30	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
2	8.30	8.20	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
3	8.20	8.10	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
4	8.10	8.00	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
5	8.00	7.90	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
6	7.90	7.80	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
7	7.80	7.70	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
8	7.70	7.60	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
9	7.60	7.50	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
10	7.50	7.40	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
11	7.40	7.30	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
12	7.30	7.20	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
13	7.20	7.10	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
14	7.10	7.00	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
15	7.00	6.90	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
16	6.90	6.80	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
17	6.80	6.70	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
18	6.70	6.60	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
19	6.60	6.50	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
20	6.50	6.40	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
21	6.40	6.30	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
22	6.30	6.20	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
23	6.20	6.10	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
24	6.10	6.00	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
25	6.00	5.90	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
26	5.90	5.80	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
27	5.80	5.70	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
28	5.70	5.60	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
29	5.60	5.50	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
30	5.50	5.40	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008
31	5.40	5.30	8.28000	0.0	0.00774	0.15	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.008

TOT								4.63						3314830.25		1949900.00							
AVG			0.0077						1.70	629.00							1069.30					
CUM								4.63															

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
1	8.300	6.74	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8.200	6.74	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	8.100	6.73	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	8.000	6.73	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	7.900	6.73	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	7.800	6.72	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	7.700	6.72	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	7.600	6.72	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	7.500	6.71	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	7.400	6.71	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	7.300	6.70	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	7.200	6.70	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	7.100	6.69	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	7.000	6.69	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	6.900	6.68	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	6.800	6.68	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	6.700	6.67	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	6.600	6.67	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	6.500	6.66	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	6.400	6.65	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	6.300	6.65	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	6.200	6.64	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	6.100	6.63	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	6.000	6.63	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	5.900	6.62	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	5.800	6.61	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	5.700	6.60	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	5.600	6.59	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	5.500	6.58	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	5.400	6.57	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	5.300	6.56	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.46	0.07	0.00	0.00	0.00	0.00	0.00	0.40			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM	ENDING	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	TOTN	PHOS	CHL A	MACRO	COLI	NCM

NO.	DIST	DEG C	PPT	umhos/cm		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	g/m³	#/100mL	
1	8.300	30.80	18.44	29664.13	0.00	4.95	7.15	0.00	7.15	0.00	0.78	0.10	0.20	1.09	0.00	0.00	0.00	0.	0.00
2	8.200	30.80	18.52	29783.04	0.00	4.92	7.13	0.00	7.13	0.00	0.78	0.10	0.20	1.09	0.00	0.00	0.00	0.	0.00
3	8.100	30.80	18.61	29907.07	0.00	4.89	7.11	0.00	7.11	0.00	0.78	0.10	0.20	1.09	0.00	0.00	0.00	0.	0.00
4	8.000	30.80	18.70	30036.43	0.00	4.86	7.09	0.00	7.09	0.00	0.78	0.10	0.21	1.09	0.00	0.00	0.00	0.	0.00
5	7.900	30.80	18.79	30171.35	0.00	4.83	7.07	0.00	7.07	0.00	0.78	0.10	0.21	1.09	0.00	0.00	0.00	0.	0.00
6	7.800	30.80	18.89	30312.08	0.00	4.81	7.05	0.00	7.05	0.00	0.78	0.10	0.21	1.10	0.00	0.00	0.00	0.	0.00
7	7.700	30.80	18.99	30458.87	0.00	4.78	7.04	0.00	7.04	0.00	0.78	0.10	0.21	1.10	0.00	0.00	0.00	0.	0.00
8	7.600	30.80	19.10	30611.96	0.00	4.76	7.02	0.00	7.02	0.00	0.78	0.10	0.21	1.10	0.00	0.00	0.00	0.	0.00
9	7.500	30.80	19.21	30771.65	0.00	4.73	7.00	0.00	7.00	0.00	0.78	0.10	0.22	1.10	0.00	0.00	0.00	0.	0.00
10	7.400	30.80	19.33	30938.20	0.00	4.71	6.98	0.00	6.98	0.00	0.78	0.10	0.22	1.11	0.00	0.00	0.00	0.	0.00
11	7.300	30.80	19.45	31111.92	0.00	4.69	6.97	0.00	6.97	0.00	0.78	0.10	0.22	1.11	0.00	0.00	0.00	0.	0.00
12	7.200	30.80	19.58	31293.11	0.00	4.66	6.95	0.00	6.95	0.00	0.78	0.11	0.22	1.11	0.00	0.00	0.00	0.	0.00
13	7.100	30.80	19.71	31482.10	0.00	4.64	6.94	0.00	6.94	0.00	0.79	0.11	0.23	1.12	0.00	0.00	0.00	0.	0.00
14	7.000	30.80	19.85	31679.21	0.00	4.62	6.92	0.00	6.92	0.00	0.79	0.11	0.23	1.12	0.00	0.00	0.00	0.	0.00
15	6.900	30.80	19.99	31884.81	0.00	4.60	6.91	0.00	6.91	0.00	0.79	0.11	0.23	1.12	0.00	0.00	0.00	0.	0.00
16	6.800	30.80	20.14	32099.25	0.00	4.58	6.90	0.00	6.90	0.00	0.79	0.11	0.23	1.13	0.00	0.00	0.00	0.	0.00
17	6.700	30.80	20.30	32322.92	0.00	4.56	6.89	0.00	6.89	0.00	0.79	0.11	0.23	1.13	0.00	0.00	0.00	0.	0.00
18	6.600	30.80	20.46	32556.21	0.00	4.54	6.87	0.00	6.87	0.00	0.79	0.11	0.24	1.13	0.00	0.00	0.00	0.	0.00
19	6.500	30.80	20.63	32799.53	0.00	4.52	6.86	0.00	6.86	0.00	0.79	0.11	0.24	1.14	0.00	0.00	0.00	0.	0.00
20	6.400	30.80	20.81	33053.32	0.00	4.50	6.85	0.00	6.85	0.00	0.80	0.11	0.24	1.14	0.00	0.00	0.00	0.	0.00
21	6.300	30.80	20.99	33318.02	0.00	4.48	6.84	0.00	6.84	0.00	0.80	0.11	0.24	1.15	0.00	0.00	0.00	0.	0.00
22	6.200	30.80	21.19	33594.12	0.00	4.46	6.83	0.00	6.83	0.00	0.80	0.11	0.24	1.15	0.00	0.00	0.00	0.	0.00
23	6.100	30.80	21.39	33882.09	0.00	4.44	6.83	0.00	6.83	0.00	0.80	0.11	0.24	1.16	0.00	0.00	0.00	0.	0.00
24	6.000	30.80	21.60	34182.45	0.00	4.42	6.82	0.00	6.82	0.00	0.81	0.11	0.25	1.16	0.00	0.00	0.00	0.	0.00
25	5.900	30.80	21.82	34495.73	0.00	4.41	6.81	0.00	6.81	0.00	0.81	0.11	0.25	1.17	0.00	0.00	0.00	0.	0.00
26	5.800	30.80	22.05	34822.49	0.00	4.39	6.81	0.00	6.81	0.00	0.81	0.11	0.25	1.17	0.00	0.00	0.00	0.	0.00
27	5.700	30.80	22.29	35163.30	0.00	4.37	6.80	0.00	6.80	0.00	0.82	0.11	0.25	1.18	0.00	0.00	0.00	0.	0.00
28	5.600	30.80	22.54	35518.78	0.00	4.35	6.80	0.00	6.80	0.00	0.82	0.11	0.25	1.18	0.00	0.00	0.00	0.	0.00
29	5.500	30.80	22.79	35889.55	0.00	4.33	6.80	0.00	6.80	0.00	0.83	0.11	0.25	1.19	0.00	0.00	0.00	0.	0.00
30	5.400	30.80	23.07	36276.27	0.00	4.31	6.80	0.00	6.80	0.00	0.83	0.11	0.25	1.20	0.00	0.00	0.00	0.	0.00
31	5.300	30.80	23.35	36679.62	0.00	4.29	6.80	0.00	6.80	0.00	0.84	0.11	0.26	1.20	0.00	0.00	0.00	0.	0.00

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
32	UPR RCH	8.28000	30.80	23.35	36679.62	0.00	4.29	6.80	0.00	6.80	0.00	0.84	0.11	0.26	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO

	km	km	m³/s		m/s	days	m	m	m³	m²	m²	m³	m/s	m²/s	m/s
32	5.30	5.10	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
33	5.10	4.90	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
34	4.90	4.70	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
35	4.70	4.50	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
36	4.50	4.30	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
37	4.30	4.10	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
38	4.10	3.90	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
39	3.90	3.70	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
40	3.70	3.50	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
41	3.50	3.30	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
42	3.30	3.10	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
43	3.10	2.90	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
44	2.90	2.70	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
45	2.70	2.50	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
46	2.50	2.30	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
47	2.30	2.10	8.28000	0.0	0.00228	1.01	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.002
TOT						16.24			11616000.00	7744000.00					
AVG					0.0023		1.50	2420.00			3630.00				
CUM						20.87									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
32	5.100	6.56	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	4.900	6.55	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	4.700	6.54	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	4.500	6.54	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	4.300	6.53	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	4.100	6.52	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	3.900	6.52	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	3.700	6.51	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	3.500	6.50	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	3.300	6.49	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	3.100	6.49	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	2.900	6.48	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	2.700	6.47	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	2.500	6.46	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	2.300	6.45	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	2.100	6.44	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.79	0.79	0.79	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.47	0.07	0.00	0.00	0.00	0.00	0.00	0.40			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
32	5.100	30.80	23.52	36922.67	0.00	4.28	6.80	0.00	6.80	0.00	0.84	0.11	0.26	1.21	0.00	0.00	0.00	0.	0.00
33	4.900	30.80	23.70	37176.70	0.00	4.27	6.80	0.00	6.80	0.00	0.84	0.11	0.26	1.21	0.00	0.00	0.00	0.	0.00
34	4.700	30.80	23.88	37437.16	0.00	4.26	6.80	0.00	6.80	0.00	0.85	0.11	0.26	1.22	0.00	0.00	0.00	0.	0.00
35	4.500	30.80	24.07	37704.23	0.00	4.25	6.81	0.00	6.81	0.00	0.85	0.11	0.25	1.22	0.00	0.00	0.00	0.	0.00
36	4.300	30.80	24.26	37978.08	0.00	4.25	6.82	0.00	6.82	0.00	0.86	0.11	0.25	1.23	0.00	0.00	0.00	0.	0.00
37	4.100	30.80	24.45	38258.87	0.00	4.25	6.84	0.00	6.84	0.00	0.87	0.11	0.25	1.23	0.00	0.00	0.00	0.	0.00
38	3.900	30.80	24.66	38546.78	0.00	4.26	6.85	0.00	6.85	0.00	0.87	0.11	0.25	1.23	0.00	0.00	0.00	0.	0.00
39	3.700	30.80	24.86	38841.99	0.00	4.27	6.87	0.00	6.87	0.00	0.88	0.11	0.25	1.24	0.00	0.00	0.00	0.	0.00
40	3.500	30.80	25.07	39144.68	0.00	4.28	6.89	0.00	6.89	0.00	0.89	0.11	0.24	1.24	0.00	0.00	0.00	0.	0.00
41	3.300	30.80	25.29	39455.05	0.00	4.30	6.92	0.00	6.92	0.00	0.90	0.11	0.24	1.25	0.00	0.00	0.00	0.	0.00
42	3.100	30.80	25.51	39773.30	0.00	4.32	6.95	0.00	6.95	0.00	0.91	0.11	0.23	1.26	0.00	0.00	0.00	0.	0.00
43	2.900	30.80	25.74	40099.61	0.00	4.34	6.98	0.00	6.98	0.00	0.92	0.11	0.23	1.26	0.00	0.00	0.00	0.	0.00
44	2.700	30.80	25.98	40434.20	0.00	4.38	7.01	0.00	7.01	0.00	0.93	0.11	0.22	1.27	0.00	0.00	0.00	0.	0.00
45	2.500	30.80	26.22	40777.28	0.00	4.42	7.05	0.00	7.05	0.00	0.95	0.11	0.21	1.27	0.00	0.00	0.00	0.	0.00
46	2.300	30.80	26.46	41129.05	0.00	4.47	7.10	0.00	7.10	0.00	0.96	0.11	0.20	1.28	0.00	0.00	0.00	0.	0.00
47	2.100	30.80	26.72	41489.75	0.00	4.52	7.15	0.00	7.15	0.00	0.98	0.11	0.20	1.28	0.00	0.00	0.00	0.	0.00

FINAL REPORT Bayou Petit Caillou — LA-QUAL Model for Bayou Petit Caillou
REACH NO. 3 Bayou Petit Caillou — FTN Associates October 2007

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
48	UPR RCH	8.28000	30.80	26.72	41489.75	0.00	4.52	7.15	0.00	7.15	0.00	0.98	0.11	0.20	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
48	2.10	2.00	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
49	2.00	1.90	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
50	1.90	1.80	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
51	1.80	1.70	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
52	1.70	1.60	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
53	1.60	1.50	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
54	1.50	1.40	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
55	1.40	1.30	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002
56	1.30	1.20	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002

57	1.20	1.10	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
58	1.10	1.00	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
59	1.00	0.90	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
60	0.90	0.80	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
61	0.80	0.70	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
62	0.70	0.60	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
63	0.60	0.50	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
64	0.50	0.40	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
65	0.40	0.30	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
66	0.30	0.20	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
67	0.20	0.10	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
68	0.10	0.00	8.28000	0.0	0.00223	0.52	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.002								
TOT						10.89			7793100.00	5195400.00													
AVG					0.0022		1.50	2474.00			3711.00												
CUM						31.76																	

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
48	2.000	6.44	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	1.900	6.43	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	1.800	6.43	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	1.700	6.43	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	1.600	6.42	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	1.500	6.42	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	1.400	6.41	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	1.300	6.41	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	1.200	6.41	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	1.100	6.40	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	1.000	6.40	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	0.900	6.39	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.800	6.39	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	0.700	6.39	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	0.600	6.38	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	0.500	6.38	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	0.400	6.37	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.300	6.37	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	0.200	6.36	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	0.100	6.36	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68	0.000	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.47	0.07	0.00	0.00	0.00	0.00	0.00	0.00			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
48	2.000	30.79	26.91	41765.07	0.00	4.58	7.19	0.00	7.19	0.00	0.99	0.11	0.19	1.29	0.00	0.00	0.00	0.	0.00
49	1.900	30.78	27.04	41949.37	0.00	4.61	7.20	0.00	7.20	0.00	0.99	0.11	0.18	1.29	0.00	0.00	0.00	0.	0.00
50	1.800	30.77	27.17	42135.95	0.00	4.64	7.19	0.00	7.19	0.00	1.00	0.11	0.18	1.29	0.00	0.00	0.00	0.	0.00
51	1.700	30.76	27.30	42324.84	0.00	4.68	7.17	0.00	7.17	0.00	1.01	0.11	0.17	1.30	0.00	0.00	0.00	0.	0.00
52	1.600	30.75	27.43	42516.07	0.00	4.71	7.14	0.00	7.14	0.00	1.02	0.11	0.17	1.30	0.00	0.00	0.00	0.	0.00
53	1.500	30.74	27.57	42709.68	0.00	4.74	7.09	0.00	7.09	0.00	1.03	0.11	0.16	1.30	0.00	0.00	0.00	0.	0.00
54	1.400	30.73	27.71	42905.68	0.00	4.77	7.02	0.00	7.02	0.00	1.04	0.11	0.16	1.31	0.00	0.00	0.00	0.	0.00
55	1.300	30.72	27.85	43104.11	0.00	4.81	6.94	0.00	6.94	0.00	1.05	0.11	0.15	1.31	0.00	0.00	0.00	0.	0.00
56	1.200	30.71	27.99	43305.01	0.00	4.84	6.84	0.00	6.84	0.00	1.06	0.11	0.15	1.31	0.00	0.00	0.00	0.	0.00
57	1.100	30.70	28.13	43508.39	0.00	4.87	6.72	0.00	6.72	0.00	1.07	0.11	0.14	1.32	0.00	0.00	0.00	0.	0.00
58	1.000	30.70	28.27	43714.30	0.00	4.91	6.59	0.00	6.59	0.00	1.08	0.11	0.13	1.32	0.00	0.00	0.00	0.	0.00
59	0.900	30.69	28.42	43922.75	0.00	4.94	6.44	0.00	6.44	0.00	1.09	0.11	0.13	1.32	0.00	0.00	0.00	0.	0.00
60	0.800	30.68	28.57	44133.80	0.00	4.98	6.27	0.00	6.27	0.00	1.10	0.11	0.12	1.33	0.00	0.00	0.00	0.	0.00
61	0.700	30.67	28.72	44347.46	0.00	5.02	6.08	0.00	6.08	0.00	1.11	0.11	0.11	1.33	0.00	0.00	0.00	0.	0.00
62	0.600	30.66	28.87	44563.77	0.00	5.05	5.88	0.00	5.88	0.00	1.13	0.11	0.10	1.34	0.00	0.00	0.00	0.	0.00
63	0.500	30.65	29.02	44782.75	0.00	5.09	5.65	0.00	5.65	0.00	1.14	0.11	0.10	1.34	0.00	0.00	0.00	0.	0.00
64	0.400	30.64	29.18	45004.46	0.00	5.13	5.41	0.00	5.41	0.00	1.15	0.10	0.09	1.34	0.00	0.00	0.00	0.	0.00
65	0.300	30.63	29.33	45228.91	0.00	5.16	5.15	0.00	5.15	0.00	1.16	0.10	0.08	1.35	0.00	0.00	0.00	0.	0.00
66	0.200	30.62	29.49	45456.14	0.00	5.20	4.86	0.00	4.86	0.00	1.18	0.10	0.07	1.35	0.00	0.00	0.00	0.	0.00
67	0.100	30.61	29.65	45686.20	0.00	5.24	4.56	0.00	4.56	0.00	1.19	0.10	0.06	1.35	0.00	0.00	0.00	0.	0.00
68	0.000	30.60	29.82	45919.11	0.00	5.28	4.23	0.00	4.23	0.00	1.20	0.10	0.05	1.36	0.00	0.00	0.00	0.	0.00

STREAM SUMMARY
Bayou Petit Caillou

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

TRAVEL TIME	=	31.76			DAYS
MAXIMUM EFFLUENT	=	0.00			PERCENT
FLOW	=	8.28000	TO	8.28000	m³/s
DISPERSION	=	18.0000	TO	18.0000	m²/s
VELOCITY	=	0.00223	TO	0.00774	m/s
DEPTH	=	1.50	TO	1.70	m
WIDTH	=	629.00	TO	******	m
BOD DECAY	=	0.11	TO	0.11	per day
NH3 DECAY	=	0.18	TO	0.19	per day
SOD	=	0.00	TO	0.79	g/m²/d
NH3 SOURCE	=	0.00	TO	0.00	g/m²/d
REAERATION	=	0.55	TO	0.56	per day
BOD SETTLING	=	0.00	TO	0.00	per day
ORG-N DECAY	=	0.02	TO	0.02	per day
ORG-N SETTLING	=	0.00	TO	0.00	per day
TEMPERATURE	=	30.60	TO	30.80	deg C

DISSOLVED OXYGEN = 4.25 TO 5.28 mg/L

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

REACH SUMMARY REPORT FOR Bayou Petit Caillou

RCH NO.	REACH NAME	BEGIN DIST km	ENDING DIST km	REACH LENGTH km	TRAVEL TIME days	FLOW AT EOR m3/s	AVERAGE VELO m/s	AVG DEPTH m	AVG WIDTH m	FLOW AT EOR cfs	AVERAGE VELO fps	AVG DEPTH ft	AVG WIDTH ft
1	Bayou Petit Caillou	8.40	5.30	3.10	4.63	8.28000	0.00774	1.700	629.00	292.367	0.025	5.578	2063.75
2	Bayou Petit Caillou	5.30	2.10	3.20	16.24	8.28000	0.00228	1.500	2420.00	292.367	0.007	4.921	7940.02
3	Bayou Petit Caillou	2.10	0.00	2.10	10.89	8.28000	0.00223	1.500	2474.00	292.367	0.007	4.921	8117.19

DISSOLVED OXYGEN LOADING FOR REACH 1: Bayou Petit Caillou

IOR	UPMN ADV	UPTR ADV	LOWR ADV	UPMN DISP	UPTR DISP	LOWR DISP	INCR IN	INCR OUT	NONP IN	WSLD IN	WITH OUT	REAE IN	BOD1 DECA	NH3-N DECA	ORG-N DECA	NCM DECA	SOD BKGD	SOD BOD1	SOD ALG	SOD NCM	ALG PHOT	ALG RESP	MAC PHOT	TOT OUT	TOT IN
1	4078.	0.	-3538.	0.	0.	-499.	0.	0.	0.	0.	0.	106.	-88.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-4183.6	4183.6
-0.04																									
2	3538.	0.	-3517.	499.	0.	-482.	0.	0.	0.	0.	0.	107.	-88.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-4144.5	4144.5
-0.04																									
3	3517.	0.	-3496.	482.	0.	-465.	0.	0.	0.	0.	0.	109.	-87.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-4107.2	4107.2
-0.04																									
4	3496.	0.	-3476.	465.	0.	-450.	0.	0.	0.	0.	0.	110.	-87.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-4071.6	4071.5
-0.03																									
5	3476.	0.	-3456.	450.	0.	-436.	0.	0.	0.	0.	0.	112.	-87.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-4037.6	4037.5
-0.03																									
6	3456.	0.	-3438.	436.	0.	-422.	0.	0.	0.	0.	0.	113.	-87.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-4005.1	4005.1
-0.03																									
7	3438.	0.	-3420.	422.	0.	-409.	0.	0.	0.	0.	0.	114.	-86.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3974.1	3974.1
-0.02																									
8	3420.	0.	-3402.	409.	0.	-398.	0.	0.	0.	0.	0.	116.	-86.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3944.6	3944.6
-0.02																									
9	3402.	0.	-3385.	398.	0.	-387.	0.	0.	0.	0.	0.	117.	-86.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3916.4	3916.4
-0.02																									
10	3385.	0.	-3368.	387.	0.	-377.	0.	0.	0.	0.	0.	118.	-86.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3889.6	3889.6
-0.03																									
11	3368.	0.	-3352.	377.	0.	-368.	0.	0.	0.	0.	0.	119.	-86.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3864.0	3864.0
-0.03																									
12	3352.	0.	-3336.	368.	0.	-359.	0.	0.	0.	0.	0.	120.	-85.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3839.6	3839.6
-0.03																									
13	3336.	0.	-3321.	359.	0.	-352.	0.	0.	0.	0.	0.	121.	-85.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3816.4	3816.4
-0.01																									
14	3321.	0.	-3306.	352.	0.	-345.	0.	0.	0.	0.	0.	122.	-85.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3794.3	3794.3
-0.02																									
15	3306.	0.	-3291.	345.	0.	-339.	0.	0.	0.	0.	0.	123.	-85.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3773.3	3773.3
-0.02																									
16	3291.	0.	-3276.	339.	0.	-334.	0.	0.	0.	0.	0.	124.	-85.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3753.3	3753.2
-0.02																									
17	3276.	0.	-3262.	334.	0.	-329.	0.	0.	0.	0.	0.	124.	-85.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3734.2	3734.2
-0.01																									
18	3262.	0.	-3248.	329.	0.	-325.	0.	0.	0.	0.	0.	125.	-84.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3716.1	3716.1
-0.02																									
19	3248.	0.	-3234.	325.	0.	-322.	0.	0.	0.	0.	0.	126.	-84.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3698.9	3698.9
-0.01																									
20	3234.	0.	-3220.	322.	0.	-320.	0.	0.	0.	0.	0.	127.	-84.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3682.6	3682.6
-0.01																									
21	3220.	0.	-3206.	320.	0.	-318.	0.	0.	0.	0.	0.	128.	-84.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3667.1	3667.1
-0.01																									
22	3206.	0.	-3192.	318.	0.	-317.	0.	0.	0.	0.	0.	128.	-84.	-9.	0.	0.	-50.	0.	0.	0.	0.	0.	0.	-3652.4	3652.4
-0.02																									

