

**APPENDIX A:
TASK 3 WORKPLAN**

TASK 3: WATER QUALITY MONITORING

Objectives: Data collection efforts will focus on providing information to support:

- Temporal and spatial analysis of water quality
- Knowledge of water quality and flow for unclassified streams
- Evaluation and development of state-wide, regional, and site-specific water quality standards
- Permit criteria related to the flow status of receiving streams
- Priority monitoring
- Use attainability assessments
- Special studies

Task

Description: The continued implementation of a basin-wide water quality monitoring plan is the primary focus for this biennium. The monitoring plan for Fiscal Year 2004-2005 includes fixed-station monitoring and systematic monitoring.

3.1 and 3.2 Monitoring Description

A minimum of 9 routine and systematic sites will be examined quarterly for field, flow (where applicable), conventional chemistry, and indicator bacteria. Diurnal studies that include pH, dissolved oxygen, conductivity and temperature will be conducted twice during the index period (between March 15 and October 15), with one during the critical period (between July 1 and September 30) at 9 sites. Metals will be sampled once a year at 8 sites. Diurnal and biological studies including habitat analysis, benthic studies and nekton counts will be conducted once during the index period and once during the critical period at 5 sites.

All monitoring procedures and methods will follow the guidelines prescribed in the Cypress Creek Basin QAPP and the 2003 TCEQ *Surface Water Quality Monitoring Procedures Manual*.

Progress Report

Each Progress Report will indicate the number of sampling events and the types of monitoring conducted, to include all types of monitoring.

Biological Data Reporting

Biological/habitat data reported to the TCEQ under an approved QAPP, will be summarized at the end of each fiscal year and submitted electronically and in hard copy using the Biological Data Reporting Packet outlined in Exhibit 3C in the CRP Guidance. Two copies of the report with color photos will be submitted.

3.3 Targeted Monitoring

No Targeted Monitoring Projects are planned for the Cypress Creek Basin during this contract period.

3.4 Special Studies

No Special Studies are planned for the Cypress Creek Basin during this contract period.

Equipment: No new equipment will be needed to accomplish the work in this task.

Deliverables

& Dues Dates: September 1, 2003 through August 31, 2004

Task 3.1 - Routine Monitoring & 3.2 - Systematic Monitoring

- A. Conduct water quality monitoring and summarize activities in Progress Report - December 15, 2003; March 15 and June 15, 2004
- B. Biological Data Reporting Packet - due dates coordinated with CRP Project Manager

September 1, 2004 through August 31, 2005

Task 3.1 - Routine Monitoring & 3.2 - Systematic Monitoring

- A. Conduct water quality monitoring and summarize activities in Progress Report - September 15 and December 15, 2004; March 15 and June 15 and August 31, 2005
- B. Biological Data Reporting Packet- August 31, 2005

APPENDIX B:
SAMPLING PROCESS DESIGN AND MONITORING SCHEDULE (PLAN)

CLEAN RIVERS PROGRAM
CYPRESS BASIN FISCAL YEAR 2004
MONITORING PROGRAM
Revision 2

Prepared by:

Paul Price Associates, Inc.
3006 Bee Caves Road, Suite D-230
Austin, TX 78746-5541

Prepared for:

Northeast Texas Municipal Water District
Clean Rivers Program - Cypress Basin Contractor
P.O. Box 955
Hughes Springs, TX 75656

2 September 2003

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1.0	Sample Design Rationale	1
2.0	Site Selection Criteria	2
2.1	Fixed Station Monitoring	3
2.2	Intensive/Systematic Station Monitoring	6
2.3	Special Study	8
3.0	Monitoring Sites	9
4.0	Monitoring Sites for FY 2004	10
5.0	Critical vs. non-critical measurements	19

LIST OF TABLES

<u>Table</u>		<u>Page</u>
B1.1	Fiscal Year 2004 Fixed and Systematic Station Monitoring Parameters.	5
B1.2	Sample Design and Schedule, FY2004 for the Cypress Creek Basin	10

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Cypress Creek Basin-Clean Rivers Program, Fixed Station Monitoring Stations, FY2004	4
2	Cypress Creek Basin-Clean Rivers Program, Systematic Station Monitoring Stations, FY2004	7

1.0 Sample Design Rationale

The sample design is based on the legislative intent of the Clean Rivers Program. Under the legislation, the Planning Agencies have been tasked with providing data to identify significant long-term water quality trends, to characterize water quality conditions in support of the 305(b) assessment. Based on Steering Committee input, achievable water quality objectives and priorities and the identification of water quality issues are used to develop work plans, which are in accord with available resources. As part of the Steering Committee process, Northeast Texas Municipal Water District (NETMWD), the Cypress Creek Basin Planning Agency, coordinates closely with the TCEQ and other participants to ensure a comprehensive water monitoring strategy within the Watershed.