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  23   3192.      0.  -3179.  317.    0. -317.    0.    0.    0.    0.    0.  129.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3638.5
3638.5  -0.02
  24   3179.      0.  -3165.  317.    0. -318.    0.    0.    0.    0.    0.  130.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3625.3
3625.3  -0.01
  25   3165.      0.  -3151.  318.    0. -319.    0.    0.    0.    0.    0.  130.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3612.9
3612.9  -0.01
  26   3151.      0.  -3138.  319.    0. -321.    0.    0.    0.    0.    0.  131.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3601.1
3601.1  -0.01
  27   3138.      0.  -3124.  321.    0. -323.    0.    0.    0.    0.    0.  131.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3589.9
3589.9   0.01
  28   3124.      0.  -3110.  323.    0. -327.    0.    0.    0.    0.    0.  132.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3579.4
3579.4  -0.01
  29   3110.      0.  -3096.  327.    0. -331.    0.    0.    0.    0.    0.  133.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3569.5
3569.5   0.00
  30   3096.      0.  -3082.  331.    0. -336.    0.    0.    0.    0.    0.  133.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3560.2
3560.2   0.00
  31   3082.      0.  -3067.  336.    0. -342.    0.    0.    0.    0.    0.  134.  -84.   -9.    0.    0. -50.    0.    0.    0.    0.    0.    0. -3551.5
3551.5   0.01
  32   3067.      0.  -3059.  342.    0. -270.    0.    0.    0.    0.    0.  933. -567.  -64.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4341.5
4341.6   0.03
  33   3059.      0.  -3052.  270.    0. -197.    0.    0.    0.    0.    0.  934. -567.  -64.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4262.3
4262.3   0.02
  34   3052.      0.  -3047.  197.    0. -122.    0.    0.    0.    0.    0.  934. -568.  -64.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4182.7
4182.7   0.03
  35   3047.      0.  -3044.  122.    0.  -43.    0.    0.    0.    0.    0.  933. -568.  -64.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4101.6
4101.6   0.03
  36   3044.      0.  -3043.   43.    0.   41.    0.    0.    0.    0.    0.  931. -569.  -64.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4058.6
4058.6   0.03
  37   3043.      0.  -3044.  -41.    0.  132.    0.    0.    0.    0.    0.  927. -570.  -64.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4102.1
4102.2   0.03
  38   3044.      0.  -3047. -132.    0.  232.    0.    0.    0.    0.    0.  922. -572.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4197.9
4198.0   0.04
  39   3047.      0.  -3053. -232.    0.  342.    0.    0.    0.    0.    0.  916. -573.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4305.2
4305.3   0.03
  40   3053.      0.  -3062. -342.    0.  466.    0.    0.    0.    0.    0.  908. -575.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4426.2
4426.2   0.01
  41   3062.      0.  -3073. -466.    0.  604.    0.    0.    0.    0.    0.  898. -577.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4563.5
4563.5   0.02
  42   3073.      0.  -3089. -604.    0.  761.    0.    0.    0.    0.    0.  886. -580.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4719.8
4719.8   0.01
  43   3089.      0.  -3108. -761.    0.  938.    0.    0.    0.    0.    0.  871. -582.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -4898.4
4898.4   0.00
  44   3108.      0.  -3132. -938.    0. 1141.    0.    0.    0.    0.    0.  854. -585.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -5103.0
5103.0  -0.03
  45   3132.      0.  -3161.-1141.    0. 1372.    0.    0.    0.    0.    0.  834. -589.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -5337.6
5337.5  -0.06
  46   3161.      0.  -3196.-1372.    0. 1635.    0.    0.    0.    0.    0.  811. -592.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -5606.9
5606.8  -0.06
  47   3196.      0.  -3237.-1635.    0. 1937.    0.    0.    0.    0.    0.  783. -596.  -65.    0.    0. -382.    0.    0.    0.    0.    0.    0. -5916.3
5916.1  -0.11
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  48   3237.      0.  -3274.-1937.    0. 1925.    0.    0.    0.    0.    0. 388. -306.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5550.7
5550.6  -0.02
  49   3274.      0.  -3297.-1925.    0. 1909.    0.    0.    0.    0.    0. 381. -307.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5562.8
5562.7  -0.04
  50   3297.      0.  -3321.-1909.    0. 1899.    0.    0.    0.    0.    0. 373. -306.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5569.4
5569.4  -0.01
  51   3321.      0.  -3345.-1899.    0. 1896.    0.    0.    0.    0.    0. 365. -305.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5582.5
5582.5  -0.04
  52   3345.      0.  -3368.-1896.    0. 1899.    0.    0.    0.    0.    0. 357. -304.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5601.5
5601.4  -0.03
  53   3368.      0.  -3392.-1899.    0. 1908.    0.    0.    0.    0.    0. 350. -302.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5625.8
5625.8   0.00
  54   3392.      0.  -3415.-1908.    0. 1921.    0.    0.    0.    0.    0. 342. -299.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5655.0
5655.0  -0.05
  55   3415.      0.  -3439.-1921.    0. 1939.    0.    0.    0.    0.    0. 334. -295.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5688.5
5688.4  -0.03
  56   3439.      0.  -3463.-1939.    0. 1960.    0.    0.    0.    0.    0. 326. -291.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5725.7
5725.6  -0.06
  57   3463.      0.  -3487.-1960.    0. 1985.    0.    0.    0.    0.    0. 318. -286.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5766.1
5766.1  -0.01
  58   3487.      0.  -3512.-1985.    0. 2012.    0.    0.    0.    0.    0. 310. -280.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5809.2
5809.2  -0.02
  59   3512.      0.  -3537.-2012.    0. 2040.    0.    0.    0.    0.    0. 302. -273.  -33.    0.    0.    0.    0.    0.    0.    0.    0.    0. -5854.4
5854.3  -0.03
```

DISSOLVED OXYGEN LOADING FOR REACH 1: Bayou Petit Caillou

IOR	UPMN ADV	UPTR ADV	LOWR ADV	UPMN DISP	UPTR DISP	LOWR DISP	INCR IN	INCR OUT	NONP IN	WSLD IN	WITH OUT	REAE IN	BOD1 DECA	NH3-N DECA	ORG-N DECA	NCM DECA	SOD BKGD	SOD BOD1	SOD ALG	SOD NCM	ALG PHOT	ALG RESP	MAC PHOT	TOT OUT	TOT IN
60	3537.	0.	-3562.	-2040.	0.	2070.	0.	0.	0.	0.	0.	294.	-266.	-33.	0.	0.	0.	0.	0.	0.	0.	0.	-5900.9	5900.9	0.00
61	3562.	0.	-3588.	-2070.	0.	2101.	0.	0.	0.	0.	0.	285.	-258.	-32.	0.	0.	0.	0.	0.	0.	0.	0.	-5948.4	5948.4	0.00
62	3588.	0.	-3614.	-2101.	0.	2131.	0.	0.	0.	0.	0.	277.	-249.	-32.	0.	0.	0.	0.	0.	0.	0.	0.	-5996.0	5996.0	-0.01
63	3614.	0.	-3640.	-2131.	0.	2161.	0.	0.	0.	0.	0.	268.	-239.	-32.	0.	0.	0.	0.	0.	0.	0.	0.	-6043.1	6043.1	0.02
64	3640.	0.	-3667.	-2161.	0.	2189.	0.	0.	0.	0.	0.	259.	-229.	-32.	0.	0.	0.	0.	0.	0.	0.	0.	-6088.9	6089.0	0.02
65	3667.	0.	-3694.	-2189.	0.	2215.	0.	0.	0.	0.	0.	250.	-218.	-32.	0.	0.	0.	0.	0.	0.	0.	0.	-6132.8	6132.9	0.01
66	3694.	0.	-3722.	-2215.	0.	2238.	0.	0.	0.	0.	0.	241.	-206.	-31.	0.	0.	0.	0.	0.	0.	0.	0.	-6173.9	6173.9	-0.01
67	3722.	0.	-3750.	-2238.	0.	2257.	0.	0.	0.	0.	0.	232.	-193.	-31.	0.	0.	0.	0.	0.	0.	0.	0.	-6211.4	6211.4	-0.03
68	3750.	0.	-3777.	-2257.	0.	2271.	0.	0.	0.	0.	0.	223.	-179.	-31.	0.	0.	0.	0.	0.	0.	0.	0.	-6244.3	6244.3	0.01

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

INPUT/OUTPUT LOADING SUMMARY

	FLOW m^3/s	DO kg/d	BOD#1 kg/d	BOD#2 kg/d	ORG-N kg/d	NH3-N kg/d	NO3-N kg/d	PHOS kg/d	CHL A	NCM
HEADWATER FLOW	8.280	4077.7	5487.1	0.0	572.3	71.5	100.2	0.0	0.0	0.0
INCREMENTAL INFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INCREMENTAL OUTFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASTELOADS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WITHDRAWLS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FLOW THRU LOWER BNDRY	-8.280	-3777.5	-3028.4	0.0	-860.5	-72.0	-39.0	0.0	0.0	0.0
DISPERSION THRU LOWER BNDRY		2271.5	-19996.8	0.0	819.9	-69.7	-522.6	0.0	0.0	0.0
DISPERSION THRU HDWTR BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NON-POINT INPUT		0.0	35000.0	0.0	0.0					0.0
NATURAL REAERATION		24543.0								
DAM REAERATION		0.0								
BACKGROUND SOD		-7654.8								
BOD#1 DECAY		-17461.3	-17461.3							
BOD#1 SETTLING		0.0	0.0							
ANAEROBIC BOD#1 DECAY			0.0							
BOD#2 DECAY		0.0		0.0						
BOD#2 SETTLING		0.0		0.0						
ANAEROBIC BOD#2 DECAY				0.0						
ORG-N DECAY		0.0			-531.7	531.7				
ORG-N SETTLING					0.0	0.0				
NH3 DECAY		-1999.5				-461.8	461.8			
BACKGROUND NH3 SOURCE						0.0				
OTHER DENITRIFICATION							0.0			
PHOSPHORUS SOURCE								0.0		
ALGAE PHOTOSYNTHESIS		0.0				0.0	0.0	0.0	0.0	
ALGAE RESPIRATION		0.0				0.0		0.0	0.0	
ALGAE SETTLING		0.0							0.0	
MACRO PHOTOSYNTHESIS		0.0				0.0	0.0	0.0		
NCM DECAY		0.0								0.0
NCM SETTLING		0.0								0.0
TOTAL INPUTS	8.280	30892.3	40487.1	0.0	1392.2	603.2	561.9	0.0	0.0	0.0
TOTAL OUTPUTS	-8.280	-30893.1	-40486.5	0.0	-1392.2	-603.5	-561.7	0.0	0.0	0.0
NET CONVERGENCE ERROR	0.000	-0.9	0.6	0.0	0.0	-0.3	0.3	0.0	0.0	0.0

.....EXECUTION COMPLETED

APPENDIX I

90th Percentile Temperature Calculations

Table I.1. 90th Percentile Temperature Calculatons for LDEQ Stn 956 data.

Station 956 Tambour Bay			Station 338 (Lake Palourde)		
Date	Water Temp (C)	Season	Date	Water Temp (C)	Season
1/11/2000	18.21	winter	1/18/2000	16.90	winter
2/8/2000	13.4	winter	2/15/2000	18.90	winter
3/14/2000	18.02	winter	3/21/2000	18.82	winter
4/11/2000	19.28	winter	4/17/2000	22.50	winter
5/9/2000	26.1	summer	5/16/2000	26.64	summer
6/6/2000	27.8	summer	6/13/2000	27.93	summer
7/11/2000	30.9	summer	7/18/2000	31.62	summer
8/8/2000	29.8	summer	8/15/2000	30.30	summer
9/5/2000	31.64	summer	9/12/2000	27.27	summer
10/3/2000	25.6	summer	10/10/2000	14.96	summer
10/31/2000	24.5	summer	11/8/2000	23.12	winter
12/5/2000	10.2	winter	12/12/2000	13.33	winter
1/10/2005	19	winter	1/18/2005	11.05	winter
2/10/2005	14.68	winter	1/24/2005	10.03	winter
2/21/2005	19.74	winter	2/14/2005	13.65	winter
3/14/2005	20.8	winter	3/7/2005	14.61	winter
4/4/2005	17.56	winter	3/28/2005	18.6	winter
5/2/2005	20	summer	4/18/2005	20.9	winter
5/16/2005	25.4	summer	5/23/2005	30.3	summer
6/20/2005	29.2	summer	6/6/2005	28.63	summer
7/18/2005	30.6	summer	6/27/2005	29.1	summer
8/1/2005	31.34	summer	7/25/2005	31.26	summer
8/22/2005	30.8	summer	8/15/2005	30.59	summer

SUMMER

Averages for May through October (LTP definition of summer)

27.98 C 28.05 C

Difference between stations = -0.07 C

90th percentile summer temp for Lake Palourde (from Table I2) = 30.70 C

Adjusted 90th percentile temp for Lost Lake = 30.7 C + -00.07 C = 30.63 C

WINTER

Averages for Jan-April and Nov-Dec (LTP definition of winter)

17.09 C 16.87 C

Difference between stations = 0.22 C

90th percentile winter temp for Lake Palourde (from Table I2) = 13.75 C

Adjusted 90th percentile temp for Lost Lake = 13.75 C + 0.22 C = 13.97 C

FILE: R:\PROJECTS\2110-616\TECH\90TH PERC TEMPS\STN 956-90TH PERC TEMP, PETIT CAILLOU.XLS

Table I.2. 90th Percentile Temperature Calculations for Station 338 Data.

30.70 C, Summer 90th percentile Calculation
13.75 C, Winter 90th percentile Calculation

Date	Water Temp (C)	Season	Percentile
10/10/2000	14.96	summer	1.56%
10/11/1994	21.80	summer	4.69%
10/13/1992	22.20	summer	7.81%
10/15/1996	22.30	summer	10.94%
10/10/1995	22.70	summer	14.06%
10/14/1997	23.20	summer	17.19%
10/12/1993	23.46	summer	20.31%
10/14/1991	24.80	summer	23.44%
6/13/1995	25.80	summer	26.56%
5/16/2000	26.64	summer	29.69%
6/11/1991	26.90	summer	32.81%
9/12/2000	27.27	summer	35.94%
8/13/1996	27.30	summer	39.06%
6/13/2000	27.93	summer	42.19%
6/10/1997	28.10	summer	45.31%
6/6/2005	28.63	summer	48.44%
8/13/1991	28.70	summer	51.56%
8/11/1992	28.98	summer	54.69%
6/14/1994	29.00	summer	57.81%
6/11/1996	29.10	summer	60.94%
6/27/2005	29.10	summer	64.06%
6/15/1992	29.40	summer	67.19%
8/9/1994	29.40	summer	70.31%
8/15/1995	29.50	summer	73.44%
8/15/2000	30.30	summer	76.56%
5/23/2005	30.30	summer	79.69%
6/15/1993	30.40	summer	82.81%
8/12/1997	30.50	summer	85.94%
8/15/2005	30.59	summer	89.06%
8/10/1993	30.95	summer	92.19%
7/25/2005	31.26	summer	95.31%
7/18/2000	31.62	summer	98.44%

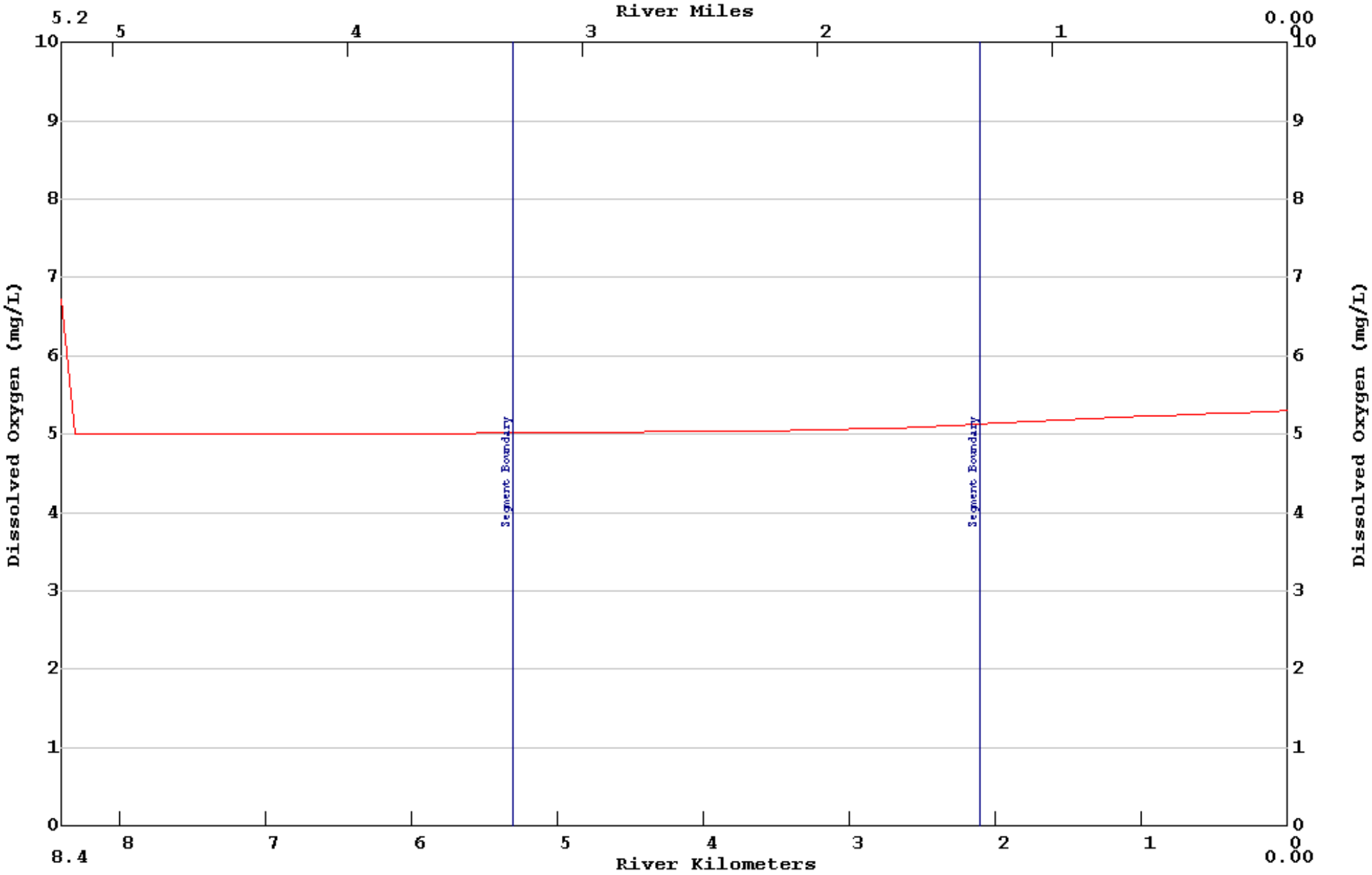
Date	Water Temp (C)	Season	Percentile
2/5/1991	14.80	winter	1.47%
4/16/1991	24.10	winter	4.41%
12/10/1991	16.31	winter	7.35%
2/11/1992	11.98	winter	10.29%
4/7/1992	18.60	winter	13.24%
12/14/1992	13.50	winter	16.18%
2/9/1993	12.40	winter	19.12%
4/13/1993	21.10	winter	22.06%
12/14/1993	11.80	winter	25.00%
2/8/1994	16.60	winter	27.94%
4/12/1994	23.00	winter	30.88%
12/13/1994	12.90	winter	33.82%
2/14/1995	11.20	winter	36.76%
4/4/1995	18.70	winter	39.71%
12/12/1995	11.40	winter	42.65%
2/13/1996	11.64	winter	45.59%
4/9/1996	17.10	winter	48.53%
2/18/1997	12.70	winter	51.47%
4/15/1997	16.90	winter	54.41%
12/9/1997	13.70	winter	57.35%
2/10/1998	13.90	winter	60.29%
4/14/1998	21.50	winter	63.24%
1/18/2000	16.90	winter	66.18%
2/15/2000	18.90	winter	69.12%
3/21/2000	18.82	winter	72.06%
4/17/2000	22.50	winter	75.00%
11/8/2000	23.12	winter	77.94%
12/12/2000	13.33	winter	80.88%
1/18/2005	11.05	winter	83.82%
1/24/2005	10.03	winter	86.76%
2/14/2005	13.65	winter	89.71%
3/7/2005	14.61	winter	92.65%
3/28/2005	18.60	winter	95.59%
4/18/2005	20.90	winter	98.53%

FILE: R:\PROJECTS\2110-616\TECH\90TH PERC TEMPS\STN 956-90TH PERC TEMP, PETIT CAILLOU.XLS

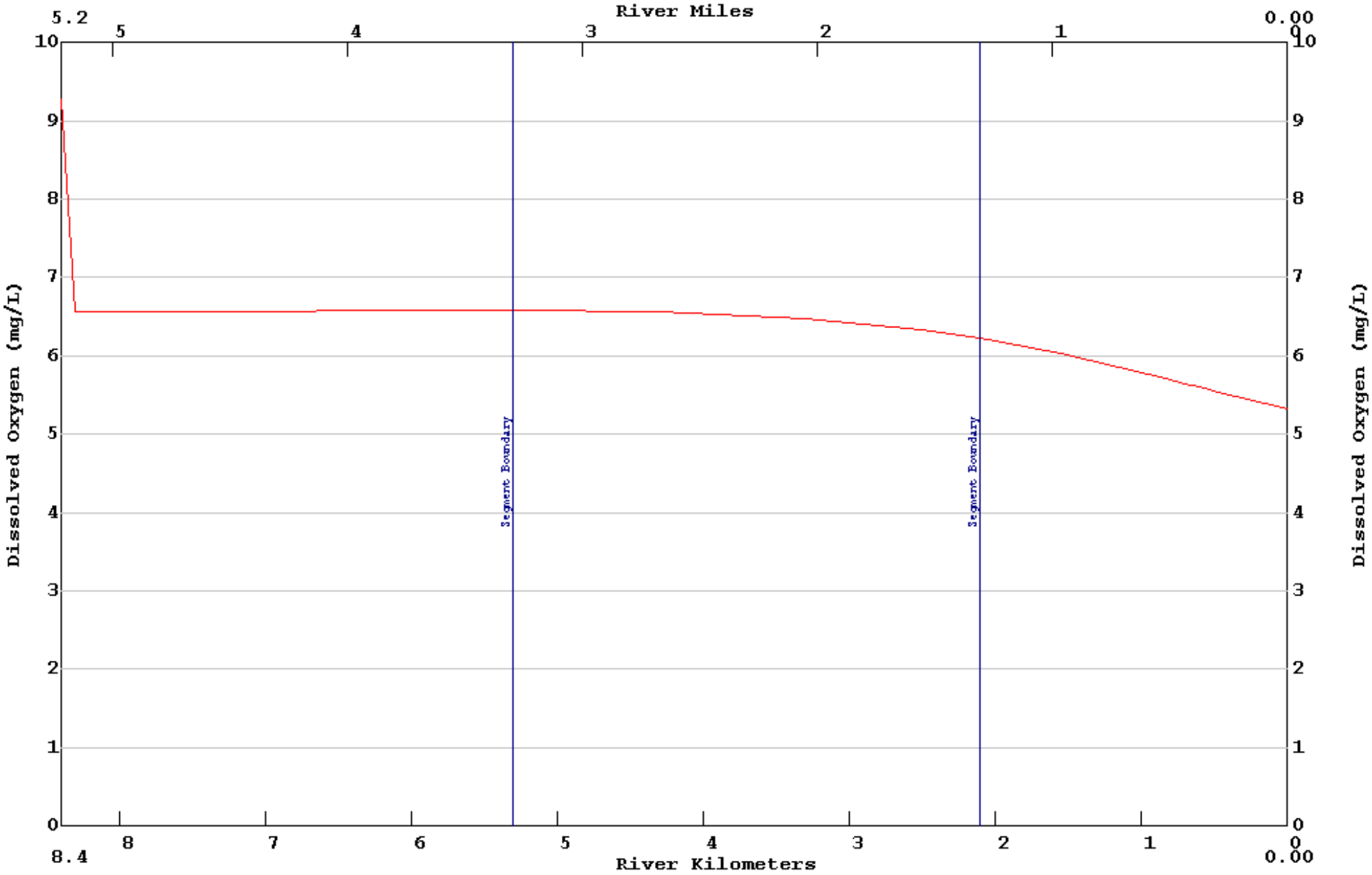
APPENDIX J

Plot of Predicted DO for Projection

LA-QUAL Version 8.11 Run at 00:11 on 10/19/2007 File D:\comp_models\LA-QUAL_8p11\bp_sum.txt
FTN Associates October 2007 min= 5.00 max= 6.73
:Bayou Petit Caillou Projection



LA-QUAL Version 8.11 Run at 00:11 on 10/19/2007 File D:\comp_models\LA-QUAL_8p11\bp_win.txt
FTN Associates October 2007 min= 5.32 max= 9.28
:Bayou Petit Caillou Projection



APPENDIX K

Printout of Model Output for Projection

```
LA-QUAL Version 8.11
Louisiana Department of Environmental Quality

Input file is D:\comp_models\LA-QUAL_8p11\bp_sum.txt
Output produced at 23:27 on 10/18/2007

$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$

CARD TYPE       CONTROL TITLES

TITLE01         LA-QUAL Model for Bayou Petit Caillou
TITLE02         FTN Associates October 2007
CNTROL03   NO   SEQU                        <Warning: legacy control - line ignored>
CNTROL04  YES   METR
CNTROL05  YES   OXYG                        <Warning: legacy control - line ignored>
ENDATA01

$$$ DATA TYPE 2 (MODEL OPTIONS) $$$

CARD TYPE       MODEL OPTION

MODOPT01   NO   TEMPERATURE
MODOPT02  YES   SALINITY
MODOPT03  YES   CONSERVATIVE MATERIAL #1 = Spec Cond            UNITS = umhos/cm
MODOPT03   NO   CONSERVATIVE MATERIAL #2 =                      UNITS =
MODOPT05  YES   DISSOLVED OXYGEN
MODOPT06  YES   BOD1 BIOCHEMICAL OXYGEN DEMAND #1
MODOPT07   NO   BOD2 BIOCHEMICAL OXYGEN DEMAND #2
MODOPT08  YES   NITROGEN SERIES
MODOPT09   NO   PHOSPHORUS
MODOPT10   NO   CHLOROPHYLL A
MODOPT11   NO   MACROPHYTES
MODOPT12   NO   COLIFORMS
MODOPT13   NO   NONCONSERVATIVE MATERIAL                        UNITS =
ENDATA02

$$$ DATA TYPE 3 (PROGRAM CONSTANTS) $$$

CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE

PROGRAM         HYDRAULIC CALCULATION METHOD       =         2.00000 (widths and depths)
PROGRAM         HEADWATER EXCHANGE RATIO           =         0.00000
ENDATA03

$$$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) $$$

 CARD TYPE     RATE CODE     THETA VALUE

TEHTA        NH3 DECA       1.07000
ENDATA04
```

$$$ CONSTANTS TYPE 5 (TEMPERATURE DATA) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA05

$$$ DATA TYPE 6 (ALGAE CONSTANTS) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA06

$$$ DATA TYPE 7 (MACROPHYTE CONSTANTS) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA07

$$$ DATA TYPE 8 (REACH IDENTIFICATION DATA) $$$

CARD TYPE	REACH ID	NAME	BEGIN REACH km		END REACH km	ELEM LENGTH km	REACH LENGTH km	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1 PC	Bayou Petit Caillou	8.40	TO	5.30	0.1000	3.10	31	1	31
REACH ID	2 PC	Bayou Petit Caillou	5.30	TO	2.10	0.2000	3.20	16	32	47
REACH ID	3 PC	Bayou Petit Caillou	2.10	TO	0.00	0.1000	2.10	21	48	68

ENDATA08

$$$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	PC	0.000	0.000	629.000	0.000	0.000	1.700	0.00000	0.000
HYDR-1	2	PC	0.000	0.000	2420.000	0.000	0.000	1.500	0.00000	0.000
HYDR-1	3	PC	0.000	0.000	2474.000	0.000	0.000	1.500	0.00000	0.000

ENDATA09

$$$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR	1	PC	0.00	18.000	0.000	0.000	0.000
HYDR	2	PC	0.00	18.000	0.000	0.000	0.000
HYDR	3	PC	0.00	18.000	0.000	0.000	0.000

ENDATA10

$$$ DATA TYPE 11 (INITIAL CONDITIONS) $$$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO

```
INITIAL          1   PC       30.60      0.00      6.73      0.11      0.00      0.00      0.00      0.00
INITIAL          2   PC       30.60      0.00      6.73      0.11      0.00      0.00      0.00      0.00
INITIAL          3   PC       30.60      0.00      6.73      0.11      0.00      0.00      0.00      0.00
ENDATA11

$$$ DATA TYPE 12 (REAEARATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) $$$
                                                                                                BOD      ANAER                          BOD2      ANAER
CARD      RCH  RCH  K2                    K2        K2        K2    BKGRND       BOD       BOD  CONV      BOD2      BOD2      BOD2  CONV      BOD2
TYPE      NUM   ID  OPT                  "A"       "B"       "C"       SOD     DECAY      SETT TO SOD     DECAY     DECAY      SETT TO SOD     DECAY
                                                                     g/m²/d   per day       m/d              per day   per day       m/d              per day

COEFF-1     1   PC  15 LOUISIANA       0.000     0.000     0.000     0.170     0.070     0.000 0.000     0.000     0.000     0.000 0.000     0.000
COEFF-1     2   PC  15 LOUISIANA       0.000     0.000     0.000     0.170     0.070     0.000 0.000     0.000     0.000     0.000 0.000     0.000
COEFF-1     3   PC  15 LOUISIANA       0.000     0.000     0.000     0.000     0.070     0.000 0.000     0.000     0.000     0.000 0.000     0.000
ENDATA12

$$$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) $$$

CARD TYPE      REACH  ID       ORG-N     ORG-N   ORGN CONV       NH3       NH3      PHOS     DENIT
                                DECA      SETT  TO NH3 SRCE      DECA      SRCE      SRCE      RATE

COEFF-2          1   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
COEFF-2          2   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
COEFF-2          3   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
ENDATA13

$$$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) $$$

CARD TYPE      REACH  ID       SECCHI    ALGAE:     ALGAE    ALG CONV     ALGAE     ALGAE     MACRO     MACRO
                                DEPTH     CHL A      SETT     TO SOD      GROW      RESP      GROW      RESP   SHADING

ENDATA14

$$$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) $$$

CARD TYPE      REACH  ID     COLIFORM       NCM       NCM    NCM CONV
                             DIE-OFF     DECAY      SETT     TO SOD

ENDATA15

$$$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE      REACH  ID       OUTFLOW      INFLOW      TEMP     SALIN      CM-I     CM-II   IN/DIST  OUT/DIST

ENDATA16

$$$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE      REACH  ID          DO       BOD     ORG-N     NH3-N     NO3-N     BOD#2
```

ENDATA17

$$$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM

ENDATA18

$$$ DATA TYPE 19 (NONPOINT SOURCE DATA) $$$

CARD TYPE	REACH	ID	BOD#1	ORG-N	COLI	NCM	DO	BOD#2
NONPOINT	1	PC	860.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	2	PC	3440.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	3	PC	10750.00	0.00	0.00	0.00	0.00	0.00

ENDATA19

$$$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW	FLOW	TEMP	SALIN	CM-I	CM-II	
				m^3/s	cfs	deg C	ppt	umhos/cm		
HDWTR-1	1	Bayou Petit Caillou	0	0.00300	0.106	30.60	16.50	26900.000	0.000	0.00

ENDATA20

$$$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE	ELEMENT	NAME	DO	BOD#1	ORG-N	NH3-N	NO3-N	BOD#2
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HDWTR-2	1	Bayou Petit Caillou	6.73	7.67	0.80	0.10	0.14	0.00

ENDATA21

$$$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	PHOS	CHL A	COLI	NCM
			mg/L	mg/L	mg/L	mg/L

ENDATA22

$$$ DATA TYPE 23 (JUNCTION DATA) $$$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME

ENDATA23

$$$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW	FLOW	FLOW	TEMP	SALIN	CM-I	CM-II
				m^3/s	cfs	MGD	deg C	ppt	umhos/cm	

```
ENDATA24

$$$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) $$$
                                                          % BOD                          %
CARD TYPE     ELEMENT   NAME                        DO       BOD      RMVL     ORG-N     NH3-N    NITRIF     NO3-N     BOD#2
                                                  mg/L      mg/L               mg/L      mg/L                 mg/L      mg/L

ENDATA25

$$$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE     ELEMENT   NAME                      PHOS     CHL A      COLI       NCM
                                                  mg/L      mg/L      mg/L      mg/L

ENDATA26

$$$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) $$$

CARD TYPE    CONSTITUENT                    CONCENTRATION

LOWER BC     TEMPERATURE                       =     30.600     deg C
LOWER BC     SALINITY                          =     29.900     ppt
LOWER BC     CONSERVATIVE MATERIAL #1          =  46037.000     umhos/cm
LOWER BC     DISSLOVED OXYGEN                  =      5.300     mg/L
LOWER BC     BIOCHEMICAL OXYGEN DEMAND         =      4.060     mg/L
LOWER BC     ORGANIC NITROGEN                  =      1.210     mg/L
LOWER BC     AMMONIA NITROGEN                  =      0.100     mg/L
LOWER BC     NITRATE NITROGEN                  =      0.050     mg/L
LOWER BC     CHLOROPHYLL A                     =      0.000     µg/L
ENDATA27

$$$ DATA TYPE 28 (DAM DATA) $$$

CARD TYPE     ELEMENT   NAME                EQN      "A"       "B"       "H"

ENDATA28

$$$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) $$$

CARD TYPE       PARAMETER     COL 1     COL 2     COL 3     COL 4     COL 5     COL 6     COL 7     COL 8

ENDATA29

$$$ DATA TYPE 30 (PLOT CONTROL CARDS) $$$


NUMBER OF PLOTS =  1
NUMBER OF REACHES IN PLOT 1 =   3
PLOT RCH  1  2  3
ENDATA30
```

$$$ DATA TYPE 31 (OVERLAY PLOT DATA) $$$

OVERLAY 1 Petit_proj.ovl :Bayou Petit Caillou Projection
ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 3 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
.....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11

FINAL REPORT Bayou Petit Caillou LA-QUAL Model for Bayou Petit Caillou
REACH NO. 1 Bayou Petit Caillou FTN Associates October 2007

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
1	HDWTR	0.00300	30.60	16.50	26900.00	0.00	6.73	7.67	0.00	7.67	0.00	0.80	0.10	0.14	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m^3/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m^3	SURFACE AREA m^2	X-SECT AREA m^2	TIDAL PRISM m^3	TIDAL VELO m/s	DISPRSN m^2/s	MEAN VELO m/s
1	8.40	8.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
2	8.30	8.20	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
3	8.20	8.10	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
4	8.10	8.00	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
5	8.00	7.90	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
6	7.90	7.80	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
7	7.80	7.70	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
8	7.70	7.60	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
9	7.60	7.50	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
10	7.50	7.40	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
11	7.40	7.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
12	7.30	7.20	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
13	7.20	7.10	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
14	7.10	7.00	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
15	7.00	6.90	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
16	6.90	6.80	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000

17	6.80	6.70	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
18	6.70	6.60	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
19	6.60	6.50	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
20	6.50	6.40	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
21	6.40	6.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
22	6.30	6.20	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
23	6.20	6.10	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
24	6.10	6.00	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
25	6.00	5.90	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
26	5.90	5.80	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
27	5.80	5.70	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
28	5.70	5.60	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
29	5.60	5.50	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
30	5.50	5.40	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
31	5.40	5.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
TOT						12788.70			3314830.25	1949900.00					
AVG					0.0000		1.70	629.00			1069.30				
CUM						12788.70									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
1	8.300	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8.200	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	8.100	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	8.000	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	7.900	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	7.800	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	7.700	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	7.600	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	7.500	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	7.400	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	7.300	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	7.200	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	7.100	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	7.000	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	6.900	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	6.800	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	6.700	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	6.600	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	6.500	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	6.400	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	6.300	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	6.200	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	6.100	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	6.000	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

25	5.900	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	5.800	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	5.700	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	5.600	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	5.500	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	5.400	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	5.300	6.35	0.49	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.41	0.07	0.00	0.00	0.00	0.00	0.00	0.17			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
1	8.300	30.60	29.89	46025.79	0.00	5.00	3.33	0.00	3.33	0.00	0.86	0.11	0.38	1.36	0.00	0.00	0.00	0.	0.00
2	8.200	30.60	29.89	46026.09	0.00	5.00	3.33	0.00	3.33	0.00	0.86	0.11	0.38	1.36	0.00	0.00	0.00	0.	0.00
3	8.100	30.60	29.89	46026.39	0.00	5.00	3.34	0.00	3.34	0.00	0.86	0.11	0.38	1.36	0.00	0.00	0.00	0.	0.00
4	8.000	30.60	29.89	46026.68	0.00	5.00	3.34	0.00	3.34	0.00	0.86	0.11	0.38	1.36	0.00	0.00	0.00	0.	0.00
5	7.900	30.60	29.89	46026.97	0.00	5.00	3.34	0.00	3.34	0.00	0.86	0.11	0.38	1.36	0.00	0.00	0.00	0.	0.00
6	7.800	30.60	29.89	46027.25	0.00	5.00	3.34	0.00	3.34	0.00	0.86	0.12	0.38	1.36	0.00	0.00	0.00	0.	0.00
7	7.700	30.60	29.89	46027.54	0.00	5.00	3.35	0.00	3.35	0.00	0.86	0.12	0.38	1.36	0.00	0.00	0.00	0.	0.00
8	7.600	30.60	29.89	46027.81	0.00	5.00	3.35	0.00	3.35	0.00	0.86	0.12	0.38	1.36	0.00	0.00	0.00	0.	0.00
9	7.500	30.60	29.89	46028.09	0.00	5.00	3.36	0.00	3.36	0.00	0.87	0.12	0.38	1.36	0.00	0.00	0.00	0.	0.00
10	7.400	30.60	29.89	46028.36	0.00	5.00	3.37	0.00	3.37	0.00	0.87	0.12	0.38	1.36	0.00	0.00	0.00	0.	0.00
11	7.300	30.60	29.89	46028.62	0.00	5.00	3.38	0.00	3.38	0.00	0.87	0.12	0.38	1.36	0.00	0.00	0.00	0.	0.00
12	7.200	30.60	29.89	46028.89	0.00	5.00	3.38	0.00	3.38	0.00	0.87	0.12	0.38	1.36	0.00	0.00	0.00	0.	0.00
13	7.100	30.60	29.89	46029.14	0.00	5.00	3.39	0.00	3.39	0.00	0.87	0.12	0.37	1.36	0.00	0.00	0.00	0.	0.00
14	7.000	30.60	29.89	46029.40	0.00	5.00	3.40	0.00	3.40	0.00	0.87	0.12	0.37	1.36	0.00	0.00	0.00	0.	0.00
15	6.900	30.60	29.89	46029.65	0.00	5.00	3.41	0.00	3.41	0.00	0.87	0.12	0.37	1.36	0.00	0.00	0.00	0.	0.00
16	6.800	30.60	29.89	46029.90	0.00	5.00	3.43	0.00	3.43	0.00	0.88	0.12	0.37	1.36	0.00	0.00	0.00	0.	0.00
17	6.700	30.60	29.90	46030.14	0.00	5.00	3.44	0.00	3.44	0.00	0.88	0.12	0.37	1.36	0.00	0.00	0.00	0.	0.00
18	6.600	30.60	29.90	46030.39	0.00	5.00	3.45	0.00	3.45	0.00	0.88	0.12	0.36	1.36	0.00	0.00	0.00	0.	0.00
19	6.500	30.60	29.90	46030.62	0.00	5.00	3.47	0.00	3.47	0.00	0.88	0.12	0.36	1.36	0.00	0.00	0.00	0.	0.00
20	6.400	30.60	29.90	46030.86	0.00	5.00	3.48	0.00	3.48	0.00	0.89	0.12	0.36	1.36	0.00	0.00	0.00	0.	0.00
21	6.300	30.60	29.90	46031.09	0.00	5.00	3.50	0.00	3.50	0.00	0.89	0.12	0.35	1.36	0.00	0.00	0.00	0.	0.00
22	6.200	30.60	29.90	46031.32	0.00	5.00	3.52	0.00	3.52	0.00	0.89	0.12	0.35	1.36	0.00	0.00	0.00	0.	0.00
23	6.100	30.60	29.90	46031.54	0.00	5.00	3.53	0.00	3.53	0.00	0.90	0.12	0.35	1.36	0.00	0.00	0.00	0.	0.00
24	6.000	30.60	29.90	46031.76	0.00	5.00	3.55	0.00	3.55	0.00	0.90	0.12	0.35	1.36	0.00	0.00	0.00	0.	0.00
25	5.900	30.60	29.90	46031.97	0.00	5.01	3.57	0.00	3.57	0.00	0.90	0.12	0.34	1.36	0.00	0.00	0.00	0.	0.00
26	5.800	30.60	29.90	46032.18	0.00	5.01	3.59	0.00	3.59	0.00	0.91	0.12	0.34	1.36	0.00	0.00	0.00	0.	0.00
27	5.700	30.60	29.90	46032.39	0.00	5.01	3.61	0.00	3.61	0.00	0.91	0.12	0.33	1.36	0.00	0.00	0.00	0.	0.00
28	5.600	30.60	29.90	46032.60	0.00	5.01	3.64	0.00	3.64	0.00	0.91	0.12	0.33	1.36	0.00	0.00	0.00	0.	0.00
29	5.500	30.60	29.90	46032.80	0.00	5.01	3.66	0.00	3.66	0.00	0.92	0.12	0.33	1.36	0.00	0.00	0.00	0.	0.00
30	5.400	30.60	29.90	46033.00	0.00	5.02	3.69	0.00	3.69	0.00	0.92	0.12	0.32	1.36	0.00	0.00	0.00	0.	0.00
31	5.300	30.60	29.90	46033.19	0.00	5.02	3.71	0.00	3.71	0.00	0.92	0.12	0.32	1.36	0.00	0.00	0.00	0.	0.00

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
32	UPR RCH	0.00300	30.60	29.90	46033.19	0.00	5.02	3.71	0.00	3.71	0.00	0.92	0.12	0.32	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
32	5.30	5.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
33	5.10	4.90	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
34	4.90	4.70	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
35	4.70	4.50	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
36	4.50	4.30	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
37	4.30	4.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
38	4.10	3.90	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
39	3.90	3.70	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
40	3.70	3.50	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
41	3.50	3.30	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
42	3.30	3.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
43	3.10	2.90	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
44	2.90	2.70	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
45	2.70	2.50	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
46	2.50	2.30	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
47	2.30	2.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
TOT						44814.81			11616000.00	7744000.00					
AVG					0.0000		1.50	2420.00			3630.00				
CUM						57603.52									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
32	5.100	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	4.900	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	4.700	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	4.500	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	4.300	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

37	4.100	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	3.900	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	3.700	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	3.500	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	3.300	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	3.100	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	2.900	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	2.700	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	2.500	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	2.300	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	2.100	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.47	0.07	0.00	0.00	0.00	0.00	0.00	0.17			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
32	5.100	30.60	29.90	46033.30	0.00	5.02	3.73	0.00	3.73	0.00	0.93	0.12	0.32	1.36	0.00	0.00	0.00	0.	0.00
33	4.900	30.60	29.90	46033.41	0.00	5.02	3.75	0.00	3.75	0.00	0.93	0.12	0.31	1.36	0.00	0.00	0.00	0.	0.00
34	4.700	30.60	29.90	46033.52	0.00	5.03	3.77	0.00	3.77	0.00	0.93	0.12	0.31	1.36	0.00	0.00	0.00	0.	0.00
35	4.500	30.60	29.90	46033.62	0.00	5.03	3.79	0.00	3.79	0.00	0.94	0.12	0.30	1.36	0.00	0.00	0.00	0.	0.00
36	4.300	30.60	29.90	46033.73	0.00	5.03	3.82	0.00	3.82	0.00	0.94	0.12	0.30	1.36	0.00	0.00	0.00	0.	0.00
37	4.100	30.60	29.90	46033.84	0.00	5.03	3.86	0.00	3.86	0.00	0.95	0.12	0.29	1.36	0.00	0.00	0.00	0.	0.00
38	3.900	30.60	29.90	46033.95	0.00	5.04	3.89	0.00	3.89	0.00	0.95	0.12	0.29	1.36	0.00	0.00	0.00	0.	0.00
39	3.700	30.60	29.90	46034.06	0.00	5.04	3.93	0.00	3.93	0.00	0.96	0.12	0.28	1.36	0.00	0.00	0.00	0.	0.00
40	3.500	30.60	29.90	46034.17	0.00	5.05	3.98	0.00	3.98	0.00	0.97	0.12	0.27	1.36	0.00	0.00	0.00	0.	0.00
41	3.300	30.60	29.90	46034.28	0.00	5.05	4.03	0.00	4.03	0.00	0.98	0.12	0.27	1.36	0.00	0.00	0.00	0.	0.00
42	3.100	30.60	29.90	46034.39	0.00	5.06	4.08	0.00	4.08	0.00	0.99	0.12	0.26	1.36	0.00	0.00	0.00	0.	0.00
43	2.900	30.60	29.90	46034.50	0.00	5.07	4.14	0.00	4.14	0.00	0.99	0.12	0.25	1.36	0.00	0.00	0.00	0.	0.00
44	2.700	30.60	29.90	46034.61	0.00	5.08	4.20	0.00	4.20	0.00	1.00	0.12	0.24	1.36	0.00	0.00	0.00	0.	0.00
45	2.500	30.60	29.90	46034.72	0.00	5.09	4.26	0.00	4.26	0.00	1.02	0.12	0.23	1.36	0.00	0.00	0.00	0.	0.00
46	2.300	30.60	29.90	46034.83	0.00	5.11	4.33	0.00	4.33	0.00	1.03	0.12	0.22	1.36	0.00	0.00	0.00	0.	0.00
47	2.100	30.60	29.90	46034.94	0.00	5.12	4.41	0.00	4.41	0.00	1.04	0.11	0.21	1.36	0.00	0.00	0.00	0.	0.00

FINAL REPORT Bayou Petit Caillou LA-QUAL Model for Bayou Petit Caillou
REACH NO. 3 Bayou Petit Caillou FTN Associates October 2007

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
48	UPR RCH	0.00300	30.60	29.90	46034.94	0.00	5.12	4.41	0.00	4.41	0.00	1.04	0.11	0.21	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
48	2.10	2.00	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
49	2.00	1.90	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
50	1.90	1.80	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
51	1.80	1.70	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
52	1.70	1.60	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
53	1.60	1.50	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
54	1.50	1.40	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
55	1.40	1.30	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
56	1.30	1.20	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
57	1.20	1.10	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
58	1.10	1.00	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
59	1.00	0.90	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
60	0.90	0.80	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
61	0.80	0.70	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
62	0.70	0.60	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
63	0.60	0.50	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
64	0.50	0.40	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
65	0.40	0.30	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
66	0.30	0.20	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
67	0.20	0.10	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
68	0.10	0.00	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
TOT						30065.97			7793100.00	5195400.00					
AVG					0.0000		1.50	2474.00			3711.00				
CUM						87669.47									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
48	2.000	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	1.900	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	1.800	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	1.700	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	1.600	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	1.500	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	1.400	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	1.300	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	1.200	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	1.100	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	1.000	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

59	0.900	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.800	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	0.700	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	0.600	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	0.500	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	0.400	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.300	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	0.200	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	0.100	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68	0.000	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.47	0.07	0.00	0.00	0.00	0.00	0.00	0.00			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
48	2.000	30.60	29.90	46035.02	0.00	5.14	4.47	0.00	4.47	0.00	1.05	0.11	0.20	1.36	0.00	0.00	0.00	0.	0.00
49	1.900	30.60	29.90	46035.07	0.00	5.15	4.50	0.00	4.50	0.00	1.05	0.11	0.19	1.36	0.00	0.00	0.00	0.	0.00
50	1.800	30.60	29.90	46035.13	0.00	5.16	4.53	0.00	4.53	0.00	1.06	0.11	0.19	1.36	0.00	0.00	0.00	0.	0.00
51	1.700	30.60	29.90	46035.19	0.00	5.17	4.56	0.00	4.56	0.00	1.07	0.11	0.18	1.36	0.00	0.00	0.00	0.	0.00
52	1.600	30.60	29.90	46035.26	0.00	5.18	4.57	0.00	4.57	0.00	1.07	0.11	0.17	1.36	0.00	0.00	0.00	0.	0.00
53	1.500	30.60	29.90	46035.34	0.00	5.19	4.59	0.00	4.59	0.00	1.08	0.11	0.17	1.36	0.00	0.00	0.00	0.	0.00
54	1.400	30.60	29.90	46035.41	0.00	5.20	4.59	0.00	4.59	0.00	1.09	0.11	0.16	1.36	0.00	0.00	0.00	0.	0.00
55	1.300	30.60	29.90	46035.50	0.00	5.20	4.59	0.00	4.59	0.00	1.09	0.11	0.15	1.36	0.00	0.00	0.00	0.	0.00
56	1.200	30.60	29.90	46035.58	0.00	5.21	4.59	0.00	4.59	0.00	1.10	0.11	0.15	1.36	0.00	0.00	0.00	0.	0.00
57	1.100	30.60	29.90	46035.67	0.00	5.22	4.58	0.00	4.58	0.00	1.11	0.11	0.14	1.36	0.00	0.00	0.00	0.	0.00
58	1.000	30.60	29.90	46035.77	0.00	5.23	4.56	0.00	4.56	0.00	1.12	0.11	0.13	1.36	0.00	0.00	0.00	0.	0.00
59	0.900	30.60	29.90	46035.86	0.00	5.23	4.54	0.00	4.54	0.00	1.13	0.11	0.13	1.36	0.00	0.00	0.00	0.	0.00
60	0.800	30.60	29.90	46035.96	0.00	5.24	4.51	0.00	4.51	0.00	1.13	0.11	0.12	1.36	0.00	0.00	0.00	0.	0.00
61	0.700	30.60	29.90	46036.07	0.00	5.25	4.48	0.00	4.48	0.00	1.14	0.11	0.11	1.36	0.00	0.00	0.00	0.	0.00
62	0.600	30.60	29.90	46036.18	0.00	5.26	4.44	0.00	4.44	0.00	1.15	0.11	0.10	1.36	0.00	0.00	0.00	0.	0.00
63	0.500	30.60	29.90	46036.29	0.00	5.26	4.40	0.00	4.40	0.00	1.16	0.11	0.10	1.36	0.00	0.00	0.00	0.	0.00
64	0.400	30.60	29.90	46036.41	0.00	5.27	4.35	0.00	4.35	0.00	1.17	0.10	0.09	1.36	0.00	0.00	0.00	0.	0.00
65	0.300	30.60	29.90	46036.54	0.00	5.28	4.30	0.00	4.30	0.00	1.18	0.10	0.08	1.36	0.00	0.00	0.00	0.	0.00
66	0.200	30.60	29.90	46036.66	0.00	5.28	4.24	0.00	4.24	0.00	1.19	0.10	0.07	1.36	0.00	0.00	0.00	0.	0.00
67	0.100	30.60	29.90	46036.79	0.00	5.29	4.17	0.00	4.17	0.00	1.20	0.10	0.06	1.36	0.00	0.00	0.00	0.	0.00
68	0.000	30.60	29.90	46036.93	0.00	5.30	4.10	0.00	4.10	0.00	1.21	0.10	0.05	1.36	0.00	0.00	0.00	0.	0.00

STREAM SUMMARY
Bayou Petit Caillou

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

TRAVEL TIME = 87669.45 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW	=	0.00300	TO	0.00300	m^3/s
DISPERSION	=	18.0000	TO	18.0000	m^2/s
VELOCITY	=	0.00000	TO	0.00000	m/s
DEPTH	=	1.50	TO	1.70	m
WIDTH	=	629.00	TO	******	m
BOD DECAY	=	0.11	TO	0.11	per day
NH3 DECAY	=	0.19	TO	0.19	per day
SOD	=	0.00	TO	0.33	$g/m^2/d$
NH3 SOURCE	=	0.00	TO	0.00	$g/m^2/d$
REAERATION	=	0.49	TO	0.56	per day
BOD SETTLING	=	0.00	TO	0.00	per day
ORG-N DECAY	=	0.02	TO	0.02	per day
ORG-N SETTLING	=	0.00	TO	0.00	per day
TEMPERATURE	=	30.60	TO	30.60	deg C
DISSOLVED OXYGEN	=	5.00	TO	5.30	mg/L

.....EXECUTION COMPLETED

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LA-QUAL Version 8.11
Louisiana Department of Environmental Quality

Input file is D:\comp_models\LA-QUAL_8p11\bp_win.txt
Output produced at 23:22 on 10/18/2007

$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$

CARD TYPE       CONTROL TITLES

TITLE01         LA-QUAL Model for Bayou Petit Caillou
TITLE02         FTN Associates October 2007
CNTROL03   NO   SEQU                        <warning: legacy control - line ignored>
CNTROL04  YES   METR
CNTROL05  YES   OXYG                        <warning: legacy control - line ignored>
ENDATA01

$$$ DATA TYPE 2 (MODEL OPTIONS) $$$

CARD TYPE       MODEL OPTION

MODOPT01   NO   TEMPERATURE
MODOPT02  YES   SALINITY
MODOPT03  YES   CONSERVATIVE MATERIAL #1 = Spec Cond            UNITS = umhos/cm
MODOPT03   NO   CONSERVATIVE MATERIAL #2 =                      UNITS =
MODOPT05  YES   DISSOLVED OXYGEN
MODOPT06  YES   BOD1 BIOCHEMICAL OXYGEN DEMAND #1
MODOPT07   NO   BOD2 BIOCHEMICAL OXYGEN DEMAND #2
MODOPT08  YES   NITROGEN SERIES
MODOPT09   NO   PHOSPHORUS
MODOPT10   NO   CHLOROPHYLL A
MODOPT11   NO   MACROPHYTES
MODOPT12   NO   COLIFORMS
MODOPT13   NO   NONCONSERVATIVE MATERIAL                        UNITS =
ENDATA02

$$$ DATA TYPE 3 (PROGRAM CONSTANTS) $$$

CARD TYPE       DESCRIPTION OF CONSTANT                       VALUE

PROGRAM         HYDRAULIC CALCULATION METHOD       =         2.00000 (widths and depths)
PROGRAM         HEADWATER EXCHANGE RATIO           =         0.00000
ENDATA03

$$$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) $$$

 CARD TYPE     RATE CODE     THETA VALUE

TEHTA        NH3 DECA       1.07000
ENDATA04
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$$$ CONSTANTS TYPE 5 (TEMPERATURE DATA) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA05

$$$ DATA TYPE 6 (ALGAE CONSTANTS) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA06

$$$ DATA TYPE 7 (MACROPHYTE CONSTANTS) $$$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA07

$$$ DATA TYPE 8 (REACH IDENTIFICATION DATA) $$$

CARD TYPE	REACH ID	NAME	BEGIN REACH km		END REACH km	ELEM LENGTH km	REACH LENGTH km	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1 PC	Bayou Petit Caillou	8.40	TO	5.30	0.1000	3.10	31	1	31
REACH ID	2 PC	Bayou Petit Caillou	5.30	TO	2.10	0.2000	3.20	16	32	47
REACH ID	3 PC	Bayou Petit Caillou	2.10	TO	0.00	0.1000	2.10	21	48	68

ENDATA08

$$$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1 PC	0.000	0.000	629.000	0.000	0.000	1.700	0.00000	0.000
HYDR-1	2 PC	0.000	0.000	2420.000	0.000	0.000	1.500	0.00000	0.000
HYDR-1	3 PC	0.000	0.000	2474.000	0.000	0.000	1.500	0.00000	0.000

ENDATA09

$$$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR	1 PC	0.00	18.000	0.000	0.000	0.000
HYDR	2 PC	0.00	18.000	0.000	0.000	0.000
HYDR	3 PC	0.00	18.000	0.000	0.000	0.000

ENDATA10

$$$ DATA TYPE 11 (INITIAL CONDITIONS) $$$

CARD TYPE REACH ID TEMP SALIN DO NH3 NO3+2 PHOS CHL A MACRO

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INITIAL          1   PC      14.00     0.00     9.28     0.11     0.00     0.00     0.00     0.00
INITIAL          2   PC      14.00     0.00     9.28     0.11     0.00     0.00     0.00     0.00
INITIAL          3   PC      14.00     0.00     9.28     0.11     0.00     0.00     0.00     0.00
ENDATA11

$$$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) $$$
                                                                                  BOD      ANAER                          BOD2     ANAER
CARD     RCH  RCH  K2                  K2       K2       K2    BKGRND      BOD      BOD      CONV     BOD2     BOD2     BOD2     CONV     BOD2
TYPE     NUM   ID  OPT                "A"      "B"      "C"      SOD     DECAY     SETT    TO SOD    DECAY    DECAY     SETT    TO SOD    DECAY
                                                              g/m²/d   per day      m/d              per day  per day      m/d              per day

COEFF-1    1   PC  15 LOUISIANA     0.000    0.000    0.000    0.400    0.070    0.000    0.000    0.000    0.000    0.000    0.000    0.000
COEFF-1    2   PC  15 LOUISIANA     0.000    0.000    0.000    0.400    0.070    0.000    0.000    0.000    0.000    0.000    0.000    0.000
COEFF-1    3   PC  15 LOUISIANA     0.000    0.000    0.000    0.000    0.070    0.000    0.000    0.000    0.000    0.000    0.000    0.000
ENDATA12

$$$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) $$$

CARD TYPE      REACH  ID       ORG-N     ORG-N   ORGN CONV       NH3       NH3      PHOS     DENIT
                                DECA      SETT  TO NH3 SRCE     DECA      SRCE      SRCE      RATE

COEFF-2          1   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
COEFF-2          2   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
COEFF-2          3   PC       0.020     0.000     0.000       0.100     0.000     0.000     0.000
ENDATA13

$$$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) $$$

CARD TYPE      REACH  ID       SECCHI    ALGAE:     ALGAE    ALG CONV     ALGAE     ALGAE     MACRO     MACRO
                               DEPTH     CHL A      SETT     TO SOD      GROW      RESP      GROW      RESP   SHADING

ENDATA14

$$$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) $$$

CARD TYPE      REACH  ID    COLIFORM       NCM       NCM    NCM CONV
                            DIE-OFF     DECAY      SETT     TO SOD

ENDATA15

$$$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE      REACH  ID       OUTFLOW      INFLOW      TEMP     SALIN      CM-I     CM-II   IN/DIST  OUT/DIST

ENDATA16

$$$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE      REACH  ID          DO       BOD     ORG-N     NH3-N     NO3-N     BOD#2
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ENDATA17

$$$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

 CARD TYPE      REACH  ID        PHOS     CHL A      COLI       NCM

ENDATA18

$$$ DATA TYPE 19 (NONPOINT SOURCE DATA) $$$

CARD TYPE      REACH  ID       BOD#1     ORG-N      COLI       NCM        DO     BOD#2

NONPOINT           1   PC     2000.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           2   PC     8000.00      0.00      0.00      0.00      0.00      0.00
NONPOINT           3   PC    25000.00      0.00      0.00      0.00      0.00      0.00
ENDATA19

$$$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) $$$

CARD TYPE     ELEMENT   NAME                  UNIT     FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                       m³/s      cfs   deg C      ppt  umhos/cm

HDWTR-1            1     Bayou Petit Caillou     0   0.00300    0.106   14.00    16.50 26900.000     0.000   0.00
ENDATA20

$$$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE     ELEMENT   NAME                        DO     BOD#1     ORG-N     NH3-N     NO3-N     BOD#2
                                                   mg/L      mg/L      mg/L      mg/L      mg/L      mg/L

HDWTR-2            1     Bayou Petit Caillou       9.28      7.67      0.80      0.10      0.14      0.00
ENDATA21

$$$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE     ELEMENT   NAME                      PHOS     CHL A      COLI       NCM
                                                   mg/L      mg/L      mg/L      mg/L

ENDATA22

$$$ DATA TYPE 23 (JUNCTION DATA) $$$

CARD TYPE   JUNCTION   UPSTRM     RIVER     NAME
             ELEMENT  ELEMENT     KILOM

ENDATA23

$$$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE  ELEMENT    RKILO  NAME                  FLOW       FLOW     FLOW    TEMP    SALIN      CM-I     CM-II
                                                   m³/s       cfs      MGD   deg C      ppt  umhos/cm
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ENDATA24

$$$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) $$$
                                                                  % BOD                          %
CARD TYPE     ELEMENT   NAME                          DO       BOD      RMVL     ORG-N     NH3-N    NITRIF     NO3-N     BOD#2
                                                     mg/L      mg/L               mg/L      mg/L                 mg/L      mg/L

ENDATA25

$$$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE     ELEMENT   NAME                        PHOS     CHL A      COLI       NCM
                                                    mg/L      mg/L      mg/L      mg/L

ENDATA26

$$$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) $$$

CARD TYPE    CONSTITUENT                    CONCENTRATION

LOWER BC     TEMPERATURE                       =     30.600     deg C
LOWER BC     SALINITY                          =     29.900     ppt
LOWER BC     CONSERVATIVE MATERIAL #1          =  46037.000     umhos/cm
LOWER BC     DISSLOVED OXYGEN                  =      5.300     mg/L
LOWER BC     BIOCHEMICAL OXYGEN DEMAND         =      4.060     mg/L
LOWER BC     ORGANIC NITROGEN                  =      1.210     mg/L
LOWER BC     AMMONIA NITROGEN                  =      0.100     mg/L
LOWER BC     NITRATE NITROGEN                  =      0.050     mg/L
LOWER BC     CHLOROPHYLL A                     =      0.000     µg/L
ENDATA27

$$$ DATA TYPE 28 (DAM DATA) $$$

CARD TYPE     ELEMENT   NAME                EQN      "A"       "B"       "H"

ENDATA28

$$$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) $$$

CARD TYPE       PARAMETER     COL 1     COL 2     COL 3     COL 4     COL 5     COL 6     COL 7     COL 8

ENDATA29

$$$ DATA TYPE 30 (PLOT CONTROL CARDS) $$$


NUMBER OF PLOTS =  1
NUMBER OF REACHES IN PLOT 1 =   3
PLOT RCH  1  2  3
ENDATA30
```

$$$ DATA TYPE 31 (OVERLAY PLOT DATA) $$$

OVERLAY 1 Petit_proj.ovl :Bayou Petit Caillou Projection
ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 2 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
.....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11