The goal of this portion of the Clean Rivers Program is to provide the appropriate, quality assured data to allow continuing assessment and management of water quality in the Cypress Basin. Detailed objectives of this monitoring program include the following:

- Establish a long-term monitoring program for the basin,
- Focus on and provide for local participation in monitoring,
- Provide reliable information to the public to enhance awareness and knowledge of water quality conditions in the basin,
- Monitor and evaluate water quality trends,
- Identify the nature and source of water quality problems that result in significant impairments,
- Evaluate the applicability of State Surface Water Quality Criteria to specific waterbodies in the basin,
- Evaluate permit requirements with respect to water quality conditions and trends in the basins, and,
- Provide data to support the development of cost-effective water quality management programs.

Historically, data from the Surface Water Quality Monitoring (SWQM) Program have been the primary information used in determining water quality standards attainment and for setting permit requirements in the Cypress Basin. TCEQ Region 5 staff maintains several routine and intensive monitoring stations throughout the Cypress Creek Basin to monitor water quality. During FY 2004, and during subsequent years through FY 2005, a total of 29 routine stations will be monitored, in addition to the number of intensive/systematic stations that will change each year. There are currently no TCEQ intensive/systematic stations selected for sampling in FY 2004. The results from these stations are presently maintained in the Surface Water Quality Monitoring (SWQM) portion of the TCEQ Regulatory Activity and Compliance System (TRACS) database, but NETMWD will develop and maintain a local database that includes this information.

Only real-time stream flow data are collected at the six U.S. Geologic Survey (USGS) stations within the Cypress Creek Basin. Discrete samples for water quality were discontinued in the Basin during 2000 and 2001.

Numerous criteria were evaluated in the selection of the systematic station monitoring program, including cost, TCEQ Region 5 monitoring plans, priorities set by the Steering Committee, special studies, and TMDL development in segments 0403 and 0404, and support for the 305 (b) assessment. Due to heightened concern over environmental quality issues on potential agricultural impacts to surface water resources and wildlife habitat, this year's systematic monitoring will concentrate within the Lake Cypress Springs (Segment 0405) and Little Cypress Creek (Segment 0409) watersheds where intensive poultry and livestock operations have developed over the years by the increasing numbers of animals and large farm structures.

2.0 Site Selection Criteria

This data collection effort involves monitoring fixed/routine water quality, using procedures that are consistent with the TCEQ SWQM program, for the purpose of data entry into the statewide database maintained by the TCEQ. To this end, some general guidelines are followed when selecting sampling sites, as identified below. Overall consideration is given to accessibility and safety. All monitoring activities have been developed with coordination with the CRP Steering Committee and with the TCEQ.

1. Fixed/routine monitoring sites are representative of in-stream data and are free from back-water effects.
2. Fixed/routine monitoring sites are selected to maximize stream coverage or basin coverage. For very long stretches of river length, a station is considered representative of a water body for not more than 25 miles in freshwater and tidal streams. A single monitoring site is considered representative of 25 percent of the total reservoir acres and estuary or ocean square miles, but not more than 5,120 acres or 8 square miles.
3. Fixed/routine monitoring sites are located preferentially where there are "localized" water quality effects based on past water quality data.
4. Fixed/routine monitoring sites are located where historical data exists. No degradation of water quality may be indicated. However, the continuation of water quality monitoring at this site has been deemed important.
5. At least one site for each classified segment will be selected for fixed/routine monitoring unless the segment is already covered by TCEQ or other qualified monitoring entities reporting fixed/routine data to TCEQ.
6. Fixed/routine monitoring sites may be selected to bracket sources of pollution, influence of tributaries, changes in land uses, and hydrological modifications.
7. Fixed/routine monitoring sites are chosen based on accessibility. When possible, sites are selected where it is possible to collect flow measurements during routine visits or where a stream flow gage is located.

Currently, monitoring activities occurring or proposed within the Cypress Basin that could be used to make water quality management decisions include the following:

- TCEQ Surface Water Quality Monitoring (SWQM) program,
- USGS monitoring program,
- Monitoring activities directed through the Clean Rivers Program,
- TCEQ 305(b) Assessments
- Total Maximum Daily Load Determinations,
- Texas Forest Service studies of logging best management practices, and
- Texas State Soil and Water Conservation Board (TSSWCB) studies of agricultural best management practices.

The Cypress Creek Basin Clean Rivers Monitoring Program has been divided into three areas: (1) Fixed-station monitoring (RT); (2) Systematic monitoring (IS); and (3) Special Studies (SS). The locations of the Fixed and Systematic monitoring stations recommended here reflect the need for continued monitoring at locations which have been sampled historically, to focus on those segments which were determined to be of most concern through the segment evaluation and ranking procedure, and to eventually provide water quality data and analysis for the entire basin. All monitoring procedures and methods will follow the guidelines prescribed in the Cypress Creek Basin Quality Assurance Project Plan (QAPP) and the 2003 TCEQ *Surface Water Quality Monitoring Procedures Manual*.