FINAL REPORT Bayou Petit Caillou LA-QUAL Model for Bayou Petit Caillou
REACH NO. 1 Bayou Petit Caillou FTN Associates October 2007

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
1	HDWTR	0.00300	14.00	16.50	26900.00	0.00	9.28	7.67	0.00	7.67	0.00	0.80	0.10	0.14	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	8.40	8.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
2	8.30	8.20	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
3	8.20	8.10	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
4	8.10	8.00	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
5	8.00	7.90	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
6	7.90	7.80	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
7	7.80	7.70	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
8	7.70	7.60	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
9	7.60	7.50	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
10	7.50	7.40	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
11	7.40	7.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
12	7.30	7.20	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
13	7.20	7.10	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
14	7.10	7.00	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
15	7.00	6.90	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
16	6.90	6.80	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000

17	6.80	6.70	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
18	6.70	6.60	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
19	6.60	6.50	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
20	6.50	6.40	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
21	6.40	6.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
22	6.30	6.20	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
23	6.20	6.10	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
24	6.10	6.00	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
25	6.00	5.90	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
26	5.90	5.80	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
27	5.80	5.70	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
28	5.70	5.60	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
29	5.60	5.50	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
30	5.50	5.40	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
31	5.40	5.30	0.00300	0.0	0.00000	412.54	1.70	629.00	106930.01	62900.00	1069.30	0.00	0.000	18.000	0.000
TOT						12788.70			3314830.25	1949900.00					
AVG					0.0000		1.70	629.00			1069.30				
CUM						12788.70									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
1	8.300	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8.200	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	8.100	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	8.000	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	7.900	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	7.800	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	7.700	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	7.600	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	7.500	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	7.400	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	7.300	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	7.200	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	7.100	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	7.000	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	6.900	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	6.800	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	6.700	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	6.600	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	6.500	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	6.400	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	6.300	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	6.200	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	6.100	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	6.000	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

25	5.900	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	5.800	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	5.700	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	5.600	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	5.500	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	5.400	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	5.300	8.57	0.37	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.41	0.07	0.00	0.00	0.00	0.00	0.00	0.40			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
1	8.300	14.00	29.89	46025.79	0.00	6.57	9.81	0.00	9.81	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
2	8.200	14.00	29.89	46026.09	0.00	6.57	9.81	0.00	9.81	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
3	8.100	14.00	29.89	46026.39	0.00	6.57	9.81	0.00	9.81	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
4	8.000	14.00	29.89	46026.68	0.00	6.57	9.81	0.00	9.81	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
5	7.900	14.00	29.89	46026.97	0.00	6.57	9.81	0.00	9.81	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
6	7.800	14.00	29.89	46027.25	0.00	6.57	9.80	0.00	9.80	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
7	7.700	14.00	29.89	46027.54	0.00	6.57	9.80	0.00	9.80	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
8	7.600	14.00	29.89	46027.81	0.00	6.57	9.80	0.00	9.80	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
9	7.500	14.00	29.89	46028.09	0.00	6.57	9.79	0.00	9.79	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
10	7.400	14.00	29.89	46028.36	0.00	6.57	9.79	0.00	9.79	0.00	0.94	0.19	0.23	1.36	0.00	0.00	0.00	0.	0.00
11	7.300	14.00	29.89	46028.62	0.00	6.57	9.78	0.00	9.78	0.00	0.94	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
12	7.200	14.00	29.89	46028.89	0.00	6.57	9.78	0.00	9.78	0.00	0.95	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
13	7.100	14.00	29.89	46029.14	0.00	6.57	9.77	0.00	9.77	0.00	0.95	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
14	7.000	14.00	29.89	46029.40	0.00	6.57	9.76	0.00	9.76	0.00	0.95	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
15	6.900	14.00	29.89	46029.65	0.00	6.57	9.76	0.00	9.76	0.00	0.95	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
16	6.800	14.00	29.89	46029.90	0.00	6.57	9.75	0.00	9.75	0.00	0.95	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
17	6.700	14.00	29.90	46030.14	0.00	6.57	9.74	0.00	9.74	0.00	0.95	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
18	6.600	14.00	29.90	46030.39	0.00	6.57	9.73	0.00	9.73	0.00	0.95	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
19	6.500	14.00	29.90	46030.62	0.00	6.57	9.72	0.00	9.72	0.00	0.96	0.19	0.22	1.36	0.00	0.00	0.00	0.	0.00
20	6.400	14.00	29.90	46030.86	0.00	6.57	9.71	0.00	9.71	0.00	0.96	0.19	0.21	1.36	0.00	0.00	0.00	0.	0.00
21	6.300	14.00	29.90	46031.09	0.00	6.57	9.70	0.00	9.70	0.00	0.96	0.19	0.21	1.36	0.00	0.00	0.00	0.	0.00
22	6.200	14.00	29.90	46031.32	0.00	6.58	9.69	0.00	9.69	0.00	0.96	0.19	0.21	1.36	0.00	0.00	0.00	0.	0.00
23	6.100	14.00	29.90	46031.54	0.00	6.58	9.68	0.00	9.68	0.00	0.97	0.19	0.21	1.36	0.00	0.00	0.00	0.	0.00
24	6.000	14.00	29.90	46031.76	0.00	6.58	9.67	0.00	9.67	0.00	0.97	0.19	0.21	1.36	0.00	0.00	0.00	0.	0.00
25	5.900	14.00	29.90	46031.97	0.00	6.58	9.65	0.00	9.65	0.00	0.97	0.18	0.20	1.36	0.00	0.00	0.00	0.	0.00
26	5.800	14.00	29.90	46032.18	0.00	6.58	9.64	0.00	9.64	0.00	0.97	0.18	0.20	1.36	0.00	0.00	0.00	0.	0.00
27	5.700	14.00	29.90	46032.39	0.00	6.58	9.62	0.00	9.62	0.00	0.98	0.18	0.20	1.36	0.00	0.00	0.00	0.	0.00
28	5.600	14.00	29.90	46032.60	0.00	6.58	9.61	0.00	9.61	0.00	0.98	0.18	0.20	1.36	0.00	0.00	0.00	0.	0.00
29	5.500	14.00	29.90	46032.80	0.00	6.58	9.59	0.00	9.59	0.00	0.98	0.18	0.20	1.36	0.00	0.00	0.00	0.	0.00
30	5.400	14.00	29.90	46033.00	0.00	6.58	9.58	0.00	9.58	0.00	0.99	0.18	0.19	1.36	0.00	0.00	0.00	0.	0.00
31	5.300	14.00	29.90	46033.19	0.00	6.58	9.56	0.00	9.56	0.00	0.99	0.18	0.19	1.36	0.00	0.00	0.00	0.	0.00

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
32	UPR RCH	0.00300	14.00	29.90	46033.19	0.00	6.58	9.56	0.00	9.56	0.00	0.99	0.18	0.19	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
32	5.30	5.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
33	5.10	4.90	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
34	4.90	4.70	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
35	4.70	4.50	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
36	4.50	4.30	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
37	4.30	4.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
38	4.10	3.90	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
39	3.90	3.70	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
40	3.70	3.50	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
41	3.50	3.30	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
42	3.30	3.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
43	3.10	2.90	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
44	2.90	2.70	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
45	2.70	2.50	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
46	2.50	2.30	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
47	2.30	2.10	0.00300	0.0	0.00000	2800.93	1.50	2420.00	726000.00	484000.00	3630.00	0.00	0.000	18.000	0.000
TOT						44814.81			11616000.00	7744000.00					
AVG					0.0000		1.50	2420.00			3630.00				
CUM						57603.52									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
32	5.100	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	4.900	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	4.700	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	4.500	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	4.300	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

37	4.100	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	3.900	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	3.700	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	3.500	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	3.300	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	3.100	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	2.900	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	2.700	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	2.500	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	2.300	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	2.100	8.57	0.42	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.27	0.02	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.47	0.07	0.00	0.00	0.00	0.00	0.00	0.40			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
32	5.100	14.00	29.90	46033.30	0.00	6.58	9.55	0.00	9.55	0.00	0.99	0.18	0.19	1.36	0.00	0.00	0.00	0.	0.00
33	4.900	14.00	29.90	46033.41	0.00	6.58	9.54	0.00	9.54	0.00	0.99	0.18	0.19	1.36	0.00	0.00	0.00	0.	0.00
34	4.700	14.00	29.90	46033.52	0.00	6.57	9.52	0.00	9.52	0.00	1.00	0.18	0.19	1.36	0.00	0.00	0.00	0.	0.00
35	4.500	14.00	29.90	46033.62	0.00	6.57	9.49	0.00	9.49	0.00	1.00	0.18	0.18	1.36	0.00	0.00	0.00	0.	0.00
36	4.300	14.00	29.90	46033.73	0.00	6.56	9.46	0.00	9.46	0.00	1.00	0.18	0.18	1.36	0.00	0.00	0.00	0.	0.00
37	4.100	14.00	29.90	46033.84	0.00	6.55	9.43	0.00	9.43	0.00	1.01	0.17	0.18	1.36	0.00	0.00	0.00	0.	0.00
38	3.900	14.00	29.90	46033.95	0.00	6.53	9.39	0.00	9.39	0.00	1.01	0.17	0.18	1.36	0.00	0.00	0.00	0.	0.00
39	3.700	14.00	29.90	46034.06	0.00	6.52	9.35	0.00	9.35	0.00	1.02	0.17	0.17	1.36	0.00	0.00	0.00	0.	0.00
40	3.500	14.00	29.90	46034.17	0.00	6.50	9.30	0.00	9.30	0.00	1.02	0.17	0.17	1.36	0.00	0.00	0.00	0.	0.00
41	3.300	14.00	29.90	46034.28	0.00	6.47	9.25	0.00	9.25	0.00	1.03	0.17	0.16	1.36	0.00	0.00	0.00	0.	0.00
42	3.100	14.00	29.90	46034.39	0.00	6.44	9.19	0.00	9.19	0.00	1.04	0.16	0.16	1.36	0.00	0.00	0.00	0.	0.00
43	2.900	14.00	29.90	46034.50	0.00	6.41	9.12	0.00	9.12	0.00	1.04	0.16	0.15	1.36	0.00	0.00	0.00	0.	0.00
44	2.700	14.00	29.90	46034.61	0.00	6.38	9.06	0.00	9.06	0.00	1.05	0.16	0.15	1.36	0.00	0.00	0.00	0.	0.00
45	2.500	14.00	29.90	46034.72	0.00	6.33	8.98	0.00	8.98	0.00	1.06	0.16	0.14	1.36	0.00	0.00	0.00	0.	0.00
46	2.300	14.00	29.90	46034.83	0.00	6.29	8.90	0.00	8.90	0.00	1.07	0.15	0.14	1.36	0.00	0.00	0.00	0.	0.00
47	2.100	14.00	29.90	46034.94	0.00	6.23	8.82	0.00	8.82	0.00	1.08	0.15	0.13	1.36	0.00	0.00	0.00	0.	0.00

FINAL REPORT Bayou Petit Caillou LA-QUAL Model for Bayou Petit Caillou
REACH NO. 3 Bayou Petit Caillou FTN Associates October 2007

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
48	UPR RCH	0.00300	14.00	29.90	46034.94	0.00	6.23	8.82	0.00	8.82	0.00	1.08	0.15	0.13	0.00	0.00	0.00	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
48	2.10	2.00	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
49	2.00	1.90	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
50	1.90	1.80	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
51	1.80	1.70	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
52	1.70	1.60	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
53	1.60	1.50	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
54	1.50	1.40	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
55	1.40	1.30	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
56	1.30	1.20	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
57	1.20	1.10	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
58	1.10	1.00	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
59	1.00	0.90	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
60	0.90	0.80	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
61	0.80	0.70	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
62	0.70	0.60	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
63	0.60	0.50	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
64	0.50	0.40	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
65	0.40	0.30	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
66	0.30	0.20	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
67	0.20	0.10	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
68	0.10	0.00	0.00300	0.0	0.00000	1431.71	1.50	2474.00	371100.00	247400.00	3711.00	0.00	0.000	18.000	0.000
TOT						30065.97			7793100.00	5195400.00					
AVG					0.0000		1.50	2474.00			3711.00				
CUM						87669.47									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
48	2.000	8.43	0.42	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	1.900	8.30	0.43	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	1.800	8.17	0.44	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	1.700	8.04	0.44	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	1.600	7.92	0.45	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	1.500	7.80	0.46	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	1.400	7.69	0.46	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	1.300	7.58	0.47	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	1.200	7.47	0.48	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	1.100	7.36	0.48	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	1.000	7.26	0.49	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

59	0.900	7.16	0.50	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.800	7.06	0.50	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	0.700	6.96	0.51	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	0.600	6.87	0.52	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	0.500	6.78	0.52	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	0.400	6.69	0.53	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.300	6.60	0.54	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	0.200	6.52	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	0.100	6.43	0.55	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68	0.000	6.35	0.56	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.47	0.07	0.00	0.00	0.00	0.00	0.00	0.00			0.02	0.00	0.10	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I umhos/cm	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
48	2.000	14.79	29.90	46035.02	0.00	6.19	8.75	0.00	8.75	0.00	1.08	0.15	0.13	1.36	0.00	0.00	0.00	0.	0.00
49	1.900	15.58	29.90	46035.07	0.00	6.16	8.69	0.00	8.69	0.00	1.09	0.15	0.13	1.36	0.00	0.00	0.00	0.	0.00
50	1.800	16.37	29.90	46035.13	0.00	6.12	8.61	0.00	8.61	0.00	1.09	0.14	0.12	1.36	0.00	0.00	0.00	0.	0.00
51	1.700	17.16	29.90	46035.19	0.00	6.08	8.51	0.00	8.51	0.00	1.10	0.14	0.12	1.36	0.00	0.00	0.00	0.	0.00
52	1.600	17.95	29.90	46035.26	0.00	6.05	8.40	0.00	8.40	0.00	1.10	0.14	0.12	1.36	0.00	0.00	0.00	0.	0.00
53	1.500	18.74	29.90	46035.34	0.00	6.01	8.27	0.00	8.27	0.00	1.11	0.14	0.11	1.36	0.00	0.00	0.00	0.	0.00
54	1.400	19.53	29.90	46035.41	0.00	5.96	8.12	0.00	8.12	0.00	1.11	0.14	0.11	1.36	0.00	0.00	0.00	0.	0.00
55	1.300	20.32	29.90	46035.50	0.00	5.92	7.95	0.00	7.95	0.00	1.12	0.13	0.11	1.36	0.00	0.00	0.00	0.	0.00
56	1.200	21.11	29.90	46035.58	0.00	5.88	7.77	0.00	7.77	0.00	1.12	0.13	0.10	1.36	0.00	0.00	0.00	0.	0.00
57	1.100	21.90	29.90	46035.67	0.00	5.83	7.57	0.00	7.57	0.00	1.13	0.13	0.10	1.36	0.00	0.00	0.00	0.	0.00
58	1.000	22.70	29.90	46035.77	0.00	5.79	7.35	0.00	7.35	0.00	1.14	0.13	0.10	1.36	0.00	0.00	0.00	0.	0.00
59	0.900	23.49	29.90	46035.86	0.00	5.74	7.12	0.00	7.12	0.00	1.14	0.13	0.09	1.36	0.00	0.00	0.00	0.	0.00
60	0.800	24.28	29.90	46035.96	0.00	5.69	6.87	0.00	6.87	0.00	1.15	0.12	0.09	1.36	0.00	0.00	0.00	0.	0.00
61	0.700	25.07	29.90	46036.07	0.00	5.65	6.60	0.00	6.60	0.00	1.16	0.12	0.08	1.36	0.00	0.00	0.00	0.	0.00
62	0.600	25.86	29.90	46036.18	0.00	5.60	6.32	0.00	6.32	0.00	1.16	0.12	0.08	1.36	0.00	0.00	0.00	0.	0.00
63	0.500	26.65	29.90	46036.29	0.00	5.56	6.02	0.00	6.02	0.00	1.17	0.12	0.08	1.36	0.00	0.00	0.00	0.	0.00
64	0.400	27.44	29.90	46036.41	0.00	5.51	5.70	0.00	5.70	0.00	1.18	0.11	0.07	1.36	0.00	0.00	0.00	0.	0.00
65	0.300	28.23	29.90	46036.54	0.00	5.46	5.37	0.00	5.37	0.00	1.18	0.11	0.07	1.36	0.00	0.00	0.00	0.	0.00
66	0.200	29.02	29.90	46036.66	0.00	5.42	5.02	0.00	5.02	0.00	1.19	0.11	0.06	1.36	0.00	0.00	0.00	0.	0.00
67	0.100	29.81	29.90	46036.79	0.00	5.37	4.65	0.00	4.65	0.00	1.20	0.10	0.06	1.36	0.00	0.00	0.00	0.	0.00
68	0.000	30.60	29.90	46036.93	0.00	5.32	4.26	0.00	4.26	0.00	1.21	0.10	0.05	1.36	0.00	0.00	0.00	0.	0.00

STREAM SUMMARY
Bayou Petit Caillou

LA-QUAL Model for Bayou Petit Caillou
FTN Associates October 2007

TRAVEL TIME = 87669.45 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW	=	0.00300	TO	0.00300	m^3/s
DISPERSION	=	18.0000	TO	18.0000	m^2/s
VELOCITY	=	0.00000	TO	0.00000	m/s
DEPTH	=	1.50	TO	1.70	m
WIDTH	=	629.00	TO	******	m
BOD DECAY	=	0.05	TO	0.11	per day
NH3 DECAY	=	0.06	TO	0.19	per day
SOD	=	0.00	TO	0.27	$g/m^2/d$
NH3 SOURCE	=	0.00	TO	0.00	$g/m^2/d$
REAERATION	=	0.37	TO	0.56	per day
BOD SETTLING	=	0.00	TO	0.00	per day
ORG-N DECAY	=	0.02	TO	0.02	per day
ORG-N SETTLING	=	0.00	TO	0.00	per day
TEMPERATURE	=	14.00	TO	30.60	deg C
DISSOLVED OXYGEN	=	5.32	TO	6.58	mg/L

.....EXECUTION COMPLETED

APPENDIX L

Input and Output Files for TMDL Calculation Program

```
120708                                  Subsegment number for this TMDL
"Bayou Petite Caillou"                  Subsegment name (max 50 chars)
"bp_sum.out"                            Name of LA-QUAL output file
3                                       Total number of reaches in the model
120709                                  Subsegment that reach 1 is in
120709                                  Subsegment that reach 2 is in
120709                                  Subsegment that reach 3 is in
10                      point source margin of safety (%)
10                      point source Future Gorwth (%)
10                      NPS margin of safety (%)
10                      NPS Future Growth (%)
4.33                    Ratio of oxygen demand to nitrogen
1                       Number of minor point sources
                        MINOR POINT SOURCE DISCHARGE #1:
"LAG33A340"                NPDES permit number (9 chars)
"004A"                     Outfall number (3 chars)
0.0001                     Flow (MGD)
"Burlington Resources"     Comment for flow (max 40 chars)
45                         CBOD5 or BOD5 permit limit
0                          COD permit limit
0                          Ammonia N permit limit
""                         Comment for conc. limits (max 40 chars)
No                      Nutrient TMDL needed?
1.0                     Natural ratio of total N to total P
```

TMDL CALCULATIONS FOR SUBSEGMENT: 120708   Bayou Petite Caillou
FTN ASSOCIATES, LTD.
Program:Pr20m6f

INFO FOR INPUT FILE WITH USER SPECIFIED DATA AND OPTIONS:
File name:tmdlbps.inp

INFO FOR LA-QUAL OUTPUT FILE:
File name:bp_sum.out
Date/Time:Output produced at 23:27 on 10/18/2007
LA-QUAL Version 8.11

LIST OF ALL REACHES IN LA-QUAL OUTPUT FILE:
  Reach   1 (Elements   1 - 31) is in subsegment 120709 Bayou Petit Ca
  Reach   2 (Elements 32 - 47) is in subsegment 120709 Bayou Petit Ca
  Reach   3 (Elements 48 - 68) is in subsegment 120709 Bayou Petit Ca

==========

CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, TRIBUTARIES, AND INCREMENTAL INFLOW):

Equation used: (Load, kg/day) = (Inflow rate, m3/sec) * (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m3 *
                                                                                    86400 sec/day

Values from LA-QUAL output:

Reach or Element number	Inflow rate (m3/sec)	CBODu conc. (mg/L)	Organic N conc. (mg/L)	Ammonia N conc. (mg/L)	NO2+NO3 N conc. (mg/L)	Name of inflow
1	0.00300	7.67	0.80	0.10	0.14	Bayou Petit Caillou

Calculated values:

Element number	CBODu load (kg/day)	Organic N load (kg/day)	Ammonia N load (kg/day)	NO2+NO3 N load (kg/day)
1	1.99	0.21	0.03	0.04
Subsegment totals:	0.00	0.21	0.03	0.04

==========

CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TYPE 19:

Values from LA-QUAL output:

Reach number	CBODu mass load (kg/day)	Organic N mass load (kg/day)
1	860.00	0.00
2	3440.00	0.00
3	10750.00	0.00
Subsegment totals	15050.00	0.00

==========

CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:

SOD temperature correction factor used in LA-QUAL model: 1.065 (default)

Equations used: SOD temp. corrected = (SOD at 20 C) * 1.065^(Water temp - 20 C)
SOD load = (SOD temp. corrected, g/m2/day) * (Surface area, m2) * 1.0E-3 kg/g
Benthic NH3-N load = (Benthic ammonia N, g/m2/day) * (Surface area, m2) * 1.0E-3 kg/g

		Values from LA-QUAL output:				Calculated values:		
Reach number	Element number	Water temp. (deg C)	Surface area (m2)	SOD at 20 C (g/m2/day)	Benthic ammonia N (g/m2/day)	SOD temp. corrected (g/m2/day)	SOD load (kg/day)	Benthic NH3-N load (kg/day)
1	1	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	2	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	3	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	4	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	5	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	6	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	7	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	8	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	9	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	10	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	11	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	12	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	13	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	14	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	15	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	16	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	17	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	18	30.60	62900.0	0.330	0.00	0.330	20.76	0.00

1	19	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	20	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	21	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	22	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	23	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	24	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	25	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	26	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	27	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	28	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	29	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	30	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
1	31	30.60	62900.0	0.330	0.00	0.330	20.76	0.00
2	32	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	33	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	34	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	35	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	36	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	37	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	38	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	39	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	40	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	41	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	42	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	43	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	44	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	45	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	46	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
2	47	30.60	484000.0	0.330	0.00	0.330	159.72	0.00
3	48	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	49	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	50	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	51	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	52	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	53	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	54	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	55	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	56	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	57	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	58	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	59	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	60	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	61	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	62	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	63	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	64	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	65	30.60	247400.0	0.330	0.00	0.000	0.00	0.00

3	66	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	67	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
3	68	30.60	247400.0	0.330	0.00	0.000	0.00	0.00
							3198.99	0.00

Subsegment totals:

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CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EXPLICITLY MODELED:

For this subsegment, there are no point source discharges explicitly modeled.

==========

CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NOT EXPLICITLY MODELED:

Equations used: Flow rate from TMDL calcs = Permit flow rate * 1.250 (to incorporate MOS and FG)
(Load, kg/day) = (Flow rate, MGD) * (Conc., mg/L) * 3.785 L/gal * 1.0E6 gal/MG * 1.0E-6 kg/mg

Assumptions: Ratio of CBODu to CBOD5 for point source dissharges = 2.3 (guidance from LTP).
For permits with BOD or ammonia limits, NO2+NO3 = 10 mg/L (drinking water criteria).
For permits with COD limits, assume that CBODu is about the same magnitude as COD and
that discharges of nitrogen (organic, ammonia, and NO2+NO3) are negligible.

NPDES permit number	Outfall number	Permit flow rate (MGD)	Factor to incorporate MOS and FG into flow	Flow rate for TMDL calcs (MGD	Comments
LAG33A340	004	0.000	1.250	0.000	Burlington Resources

User specified permit limits:

NPDES permit number	Outfall number	CBOD5 (mg/L)	COD (mg/L)	Ammonia (mg/L)	Comments
LAG33A340	004	45.0	0.0	0.0	

Values for TMDL calculations:

NPDES permit	Outfall	CBODu	Organic N	Ammonia N	NO2+NO3 N

number	number	(mg/L)	(mg/L)	(mg/L)	(mg/L)	Comments
LAG33A340	004	103.50	0.00	0.00	0.00	

NPDES permit number	Outfall number	Calculated loads: CBODu (kg/day)	Organic N (kg/day)	AmmoniaN (kg.day)	NO2+NO3 N (kg.day)	Comments
LAG33A340	004	0.05	0.00	0.00	0.00	
Subsegment total		0.05	0.00	0.00	0.00	

SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT:

Equations used: Organic N oxygen demand, kg/day = 4.3300 * Organic N load, kg/day of N
Ammonia N oxygen demand, kg/day = 4.3300 * Ammonia N load, kg/day of N
Margin of safety = 10.0% * nonpoint source load
Future Growth = 10.0% * nonpoint source load
Load Allocation = 80.0% * nonpoint source load

Values from calculations above

	SOD (kg/day)	CBODu (kg/day)	Nitrogen loads (kg/day of N): Organic (kg/day)	Ammonia (kg/day)	NO2+NO3 N (kg/day)
NPS inflows	N/A	0.00	0.21	0.03	0.04
Mass LOads (data type 19)	N/A	15050.00	0.00	N/A	N/A
SOD and Benthic	3198.99	N/A	N/A	0.00	N/A

Calculated loads of oxygen demand:

	SOD (kg/day)	CBODu (kg/day)	Oygen demand loads: Organic (kg/day)	Ammonia (kg/day)	Total Oxygen demand (kg/day)
NPS inflows	N/A	0.00	0.91	0.13	1.04
Mass LOads (data type 19)	N/A	15050.00	0.00	N/A	15050.00
SOD and Benthic	3198.99	N/A	N/A	0.00	3198.99
Total for all NPS loads	3198.99	15050.00	0.91	0.13	18250.03

NPS future growth	(10.0%)	319.90	1505.00	0.09	0.01	1825.00
NPS margin of safety	(10.0%)	319.90	1505.00	0.09	0.01	1825.00
NPS load allocation	(80.0%)	2559.19	12040.00	0.73	0.11	14600.03

==========

SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT

Equations used: Organic N oxygen demand, kg/day = 4.3300 * Organic N load, kg/day of N
Ammonia N oxygen demand, kg/day = 4.3300 * Ammonia N load, kg/day of N
Margin of Safety = 10.0% * point source load
Future Growth = 10.0% * nonpoint source load
Wasteload Allocation (WLA) for modeled point source = 80.0% * modeled load
Wasteload Allocation (WLA) for minor point sources = 80.0% * calculated load

Values from calculations above

		Nitrogen loads (kg/day of N):		
	CBODu (kg/day)	Organic N (kg/day)	Ammonia N (kg/day)	NO3+NO2 (kg/day)
Calculated load for minor point source	0.05	0.00	0.00	0.00

Calculated loads of oxygen demand

		Oygen demand loads:			Total Oxygen
	CBODu (kg/day)	Organic N (kg/day)	Ammonia N (kg/day)	demand (kg/day)
Calculated load for minor point source	0.05	0.00	0.00	0.05
Total for all point source loads	0.05	0.00	0.00	0.05
MOS for all point Sources (10.0%)	0.00	0.00	0.00	0.00
FG for all point Sources (10.0%)	0.00	0.00	0.00	0.00
WLA for minor point sources (80.0%)	0.04	0.00	0.00	0.04

```
120708                              Subsegment number for this TMDL
"Bayou Petite Caillou"              Subsegment name (max 50 chars)
"bp_win.out"                        Name of LA-QUAL output file
3                                   Total number of reaches in the model
120709                              Subsegment that reach 1 is in
120709                              Subsegment that reach 2 is in
120709                              Subsegment that reach 3 is in
10                    point source margin of safety (%)
10                    point source Future Gorwth (%)
10                    NPS margin of safety (%)
10                    NPS Future Growth (%)
4.33                  Ratio of oxygen demand to nitrogen
1                     Number of minor point sources
                      MINOR POINT SOURCE DISCHARGE #1:
"LAG33A340"              NPDES permit number (9 chars)
"004A"                   Outfall number (3 chars)
0.0001                   Flow (MGD)
"Burlington Resources"   Comment for flow (max 40 chars)
45                       CBOD5 or BOD5 permit limit
0                        COD permit limit
0                        Ammonia N permit limit
""                       Comment for conc. limits (max 40 chars)
No                    Nutrient TMDL needed?
1.0                   Natural ratio of total N to total P
```

TMDL CALCULATIONS FOR SUBSEGMENT: 120708   Bayou Petite Caillou
FTN ASSOCIATES, LTD.
Program:Pr20m6f

INFO FOR INPUT FILE WITH USER SPECIFIED DATA AND OPTIONS:
File name:tmdlbpw.inp

INFO FOR LA-QUAL OUTPUT FILE:
File name:bp_win.out
Date/Time:Output produced at 23:22 on 10/18/2007
LA-QUAL Version 8.11

LIST OF ALL REACHES IN LA-QUAL OUTPUT FILE:
  Reach   1 (Elements   1 - 31) is in subsegment 120709 Bayou Petit Ca
  Reach   2 (Elements 32 - 47) is in subsegment 120709 Bayou Petit Ca
  Reach   3 (Elements 48 - 68) is in subsegment 120709 Bayou Petit Ca

==========

CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, TRIBUTARIES, AND INCREMENTAL INFLOW):

Equation used: (Load, kg/day) = (Inflow rate, m3/sec) * (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m3 *
86400 sec/day

Values from LA-QUAL output:

Reach or Element number	Inflow rate (m3/sec)	CBODu conc. (mg/L)	Organic N conc. (mg/L)	Ammonia N conc. (mg/L)	NO2+NO3 N conc. (mg/L)	Name of inflow
1	0.00300	7.67	0.80	0.10	0.14	Bayou Petit Caillou

Calculated values:

Element number	CBODu load (kg/day)	Organic N load (kg/day)	Ammonia N load (kg/day)	NO2+NO3 N load (kg/day)
1	1.99	0.21	0.03	0.04
Subsegment totals:	0.00	0.21	0.03	0.04

==========

CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TYPE 19:

Values from LA-QUAL output:

Reach number	CBODu mass load (kg/day)	Organic N mass load (kg/day)
1	2000.00	0.00
2	8000.00	0.00
3	25000.00	0.00
Subsegment totals	35000.00	0.00

==========

CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:

SOD temperature correction factor used in LA-QUAL model: 1.065 (default)

Equations used: SOD temp. corrected = (SOD at 20 C) * 1.065^(Water temp - 20 C)
SOD load = (SOD temp. corrected, g/m2/day) * (Surface area, m2) * 1.0E-3 kg/g
Benthic NH3-N load = (Benthic ammonia N, g/m2/day) * (Surface area, m2) * 1.0E-3 kg/g

		Values from LA-QUAL output:				Calculated values:		
Reach number	Element number	Water temp. (deg C)	Surface area (m2)	SOD at 20 C (g/m2/day)	Benthic ammonia N (g/m2/day)	SOD temp. corrected (g/m2/day)	SOD load (kg/day)	Benthic NH3-N load (kg/day)
1	1	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	2	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	3	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	4	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	5	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	6	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	7	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	8	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	9	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	10	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	11	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	12	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	13	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	14	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	15	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	16	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	17	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	18	14.00	62900.0	0.270	0.00	0.270	16.98	0.00

1	19	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	20	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	21	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	22	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	23	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	24	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	25	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	26	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	27	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	28	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	29	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	30	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
1	31	14.00	62900.0	0.270	0.00	0.270	16.98	0.00
2	32	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	33	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	34	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	35	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	36	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	37	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	38	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	39	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	40	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	41	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	42	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	43	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	44	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	45	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	46	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
2	47	14.00	484000.0	0.270	0.00	0.270	130.68	0.00
3	48	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	49	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	50	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	51	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	52	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	53	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	54	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	55	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	56	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	57	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	58	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	59	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	60	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	61	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	62	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	63	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	64	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	65	14.00	247400.0	0.270	0.00	0.000	0.00	0.00

3	66	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	67	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
3	68	14.00	247400.0	0.270	0.00	0.000	0.00	0.00
							2617.35	0.00

Subsegment totals:

==========

CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EXPLICITLY MODELED:

For this subsegment, there are no point source discharges explicitly modeled.

==========

CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NOT EXPLICITLY MODELED:

Equations used: Flow rate from TMDL calcs = Permit flow rate * 1.250 (to incorporate MOS and FG)
(Load, kg/day) = (Flow rate, MGD) * (Conc., mg/L) * 3.785 L/gal * 1.0E6 gal/MG * 1.0E-6 kg/mg

Assumptions: Ratio of CBODu to CBOD5 for point source dissharges = 2.3 (guidance from LTP).
For permits with BOD or ammonia limits, NO2+NO3 = 10 mg/L (drinking water criteria).
For permits with COD limits, assume that CBODu is about the same magnitude as COD and
that discharges of nitrogen (organic, ammonia, and NO2+NO3) are negligible.

NPDES permit number	Outfall number	Permit flow rate (MGD)	Factor to incorporate MOS and FG into flow	Flow rate for TMDL calcs (MGD	Comments
LAG33A340	004	0.000	1.250	0.000	Burlington Resources

User specified permit limits:

NPDES permit number	Outfall number	CBOD5 (mg/L)	COD (mg/L)	Ammonia (mg/L)	Comments
LAG33A340	004	45.0	0.0	0.0	

Values for TMDL calculations:

NPDES permit	Outfall	CBODu	Organic N	Ammonia N	NO2+NO3 N

number	number	(mg/L)	(mg/L)	(mg/L)	(mg/L)	Comments
LAG33A340	004	103.50	0.00	0.00	0.00	

NPDES permit number	Outfall number	Calculated loads: CBODu (kg/day)	Organic N (kg/day)	AmmoniaN (kg.day)	NO2+NO3 N (kg.day)	Comments
LAG33A340	004	0.05	0.00	0.00	0.00	
Subsegment total		0.05	0.00	0.00	0.00	

SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT:

Equations used: Organic N oxygen demand, kg/day = 4.3300 * Organic N load, kg/day of N
Ammonia N oxygen demand, kg/day = 4.3300 * Ammonia N load, kg/day of N
Margin of safety = 10.0% * nonpoint source load
Future Growth = 10.0% * nonpoint source load
Load Allocation = 80.0% * nonpoint source load

Values from calculations above

	SOD (kg/day)	CBODu (kg/day)	Nitrogen loads (kg/day of N): Organic (kg/day)	Ammonia (kg/day)	NO2+NO3 N (kg/day)
NPS inflows	N/A	0.00	0.21	0.03	0.04
Mass LOads (data type 19)	N/A	35000.00	0.00	N/A	N/A
SOD and Benthic	2617.35	N/A	N/A	0.00	N/A

Calculated loads of oxygen demand:

	SOD (kg/day)	CBODu (kg/day)	Oygen demand loads: Organic (kg/day)	Ammonia (kg/day)	Total Oxygen demand (kg/day)
NPS inflows	N/A	0.00	0.91	0.13	1.04
Mass LOads (data type 19)	N/A	35000.00	0.00	N/A	35000.00
SOD and Benthic	2617.35	N/A	N/A	0.00	2617.35
Total for all NPS loads	2617.35	35000.00	0.91	0.13	37618.39

NPS future growth	(10.0%)	261.74	3500.00	0.09	0.01	3761.84
NPS margin of safety	(10.0%)	261.74	3500.00	0.09	0.01	3761.84
NPS load allocation	(80.0%)	2093.87	28000.00	0.73	0.11	30094.71

==========

SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT

Equations used: Organic N oxygen demand, kg/day = 4.3300 * Organic N load, kg/day of N
Ammonia N oxygen demand, kg/day = 4.3300 * Ammonia N load, kg/day of N
Margin of Safety = 10.0% * point source load
Future Growth = 10.0% * nonpoint source load
Wasteload Allocation (WLA) for modeled point source = 80.0% * modeled load
Wasteload Allocation (WLA) for minor point sources = 80.0% * calculated load

Values from calculations above

		Nitrogen loads (kg/day of N):		
	CBODu (kg/day)	Organic N (kg/day)	Ammonia N (kg/day)	NO3+NO2 (kg/day)
Calculated load for minor point source	0.05	0.00	0.00	0.00

Calculated loads of oxygen demand

		Oygen demand loads:			Total Oxygen
	CBODu (kg/day)	Organic N (kg/day)	Ammonia N (kg/day)	demand (kg/day)
Calculated load for minor point source	0.05	0.00	0.00	0.05
Total for all point source loads	0.05	0.00	0.00	0.05
MOS for all point Sources (10.0%)	0.00	0.00	0.00	0.00
FG for all point Sources (10.0%)	0.00	0.00	0.00	0.00
WLA for minor point sources (80.0%)	0.04	0.00	0.00	0.04

APPENDIX M

Source Code for TMDL Calculation Program

SUMMARY OF TMDL CALCULATIONS FOR DO TMDLs IN RED AND SABINE BASINS

Total maximum daily load (TMDL) is sum of these six components:

- Wasteload allocations (WLA) for point sources
- Margin of safety (MOS) for point sources
- Future growth (FG) for point sources
- Load allocations (LA) for nonpoint sources
- Margin of safety (MOS) for nonpoint sources
- Future growth (FG) for nonpoint sources

Point sources:

- For this analysis, all effluent flows are set to 125% of design or expected flow (for both simulated point sources and minor point sources)

- Each load calculated as: Load, kg/day = (Flow, m^3/sec) × (Concentration, mg/L) × 86.4

- Oxygen demand from ammonia and organic nitrogen = nitrogen load × 4.33

- Total point source load = sum of point source loads simulated in model + sum of minor point source loads calculated in spreadsheet

- MOS for all point sources = 10% × total point source load
- FG for all point sources = 10% × total point source load

- WLA for each simulated point source = 80% × simulated load for that point source
- WLA for all minor point sources = 80% × total load for minor point sources

Nonpoint sources:

- This includes headwaters, tributaries, incremental inflow, sediment oxygen demand, benthic ammonia loads, mass loads of CBODu, and mass loads of organic nitrogen.

- Each load for headwaters, tributaries, and incremental inflow is calculated as:
  Load, kg/day = (Flow, m^3/sec) × (Concentration, mg/L) × 86.4

- For this analysis, the sediment oxygen demand (SOD) is corrected for temperature by multiplying the model input values times 1.065^(Temperature, °C – 20)

- Loads from SOD and benthic ammonia are calculated as:
  Load, kg/day = (rate per unit area, g/m^2/day)× (stream bottom area, m^2) × 0.001

- Oxygen demand from ammonia and organic nitrogen = nitrogen load × 4.33

- MOS for nonpoint sources = 10% × sum of all nonpoint source loads
- FG for nonpoint sources = 10% × sum of all nonpoint source loads