2.1 Fixed Station Monitoring

The primary objective of the routine station monitoring program is to continue and extend the long-term water quality database to follow trends and identify water quality changes in the major sub-basins of the Cypress Creek system. Under this program, four stations will be sampled for field parameters, conventional parameters, indicator bacteria (fecal coliform and *Escherichia coli* (*E. coli*)), 24-hour dissolved oxygen (DO), biology, and metals. Caddo Lake Institute, and the Franklin County Water District will perform the water quality data collection for the fixed stations (RT) (Figure1). Parameters to be measured or sampled for are listed in Table B1.1.

The Caddo Lake Institute will conduct water quality monitoring on Caddo Lake at two fixed stations. Quarterly monitoring will occur at mid-lake in Caddo Lake and near the shore at the end of FM 2198. Field parameters include the measurements of water temperature, dissolved oxygen, conductivity, pH and water clarity. Conventional water quality samples are collected for laboratory analysis of total suspended solids, total dissolved solids, alkalinity, sulfate chloride, ammonia nitrogen, total phosphorous, nitrate nitrogen, nitrite nitrogen, total Kjeldahl nitrogen, total organic carbon, hardness, chlorophyll-a and pheophytin-a. Bacteriological samples are collected and analyzed for fecal coliform and *E. coli*. Metals in water and sediment samples will be collected on an annual basis to assess the potential for exposure of either humans or aquatic community to toxic concentrations. The diurnal (24-hour) DO level variations will be measured at all four locations between March and August 2004 to monitor compliance with TCEQ dissolved oxygen standards.

Figure 1 Cypress Creek Basin – Clean Rivers Program FY 2002 Fixed Station Monitoring Sites