- LA for nonpoint sources = 80% × sum of all nonpoint source loads

```
        program pr20m6f
C**** For this prograqm to work the echo of the input and final report must be turned on:
C     1) The echo of the input provides MAJORITY of the ionformation for the calcuations,
C     2) The Hydralic, SOD, and NH3Sr data (needed for surface area for the SOD) are found
C        in the final report reach summary.

C     Printing:
C     This is printed in MSWord or VSlick by setting the left and right margins to 0.3 and 0.38
C     and setting the font to Courier New 9 pt normal text.

C     This program is specifcally formated for LA-QUAL 8.11.


C**********************************Search program (part 1)**************************************
C This whole program is written by Richard R. Bennett on 9/20/07 for LA-QUAL version 8.0
C Every variable is used in this program except

       INTEGER imp,i,a,c,d,e,f,g,h,j,k,l,m,n,o,q,k1
       Character*132 line,stream_id
       Character*8 target
       character*21 target2
       character*15 target3
       character*16 target3b,target5b,target5c,target6,t
     &arget7,target8,target9,target10
       character*36 target4


C**********All arrays are entered in the order in which they occurr in the program
C**************Input REAL arrays

      integer total_elem
      integer incr_reach(1:999)
       REAL SOD_temp_cor(1:999),C2_NH3SR(1:999),
     &incr2_CBODu_con(1:999),incr2_Org_N_con(1:999), incr2_Amm_N_con(1:
     &999),incr2_Nitrate_con(1:999), NP_BOD(1:999),NP_ORG(1:999),
     & HDWT1_Flow(1:999),incr_flow(1:999)
       INTEGER HDWT1_elem(1:999)
       REAL WSTLD_Flow(1:999),Elem_end(1:999),Elem_begin(1:999)
       character NPS_wstld_name(1:999)*25,PS_Wstld_name(1:999)*20
       REAL WSTLD2_BOD(1:999),WSTLD2_ORG(1:999),WSTLD2
     &_NH3(1:999), WSTLD2_NO3(1:999)
       REAL nps_WSTLD_Flow(1:999),nps_elem_wstld(1:999)
       REAL NPS_WSTLD2_BOD(1:999),NPS_WSTLD2_ORG(1:999),NPS_WSTLD2
     &_NH3(1:999),NPS_WSTLD2_NO3(1:999)
       REAL PS_WSTLD_Flow(1:999),ps_elem_wstld(1:999)
       REAL ps_WSTLD2_BOD(1:999),ps_WSTLD2_ORG(1:999),ps_WSTLD2
     &_NH3(1:999),ps_WSTLD2_NO3(1:999)
       Integer NP_reach(1:999),elem_wstld(1:999),num,num_pt_sour
       real ps_mos,ps_mos_per,nps_mos,nps_mos_per
       real ps_FG,ps_FG_per,nps_FG,nps_FG_per
       Real Temp(1:999),S_area_int(1:1000)
       integer elem_col_int
       character source_type(1:999)*3,reach_name(1:999)*15,wstld_name(1:
     &100)*20, hdwt1_name(1:999)*25,reach_subseg_num(1:999)*20,
     &permit_number(1:999)*20,outfall_num(1:999)*20,comment(1:999)*40,
     &comment_con(1:999)*40,nut_tmdl_need*4
       Real perm_flow(1:999),CBOD5_Perm(1:999), cod_perm(1:999),ammon_pe
     &rm(1:999),nat_rat,ammoxy_rat
       real HDWT2_BOD_con(1:999),HDWT2_ORG_con(1:999), HDWT2_NH3_con(1:1
     &00), HDWT2_NO3_con(1:999)
       real incr_outflow(1:999),incr_inflow(1:999)

C****************Character Search Strings
      target = 'CNTROL04'
      target2= 'THETA        BENTHAL'
      target3= '$$$ DATA TYPE 8'  ! Reach ID data
      target3b='$$$ DATA TYPE 11' ! Reach Initial conditions (need temps)
      target4= 'BIOLOGICAL AND PHYSICAL COEFFICIENTS' ! SOD and NH3Sr rates (Final Report)
      target5b= '$$$ DATA TYPE 16'  ! Incrmental flows
      target5c= '$$$ DATA TYPE 17'  ! Incrmental WQ
      target6= '$$$ DATA TYPE 19'   ! Mass laods
      target7= '$$$ DATA TYPE 20'   ! Headwater flows
      Target8= '$$$ DATA TYPE 21'   ! Headwater WQ
      Target9= '$$$ DATA TYPE 24'   ! Wasteload flows
```

```
      target10= '$$$ DATA TYPE 25'  ! Wastelaod WQ

C***************Array counterrs
      num=0
      num_incr=0
      num_hdwt=0
      num_wstld=0
      nps_num_wstld=0
      ps_num_wstld=0
      a=0
      cir=0
      c=0
      d=0
      e=0
      f=0
      g=0
      h=0
      j=0
      k=0
      k1=0
      l=0
      m=0
      nps=1
      ps=1
      n=0
      o=0
      q=0


      Character*70 userFilename,Laqualfilename,subsegname,subsegnumber,
     &pertime,LAQUAL_version,laqualfileoutput

      print*,'Enter user input filename: ' ! this is the TMDL program input file
      read*,userfilename                   ! it is NOT hte LA-QUAL file!!!!

      imp=1000000


C*Read input file
      OPEN(UNIT=12, FILE=userfilename, STATUS='OLD') ! input file
      Open (unit=11, FILE='tmdl-res.txt', Status='UNKNOWN')  ! output file
c      OPEN (UNIT=13, FILE='inter-res.txt', Status='UNKNOWN') ! debugging file
      REad(12,*)subsegnumber  ! subsegment number
      REad(12,*)subsegname    ! subsegment name
      read(12,*)laqualfileoutput ! LA-QUAL output file
      read(12,*)usernum          ! number of reaches in output file
      do 10 I=1,usernum          ! read subsegment number for each reach loop
10       read(12,*)reach_subseg_num(I)
      read(12,*)ps_mos_per  ! point source MOS in percent
      read(12,*)ps_FG_per   ! point source FG in percent
      read(12,*)nps_mos_per  ! nonpoint source MOS in percent
      read(12,*)nps_FG_per   ! nonpoint source FG in percent
      READ(12,*)ammoxy_rat   ! ammonia oxidation rate
      read(12,*)num_pt_sour  ! number of point sources in input file
      do 20 I=1,num_pt_sour  ! read point source data loop
         read(12,*)
         read(12,*)permit_number(I) ! permit number
         read(12,*)outfall_num(I)   ! outfall number
         read(12,*)perm_flow(I)     ! permit flow (MGD)
         read(12,*)comment(I)       ! comment (usually facility name)
         read(12,*)cbod5_perm(I)    ! CBOD5 or BOD5 permit conc in mg/L
         read(12,*)COD_perm(I)      ! COD permit conc in mg/L
         read(12,*)ammon_perm(I)    ! ammonia permit conc in mg/L
         read(12,*)comment_con(I)   ! comment for concentration
20    continue
      read(12,*)nut_tmdl_need       ! is a nutrietn TMDL needed?
      read(12,*) nat_rat            ! ratio of natural nitrogen to phosphorus

      ps_mos=ps_mos_per/100.000
      ps_FG=ps_FG_per/100.000
      nps_mos=nps_mos_per/100.000
      nps_FG=nps_FG_per/100.000

      laqualfilename=laqualfileoutput
```

```
      OPEN(UNIT=10, FILE=Laqualfilename, STATUS='OLD') ! this is teh LA-QUAL output file

1030  FORMAT(A35,3X,A25)
      DO 100 i=1,imp
      READ(10,'(A132)') line

C**********Are we at the end of the file?
      if(line(11:29).EQ.'EXECUTION COMPLETED')GO TO 900


C************ read LA-QUAL version
      if (i .EQ. 1) then
          read (line(1:32),'(A32)') LAQUAL_version
      end if

C**********when was the LA-QUAL file made and metric units
      if (line (1:6) .EQ. 'Output') then
         read(line(1:38),'(A38)') pertime
      else IF (line(1:8).EQ. target) then
1020     FORMAT (A35,3X,A10,3X,A10)

C**********Look for theta Benthal
         else IF (line(1:21).EQ. target2) then
1040        Format (A36,5X,A40)

C**********Data T8,Count number of reaches
         else IF (line (1:15) .EQ. target3) then
            Read (10,*)
            Read (10,*)
            Read (10,*)
            Read (10,*)
105         Read (10, '(A132)') stream_id
            if (stream_id(1:8).EQ. 'REACH ID')then
              num=num+1
              read(stream_ID(23:48),'(A15)')reach_name(num)
              read(stream_ID(109:111),)elem_begin(num)
              read(stream_ID(116:118),)elem_end(num)
              total_elem=elem_end(num)
              go to 105
            end if

C**********Data T11, read temp
      else IF (line (1:16).EQ. target3b) then
            READ (10,*)
            READ (10,*)
            READ (10,*)
107         READ (10,'(A132)') stream_id
            if (stream_id(1:7) .EQ. 'INITIAL') then
               q=q+1
               READ(stream_id(32:36),'(F5.0)') temp(q)
               go to 107
               end if

C**********FINAL REPORT,(read COEF-1 Bckgrd SOD and NH3SR)
      else IF (line (49:84) .EQ. target4) then
            Read (10,*)
            Read (10,*)
            Read (10,*)
            Read (10,*)
            Read (10,*)
110         Read (10, '(A132)') stream_id
            if (stream_id(1:7).NE. ' ') then
               a=a+1
               READ(Stream_id(1:4),'(I4)')elem
               READ(stream_id(68:73),'(F7.0)') SOD_temp_cor(elem)
               READ(Stream_id(106:111),'(F6.0)') C2_NH3SR(elem)
c               elem is used to put them in numerical order, NOT
c               in the order they are read from the LA_QUAL file!
c               (this only comes into play for branched models)
1060        FORMAT (A35,5X,A10,5X,A10)
            GO TO 110
            end if

C***********Data Type (incremenatal flow data part1)
```

```
       else if (line(1:16) .EQ. target5b) then
            read(10,*)
            read(10,*)
            read(10,*)
117         read(10,'(A132)')stream_id
            if (stream_id(1:6) .EQ. 'INCR-1') then
                num_incr=num_incr+1
                read(stream_id(17:19),'(I3)') incr_reach(num_incr)
                read(stream_id(32:38),'(F7.0)') incr_outflow(num_incr)
                read(stream_id(44:50),'(F7.0)') incr_inflow(num_incr)
                incr_flow(num_incr) = abs(incr_inflow(num_incr))-abs(inc
     &r_outflow(num_incr))
            go to 117
            end if

C**********Data Tyoe (incremental flow part 2)
       else if (line(1:16) .EQ. target5c) then
            num_incr=0
            read(10,*)
            read(10,*)
            read(10,*)
118          read(10,'(A132)')stream_id
            if (stream_id(1:6) .EQ. 'INCR-2') then
            num_incr=num_incr+1
            read(stream_id(37:46),'(F10.0)') incr2_CBODu_con(num_incr)
            read(stream_id(47:56),'(F10.0)') incr2_Org_N_con(num_incr)
            read(stream_id(57:66),'(F10.0)') incr2_Amm_N_con(num_incr)
            read(stream_id(67:76),'(F10.0)') incr2_Nitrate_con(num_incr)
            go to 118
            end if

C***********Data T19(reads BOD and ORG-N)
       else IF (line (1:16) .EQ. target6) then
            Read (10,*)
            Read (10,*)
            READ (10,*)
120         Read (10, '(A132)') stream_id
            if (stream_id(1:8).EQ. 'NONPOINT') then
               c=c+1
               d=d+1
               read(stream_ID(17:19),'(I3)')NP_reach(c)
               READ(stream_id(28:36),'(F9.0)')NP_BOD(c)
               READ(stream_id(38:46),'(F9.0)')NP_ORG(d)
1080        Format (A35,5X,A10,2X,A10,2X,A10)
            GO TO 120
            end if

C**********DATA T20(reads flow for HDWTR-1)
         else IF (line (1:16) .EQ. target7) then
            Read (10,*)
            READ (10,*)
            Read (10,*)
            REad (10,*)
125         Read (10, '(A132)') stream_id
            if (stream_id(1:7).EQ. 'HDWTR-1') then
               num_hdwt=num_HDwt+1
               e=e+1
               Read(stream_id(17:19),'(I3)')HDWT1_elem(e)
               read(stream_id(25:44),'(A20)')hdwt1_name(e)
               READ(stream_id(53:59),'(F7.0)') HDWT1_Flow(e)
               GO TO 125
            end if

C**********DATA T21(read BOD,ORG-N,NH3,NO3+2 for HDWTR-2)
         else IF (line (1:16) .EQ. target8) then
            Read (10,*)
            Read (10,*)
            READ (10,*)
            Read (10,*)
130         Read (10, '(A132)') stream_id
            if (stream_id(1:7).EQ. 'HDWTR-2') then
            f=f+1
            g=g+1
            h=h+1
```

```
            j=j+1
            READ(stream_id(58:66),'(F9.0)') HDWT2_BOD_con(f)
            READ(stream_id(68:76),'(F9.0)') HDWT2_ORG_con(g)
            READ(stream_id(78:86),'(F9.0)') HDWT2_NH3_con(h)
            READ(stream_id(88:96),'(F9.0)') HDWT2_NO3_con(j)
1090        Format (A35,5X,A5,5X,A5,5X,A5,5X,A5)
            GO TO 130
            end if

C**********DATA T24(flow for WSTLD-1)
          ps=1
          nps=1
          else IF (line (1:16) .EQ. target9) then
            Read (10,*)
            Read (10,*)
            Read (10,*)
            READ (10,*)
135         Read (10, '(A132)') stream_id
            if (stream_id(1:7).EQ. 'WSTLD-1') then
               num_wstld=num_wstld+1
               k=k+1
               READ(stream_id(52:59),'(F8.0)')WSTLD_Flow(k)
               read(stream_id(13:16),'(I4)')elem_wstld(k)
               read(stream_id(30:47),'(A18)')wstld_name(k)
               if (stream_id(30:32).EQ.'NPS') then !
                  nps_num_wstld=nps_num_wstld+1
                  NPS_wstld_name(nps) = wstld_name(K)
                  NPS_elem_wstld(nps) = elem_wstld(K)
                  NPS_wstld_flow(nps) = wstld_flow(K)
                  nps=nps+1
               else
                    ps_num_wstld=ps_num_wstld+1
                    PS_wstld_name(ps) = wstld_name(K)
                    PS_elem_wstld(ps) = elem_wstld(K)
                    PS_wstld_flow(ps) = wstld_flow(K)
                    ps=ps+1
c                   this loop and if statement is used to separate
c                   point and nonpoint wastelaods
               end if
            GO TO 135
            end if

C**********DATA T25(BOD,ORG-N,NH3,NO3+2) for WSTLD-2
      ps=1
      nps=1
         else IF (line (1:16) .EQ. target10) then
            Read (10,*)
            Read (10,*)
            READ (10,*)
            READ (10,*)
140         Read (10, '(A132)') stream_id
            if (stream_id(1:7).EQ. 'WSTLD-2') then
            l=l+1
            m=m+1
            n=n+1
            o=o+1
            k1=k1+1
            READ(stream_id(25:27),'(A3)')source_type(k1)
            READ(stream_id(57:66),'(F10.0)')WSTLD2_BOD(l)
            READ(stream_id(77:86),'(F10.0)')WSTLD2_ORG(m)
            READ(stream_id(87:96),'(F10.0)')WSTLD2_NH3(n)
            READ(stream_id(107:116),'(F10.0)')WSTLD2_NO3(o)
            if (source_type(K1).EQ.'NPS') then
                  nps_wstld2_bod(nps) = wstld2_bod(l)
                  nps_wstld2_org(nps) = wstld2_org(m)
                  nps_wstld2_nh3(nps) = WSTLD2_NH3(N)
                  nps_wstld2_no3(nps) = wstld2_no3(o)
                  nps=nps+1
               else
                  ps_wstld2_bod(ps) = wstld2_bod(l)
                  ps_wstld2_org(ps) = wstld2_org(m)
                  ps_wstld2_nh3(ps) = WSTLD2_NH3(N)
                  ps_wstld2_no3(ps) = wstld2_no3(o)
                  ps=ps+1
```

```
                end if
c must have blank space after else or the else will only apply to the first statement and NOT
c to all of them

1095        Format (A35,6X,A5,2X,A5,2X,A5,2X,A5,2X,A5)
            GO TO 140
            end if

C*************FINAL REPORT, hydrualic parameter
        else IF (line (1:62) .EQ. ' **********************************
     &*************** HYDRAULIC') then
             Read (10,*)
             READ (10,*)
             READ (10,*)
             READ (10,*)
             READ (10,*)
145          Read (10, '(A132)') stream_id
             if (stream_id(3:5).NE. '   ') then
c               p=p+1
C* these numbers are NOT in numerical order, they are in Branch (ie model layout) order
               read(stream_id(3:5),'(I3)')elem_col_int
               READ(stream_id(84:94),'(F11.0)')S_Area_int(elem_col_int)
               GO TO 145
            end if
1200  FORMAT (A35,5X,I4)
      END IF
100   Continue
900   CONTINUE
      Print*,'Program has finished reading the inputs!!!'


C***************************PART 2***********************************
C***********************Calculations

C*variables mostly in order of use
      real con3,con4,nps_FG_summary_org
      real mldt19_tot_cbodu, mldt19_tot_org
      real incr_CBODu(1:999), incr_Org_N(1:999), incr_Amm_N(1:999),
     &incr_NItrate(1:999)
      real incr_CBODu_tot, incr_Org_N_tot, incr_Amm_N_tot,incr_NItrate_t
     &ot
      real WSTLD2_BOD_con(1:999),WSTLD2_ORG_con(1:999),WSTLD2_NH3_con
     &(1:999),WSTLD2_NO3_con(1:999)
      real WSTLD2_BOD_cal(1:999),WSTLD2_Org_cal(1:999),WSTLD2_NH3_cal
     &(1:999),WSTLD2_NO3_cal(1:999)
      real WSTLD2_BOD_cal_tot,WSTLD2_Org_cal_tot,WSTLD2_NH3_cal_tot,
     &WSTLD2_NO3_cal_tot
      real ps_WSTLD2_BOD_con(1:999),ps_WSTLD2_ORG_con(1:999),ps_WSTLD2_N
     &H3_con(1:999),ps_WSTLD2_NO3_con(1:999)
      real ps_WSTLD2_BOD_cal(1:999),ps_WSTLD2_Org_cal(1:999),ps_WSTLD2_N
     &H3_cal(1:999),ps_WSTLD2_NO3_cal(1:999)
      real ps_WSTLD2_BOD_cal_tot, ps_WSTLD2_Org_cal_tot, ps_WSTLD2_NH3_c
     &al_tot,ps_WSTLD2_NO3_cal_tot
      real nps_WSTLD2_BOD_con(1:999),nps_WSTLD2_ORG_con(1:999),nps_WSTLD
     &2_NH3_con(1:999),nps_WSTLD2_NO3_con(1:999)
      real nps_WSTLD2_BOD_cal(1:999),nps_WSTLD2_Org_cal(1:999),nps_WSTLD
     &2_NH3_cal(1:999),nps_WSTLD2_NO3_cal(1:999)
      real nps_WSTLD2_BOD_cal_tot,nps_WSTLD2_Org_cal_tot, nps_WSTLD2_NH3
     &_cal_tot,nps_WSTLD2_NO3_cal_tot
      real nps_BOD_tot,nps_Org_N_tot,nps_NH3_N_tot,nps_NO3_tot
      real HDWT_BOD_cal(1:999), HDWT_Org_cal(1:999), HDWT_NH3_cal(1:999)
     &, HDWT_NO3_cal(1:999)
      real HDWT_BOD_cal_tot, HDWT_Org_cal_tot, HDWT_NH3_cal_tot,
     &HDWT_NO3_cal_tot
      real elem_benthis(1:1000), elem_sod(1:1000), elem_temp(1:1000)
     &,sod_load(1:1000), benthic(1:1000)
      real nps_sod_load_tot, nps_benthic_tot,fac_mos_FG
      reaL tmdl_cal_flow(1:999)
      real cbodu_tmdl_val(1:999), org_N_tmdl_val(1:999),ammon_tmdl_val(1
     &:100),no3_tmdl_val(1:999)
      real  cbodu_tmdl_cal(1:999),org_N_tmdl_cal(1:999), ammon_tmdl_cal(
     &1:100), no3_tmdl_cal(1:999)
      real  cbodu_tmdl_tot,org_N_tmdl_tot,ammon_tmdl_tot,no3_tmdl_tot
      real nps_summary_cbodu,nps_summary_org,nps_summary_ammon
```

```
 real oxy_dem_nps_org_N_tot, oxy_dem_nps_nh3_tot
 real nps_mos_sod_load_tot,nps_mos_summary_cbodu,nps_mos_summary_or
&g,nps_mos_summary_ammon,nps_mos_nps_NO3_tot
 real nps_FG_sod_load_tot,nps_FG_summary_cbodu
&,nps_FG_summary_ammon,nps_FG_nps_NO3_tot
 real nps_LA_sod_load_tot,nps_LA_summary_cbodu,nps_LA_summary_org,n
&ps_LA_summary_ammon,nps_LA_nps_NO3_tot
 real ps_summary_cbodu,ps_summary_org,ps_summary_nh3_n
 real mos_ps_summary_cbodu,mos_ps_summary_org,mos_ps_summary_nh3_n
 real FG_ps_summary_cbodu,FG_ps_summary_org,FG_ps_summary_nh3_n
 real wla_ps_cbodu_tmdl_tot,wla_ps_org_N_tmdl_tot, wla_ps_ammon_tmd
&l_tot
 real wla_ps_WSTLD2_BOD_cal(1:999),wla_ps_WSTLD2_ORG_cal(1:999),wla
&_ps_WSTLD2_NH3_cal(1:999)
 real oxy_dem_mldt19_tot_org,nps_inflows_tot_oxy_demand,
&mldt19_tot_oxy_dem,tot_oxy_dem_sod_ben
 real oxy_dem_ps_WSTLD2_Bod_cal(1:999),oxy_dem_ps_WSTLD2_ORG_cal(1:
&100),oxy_dem_ps_WSTLD2_Nh3_cal(1:999),tot_oxy_dem_nps,
&wla_min_ps_summary_tot
 real oxy_dem_ps_WSTLD2_Org_cal_tot,oxy_dem_ps_WSTLD2_NH3_cal_tot
 real nps_mos_tot_oxy_dem,nps_FG_tot_oxy_dem,nps_LA_tot_oxy_dem
 real oxy_dem_org_N_tmdl,oxy_dem_ammon_tmdl,min_ps_summary_tot,
&mod_tot_oxy_dem_ps(1:999),mos_tot_oxy_dem_summary,wla_mod_tot_oxy_
&dem_ps(1:999)
 real nut_tmdl_nps_org_N_tot,nps_tot_nitrogen_load,nps_total_P
 real ps_nut_tmdl_summary_org_N_tot,ps_nut_tmdl_summary_nh3_N_tot,
&ps_nut_tmdl_summary_no3_N_tot,ps_tot_nitrogen_final_load,ps_tot_P_
&final,ps_tot_sum_total_nitrogen_load,ps_tot_sum_total_P
 real mos_ps_nut_tmdl_sum_org_N_tot,
&mos_ps_nut_tmdl_sum_nh3_N_tot,
&mos_ps_nut_tmdl_sum_no3_N_tot,
&mos_ps_tot_nitrogen_final_load,
&mos_ps_tot_P_final
 real FG_ps_nut_tmdl_sum_org_N_tot,
&FG_ps_nut_tmdl_sum_nh3_N_tot,
&FG_ps_nut_tmdl_sum_no3_N_tot,
&FG_ps_tot_nitrogen_final_load,
&FG_ps_tot_P_final
 real wla_min_ps_nut_tmdl_sum_org,
&wla_min_ps_nut_tmdl_sum_nh3,
&wla_min_ps_nut_tmdl_sum_no3,
&wla_min_ps_nitrogen_final_load,
&wla_min_ps_P_final
 real wla_ps_WSTLD2_org_cal_sum(1:999),wla_ps_WSTLD2_NH3_cal_sum(1:
&100),wla_ps_WSTLD2_NO3_cal_sum(1:999)
 real wla_ps_total_nitrogen_load(1:999), wla_ps_total_P(1:999)
 real nps_mos_nut_tmdl_nps_Org_N_tot,nps_mos_nps_nh3_n_tot,
&nps_mos_tot_nitrogen_load,nps_mos_total_p
 real nps_FG_nut_tmdl_nps_Org_N_tot,nps_FG_nps_nh3_n_tot,
&nps_FG_tot_nitrogen_load,nps_FG_total_p
 real nps_la_nut_tmdl_nps_Org_N_tot,nps_la_nps_nh3_n_tot,
&nps_la_tot_nitrogen_load,nps_la_total_p
 real min_ps_total_nitrogen_load,min_ps_total_P
 real ps_total_nitrogen_load(1:999),ps_total_P(1:999)

 if (usernum.NE.num) then
   print*,'Usernum does not equal num, there has been a read failur
&e!',num,usernum
   Write(11,*)'This output is NOT correct!'
   end if

 mldt19_tot_cbodu=0
 mldt19_tot_org=0

 incr_CBODu_tot=0
 incr_Org_N_tot=0
 incr_Amm_N_tot=0
 incr_Nitrate_tot=0

 ps_WSTLD2_BOD_cal_tot=0
 ps_WSTLD2_Org_cal_tot=0
 ps_WSTLD2_NH3_cal_tot=0

 nps_WSTLD2_BOD_cal_tot=0
```

```
      nps_WSTLD2_Org_cal_tot=0
      nps_WSTLD2_NH3_cal_tot=0

      WSTLD2_BOD_cal_tot=0
      WSTLD2_Org_cal_tot=0
      WSTLD2_NH3_cal_tot=0

      HDWT_BOD_cal_tot=0
      HDWT_Org_cal_tot=0
      HDWT_NH3_cal_tot=0
      HDWT_NO3_cal_tot=0

      nps_sod_load_tot=0
      nps_benthic_tot=0

      cbodu_tmdl_tot=0
      org_N_tmdl_tot=0
      ammon_tmdl_tot=0
      no3_tmdl_tot=0

      fac_mos_FG=1/(1-(ps_mos+ps_FG))
      con3 = 1.00/1000000.00*1000.00*86400.00
      con4 = 3.7850000000 ! MGD * mg/L * con4,
c     con4 = 3.785 L/gal * 1.0E6 gal/MG * 1.0E-6 kg/mg

      do 180 I=1,num
      mldt19_tot_cbodu=mldt19_tot_cbodu+NP_bod(I)
      mldt19_tot_org= mldt19_tot_org+NP_org(I)
180   continue

C* Here I will arrange the elemntal surface areas into the numerical order to match the order the SOD
C* and NH3 data are in.
c          elem_col(1) = elem_col_int(1)
c          S_Area(1) = S_Area_int(1)
c      DO 185 I=2,total_elem   !need to start at 2 for comaprisons
c          elem_col(I)=I
c          if (elem_col_int(I).EQ.I) then
c             S_Area(I) = S_Area_int(I)
c          else
c
c             DO 184 R=1,total_elem  !go through the list until we get a match
c             if (Elem_col_int(R).EQ.Elem_col(I)) then
c                S_Area(I) = S_Area_int(I)
c             end if
c184          continue
c          end if

c185   continue

      cir=num_incr
      DO 190 cirr=1,cir

      incr_CBODu(cirr)=incr_flow(cirr)*incr2_CBODu_con(cirr)*con3
      incr_Org_N(cirr)=incr_flow(cirr)*incr2_Org_N_con(cirr)*con3
      incr_Amm_N(cirr)=incr_flow(cirr)*incr2_Amm_N_con(cirr)*con3
      incr_NItrate(cirr)=incr_flow(cirr)*incr2_Nitrate_con(cirr)*con3

      incr_CBODu_tot=incr_CBODu_tot+incr_CBODu(cirr)
      incr_Org_N_tot=incr_Org_N_tot+incr_Org_N(cirr)
      incr_Amm_N_tot=incr_Amm_N_tot+incr_Amm_N(cirr)
      incr_Nitrate_tot=incr_Nitrate_tot+incr_Nitrate(cirr)
190   continue

C*********** calcualtions for point soucers EXPLICITLY modeled
      cir=ps_num_wstld
      DO 194 cirr=1,cir
      ps_WSTLD2_BOD_con(cirr)=ps_wstld2_bod(cirr)
      ps_WSTLD2_ORG_con(cirr)=ps_wstld2_org(cirr)
      ps_WSTLD2_NH3_con(cirr)=ps_wstld2_nh3(cirr)
      ps_WSTLD2_NO3_con(cirr)=ps_wstld2_no3(cirr)

      ps_WSTLD2_BOD_cal(cirr)=ps_WSTLD_Flow(cirr)*ps_WSTLD2_BOD_con(cirr
     &)*con3
      ps_WSTLD2_Org_cal(cirr)=ps_WSTLD_FLow(cirr)*ps_WSTLD2_Org_con(cirr
```

```
     &)*con3
      ps_WSTLD2_NH3_cal(cirr)=ps_WSTLD_FLow(cirr)*ps_WSTLD2_NH3_con(cirr
     &)*con3
      ps_WSTLD2_NO3_cal(cirr)=ps_WSTLD_Flow(cirr)*ps_WSTLD2_NO3_con(cirr
     &)*con3

      wla_ps_WSTLD2_org_cal_sum(cirr)=ps_WSTLD2_org_cal(cirr)*(1-ps_mos-
     &ps_FG)
      wla_ps_WSTLD2_NH3_cal_sum(cirr)=ps_WSTLD2_NH3_cal(cirr)*(1-ps_mos-
     &ps_FG)
      wla_ps_WSTLD2_NO3_cal_sum(cirr)=ps_WSTLD2_NO3_cal(cirr)*(1-ps_mos-
     &ps_FG)

      ps_WSTLD2_BOD_cal_tot=ps_WSTLD2_BOD_cal_tot+ps_WSTLD2_BOD_cal(cirr
     &)
      ps_WSTLD2_Org_cal_tot=ps_WSTLD2_Org_cal_tot+ps_WSTLD2_Org_cal(cirr
     &)
      ps_WSTLD2_NH3_cal_tot=ps_WSTLD2_NH3_cal_tot+ps_WSTLD2_NH3_cal(cirr
     &)
      ps_WSTLD2_NO3_cal_tot=ps_WSTLD2_NO3_cal_tot+ps_WSTLD2_NO3_cal(cirr
     &)

       oxy_dem_ps_wstld2_bod_cal(cirr)=1*ps_WSTLD2_BOD_cal(cirr
     &)
       oxy_dem_ps_wstld2_org_cal(cirr)=ammoxy_rat*ps_wstld2_org_cal(cirr
     &)
       oxy_dem_ps_wstld2_nh3_cal(cirr)=ammoxy_rat*ps_wstld2_nh3_cal(cirr
     &)
       mod_tot_oxy_dem_ps(cirr)=oxy_dem_ps_wstld2_bod_cal(cirr)+oxy_dem_
     &ps_wstld2_org_cal(cirr)+ oxy_dem_ps_wstld2_nh3_cal(cirr)

       wla_ps_wstld2_bod_cal(cirr)=ps_wstld2_bod_cal(cirr)*(1-ps_mos-ps_
     &FG)
       wla_ps_WSTLD2_ORG_cal(cirr)=oxy_dem_ps_WSTLD2_Org_cal(cirr)*(1-ps
     &_mos-ps_FG)
       wla_ps_wstld2_nh3_cal(cirr)=oxy_dem_ps_WSTLD2_NH3_cal(cirr)*(1-ps
     &_mos-ps_FG)
       wla_mod_tot_oxy_dem_ps(cirr)=mod_tot_oxy_dem_ps(cirr)*(1-ps_mos-p
     &s_FG)

C     rounding functions (uisng the anint function)

       wla_ps_wstld2_bod_cal(cirr)=wla_ps_wstld2_bod_cal(cirr)*100
       wla_ps_wstld2_bod_cal(cirr)=anint(wla_ps_wstld2_bod_cal(cirr))
       wla_ps_wstld2_bod_cal(cirr)=wla_ps_wstld2_bod_cal(cirr)/100

       wla_ps_wstld2_org_cal(cirr)=wla_ps_wstld2_org_cal(cirr)*100
       wla_ps_wstld2_org_cal(cirr)=anint(wla_ps_wstld2_org_cal(cirr))
       wla_ps_wstld2_org_cal(cirr)=wla_ps_wstld2_org_cal(cirr)/100

       wla_ps_wstld2_nh3_cal(cirr)=wla_ps_wstld2_nh3_cal(cirr)*100
       wla_ps_wstld2_nh3_cal(cirr)=anint(wla_ps_wstld2_nh3_cal(cirr))
       wla_ps_wstld2_nh3_cal(cirr)=wla_ps_wstld2_nh3_cal(cirr)/100

       wla_mod_tot_oxy_dem_ps(cirr)=wla_mod_tot_oxy_dem_ps(cirr)*100
       wla_mod_tot_oxy_dem_ps(cirr)=anint(wla_mod_tot_oxy_dem_ps(cirr))
       wla_mod_tot_oxy_dem_ps(cirr)=wla_mod_tot_oxy_dem_ps(cirr)/100

C*************** nps wasteload calculations
194   continue
      do 196 cirr=1,nps_num_wstld
      nps_WSTLD2_BOD_con(cirr)=nps_wstld2_bod(cirr)
      nps_WSTLD2_ORG_con(cirr)=nps_wstld2_org(cirr)
      nps_WSTLD2_NH3_con(cirr)=nps_wstld2_nh3(cirr)
      nps_WSTLD2_NO3_con(cirr)=nps_wstld2_no3(cirr)

      nps_WSTLD2_BOD_cal(cirr)=nps_WSTLD_Flow(cirr)*nps_WSTLD2_BOD_con(c
     &irr)*con3
      nps_WSTLD2_Org_cal(cirr)=nps_WSTLD_FLow(cirr)*nps_WSTLD2_Org_con(c
     &irr)*con3
      nps_WSTLD2_NH3_cal(cirr)=nps_WSTLD_FLow(cirr)*nps_WSTLD2_NH3_con(c
     &irr)*con3
      nps_WSTLD2_NO3_cal(cirr)=nps_WSTLD_Flow(cirr)*nps_WSTLD2_NO3_con(c
     &irr)*con3
```

```
       nps_WSTLD2_BOD_cal_tot=nps_WSTLD2_BOD_cal_tot+nps_WSTLD2_BOD_cal(c
      &irr)
       nps_WSTLD2_Org_cal_tot=nps_WSTLD2_Org_cal_tot+nps_WSTLD2_Org_cal(c
      &irr)
       nps_WSTLD2_NH3_cal_tot=nps_WSTLD2_NH3_cal_tot+nps_WSTLD2_NH3_cal(c
      &irr)
       nps_WSTLD2_NO3_cal_tot=nps_WSTLD2_NO3_cal_tot+nps_WSTLD2_NO3_cal(c
      &irr)

       nps_WSTLD2_BOD_cal_tot=nps_WSTLD2_BOD_cal_tot*100
       nps_WSTLD2_BOD_cal_tot=anint(nps_WSTLD2_BOD_cal_tot)
       nps_WSTLD2_BOD_cal_tot=nps_WSTLD2_BOD_cal_tot/100

       nps_WSTLD2_Org_cal_tot=nps_WSTLD2_Org_cal_tot*100
       nps_WSTLD2_Org_cal_tot=anint(nps_WSTLD2_Org_cal_tot)
       nps_WSTLD2_Org_cal_tot=nps_WSTLD2_Org_cal_tot/100

       nps_WSTLD2_NH3_cal_tot=nps_WSTLD2_NH3_cal_tot*100
       nps_WSTLD2_NH3_cal_tot=anint(nps_WSTLD2_NH3_cal_tot)
       nps_WSTLD2_NH3_cal_tot=nps_WSTLD2_NH3_cal_tot/100

       nps_WSTLD2_NO3_cal_tot=nps_WSTLD2_NO3_cal_tot*100
       nps_WSTLD2_NO3_cal_tot=anint(nps_WSTLD2_NO3_cal_tot)
       nps_WSTLD2_NO3_cal_tot=nps_WSTLD2_NO3_cal_tot/100


c**********only wasteloads can be divided into point source and non point sources
196    continue

       do 198 cirr= 1, num_wstld
       WSTLD2_BOD_con(cirr)=WSTLD2_BOD(cirr)
       WSTLD2_ORG_con(cirr)=WSTLD2_Org(cirr)
       WSTLD2_NH3_con(cirr)=WSTLD2_NH3(cirr)
       WSTLD2_NO3_con(cirr)=WSTLD2_NO3(cirr)

       WSTLD2_BOD_cal(cirr)=WSTLD_Flow(cirr)*WSTLD2_BOD_con(cirr)*con3
       WSTLD2_Org_cal(cirr)=WSTLD_FLow(cirr)*WSTLD2_Org_con(cirr)*con3
       WSTLD2_NH3_cal(cirr)=WSTLD_FLow(cirr)*WSTLD2_NH3_con(cirr)*con3
       WSTLD2_NO3_cal(cirr)=WSTLD_Flow(cirr)*WSTLD2_NO3_con(cirr)*con3

       WSTLD2_BOD_cal_tot=WSTLD2_BOD_cal_tot+WSTLD2_BOD_cal(cirr)
       WSTLD2_Org_cal_tot=WSTLD2_Org_cal_tot+WSTLD2_Org_cal(cirr)
       WSTLD2_NH3_cal_tot=WSTLD2_NH3_cal_tot+WSTLD2_NH3_cal(cirr)
       WSTLD2_NO3_cal_tot=WSTLD2_NO3_cal_tot+WSTLD2_NO3_cal(cirr)

       wstld2_bod_cal_tot=wstld2_bod_cal_tot*100
       wstld2_bod_cal_tot=anint(wstld2_bod_cal_tot)
       wstld2_bod_cal_tot=wstld2_bod_cal_tot/100

       wstld2_org_cal_tot=wstld2_org_cal_tot*100
       wstld2_org_cal_tot=anint(wstld2_org_cal_tot)
       wstld2_org_cal_tot=wstld2_org_cal_tot/100

       wstld2_NH3_cal_tot=wstld2_NH3_cal_tot*100
       wstld2_NH3_cal_tot=anint(wstld2_NH3_cal_tot)
       wstld2_NH3_cal_tot=wstld2_NH3_cal_tot/100

       wstld2_NO3_cal_tot=wstld2_NO3_cal_tot*100
       wstld2_NO3_cal_tot=anint(wstld2_NO3_cal_tot)
       wstld2_NO3_cal_tot=wstld2_NO3_cal_tot/100
198    continue

       cir=num_hdwt

       DO 199 cirr=1,cir

       HDWT_BOD_cal(cirr)=HDWT1_Flow(cirr)*HDWT2_BOD_con(cirr)*con3
       HDWT_Org_cal(cirr)=HDWT1_FLow(cirr)*HDWT2_Org_con(cirr)*con3
       HDWT_NH3_cal(cirr)=HDWT1_FLow(cirr)*HDWT2_NH3_con(cirr)*con3
       HDWT_NO3_cal(cirr)=HDWT1_Flow(cirr)*HDWT2_NO3_con(cirr)*con3

       HDWT_BOD_cal_tot=HDWT_BOD_cal_tot+HDWT_BOD_cal(cirr)
```

```
      HDWT_Org_cal_tot=HDWT_Org_cal_tot+HDWT_Org_cal(cirr)
      HDWT_NH3_cal_tot=HDWT_NH3_cal_tot+HDWT_NH3_cal(cirr)
      HDWT_NO3_cal_tot=HDWT_NO3_cal_tot+HDWT_NO3_cal(cirr)

      HDWT_bod_cal_tot=HDWT_bod_cal_tot*100
      HDWT_bod_cal_tot=anint(HDWT_bod_cal_tot)
      HDWT_bod_cal_tot=wstld2_bod_cal_tot/100

      HDWT_org_cal_tot=HDWT_org_cal_tot*100
      HDWT_org_cal_tot=anint(HDWT_org_cal_tot)
      HDWT_org_cal_tot=HDWT_org_cal_tot/100

      HDWT_NH3_cal_tot=HDWT_NH3_cal_tot*100
      HDWT_NH3_cal_tot=anint(HDWT_NH3_cal_tot)
      HDWT_NH3_cal_tot=HDWT_NH3_cal_tot/100

      HDWT_NO3_cal_tot=HDWT_NO3_cal_tot*100
      HDWT_NO3_cal_tot=anint(HDWT_NO3_cal_tot)
      HDWT_NO3_cal_tot=HDWT_NO3_cal_tot/100



199   Continue


C*************** total up NPS values from incremetnal flow, tribs and headwaters
      nps_BOD_tot=incr_CBODu_tot+nps_WSTLD2_BOD_cal_tot+
     &HDWT_BOD_cal_tot
      nps_Org_N_tot=incr_Org_N_tot+nps_WSTLD2_Org_cal_tot+
     &HDWT_Org_cal_tot
      nps_NH3_N_tot=incr_Amm_N_tot+nps_WSTLD2_NH3_cal_tot+HDWT_NH3
     &_cal_tot
      nps_NO3_tot=incr_Nitrate_tot+nps_WSTLD2_NO3_cal_tot+HDWT_NO3_cal_t
     &ot

C************* total up oxygen demand for NPS
      oxy_dem_nps_org_N_tot=ammoxy_rat*nps_org_N_tot
      oxy_dem_nps_nh3_tot=ammoxy_rat*nps_nh3_N_tot
      oxy_dem_mldt19_tot_org=ammoxy_rat*mldt19_tot_org


C************* create the element and reach column, as well as other columns for
C************* for SOD and benthic ammonia
      DO 201 I=1,num
          DO 200 J=elem_begin(I), elem_end(I)
               elem_benthis(J)= C2_NH3SR (I)
               elem_sod(J)=SOD_temp_cor(I)
               elem_temp(J)=temp(I)
200            continue
201   continue



      do 202 I=1,total_elem
c               sod_temp_cor(I)=elem_sod(I)*1.065**(elem_temp(I)-20)
               sod_load(I)=sod_temp_cor(I)*s_area_int(I)*1.00/1000.00
               benthic(I)=elem_benthis(I)*s_area_int(I)*1.00/1000.00
               nps_sod_load_tot=nps_sod_load_tot+sod_load(I)
               nps_benthic_tot=nps_benthic_tot+benthic(I)
202   continue


C*****************calculate values for PS and NPS summary sections
      oxy_dem_nps_benthic_tot=ammoxy_rat*nps_benthic_tot

      nps_inflows_tot_oxy_demand=nps_BOD_tot+oxy_dem_nps_org_N_tot+oxy_d
     &em_nps_nh3_tot
      mldt19_tot_oxy_dem=mldt19_tot_cbodu+oxy_dem_mldt19_tot_org
      tot_oxy_dem_sod_ben=nps_sod_load_tot+oxy_dem_nps_benthic_tot

      tot_oxy_dem_nps=nps_inflows_tot_oxy_demand+mldt19_tot_oxy_dem+tot_
     &oxy_dem_sod_ben

      oxy_dem_ps_WSTLD2_Org_cal_tot=ps_WSTLD2_Org_cal_tot*ammoxy_rat
```

```
 oxy_dem_ps_WSTLD2_NH3_cal_tot=ps_WSTLD2_NH3_cal_tot*ammoxy_rat

 nps_summary_cbodu=nps_bod_tot+mldt19_tot_cbodu
 nps_summary_org=oxy_dem_nps_org_N_tot+oxy_dem_mldt19_tot_org
 nps_summary_ammon=oxy_dem_nps_nh3_tot+oxy_dem_nps_benthic_tot

 nps_mos_sod_load_tot=nps_sod_load_tot*nps_mos
 nps_mos_sod_load_tot=nps_mos_sod_load_tot*100
 nps_mos_sod_load_tot=anint(nps_mos_sod_load_tot)/100

 nps_mos_summary_cbodu=nps_summary_cbodu*nps_mos
 nps_mos_summary_cbodu=nps_mos_summary_cbodu*100
 nps_mos_summary_cbodu=anint(nps_mos_summary_cbodu)/100

 nps_mos_summary_org=nps_summary_org*nps_mos
 nps_mos_summary_org=nps_mos_summary_org*100
 nps_mos_summary_org=anint(nps_mos_summary_org)/100

 nps_mos_summary_ammon=nps_summary_ammon*nps_mos
 nps_mos_summary_ammon=nps_mos_summary_ammon*100
 nps_mos_summary_ammon=anint(nps_mos_summary_ammon)/100

 nps_FG_sod_load_tot=nps_sod_load_tot*nps_FG
 nps_FG_sod_load_tot=nps_FG_sod_load_tot*100
 nps_FG_sod_load_tot=anint(nps_FG_sod_load_tot)/100


 nps_FG_summary_cbodu=nps_summary_cbodu*nps_FG
 nps_FG_summary_cbodu=nps_FG_summary_cbodu*100
 nps_FG_summary_cbodu=anint(nps_FG_summary_cbodu)/100

 nps_FG_summary_org=nps_summary_org*nps_FG
 nps_FG_summary_org=nps_FG_summary_org*100
 nps_FG_summary_org=anint(nps_FG_summary_org)/100

 nps_FG_summary_ammon=nps_summary_ammon*nps_FG
 nps_FG_summary_ammon=nps_FG_summary_ammon*100
 nps_FG_summary_ammon=anint(nps_FG_summary_ammon)/100


 nps_mos_tot_oxy_dem=tot_oxy_dem_nps*nps_mos
 nps_mos_tot_oxy_dem=nps_mos_tot_oxy_dem*100
 nps_mos_tot_oxy_dem=anint(nps_mos_tot_oxy_dem)/100


 nps_FG_tot_oxy_dem=tot_oxy_dem_nps*nps_FG
 nps_FG_tot_oxy_dem=nps_FG_tot_oxy_dem*100
 nps_FG_tot_oxy_dem=anint(nps_FG_tot_oxy_dem)/100


 nps_mos_nps_NO3_tot=nps_NO3_tot*nps_mos
 nps_mos_nps_NO3_tot=nps_mos_nps_NO3_tot*100
 nps_mos_nps_NO3_tot=anint(nps_mos_nps_NO3_tot)/100


 nps_FG_nps_NO3_tot=nps_NO3_tot*nps_FG
 nps_FG_nps_NO3_tot=nps_FG_nps_NO3_tot*100
 nps_FG_nps_NO3_tot=anint(nps_FG_nps_NO3_tot)/100


 nps_LA_sod_load_tot=nps_sod_load_tot-nps_MOS_sod_load_tot-nps_FG_s
&od_load_tot
 nps_LA_summary_cbodu=nps_summary_cbodu-nps_MOS_summary_cbodu-nps_F
&G_summary_cbodu
 nps_LA_summary_org=nps_summary_org-nps_MOS_summary_org-nps_FG_summ
&ary_org
 nps_LA_summary_ammon=nps_summary_ammon-nps_MOS_summary_ammon-nps_F
&G_summary_ammon
 nps_LA_nps_NO3_tot=nps_NO3_tot-nps_MOS_nps_NO3_tot-nps_FG_nps_NO3_
&tot

 nps_LA_tot_oxy_dem=tot_oxy_dem_nps-nps_mos_tot_oxy_dem-nps_fg_tot_
&oxy_dem
```

```
c these values are from reading data from La_qual output (and thus ARE NOT minor point sources)
      ps_BOD_tot=ps_WSTLD2_BOD_cal_tot
      ps_Org_N_tot=ps_WSTLD2_Org_cal_tot
      ps_NH3_N_tot=ps_WSTLD2_NH3_cal_tot
      ps_NO3_tot=ps_WSTLD2_NO3_cal_tot

c this produces the "values for tmdl calculations table"
      do 204 I =1, num_pt_sour
               cbodu_tmdl_val(I)=2.30*cbod5_perm(I)
               if (CBOD5_perm(I).EQ.0.OR.CBOD5_perm(I).EQ.-999)then
                  cbodu_tmdl_val(I)=1.00*cod_perm(I)
                  if (cod_perm(I).EQ.0.OR.Cod_perm(I).EQ.-999)then
                  cbodu_tmdl_val(I)=0
               end if
               end if

               ammon_tmdl_val(I)=ammon_perm(I)
               if (ammon_perm(I) .EQ.-999) then
                  ammon_tmdl_val(I)=2*cbod5_perm(I)
                  if (cbod5_perm(I).EQ.-999) then
                     ammon_tmdl_val(I)=0
               end if
               end if

               no3_tmdl_val(I) = 0

               org_N_tmdl_val(I)=ammon_tmdl_val(I)*2.00

               if (cbod5_perm(I).EQ.0.AND.ammon_perm(I).EQ.0) then
               org_N_tmdl_val(I)=0
               ammon_tmdl_val(I)=0
               no3_tmdl_val(I) = 0
               end if

204   continue

C *** caluculate tmdl vlues for tmdl load chart
      do 206 I=1,num_pt_sour
         tmdl_cal_flow(I)=perm_flow(I)*fac_mos_FG
         cbodu_tmdl_cal(I) = tmdl_cal_flow(I)*cbodu_tmdl_val(I)*con4
         org_N_tmdl_cal(I) = tmdl_cal_flow(I)*org_N_tmdl_val(I)*con4
         ammon_tmdl_cal(I) = tmdl_cal_flow(I)*ammon_tmdl_val(I)*con4
         no3_tmdl_cal(I) = tmdl_cal_flow(I)*no3_tmdl_val(I) *con4

         cbodu_tmdl_tot=cbodu_tmdl_tot+cbodu_tmdl_cal(I)
         org_N_tmdl_tot=org_N_tmdl_tot+org_N_tmdl_cal(I)
         ammon_tmdl_tot=ammon_tmdl_tot+ammon_tmdl_cal(I)
         no3_tmdl_tot=no3_tmdl_tot+no3_tmdl_cal(I)

         oxy_dem_org_N_tmdl= org_N_tmdl_tot*ammoxy_rat