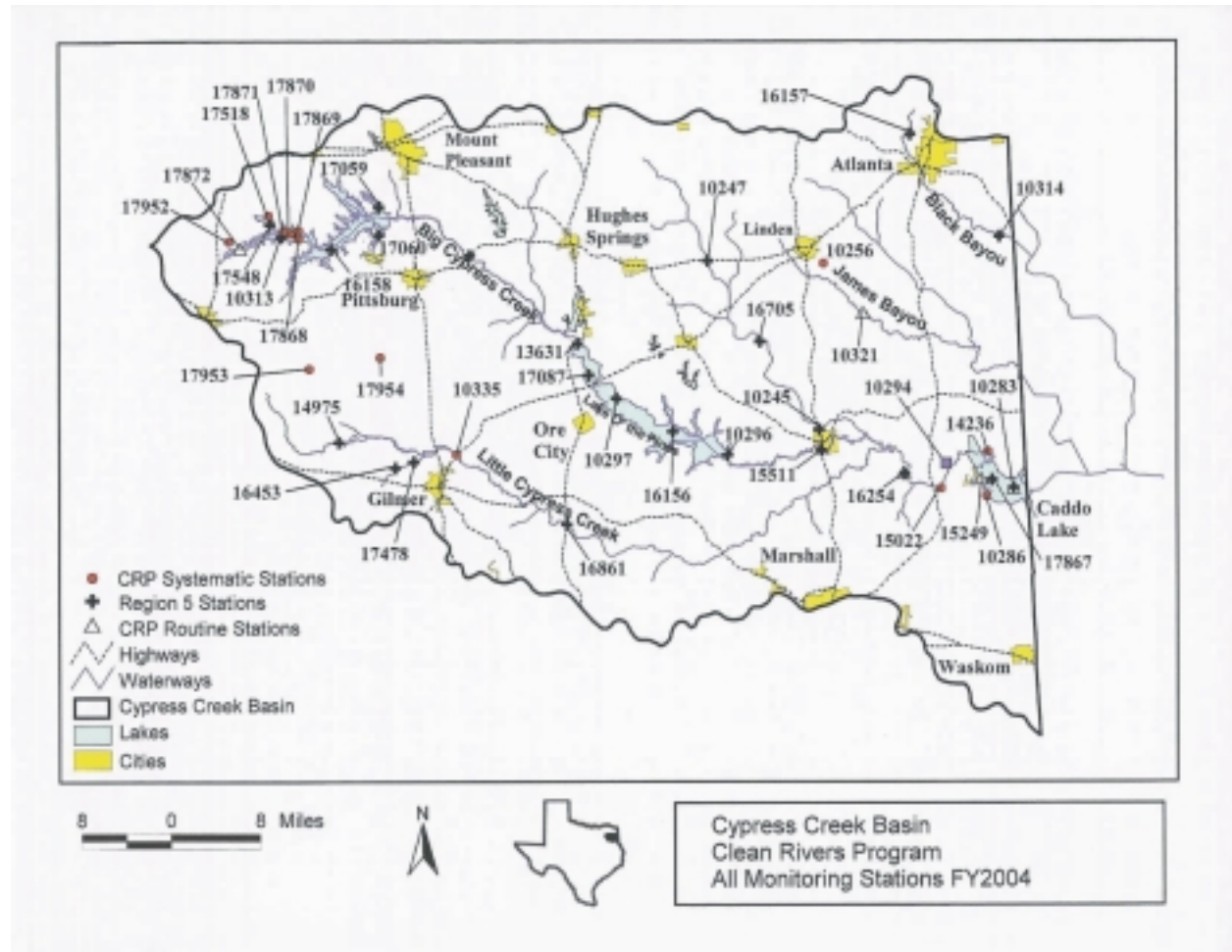


Table B1.1

Fiscal Year 2004 Fixed and Systematic Station Monitoring Parameters

Field Parameters	Storet Code	Conventional - Water	Storet Code	Sediment Samples	Storet Code
Dissolved Oxygen (mg/L)	00300	TDS	70300	Aluminum, Total	01108
Water Temperature (°C)	00010	TSS	00530	Arsenic, Total	01003
Conductivity (umhos/cm)	00094	Total Alkalinity	00410	Barium, Total	01008
pH (s.u.)	00400	Sulfate	00945	Cadmium, Total	01028
Present Weather	89966	Ammonia	00610	Chromium, Total	01029
Secchi Depth (m)	00078	Total Phosphorus	00665	Copper, Total	01043
Days Since Last Rainfall	72053	Chlorophyll-a	32211	Lead, Total	01052
Flow (cfs)	00061	Pheophytin-a	32218	Manganese, Total	01053
Flow Severity	01351	Chloride	00940	Mercury, Total	71921
Flow Measurement Method	89835	Nitrate-N	00620	Molybdenum, Total	01063
		Nitrite-N	00615	Nickel, Total	01068
24-Hour Field Data		Hardness	00900	Selenium, Total	01148
Dissolved Oxygen, 24-Hr Min. (mg/L)	89855	Total Kjeldahl Nitrogen	00625	Silver, Total	01078
Dissolved Oxygen, 24-Hr Max. (mg/L)	89856	TOC	00680	Zinc, Total	01093
Dissolved Oxygen, 24-Hr Avg. (mg/L)	89857			TOC	81951
Dissolved Oxygen, # measurements, 24-Hr	89858	Metals in Water		Oil and Grease	00557
Water Temperature, 24Hr Avg. (°C)	00209	Dissolved Metals		Total Kjeldahl Nitrogen	00627
Water Temperature, 24Hr Max. (°C)	00210	Aluminum	01106	Total Phosphorus	00668
Water Temperature, 24Hr Min. (°C)	00211	Arsenic	01000	% Grain Size	
Water Temperature, #measurements, 24-Hr	00221	Barium	01005	% Clay	82009
Conductivity, 24-Hr Avg. (umhos/cm)	00212	Chromium	01030	% Gravel	80256
Conductivity, 24-Hr Max. (umhos/cm)	00213	Copper	01040	% Sand	89991
Conductivity, 24-Hr Min. (umhos/cm)	00214	Molybdenum	01060	% Silt	82008
Conductivity, # measurements, 24-Hr	00222	Nickel	01065	Acid Volatile Sulfide (AVS)	50088
pH, 24Hr Max. (s.u.)	00215	Silver	01075	Solids in Sediment (% WT)	81373
pH, 24Hr Min. (s.u.)	00216	Zinc	01090		
pH, # measurements, 24-Hr	00223				
		Total Metals			
Biological Parameters*		Calcium	00916		
Fecal Coliform (Bacteria)	31616	Iron	01045		
Escherichia coli (Bacteria)	31699	Manganese	01055		
Biological Monitoring (ALM)**	-----	Selenium	01147		

* See Field Data Sheets (Appendix C) for a complete listing of all biological and habitat parameters being collected

** Aquatic Life Monitoring -Two monitoring events are required during a single year at representative Fixed and Systematic Stations.

In cooperation with the TCEQ Clean Rivers Program, the Franklin County Water District has conducted in-kind surface water quality monitoring on Lake Cypress Springs in accordance to methods, standards and procedures outlined in the CRP QAPP since April 2000. FCWD's participation will involve quarterly monitoring of field parameters, *E. coli*, and the CRP conventional parameter set at one open water station in the West End Arm of the reservoir. Diel measurements of DO will be monitored twice in the mixed surface layer of the reservoir. Dissolved metals in water, total metals in water, and metals in sediment samples will be collected on an annual basis.

The City of Marshall retains (and provides funding for) a fixed station located on Big Cypress Creek near the City of Marshall water intake. No CRP funds are associated with this station, but will be sampled by the Caddo Lake Institute consistent with the collection procedures outlined in the 2003 TCEQ *Surface Water Quality Monitoring Procedures Manual* during the quarterly routine station sampling events. Data obtained from this location is currently being used by the City's Water Treatment Superintendent as a process tool to assess water quality conditions associated with Big Cypress Creek and is being provided to the Northeast Texas Municipal Water District (NETMWD) for inclusion in the TCEQ SWQM portion of the TRACS surface water quality-monitoring database.

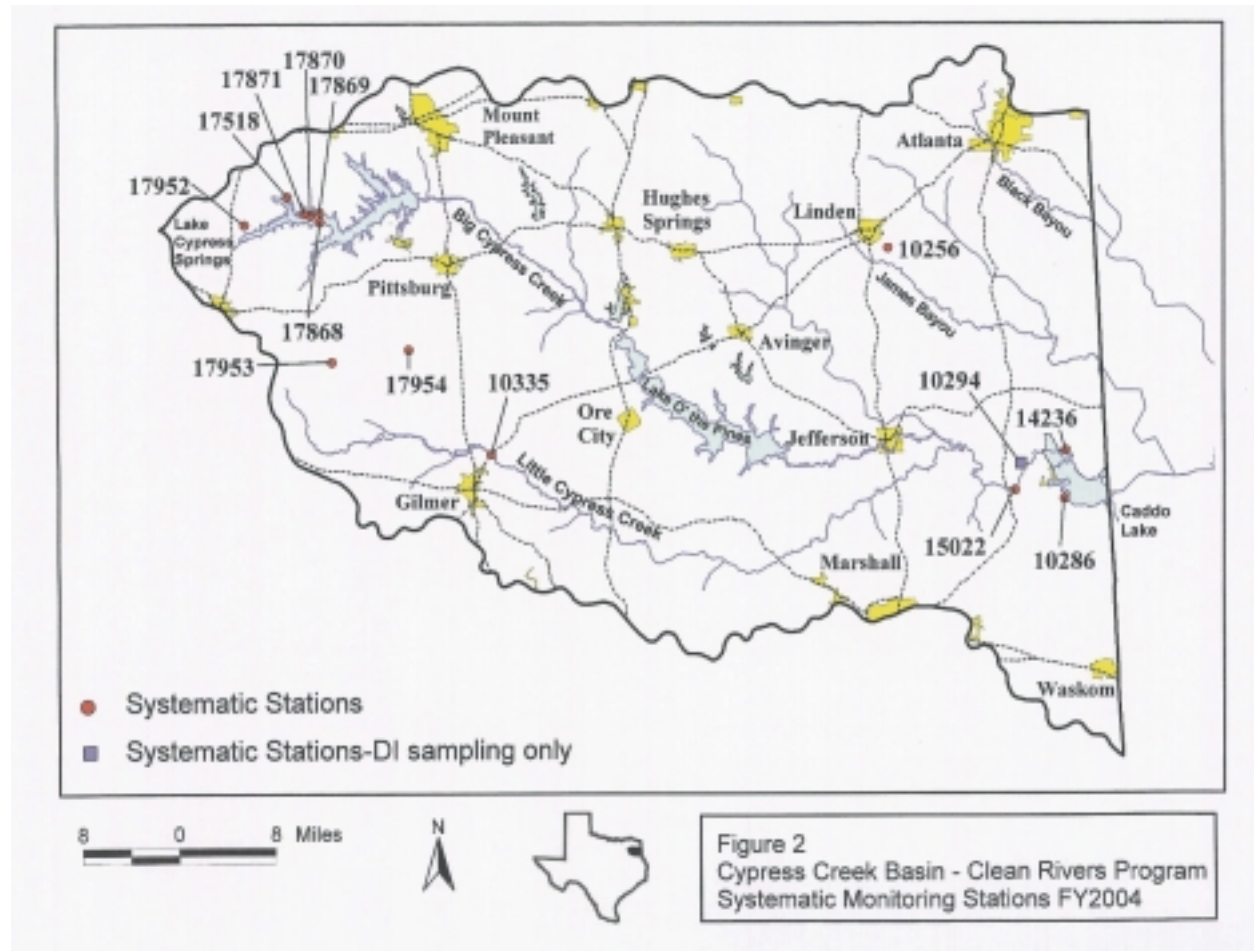
Only one fixed station location on the sampling agenda, James Bayou at CR 1775 in Cass County, has been selected for Aquatic Life Monitoring during FY2004. Biological surveys of fish and benthic macroinvertebrates to assess the aquatic community composition and integrity will be conducted twice during the low flow period of early to late summer of next year (2004).

2.2 Intensive/Systematic Station Monitoring

The intensive/systematic monitoring program is designed on a rotational approach to investigate known areas of concern and detect areas of potential concern. Sample monitoring will focus on the Caddo Lake (Segment 0401), Big Cypress Creek below Lake O' the Pines (Segment 0402), Lake Cypress Springs (Segment 0405), James Bayou (Segment 0407), and Little Cypress Creek (Segment 0409) watersheds. Figure 2 shows the intensive/systematic monitoring locations throughout the Cypress Basin for FY 2004.