         oxy_dem_ammon_tmdl= ammon_tmdl_tot*ammoxy_rat


206   continue
c*********calculate tmdl values for summary chart (using ammox multiplier



c first term is read in from La-qual second is from User supplied data
c more summary calculations
      ps_summary_cbodu=ps_bod_tot+cbodu_tmdl_tot
      ps_summary_org= oxy_dem_ps_wstld2_org_cal_tot+ oxy_dem_org_N_tmdl

      ps_summary_nh3_n=oxy_dem_ps_WSTLD2_NH3_cal_tot+oxy_dem_ammon_tmdl

      tot_oxy_dem_summary=ps_summary_cbodu+ps_summary_org+ps_summary_nh3
     &_n

      mos_ps_summary_cbodu=ps_summary_cbodu*ps_mos
      mos_ps_summary_org=ps_summary_org*ps_mos
      mos_ps_summary_nh3_n= ps_summary_nh3_n*ps_mos

      FG_ps_summary_cbodu=ps_summary_cbodu*ps_FG
      FG_ps_summary_org=ps_summary_org*ps_FG
```

```
      FG_ps_summary_nh3_n= ps_summary_nh3_n*ps_FG


      min_ps_summary_tot=cbodu_tmdl_tot+oxy_dem_org_N_tmdl+oxy_dem_ammon
     &_tmdl

      mos_tot_oxy_dem_summary=tot_oxy_dem_summary*ps_mos
      FG_tot_oxy_dem_summary=tot_oxy_dem_summary*ps_FG

c WLA for minor point sources
      wla_ps_cbodu_tmdl_tot=cbodu_tmdl_tot*(1-ps_mos-ps_FG)
      wla_ps_org_N_tmdl_tot=oxy_dem_org_N_tmdl*(1-ps_mos-ps_FG)
      wla_ps_ammon_tmdl_tot=oxy_dem_ammon_tmdl*(1-ps_mos-ps_FG)
      wla_min_ps_summary_tot=min_ps_summary_tot*(1-ps_mos-ps_FG)


C********** Nutrient TMDL calucaltions (a lot of the NPS calcualatiosn are done above
C********* in lines 677-684
C just need to take nps_org_N_tot from
C the first equtaion (which has org_N from heads, tribs and increments)
C and add mass loads data type 19
C (seen in last term),


C******** the loop below should be with the section "calcualtions for point sources explicitly modeled
C*since the loop below is all PS stuff but oh well I do not want to risk moving it

      if (ps_num_wstld .EQ.0) then
      go to 207
      end if



      do 208 cir=1,ps_num_wstld
             ps_total_nitrogen_load(cir)=ps_WSTLD2_ORG_cal(cir)+ps_WSTLD
     &2_Nh3_cal(cir)+ps_WSTLd2_NO3_cal(cir)
             ps_total_P(cir)=ps_total_nitrogen_load(cir)/nat_rat

             ps_tot_sum_total_nitrogen_load=ps_tot_sum_total_nitrogen_lo
     &ad+ps_total_nitrogen_load(cir)
             ps_tot_sum_total_P=ps_tot_sum_total_P+ps_total_P(cir)

             wla_ps_total_nitrogen_load(cir)=ps_total_nitrogen_load(cir)
     &*(1-ps_mos-ps_FG)
             wla_ps_total_P(cir)=ps_total_P(cir)*(1-ps_mos-ps_FG)

208   continue



207   nut_tmdl_nps_Org_N_tot=nps_org_N_tot+mldt19_tot_org
      nps_tot_nitrogen_load= nut_tmdl_nps_org_N_tot+nps_nh3_n_tot+
     &nps_NO3_tot

      nps_total_P=nps_tot_nitrogen_load/nat_rat

      nps_mos_nut_tmdl_nps_Org_N_tot=nut_tmdl_nps_Org_N_tot*nps_mos
      nps_mos_nps_nh3_n_tot=nps_nh3_n_tot*nps_mos
      nps_mos_nps_NO3_tot=nps_NO3_tot*nps_mos
      nps_mos_tot_nitrogen_load=nps_tot_nitrogen_load*nps_mos
      nps_mos_total_p=NPS_total_p*nps_mos

      nps_FG_nut_tmdl_nps_Org_N_tot=nut_tmdl_nps_Org_N_tot*nps_FG
      nps_FG_nps_nh3_n_tot=nps_nh3_n_tot*nps_FG
      nps_FG_nps_NO3_tot=nps_NO3_tot*nps_FG
      nps_FG_tot_nitrogen_load=nps_tot_nitrogen_load*nps_FG
      nps_FG_total_p=NPS_total_p*nps_FG

      nps_la_nut_tmdl_nps_Org_N_tot=nut_tmdl_nps_Org_N_tot*(1-nps_mos-np
     &s_FG)
      nps_la_nps_nh3_n_tot=nps_nh3_n_tot*(1-nps_mos)
      nps_la_nps_NO3_tot=nps_NO3_tot*(1-nps_mos)
      nps_la_tot_nitrogen_load=nps_tot_nitrogen_load*(1-nps_mos)
```

```
      nps_la_total_p=npS_total_p*(1-nps_mos)

      min_ps_total_nitrogen_load=org_N_tmdl_tot+ammon_tmdl_tot+no3_tmdl_
     &tot
      min_ps_total_P=min_ps_total_nitrogen_load/nat_rat

      ps_nut_tmdl_summary_org_N_tot=ps_WSTLD2_Org_cal_tot+org_N_tmdl_tot
      ps_nut_tmdl_summary_nh3_N_tot=ps_WSTLD2_NH3_cal_tot+ammon_tmdl_tot
      ps_nut_tmdl_summary_no3_N_tot=ps_WSTLD2_NO3_cal_tot+no3_tmdl_tot

      ps_tot_nitrogen_final_load=min_ps_total_nitrogen_load+ps_tot_sum_t
     &otal_nitrogen_load
      ps_tot_P_final=min_ps_total_P+ps_tot_sum_total_P

      mos_ps_nut_tmdl_sum_org_N_tot=ps_nut_tmdl_summary_org_N_tot*ps_mos
      mos_ps_nut_tmdl_sum_nh3_N_tot=ps_nut_tmdl_summary_nh3_N_tot*ps_mos
      mos_ps_nut_tmdl_sum_no3_N_tot=ps_nut_tmdl_summary_no3_N_tot*ps_mos

      FG_ps_nut_tmdl_sum_org_N_tot=ps_nut_tmdl_summary_org_N_tot*ps_FG
      FG_ps_nut_tmdl_sum_nh3_N_tot=ps_nut_tmdl_summary_nh3_N_tot*ps_FG
      FG_ps_nut_tmdl_sum_no3_N_tot=ps_nut_tmdl_summary_no3_N_tot*ps_FG

      mos_ps_tot_nitrogen_final_load=ps_tot_nitrogen_final_load*ps_mos
      mos_ps_tot_P_final=ps_tot_P_final*ps_mos

      FG_ps_tot_nitrogen_final_load=ps_tot_nitrogen_final_load*ps_FG
      FG_ps_tot_P_final=ps_tot_P_final*ps_FG

      wla_min_ps_nut_tmdl_sum_org=org_N_tmdl_tot*(1-ps_mos-ps_FG)
      wla_min_ps_nut_tmdl_sum_nh3=ammon_tmdl_tot*(1-ps_mos-ps_FG)
      wla_min_ps_nut_tmdl_sum_no3=no3_tmdl_tot*(1-ps_mos-ps_FG)

      wla_min_ps_nitrogen_final_load=min_ps_total_nitrogen_load*(1-p
     &s_mos-ps_FG)
      wla_min_ps_P_final=min_ps_total_P*(1-ps_mos-ps_FG)

c590   write(11,6090)'Calculated load for minor point sources   ',org_N_t
c     &mdl_tot,ammon_tmdl_tot,no3_tmdl_tot,min_ps_total_nitrogen_load,min
c     &_ps_total_P



c      write(11,6090)'Total for all point source loads             ',ps_n
c     &ut_tmdl_summary_org_N_tot,ps_nut_tmdl_summary_nh3_N_tot,ps_nut_tmd
c     &l_summary_no3_N_tot,ps_tot_nitrogen_final_load,ps_tot_P_final




C***********Output File Write Statements

C*****SECTION: "TMDL CALCULATIONS FOR SUBSEGMENT:"

990   format(A33,2x,A10,2x,A20)
      Write (11,990)'TMDL CALCULATIONS FOR SUBSEGMENT:',subsegnumber,sub
     &segname
      Write(11,*)'FTN ASSOCIATES, LTD.'
      Write(11,*)'Program:Pr20m6f'
      Write(11,*)' '
      Write(11,*)'INFO FOR INPUT FILE WITH USER SPECIFIED DATA AND OPTIO
     &NS:'
      Write(11,*)'File name:',userfilename
      write(11,*)' '
      write(11,*)'INFO FOR LA-QUAL OUTPUT FILE:'
      Write(11,*)'File name:',laqualfilename
      Write(11,*)'Date/Time:',pertime
      write(11,*)LAQUAL_version
      write(11,*)'  '
      Write(11,*)'LIST OF ALL REACHES IN LA-QUAL OUTPUT FILE:'
      DO 209 numm=1, num
1000      Format(A7,1x,I3,1x,A10,1x,I3,1x,A1,1x,I3,A18,2x,A6,1x,A15)
209       WRITE(11,1000)'Reach',np_Reach(numm),'(Elements',Elem_begin(nu
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```
     &mm),'-',elem_end(numm),') is in subsegment',reach_subseg_num(numm)
     &,reach_name(numm)
      write(11,*)' '


C***** SECTION:"CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, TRIBUTARIES, AND INCREMENTAL INFLOW):"

      Write(11,3030)
      write(11,*)' '
3030  FORmat(102('='))
      Write(11,*)'CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, T
     &RIBUTARIES, AND INCREMENTAL INFLOW):'
      Write(11,*)' '
      write(11,*)'Equation used: (Load, kg/day) = (Inflow rate, m3/sec)
     &* (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m3 *'
      write(11,*)'
     &                           86400 sec/day'
      write(11,*)' '
      Write(11,*)'Values from LA-QUAL output:'
      write(11,*)' '
      Write(11,*)'Reach or   Inflow      CBODu     Organic N   Ammonia N
     &        NO2+NO3 N'
      write(11,*)'Element     rate        conc.       conc.       conc.
     &          conc.'
      write(11,*)'number    (m3/sec)     (mg/L)      (mg/L)      (mg/L)
     &          (mg/L)     Name of inflow'
      write(11,*)'------    --------    --------    --------    --------
     &        --------     --------------------'
3050  Format(I3,5x,f10.5,4x,f8.2,4x,f8.2,4x,f8.2,8x,f8.2,5x,A25)
      do 210 cir=1,num_hdwt
210      write(11,3050) HDWT1_elem(cir), HDWT1_Flow(cir), HDWT2_BOD_con(
     &cir),HDWT2_ORG_con(cir),HDWT2_NH3_con(cir), HDWT2_NO3_con(cir),
     &hdwt1_name(cir)
      do 220 cir=1,nps_num_wstld
220   write(11,3050)nps_elem_wstld(cir),nps_WSTLD_Flow(cir), nps_WSTL
     &D2_BOD_con(cir),nps_WSTLD2_ORG_con(cir), nps_WSTLD2_NH3_con(cir),
     &nps_WSTLD2_NO3_con(cir),NPS_wstld_name(cir)
      do 222 cir=1,num_incr
222   write(11,3050)incr_reach(cir),incr_inFlow(cir), incr2_CBODu_con(ci
     &r),incr2_ORG_N_con(cir),incr2_Amm_N_con(cir),incr2_Nitrate_con(cir
     &),'Incremental Reach flow   '
      write(11,*)'  '
c      write(11,*)'------    --------    --------    --------    --------
c     &        --------     --------------------'
      write(11,*)'  '
      write(11,*)'Calculated values:'
      write(11,*)' '
      write(11,*)'                          CBODu     Organic N   Ammonia
     &N   NO2+NO3 N'
      write(11,*)'             Element     load        load        load
     &     load'
      write(11,*)'             number    (kg/day)    (kg/day)    (kg/day
     &)    (kg/day)'
      write(11,*)'             ------    --------    --------    --------
     &    --------'
3060  Format(13x,I3,5x,f10.2,2x,f10.2,1x,f10.2,2x,f10.2)
      cir=num_hdwt
      do 224 cirr=1,cir
224      write(11,3060) HDWT1_elem(cirr), HDWT_BOD_cal(cirr),
     &HDWT_ORG_cal(cirr),HDWT_NH3_cal(cirr), HDWT_NO3_
     &cal(cirr)
      cir=nps_num_wstld
      do 226 cirr=1,cir
226      write(11,3060)nps_elem_wstld(cirr),nps_WSTLD2_BOD_cal(cirr)
     &, nps_WSTLD2_ORG_cal(cirr), nps_WSTLD2_NH3_cal(cirr), nps_WSTLD2_N
     &O3_cal(cirr)
      do 228 cirr=1,num_incr
228      write(11,3060)incr_reach(cirr),incr_CBODu(cirr)
     &, incr_Org_N(cirr), incr_Amm_N(cirr),incr_NITrate(cirr)
      write(11,*)'             ------    --------    --------    --------
     &    --------'
3070  Format(A19,f12.2,2x,f10.2,1x,f10.2,2x,f10.2)
      write(11,3070)'Subsegment totals:',nps_BOD_tot,nps_Org_N_tot,nps_
     &NH3_N_tot,nps_NO3_tot
```

```
      write(11,*)' '


C***** SECTION:"CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TYPE 19:"

      Write(11,3030)
      write(11,*)' '
      write(11,*)'CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TY
     &PE 19:'
      write(11,*)' '
      write(11,*)'Values from LA-QUAL output:'
      write(11,*)' '
      write(11,*)'                                        CBODu       Orga
     &nic N'
      write(11,*)'                         Reach      mass load     mass
     & load'
      write(11,*)'                         number      (kg/day)      (kg
     &/day)'
      write(11,*)'                         ------      --------    -----
     &------'
      DO 230 numm=1,num
3080  Format(26X,I3,6x,F10.2,5x,F10.2)
230      Write(11,3080)NP_reach(numm),NP_BOD(numm), NP_Org(numm)
      write(11,*)'                         ------      --------    -----
     &------'
3090  format(A33,F12.2,3x,F12.2)
      write(11,3090)'Subsegment totals               ',MLDT19_tot_CBODu
     &,MLDT19_tot_org
      write(11,*)' '


C***** SECTION:"CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:"

      ctr=1
      write(11,3030)
      write(11,*)'  '
      write(11,*)'CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:'
      write(11,*)'  '
      write(11,*)'SOD temperature correction factor used in LA-QUAL mode
     &l: 1.065 (default)'
      write(11,*)' '
      write(11,*)'Equations used: SOD temp. corrected = (SOD at 20 C) *
     &1.065^(Water temp - 20 C)'
      write(11,*)'                SOD load = (SOD temp. corrected, g/m2/
     &day) * (Surface area, m2) * 1.0E-3 kg/g'
      write(11,*)'                Benthic NH3-N load = (Benthic ammonia
     &N, g/m2/day) * (Surface area, m2) * 1.0E-3 kg/g'
      write(11,*)' '
      write(11,*)' '
      write(11,*)'                              Values from LA-QUAL output
     &:                  Calculated values:'
      write(11,*)'                     ----------------------------------
     &---------    --------------------------------'
      write(11,*)'                      Water     Surface      SOD at
     &Benthic      SOD temp.     SOD       Benthic'
      write(11,*)'Reach    Element     temp.       area        20 C
     &ammonia N    corrected     load     NH3-N load'
      write(11,*)'number   number     (deg C)      (m2)     (g/m2/day)
     &(g/m2/day)  (g/m2/day)   (kg/day)    (kg/day)'
      write(11,*)'------   ------    --------    --------    --------
     &--------     --------    --------    ---------'
      DO 300 cir=1, total_elem
4000  format(I3,7x,I3,4x,f10.2,1x,f10,3x,f10.3,1x,f10.2,5x,f6.3,3x,f10.2
     &,6x,f6.2)
4001  if (cir.LT.elem_begin(ctr)) then

      ctr=ctr-1
      go to 4001
      end if

4002  if (cir.GT.elem_end(ctr)) then
      ctr=ctr+1
      go to 4002
      end if
```

```
4009  FORMAT(I3,2x,I3,2x,I3,2x,F6.2,2x,I3,2x,I3,2x,F8.4)
C      write(13,4009)cir,elem_begin(ctr),elem_end(ctr),elem_col(cir),ctr,
C     &np_reach(ctr),elem_sod(cir)

      write (11,4000)np_reach(ctr),cir,elem_temp(cir),
     &s_area_int(cir),elem_sod(cir), elem_benthis(cir),sod_temp_cor(cir)
     &,sod_load(cir),benthic(cir)

300   continue
      write(11,*)'
     &                        --------    ---------'
4010  format(A60,16x,F10.2,2x,f10.2)
      write(11,4010)'Subsegment totals:',nps_sod_load_tot,nps_benthic_to
     &t
      write(11,*)' '


C***** SECTION:"CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EXPLICITLY MODELED:"

      write(11,3030)
      write(11,*)' '
      write(11,*)'CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EX
     &PLICITLY MODELED:'
      write(11,*)' '
      if (ps_num_wstld.EQ.0) then
      WRITE(11,*)'For this subsegment, there are no point source dischar
     &ges explicitly modeled.'
      go to 335
      end if
      write(11,*)'Equation used: (Load, kg/day) = (Inflow rate, m3/sec)
     &* (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m3 *'
      write(11,*)'
     &                               86400 sec/day'
      write(11,*)'  '
      write(11,*)'Values from LA-QUAL output:'
      write(11,*)'  '
      write(11,*)'          Inflow      CBODu     Organic N   Ammonia N
     &   NO2+NO3 N'
      write(11,*)'Element     rate        conc.       conc.       conc.
     &     conc.'
      write(11,*)'number    (m3/sec)     (mg/L)      (mg/L)      (mg/L)
     &      (mg/L)     Name of discharge'
      write(11,*)'------    --------    --------    --------    --------
     &    --------    --------------------'
      DO 330 cir=1,ps_num_wstld
4020  Format(I3,5x,f10.5,5x,f7.3,5x,f7.3,5x,f7.3,5x,f7.3,6x,A20)
        write(11,4020)ps_elem_wstld(cir),ps_WSTLD_Flow(cir), ps_WSTL
     &D2_BOD_con(cir),ps_WSTLD2_ORG_con(cir), ps_WSTLD2_NH3_con(cir),
     &ps_WSTLD2_NO3_con(cir),PS_wstld_name(cir)
330   continue
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'Calculated values:'
      write(11,*)' '
      write(11,*)'  '
      write(11,*)'                        CBODu     Organic N   Ammonia N
     & NO2+NO3 N'
      write(11,*)'            Element     load        load        load
     &       load'
      write(11,*)'            number    (kg/day)    (kg/day)    (kg/day)
     &    (kg/day)'
      write(11,*)'            ------    --------    --------    --------
     &    --------'
      cir=ps_num_wstld
      if (ps_num_wstld .EQ.0) then
      write(11,*)'             NONE         0.00        0.00        0.00
     &        0.00'
      go to 342
      end if
      do 340 cirr=1,cir
4030  Format(13x,I3,4x,f10.2,4x,f8.2,4x,f8.2,4x,f8.2)
340      write(11,4030)ps_elem_wstld(cirr),ps_WSTLD2_BOD_cal(cirr)
```

```
     &, ps_WSTLD2_ORG_cal(cirr), ps_WSTLD2_NH3_cal(cirr), ps_WSTLD2_N
     &O3_cal(cirr)
342   write(11,*)'            ------    --------    --------    --------
     &    --------'
4040  Format(A16,4x,f10.2,2x,f10.2,2x,f10.2,2x, f10.2)
      write(11,4040)'Subsegment totals:',ps_BOD_tot,ps_Org_N_tot,ps_
     &NH3_N_tot,ps_NO3_tot
      write(11,*)'  '
      write(11,*)'  '


C*****SECTION:"CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NOT EXPLICITLY MODELED:"

335   write(11,3030)
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NO
     &T EXPLICITLY MODELED:'
      write(11,*)'  '
      if (num_pt_sour.EQ.0) THEN
         WRITE(11,*)'For this subsegment, there are no point source disc
     &harges not explicitly modeled.'
         write(11,*)' '
         GO TO 431
         END IF
4045  format (A62,f6.3,A33)
      write(11,4045)'Equations used: Flow rate from TMDL calcs = Permit
     &flow rate * ',fac_mos_FG,' (to incorporate MOS and FG) '
      write(11,*)'                (Load, kg/day) = (Flow rate, MGD) * (C
     &onc., mg/L) * 3.785 L/gal * 1.0E6 gal/MG * 1.0E-6 kg/mg'
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'Assumptions: Ratio of CBODu to CBOD5 for point source
     & dissharges = 2.3 (guidance from LTP).'
      write(11,*)'             For permits with BOD or ammonia limits, N
     &O2+NO3 = 10 mg/L (drinking water criteria).'
      write(11,*)'             For permits with COD limits, assume that
     &CBODu is about the same magnitude as COD and'
      write(11,*)'                          that discharges of nitrogen (o
     &rganic, ammonia, and NO2+NO3) are negligible.'
      write(11,*)' '
      write(11,*)'  '
      write(11,*)'                          Permit    Factor to      Flow
     &'
      write(11,*)'NPDES                     flow    incorporate   rate fo
     &r'
      write(11,*)'permit      Outfall       rate     MOS and FG   TMDL ca
     &lcs            '
      write(11,*)'number      number        (MGD)     into flow       (MG)
     &D      Comments'
      write(11,*)'--------    --------    --------    --------    ------
     &--    ----------------------------------------'
      do 400 I= 1,num_pt_sour
         tmdl_cal_flow(I)=perm_flow(I)*fac_mos_FG
4050     Format(A10,4x,A3,5x,F10.3,3x,F6.3,4x,f10.3,5x,A40)
         write (11,4050)permit_number(I), outfall_num(I),perm_flow(I),fa
     &c_mos_FG,tmdl_cal_flow(I), comment(I)
400    continue
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'                           User specified permit limits
     &:'
      write(11,*)' NPDES                   ------------------------------
     &-'
      write(11,*)' permit      Outfall     CBOD5        COD       Ammoni
     &a'
      write(11,*)' number      number      (mg/L)      (mg/L)      (mg/L
     &)     Comments'
      write(11,*)'--------    --------    --------    --------    ------
     &--    ----------------------------------------'
      do 410 I= 1,num_pt_sour
4060     Format(A10,4x,A3,5x,F10.1,2x,F10.1,2x,F10.1,4x,A40)
410      write (11,4060)permit_number(I), outfall_num(I),CBOD5_perm(I),
```

```
     &COD_perm(I), ammon_perm(I),comment_con(I)
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'                                Values for TMDL calcul
     &ations:'
      write(11,*)' NPDES                  ------------------------------
     &-------------'
      write(11,*)' permit      Outfall     CBODu     Organic N   Ammonia
     & N   NO2+NO3 N'
      write(11,*)'  number      number      (mg/L)      (mg/L)      (mg/
     &L)      (mg/L)     Comments'
      write(11,*)'--------    --------    --------    --------    ------
     &--    --------    ----------------------------'
      do 420 I= 1,num_pt_sour
         tmdl_cal_flow(I)=perm_flow(I)*fac_MOS_fg
4070     Format(A10,4x,A3,5x,F10.2,2x,F10.2,2x,F10.2,2x,F10.2)
420      write (11,4070)permit_number(I), outfall_num(I),CBODu_tmdl_val(
     &I),org_N_tmdl_val(I),ammon_tmdl_val(I), no3_tmdl_val(I)
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'                                        Calculated loads
     &:'
      write(11,*)' NPDES                  ------------------------------
     &-------------'
      write(11,*)' permit      Outfall     CBODu     Organic N   Ammonia
     &N   NO2+NO3 N'
      write(11,*)' number      number     (kg/day)    (kg/day)    (kg.da
     &y)   (kg.day)     Comments'
      write(11,*)'--------    --------    --------    --------    ------
     &--    --------    ----------------------------'
      DO 430 I= 1,num_pt_sour
4080     Format(A10,4x,A3,5x,F10.2,2x,F10.2,2x,F10.2,2x,F10.2)
         write(11,4080)permit_number(I), outfall_num(I),cbodu_tmdl_cal(I
     &), org_n_tmdl_cal(I),ammon_tmdl_cal(I),no3_tmdl_cal(I)
430   continue
      write(11,*)'                            --------    --------    ------
     &--    --------'
4090  format(A20,2x,f10.2,2x,f10.2,2x,f10.2,2x, f10.2)
      write(11,4090)'Subsegment total',cbodu_tmdl_tot,org_N_tmdl_tot,amm
     &on_tmdl_tot,no3_tmdl_tot


C*****SECTION:"SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT:"

431   write(11,3030)
      write(11,*)' '
      write(11,*)'SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBS
     &EGEMENT:'
      write(11,*)' '
      write(11,*)' '
4093  format(A52,f6.4,A30)
      write(11,4093)'Equations used:  Organic N oxygen demand, kg/day =
     &',ammoxy_rat,' * Organic N load, kg/day of N'
4094  format(A52,F6.4,A30)
      write(11,4094)'                 Ammonia N oxygen demand, kg/day =
     &',ammoxy_rat,' * Ammonia N load, kg/day of N'
4095  format(A37,f4.1,A24)
      write(11,4095)'                 Margin of safety = ',nps_mos_per,'
     &% * nonpoint source load'
4097  format(A34,f4.1,A24)
      write(11,4097)'                 Future Growth = ',nps_FG_per,'% *
     &nonpoint source load'
4099  format(A36,f4.1,A24)
      write(11,4099)'                 Load Allocation = ',100-nps_mos_pe
     &r-ps_FG_per,'% * nonpoint source load'
      write(11,*)' '
      write(11,*)'Values from calculations above'
      write(11,*)' '
      write(11,*)'
     &    Nitrogen loads (kg/day of N):'
      write(11,*)'
     &---------------------------------'
```

```
      write(11,*)'                                    SOD       CBODu
     &Organic      Ammonia     NO2+NO3 N'
      write(11,*)'                                 (kg/day)    (kg/day)   (
     &kg/day)     (kg/day)     (kg/day)'
      write(11,*)'                                 --------    --------   -
     &-------     --------     ---------'
5000  format(A36,4x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
      write(11,5000)'NPS inflows                      N/A ',nps_bod_tot,n
     &ps_org_N_tot,nps_nh3_n_tot,nps_NO3_tot
5010  format(A36,4x,f10.2,1x,f10.2,4x,A20)
      write(11,5010)'Mass LOads (data type 19)       N/A ',mldt19_tot_cb
     &odu,mldt19_tot_org,'N/A          N/A'
5020  format(A15,13x,f10.2,1x,A20,5x,f10.2,7x,A4)
      write(11,5020)'SOD and Benthic ammonia',nps_sod_load_tot,'N/A
     &   N/A',nps_benthic_tot,'N/A'
c      write(11,*)'                                --------    --------   -
c     &-------     --------     ---------'
      write(11,*)'  '
      write(11,*)'Calculated loads of oxygen demand:'
      write(11,*)'
     & Oygen demand loads:     Total'
      write(11,*)'
     & -------------------     Oxygen'
      write(11,*)'                                    SOD       CBODu
     &Organic      Ammonia     demand'
      write(11,*)'                                 (kg/day)    (kg/day)   (
     &kg/day)     (kg/day)     (kg/day)'
      write(11,*)'                                 --------    --------   -
     &-------     --------     ---------'
c5000  format(A36,4x,f10.5,2x,f10.5,2x,f10.5,3x,f10.5)

      write(11,5000)'NPS inflows                      N/A ',nps_bod_tot,
     &oxy_dem_nps_org_N_tot,oxy_dem_nps_nh3_tot,nps_inflows_tot_oxy_dema
     &nd
5011  format(A36,4x,f10.2,1x,f10.2,8x,A3,6x,f10.2)
      write(11,5011)'Mass LOads (data type 19)       N/A ',mldt19_tot_cb
     &odu,oxy_dem_mldt19_tot_org,'N/A',mldt19_tot_oxy_dem
5021  format(A15,13x,f10.2,1x,A20,5x,f10.2,4x,f10.2)
      write(11,5021)'SOD and Benthic ammonia',nps_sod_load_tot,'N/A
     &   N/A',oxy_dem_nps_benthic_tot,tot_oxy_dem_sod_ben
      write(11,*)' '
5030  format(A23,5x,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
      write(11,5030)'Total for all NPS loads',nps_sod_load_tot,nps_summa
     &ry_cbodu,nps_summary_org,nps_summary_ammon, tot_oxy_dem_nps
      write(11,*)' '
5035  format(A22,f4.1,A2,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
      write(11,5035)'NPS future growth    (',nps_FG_per,'%)    ',nps_FG_
     &sod_load_tot,nps_FG_summary_cbodu,nps_FG_summary_org,nps_FG_s
     &ummary_ammon,nps_FG_tot_oxy_dem
5040  format(A22,f4.1,A2,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
      write(11,5040)'NPS margin of safety (',nps_mos_per,'%)    ',nps_mo
     &s_sod_load_tot,nps_mos_summary_cbodu,nps_mos_summary_org,nps_mos_s
     &ummary_ammon,nps_mos_tot_oxy_dem
5050  format(A22,f4.1,A2,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
      write(11,5050)'NPS load allocation  (',100-nps_MOS_PER-nps_FG_PER
     &,'%)    ',npS_LA_sod_load_tot,nps_LA _summary_cbodu,nps_LA_summary
     &_org,nps_La_summary_ammon,nps_LA_tot_oxy_dem
      write(11,*)' '
      write(11,*)'  '


C*****SECTION:"SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT"

      write(11,3030)
      write(11,*)' '
      Write(11,*)'SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGE
     &MENT'
      write(11,*)' '
      if (num_pt_sour+ps_num_wstld.EQ.0) THEN
         WRITE(11,*)'For this subsegment, there are no point source disc
     &harges either modeled or unmodeled in this subsegment.'
         write(11,*)' '
         GO TO 561
         end if
```

```
      write(11,*)'  '
      write(11,4093)' Equations used: Organic N oxygen demand, kg/day =
     & ',ammoxy_rat,' * Organic N load, kg/day of N'
      write(11,4093)'                 Ammonia N oxygen demand, kg/day =
     & ',ammoxy_rat,' * Ammonia N load, kg/day of N'
5052  format(A36,f4.1,A21)
      write(11,5052)'                 Margin of Safety = ',ps_mos_per,'%
     & * point source load'
5053  format(A33,F4.1,A24)
      write(11,5053)'                 Future Growth = ',nps_FG_per,'% *
     &nonpoint source load'
5054  format(A71,f4.1,A16)
      write(11,5054)'                 Wasteload Allocation (WLA) for mod
     &eled point source = ',100-ps_mos_per-ps_FG_per,'% * modeled load'
5056  format(A70,f4.1,A19)
      write(11,5056)'                 Wasteload Allocation (WLA) for min
     &or point sources = ',100-ps_mos_per-ps_FG_per,'% * calculated load
     &'
      write(11,*)' '
      write(11,*)'Values from calculations above'
      write(11,*)'
     & Nitrogen loads (kg/day of N):'
      write(11,*)'                                                      -
     &--------------------------------'
      write(11,*)'                                                       CBODu    O
     &rganic N   Ammonia N    NO3+NO2'
      write(11,*)'                                                      (kg/day)
     &(kg/day)    (kg/day)    (kg/day)'
      write(11,*)'                                                      -------   -
     &--------    --------    --------'
      if (ps_num_wstld .EQ.0) then
      go to 470
      end if
      DO 450 cir=1,ps_num_wstld
5060  Format(A17,1x,A20,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,5060)'Modeled load for:' ,ps_wstld_name(cir),
     &ps_WSTLD2_Bod_cal(cir),ps_WSTLD2_ORG_cal(cir), ps_WSTLD2_N
     &h3_cal(cir),ps_WSTLd2_NO3_cal(cir)
450   continue
5080  format(A38,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
470   write(11,5080)'Calculated load for minor point sources   ',cbodu_t
     &mdl_tot,org_N_tmdl_tot,ammon_tmdl_tot,no3_tmdl_tot
      write(11,*)'  '
      write(11,*)'  '
      write(11,*)'Calculated loads of oxygen demand'
      write(11,*)' '
      write(11,*)'
     & Oygen demand loads:     Total'
      write(11,*)'
     & -------------------     Oxygen'
      write(11,*)'                                                       CBODu    O
     &rganic N   Ammonia N     demand'
      write(11,*)'                                                      (kg/day)
     &(kg/day)    (kg/day)    (kg/day)'
      write(11,*)'                                                      -------   -
     &--------    --------    --------'
      if (ps_num_wstld .EQ.0) then
      go to 540
      end if
      DO 490 cir=1,ps_num_wstld
      write(11,5060)'Modeled load for:',ps_wstld_name(cir),
     &oxy_dem_ps_WSTLD2_Bod_cal(cir),oxy_dem_ps_WSTLD2_ORG_cal(cir),oxy_
     &dem_ps_WSTLD2_Nh3_cal(cir),mod_tot_oxy_dem_ps(cir)
490   continue
540   write(11,5080)'Calculated load for minor point sources   ',cbodu_t
     &mdl_tot,oxy_dem_org_N_tmdl, oxy_dem_ammon_tmdl,min_ps_summary_tot
      write(11,5080)'Total for all point source loads             ',ps_s
     &ummary_cbodu, ps_summary_org,ps_summary_nh3_n,tot_oxy_dem_summary
      write(11,*)' '
5090  Format(A31,f4.1,A3,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,5090)'MOS for all point Sources     (',ps_mos_per,'%)  ',
     &mos_ps_summary_cbodu, mos_ps_summary_org,mos_ps_summary_nh3_n,mos_
     &tot_oxy_dem_summary
5092  Format(A31,f4.1,A3,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
```

```
      write(11,5092)'FG for all point Sources      (',ps_FG_per,'%)  ',
     &FG_ps_summary_cbodu,FG_ps_summary_org,FG_ps_summary_nh3_n,FG_
     &tot_oxy_dem_summary

      if (ps_num_wstld .EQ.0) then
      go to 560
      end if
      DO 550 cir=1,ps_num_wstld
5095  Format(A8,1x,A21,A1,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,5095)'WLA for:',ps_wstld_name(cir),'(',100-ps_mos_per-ps_
     &FG_per,'%)',wla_ps_WSTLD2_BOD_cal(cir),wla_ps_WSTLD2_ORG_cal(cir),
     &wla_ps_WSTLd2_nH3_cal(cir),wla_mod_tot_oxy_dem_ps(cir)
550   continue
6000  format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
560   write(11,6000)'WLA for minor point sources   (',100-ps_mos_per-ps_
     &FG_per,'%)   ',wla_ps_cbodu_tmdl_tot,wla_ps_org_N_tmdl_tot, wla_ps
     &_ammon_tmdl_tot,wla_min_ps_summary_tot


      if (nut_tmdl_need .EQ. 'YES') then
         goto 561
      else
         go to 605
      end if


C*****SECTION:"NUTRIENT TMDL CALCULATIONS:"

561   write(11,3030)
      write(11,*)' '
      write(11,*)' '
      write(11,*)'NUTRIENT TMDL CALCULATIONS:'
      write(11,*)'  '
      if(nut_tmdl_need.EQ.'NO') then
      write(11,*)'No nutrient TMDL is needed for this subsegment'
      go to 605
      end if
      write(11,*)'Assumptions: Naturally occurring ratio of total N to t
     &otal P = ',nat_rat
      write(11,*)' '
      write(11,*)'Equations used: Total N = (Organic N) + (Ammonia N) +
     &(NO2+NO3 N)'
      write(11,*)'                Total P = (Total N) / (Naturally occur
     &ring ratio of total N to total P)'
6010  format(A39,f4.1,A24)
      write(11,6010)'              NPS margin of safety = ',nps_mos_per,
     &'% * nonpoint source load'
6015  format(A36,f4.1,A24)
      write(11,6015)'              NPS Future Growth = ',nps_FG_per,
     &'% * nonpoint source load'
6020  format(A38,f4.1,A24)
      write(11,6020)'                NPS load allocation = ',100-nps_mos
     &_per-nps_FG_per,'% * nonpoint source load'
6030  format(A57,f4.1,A27)
      write(11,6030)'                Margin of safety for all point sour
     &ces = ',ps_mos_per,'% * total point source load'
6035  format(A53,F4.1,A24)
      write(11,6035)'                Future Growth for all point soures
     &= ',nps_FG_per,'% * nonpoint source load'
6040  format(A70,f4.1,A16)
      write(11,6040)'                Wasteload allocation (WLA) for mode
     &led point source = ',100-ps_mos_per-ps_FG_per,'% * modeled load'
6050  format(A69,f4.1,A19)
      write(11,6050)'                Wasteload allocation (WLA) for mino
     &r point sources = ',100-ps_mos_per-ps_FG_per,'% * calculated load'
      write(11,*)'  '
      write(11,*)' '
      write(11,*)'Nonpoint sources:'
      write(11,*)'                                                 Organic N
     &Ammonia N   NO2+NO3 N    Total N     Total P'
      write(11,*)'                                                  (kg/day)
     & (kg/day)    (kg/day)    (kg/day)    (kg/day)'
      write(11,*)'                                                  --------
     & --------    --------    --------    --------'
```

```
6060  format(A25,16x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6060)'Total for all NPS loads                    ',nut_tm
     &dl_nps_org_N_tot,nps_nh3_n_tot,nps_NO3_tot,nps_tot_nitrogen_load,n
     &ps_total_P
      write(11,*)'  '
6070  format(A22,f4.1,A2,13x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6070)'NPS margin of safety (',nps_mos_per,'%)    ',nps_mo
     &s_nut_tmdl_nps_Org_N_tot,nps_mos_nps_nh3_n_tot,nps_mos_nps_NO3_tot
     &,nps_mos_tot_nitrogen_load,nps_mos_total_p
6075  format(A22,f4.1,A2,13x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6075)'NPS Future Growth    (',nps_mos_per,'%)    ',nps_FG
     &_nut_tmdl_nps_Org_N_tot,nps_FG_nps_nh3_n_tot,nps_FG_nps_NO3_tot
     &,nps_FG_tot_nitrogen_load,nps_FG_total_p
6080  format(A22,f4.1,A2,13x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6080)'NPS load allocation  (',100-nps_mos_per-nps_FG_per,
     &'%)    ',nps_la_nut_tmdl_nps_Org_N_tot,nps_la_nps_nh3_n_tot,nps_la
     &_nps_NO3_tot,nps_la_tot_nitrogen_load,nps_la_total_p
      write(11,*)' '
      write(11,*)'  '
      write(11,*)'Point sources:'
      write(11,*)' '
      write(11,*)'                                              Organic N
     &Ammonia N   NO2+NO3 N    Total N     Total P'
      write(11,*)'                                               (kg/day)
     & (kg/day)    (kg/day)    (kg/day)    (kg/day)'
      write(11,*)'                                               --------
     & --------    --------    --------    --------'
      if (ps_num_wstld .EQ.0) then
      go to 590
      end if
      DO 585 cir=1,ps_num_wstld
6085  Format(A17,1x,A14,8x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
        write(11,6085)'Modeled load for:',ps_wstld_name(cir),
     &ps_WSTLD2_ORG_cal(cir),ps_WSTLD2_Nh3_cal(cir),ps_WSTLd2_NO3_cal(c
     &ir),ps_total_nitrogen_load(cir),ps_total_P(cir)

585   continue
c5080  format(A38,2x,f10.5,2x,f10.5,2x,f10.5,2x,f10.5)
6090  format(A38,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
590   write(11,6090)'Calculated load for minor point sources   ',org_N_t
     &mdl_tot,ammon_tmdl_tot,no3_tmdl_tot,min_ps_total_nitrogen_load,min
     &_ps_total_P
      write(11,*)'                                               --------
     & --------    --------    --------    --------'
      write(11,6090)'Total for all point source loads             ',ps_n
     &ut_tmdl_summary_org_N_tot,ps_nut_tmdl_summary_nh3_N_tot,ps_nut_tmd
     &l_summary_no3_N_tot,ps_tot_nitrogen_final_load,ps_tot_P_final
      write(11,*)' '
7000  Format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,7000)'MOS for all point Sources     (',ps_mos_per,'%)',
     &mos_ps_nut_tmdl_sum_org_N_tot,mos_ps_nut_tmdl_sum_nh3_N_tot,
     &mos_ps_nut_tmdl_sum_no3_N_tot,mos_ps_tot_nitrogen_final_load,
     &mos_ps_tot_P_final
7005  Format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,7005)'FG for all point Sources      (',ps_mos_p
     &er,'%)',FG_ps_nut_tmdl_sum_org_N_tot,FG_ps_nut_tmdl_sum_nh3_N_to
     &t,FG_ps_nut_tmdl_sum_no3_N_tot,FG_ps_tot_nitrogen_final_load,
     &FG_ps_tot_P_final
      if (ps_num_wstld .EQ.0) then
      go to 610
      end if
      DO 600 cir=1,ps_num_wstld
7010  Format(A9,1x,A20,A1,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2
     &x,f10.2)
600   write(11,7010)'WLA for: ',ps_wstld_name(cir),'(',100-ps_mos_per-ps
     &_FG_per,'%)',wla_ps_WSTLD2_ORG_cal_sum(cir),wla_ps_WSTLd2_nH3_cal_
     &sum(cir),wla_ps_wstLD2_NO3_cal_sum(cir),wla_ps_total_nitrogen_load
     &(cir),wla_ps_total_P(cir)
610   continue
7020  format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)

      write(11,7020)'WLA for minor point sources   (',100-ps_mos_per-ps_
     &FG_per,'%)   ',wla_min_ps_nut_tmdl_sum_org,wla_min_ps_nut_tmdl_sum
     &_nh3,wla_min_ps_nut_tmdl_sum_no3,wla_min_ps_nitrogen_final_load
```

```
     &,wla_min_ps_P_final

605   Print*,'Program has made the output file!!!'

606   STOP
      END
```