A total of thirteen sampling location sites have been selected. Monthly field data and indicator bacteria samples will be taken from three locations on Caddo Lake to establish natural background levels of *E. coli* at Clinton Lake, near the mouth of Harrison Bayou and at the Caddo Lake State Park Boat Ramp. Water quality monitoring at five locations on Lake Cypress Springs will take place during FY 2004. Quarterly monitoring of field parameters, *E. coli* and the CRP conventional parameter set in addition to the annual collection of metals in water, and in sediments will occur at one near shore location near the mouth of Frog Creek. *E. coli* sampling will focus on areas of potential exposure specifically the swimming waters of four major public park areas (Dogwood, Guthrie, Walleye and Overlook) when recreational use is highest during the months of June, July and August. The surface water quality and the biological communities at four creek locations surrounded by agricultural land near dairy and poultry operations and one creek location situated downstream of an existing permitted wastewater discharger will be examined over a one-year period: 1) Blair Creek at Franklin County Road SE 3330 1.6 km west

Figure 2. Cypress Creek Basin – Clean Rivers Program FY 2004 Systematic Station Monitoring Sites



of State Highway (SH) 37 and 1 km north of Lake Cypress Springs in Franklin County; 2) Little Cypress Bayou at SH 155 northeast of Gilmer, Texas in Upshur County; 3) South Lilly Creek at FM 2454 1.7 km southeast of FM 556 and 10.7 km southwest of Pittsburg, Texas in Upshur County; 4) South Lilly Creek at Woodchuck Road 2.4 km east of FM 1647 in the northwest corner of Upshur County; and 5) Beach Creek at FM 125 southeast of Linden in Cass County. Field and conventional parameters, flow measurements, and *E. coli* indicator bacteria will be sampled quarterly while total metals in water and dissolved metals in water will be collected on an annual basis. Routine 24-hour DO and aquatic life use activity will be monitored twice and at a minimum of 30 days apart. Biological collections for fish and macroinvertebrate community characterization and physical habitat assessments will be evaluated in June and August 2004.

An amendment will be prepared, under TCEQ's directive, to detail the changes made to the Cypress Creek Basin Clean Rivers Program QAPP FY2004-2005 to update the Appendix B (Sampling Process design and Monitoring Schedule Plan) for fiscal year 2005.

2.3 Special Study

No Special Studies are planned for the Cypress Creek Basin during this contract period.

3.0 MONITORING SITES

Monitoring Tables for fiscal year 2004 are presented on the following page.

4.0 MONITORING SITES FOR FY 2004

The sample design for surface water quality monitoring is shown in Table B1.2 below. This table summarizes sampling frequency, and the entity(ies) responsible for sampling each monitoring station location. Refer to Table B1.1 for a complete listing of types of parameters to be measured for each parameter group.

Table B1.2 Sample Design and Schedule, FY 2004 for the Cypress Creek Basin

Basin_id: 4
Segment: 0401 Caddo Lake

Region	Station ID	Site Description	Start Date	End Date	SCI/ SC2 *	Prog Code **	Monitoring Frequencies (per year)																
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field	
5	10283	Caddo Lake mid-lake	9/1/03	8/31/04	NT/CL	RT	12								1						12		12
5	10286	Caddo Lake near mouth of Harrison Bayou	9/1/03	8/31/04	NT/CL	IS	12																
5	10286	Caddo Lake near mouth of Harrison Bayou	9/1/03	8/31/04	NT/CL	DI		3															
5	10294	Carter Lake in Caddo Lake	9/1/03	8/31/04	NT/CL	DI		3															3
5	14236	Clinton Lake in Caddo Lake	9/1/03	8/31/04	NT/CL	IS	12																12
5	14236	Clinton Lake in Caddo Lake	9/1/03	8/31/04	NT/CL	DI		3															
5	15249	Caddo Lake near shore at end of FM 2198	9/1/03	8/31/04	NT/CL	RT						2		1		4					12		12
5	15249	Caddo Lake near shore at end of FM 2198	9/1/03	8/31/04	NT/CL	DI		3															

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.

** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Cont'd)

Basin_id: 4

Segment: 0402 Big Cypress Creek below Lake O' the Pines

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2 *	Prog Code **	Monitoring Frequencies (per year)															
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field
5	15022	Big Cypress Creek at Caddo Lake State Park Boat Ramp	9/1/03	8/31/04	NT/CL	IS	12															12
5	16254	Big Cypress near the City of Marshall water intake	9/1/03	8/31/04	NT/CL	RT	4		4				2		1		4					4
5	16254	Big Cypress near the City of Marshall water intake	9/1/03	8/31/04	NT/CL	DI		4														

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.

** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Cont'd)

Basin_id: 4
 Segment: 0403 Lake O' the Pines

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2	Prog Code	Monitoring Frequencies (per year)																	
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field		
5		NONE	9/1/03	8/31/04																				

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.
 ** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Cont'd)

Basin_id: 4

Segment: 0404 Big Cypress Creek below Lake Bob Sandlin

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2	Prog Code	Monitoring Frequencies (per year)																
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field	
5		NONE	9/1/03	8/31/04	NT/CL																		1

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.
 ** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Cont'd)

Basin_id: 4

Segment: 0405 Lake Cypress Springs

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2	Prog Code	Monitoring Frequencies (per year)															
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field
5	17872	Lake Cypress Springs @ Lakeview Midlake	9/1/03	8/31/04	NT/FC	RT	4						1		1		4					4
5	17872	Lake Cypress Springs @ Lakeview Midlake	9/1/03	8/31/04	NT/FC	DI		2														
5	17518	Lake Cypress Springs @ Frog Creek	9/1/03	8/31/04	NT/FC	IS	4						1		1		4					4
5	17518	Lake Cypress Springs @ Frog Creek	9/1/03	8/31/04	NT/FC	DI		2														
5	17868	Lake Cypress Springs @ Dogwood Park	9/1/03	8/31/04	NT/FC	IS	3															3
5	17869	Lake Cypress Springs @ Guthrie Park	9/1/03	8/31/04	NT/FC	IS	3															3
5	17870	Lake Cypress Springs @ Walleye Park	9/1/03	8/31/04	NT/FC	IS	3															3
5	17871	Lake Cypress Springs @ Overlook Park	9/1/03	8/31/04	NT/FC	IS	3															3
5	17952	Blair Creek at SE 3350	9/1/03	8/31/04	NT/CL	IS	4		4	2	2	2	1				4					4
5	17952	Blair Creek at SE 3350	9/1/03	8/31/04	NT/CL	DI		2														

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.

** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Cont'd)

Basin_id: 4
 Segment: 0406 Black Bayou

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2	Prog Code	Monitoring Frequencies (per year)																	
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field		
5		NONE	9/1/03	8/31/04																				

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.
 ** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Cont'd)

Basin_id: 4

Segment: 0407 James' Bayou

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2 *	Prog Code **	Monitoring Frequencies (per year)															
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field
5	10321	James Bayou at CR 1775	9/1/03	8/31/04	NT/CL	RT	4		4	2	2	2	2				4					4
5	10321	James Bayou at CR 1775	9/1/03	8/31/04	NT/CL	DI		2														
5	10256	Beach Creek at FM 125	9/1/03	8/31/04	NT/CL	IS	4		4	2	2	2	1				4					4
5	10256	Beach Creek at FM 125	9/1/03	8/31/04	NT/CL	DI		2														

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.

** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Cont'd)

Basin_id: 4
 Segment: 0408 Lake Bob Sandlin

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2	Prog Code	Monitoring Frequencies (per year)																	
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field		
5		NONE	9/1/03	8/31/04																				

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.
 ** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

Table B1.2 (Concluded)

Basin_id: 4

Segment: 0409 Little Cypress Bayou (Creek)

Region	Station ID	Site Description	Start Date	End Date	SC1/ SC2 *	Prog Code **	Monitoring Frequencies (per year)															
							TSWQS Bacteria	24hr DO	Flow	AqHab	Routine Benthics	Routine Nexton	TSWQS Metals Water	Organic Water	Metals Sed	Organic Sed	Conv	Amb Tox Wat	Amb Tox Sed	Bacteria	Fish Tissue	Field
5	17954	South Lilly Creek at FM 2454	9/1/03	8/31/04	NT/CL	IS	4		4	2	2	2	1				4					4
5	17954	South Lilly Creek at FM 2454	9/1/03	8/31/04	NT/CL	DI		2														
5	17953	South Lilly Creek at Woodchuck Road	9/1/03	8/31/04	NT/CL	IS	4		4	2	2	2	1				4					4
5	17953	South Lilly Creek at Woodchuck Road	9/1/03	8/31/04	NT/CL	DI		2														
5	10335	Little Cypress Creek at SH 155	9/1/03	8/31/04	NT/CL	IS	4		4	2	2	2	1				4					4
5	10335	Little Cypress Creek at SH 155	9/1/03	8/31/04	NT/CL	DI		2														

* NT=NETMWD, CL=Caddo Lake, FC=Franklin Count Water District, and PP=Paul Price Associates, Inc.

** RT=Routine water sampling baseline, DI=DIEL sampling, IS=Intensive Systematic, and SS=Special Study

5.0 Critical vs. non-critical measurements

All data taken for CRP and entered into the SWQM portion of the TRACS database are considered critical.

**APPENDIX C:
FIELD DATA SHEETS**

1. Field Parameters and Stream Physical Characteristics Checklist
2. Stream Physical Characteristics Worksheet
3. Field Parameters and Reservoir Physical Characteristics Checklist
4. Nekton Collection Field Data Sheet
5. Nekton Data Form for Laboratory Identification and Enumeration
6. Benthic Macroinvertebrate Data Sheet

Page: _____ of _____

STREAM PHYSICAL CHARACTERISTICS CHECKLIST

Job Name: _____ Job No.: _____ Date: ___/___/___ Observers: _____

Stream: _____ Station ID: _____ Time: _____ Nearest Stream Segment: _____

Location of Station: _____

Weather Conditions: clear partly cloudy cloudy rain Wind Intensity: calm slight moderate strong

Length of Stream Evaluated: _____ Days Since Last Rain: _____

Stream Type: perennial ___ intermittent with perennial pools ___ intermittent ___					
Flow Severity: 1) No Flow 2) Low Flow 3) Normal 4) Flood 5) High 6) Dry					
Evidence of Flow Fluctuations:			Observed Stream Uses:		
Adjacent Land Use: Left Bank - _____ Right Bank - _____			Aesthetics: 1 Wilderness 3 Common 2 Natural 4 Offensive		
Water Conditions: (foam, flood, etc.)			Channel Obstructions/ Modifications:		
Stream Bends: No. Well Defined		No. Moderately Defined	No. Poorly Defined:	No. of Riffles:	
Turbidity:	Color:	Water Odor:	Flow:	Sediment Odor:	
Air Temp: _____ °C Water Temp: _____ °C	pH:	Conductivity:	DO: DO%: DOC:	Secchi Depth: _____ meters	
Riparian Vegetation: Trees (%) : _____	Shrubs (%) : _____	Grasses, Forbs (%) : _____	Cult. Fields (%) : _____	Other (%) : _____	