APPENDIX N

Ammonia Toxicity Calculations

AMMONIA TOXICITY CALCULATIONS FOR BAYOU PETITE CAILLOU (SUBSEGMENT 120709)

Equations from 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, Dec. 1999.

Use chronic criterion when fish early life stages are present (as mentioned on page 88, this is the same as CCC for early life stages absent when temp > 15°C)

CCC, in mg N/L = $[0.0577/(1+10^{7.688-pH}) + 2.487/(1+10^{pH-7.688})] * MIN [2.85, 1.45*10^{0.028*(25-T)}]$

Note: CCC is the Chronic Criterion Concentration

CCC calculations below use seasonal average pH from LDEQ ambient monitoring data at station 956 (Bayou Petit Caillou at Tambour Bay, Louisiana):

Summer (May-Oct)		Winter (Nov-Apr)	
Date	pH (su)	Date	pH (su)
09-MAY-2000	7.60	11-JAN-2000	7.37
06-JUN-2000	7.37	08-FEB-2000	7.49
11-JUL-2000	7.68	14-MAR-2000	7.70
08-AUG-2000	7.57	11-APR-2000	8.19
05-SEP-2000	7.22	05-DEC-2000	8.00
03-OCT-2000	7.53		
31-OCT-2000	7.03		
Average =	7.43	Average =	7.75

Model Element	Summer				Winter			
	Temp. in projection run (ºC)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?	Temp. in projection run (ºC)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
1	30.2	1.68	0.11	No	16	3.07	0.19	No
2	30.2	1.68	0.11	No	16	3.07	0.19	No
3	30.2	1.68	0.11	No	16	3.07	0.19	No
4	30.2	1.68	0.11	No	16	3.07	0.19	No
5	30.2	1.68	0.11	No	16	3.07	0.19	No
6	30.2	1.68	0.12	No	16	3.07	0.19	No
7	30.2	1.68	0.12	No	16	3.07	0.19	No
8	30.2	1.68	0.12	No	16	3.07	0.19	No
9	30.2	1.68	0.12	No	16	3.07	0.19	No
10	30.2	1.68	0.12	No	16	3.07	0.19	No
11	30.2	1.68	0.12	No	16	3.07	0.19	No
12	30.2	1.68	0.12	No	16	3.07	0.19	No
13	30.2	1.68	0.12	No	16	3.07	0.19	No
14	30.2	1.68	0.12	No	16	3.07	0.19	No
15	30.2	1.68	0.12	No	16	3.07	0.19	No
16	30.2	1.68	0.12	No	16	3.07	0.19	No
17	30.2	1.68	0.12	No	16	3.07	0.19	No
18	30.2	1.68	0.12	No	16	3.07	0.19	No
19	30.2	1.68	0.12	No	16	3.07	0.19	No
20	30.2	1.68	0.12	No	16	3.07	0.19	No
21	30.2	1.68	0.12	No	16	3.07	0.19	No
22	30.2	1.68	0.12	No	16	3.07	0.19	No
23	30.2	1.68	0.12	No	16	3.07	0.19	No
24	30.2	1.68	0.12	No	16	3.07	0.19	No

Model Element	Summer				Winter			
	Temp. in projection run (ºC)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?	Temp. in projection run (ºC)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
25	30.2	1.68	0.12	No	16	3.07	0.18	No
26	30.2	1.68	0.12	No	16	3.07	0.18	No
27	30.2	1.68	0.12	No	16	3.07	0.18	No
28	30.2	1.68	0.12	No	16	3.07	0.18	No
29	30.2	1.68	0.12	No	16	3.07	0.18	No
30	30.2	1.68	0.12	No	16	3.07	0.18	No
31	30.2	1.68	0.12	No	16	3.07	0.18	No
32	30.2	1.68	0.12	No	16	3.07	0.18	No
33	30.2	1.68	0.12	No	16	3.07	0.18	No
34	30.2	1.68	0.12	No	16	3.07	0.18	No
35	30.2	1.68	0.12	No	16	3.07	0.18	No
36	30.2	1.68	0.12	No	16	3.07	0.18	No
37	30.2	1.68	0.12	No	16	3.07	0.17	No
38	30.2	1.68	0.12	No	16	3.07	0.17	No
39	30.2	1.68	0.12	No	16	3.07	0.17	No
40	30.2	1.68	0.12	No	16	3.07	0.17	No
41	30.2	1.68	0.12	No	16	3.07	0.17	No
42	30.2	1.68	0.12	No	16	3.07	0.16	No
43	30.2	1.68	0.12	No	16	3.07	0.16	No
44	30.2	1.68	0.12	No	16	3.07	0.16	No
45	30.2	1.68	0.12	No	16	3.07	0.16	No
46	30.2	1.68	0.12	No	16	3.07	0.15	No
47	30.2	1.68	0.11	No	16	3.07	0.15	No
48	30.2	1.68	0.11	No	16	3.07	0.15	No
49	30.2	1.68	0.11	No	16	3.07	0.15	No
50	30.2	1.68	0.11	No	16	3.07	0.14	No
51	30.2	1.68	0.11	No	16	3.07	0.14	No
52	30.2	1.68	0.11	No	16	3.07	0.14	No
53	30.2	1.68	0.11	No	16	3.07	0.14	No
54	30.2	1.68	0.11	No	16	3.07	0.14	No
55	30.2	1.68	0.11	No	16	3.07	0.13	No
56	30.2	1.68	0.11	No	16	3.07	0.13	No
57	30.2	1.68	0.11	No	16	3.07	0.13	No
58	30.2	1.68	0.11	No	16	3.07	0.13	No
59	30.2	1.68	0.11	No	16	3.07	0.13	No
60	30.2	1.68	0.11	No	16	3.07	0.12	No
61	30.2	1.68	0.11	No	16	3.07	0.12	No
62	30.2	1.68	0.11	No	16	3.07	0.12	No
63	30.2	1.68	0.11	No	16	3.07	0.12	No
64	30.2	1.68	0.10	No	16	3.07	0.11	No
65	30.2	1.68	0.10	No	16	3.07	0.11	No
66	30.2	1.68	0.10	No	16	3.07	0.11	No
67	30.2	1.68	0.10	No	16	3.07	0.10	No
68	30.2	1.68	0.10	No	16	3.07	0.10	No

Number of elements with toxicity = 0

Number of elements with toxicity = 0

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APPENDIX O

Nutrient TMDL Calculations

NUTRIENT TMDL CALCULATIONS FOR BAYOU PETITE CAILLOU (SUBSEGMENT 120709)

Nutrient Data for Reference Waterbodies in the Terrebonne Basin:
(Source: Report prepared for EPA Region 6 by Cadmus, dated May 30, 2007)

	Parameter	Bayou Tambour (C-11)	Jude's Cut (C-12)	Bayou Platt (C-13)	Fred Bayou (C-14)	Off of Bayou DuLarge (C-15)	Averages for five sites
Summer 2005	Nitrate N (mg/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	--
	Nitrite N (mg/L)	< 0.02	0.02	< 0.02	< 0.02	0.03	--
	TKN (mg/L)	1.84	2.11	1.66	1.70	1.84	--
	Total N* (mg/L)	1.86	2.14	1.68	1.72	1.88	1.86
	Total P (mg/L)	0.15	0.15	0.17	0.15	0.18	0.16
Winter 2006	Nitrate N (mg/L)	0.24	0.02	0.13	< 0.02	0.12	--
	Nitrite N (mg/L)	0.03	< 0.02	0.03	< 0.02	0.04	--
	TKN (mg/L)	2.63	0.90		1.41	1.40	--
	Total N* (mg/L)	2.90	0.93	0.16	1.43	1.56	1.40
	Total P (mg/L)	0.17	0.11	0.08	0.11	0.12	0.12
Spring 2006	Nitrate N (mg/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	--
	Nitrite N (mg/L)	< 0.02	0.02	< 0.02	0.02	< 0.02	--
	TKN (mg/L)	1.47	1.87	1.88	2.03	1.51	--
	Total N* (mg/L)	1.49	1.90	1.90	2.06	1.53	1.78
	Total P (mg/L)	0.09	0.15	0.18	0.19	0.16	0.15
Summer 2006	Nitrate N (mg/L)	< 0.02	< 0.02	< 0.02	0.04	< 0.02	--
	Nitrite N (mg/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	--
	TKN (mg/L)	1.95	1.77	1.70	1.57	1.80	--
	Total N* (mg/L)	1.97	1.79	1.72	1.62	1.82	1.78
	Total P (mg/L)	0.15	0.13	0.19	0.13	0.22	0.16

Target concentrations for nutrient TMDLs:

Total N* (mg/L) average for all four sampling events = 1.70
Total P (mg/L) average for all four sampling events = 0.15

*Notes: A. Total N was calculated as Nitrate + Nitrite + TKN
B. Values below the detection limit were entered as half of the detection limit.

Runoff info for subsegment 120709 (from Tetra Tech fecal coliform TMDL, dated March 29, 2007)

Total area for subsegment 120709 = 18040.82 acres
Average runoff for subsegment 120709 = 2.402 mm/day

Calculation of target loads for nutrient TMDLs:

Average flow generated w/in subsegment 120709 = total area * average runoff * conversions
= 71.68 cfs = 46.33 MGD

Target loads (TMDL) = target concentrations * average flow * conversions
Total N = 657.31 lbs/day = 298.16 kg/day
Total P = 58.00 lbs/day = 26.31 kg/day

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