* Note: Copy on Waterproof Paper. Revised from TNRCC form TNRCC-WQS hqi_phys.tbl (8 Oct. 2001)

Parameters to be sampled at this station:

Field _____ Fecal _____ Total Metals in Water _____
 Conventional _____ E-coli _____ Dissolved Metals in Water _____
 Flow _____ 24 Hr. DO _____ Sediment _____
 Profile _____ Organics in Water _____

Photographs Taken _____

General Observations: _____

Part I - Stream Physical Characteristics Worksheet

Observers:		Date:	Time:	Weather Conditions:									
Stream:			Location of Site:			Length of Reach:							
Stream Segment No.		Observed Stream Uses:			Aesthetics (circle one): (1) wilderness (2) natural (3) common (4) offensive								
Stream Type (Circle One): perennial or intermittent w/ perennial pools				Stream Bends:		No. Well Defined	No. Moderately Defined	No. Poorly Defined					
Channel Obstructions/Modifications:				No. of Riffles	Channel Flow Status (circle one): high moderate low no flow								
Riparian Vegetation (%):	Left Bank	Trees		Shrubs		Grasses		Forbs		Cult. Fields		Other	
	Right Bank	Trees		Shrubs		Grasses		Forbs		Cult. Fields		Other	

Location of Transect	Stream Width (m)	Left Bank Slope (E)	Left Bank Erosion Potential (%)	Stream Depths (m) at Points Across Transect										Right Bank Slope (E)	Right Bank Erosion Potential (%)	Tree Canopy (%)
				Thalweg Depth:												
	Habitat Type (Circle One) Riffle Run Glide Pool		Dominant Substrate Type			Dominant Types Riparian Vegetation: Left Bank:						% Gravel or Larger				
	Algae or Macrophytes (Circle One) Abundant Common Rare Absent		Width of Natural Buffer Vegetation (m) LB: RB:		Instream Cover Types:						% Instream Cover					
				Stream Depths (m) at Points Across Transect												
				Thalweg Depth:												
	Habitat Type (Circle One) Riffle Run Glide Pool		Dominant Substrate Type			Dominant Types Riparian Vegetation: Left Bank:						% Gravel or Larger				
	Algae or Macrophytes (Circle One) Abundant Common Rare Absent		Width of Natural Buffer Vegetation (m) LB: RB:		Instream Cover Types:						% Instream Cover					

Paul Price Associates, Inc.
3006 Bee Caves Road Suite D-230
Austin, Texas 78746
(512) 329-0155

Page: ____ of: ____

RESERVOIR PHYSICAL CHARACTERISTICS CHECKLIST

Job Name: _____ Job No.: _____ Date: ____/____/____ Observers: _____

Reservoir: _____ Station ID: _____ Time: _____ Nearest Stream Segment: _____

Location of Station: _____

Weather Conditions: Clear Prtly cldy Cloudy Rain % Cloud Cover: _____ Air Temp: _____

Adjacent Land Use: _____ Days Since Last Rain: _____

Evidence of Flow Fluctuations: _____ Observed Reservoir Uses: _____

Water Conditions: _____ Secchi Disk Depth: _____

Turbidity: _____ Water Odor: _____ Sediment Odor: _____ Water Color: _____

Reservoir Water Level : _____ ft. Below Normal Normal Above Normal Total Depth: _____

Wind Intensity: Calm Slight Moderate Strong Water Surface: Calm Ripples Waves

Water Column Measurements

Water Depth	Field Parameter						
	Meters	Temperature (°C)	Cond. (µS/cm)	pH	D.O. (mg/L)	D.O. (% Sat.)	D.O. (Charge)
0.3							
1.0							
2.0							
3.0							
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							

Parameters to be sampled at this station:

Field _____ Fecal _____ Total Metals in Water _____
 Conventional _____ E-coli _____ Dissolved Metals in Water _____
 Flow _____ 24 Hr. DO _____ Sediment _____
 Profile _____ Organics in Water _____

Photographs Taken _____

General Observations: _____

Paul Price Associates, Inc.
 3006 Bee Caves Road Suite D-230
 Austin, Texas 78746-5541
 (512) 329-0155

NEKTON COLLECTIONS FIELD DATA SHEET
 Collection Permit # SP4-0990-292

Waterbody:	Date:	Time:	Station #:	County:			
Gear Used:							
Boat Mounted Electrofisher:	Low Range	High Range	AC or DC	Pulses/sec	% on	amps (a)	Duration (sec)
Backpack Electrofisher:	Voltage (v)		Frequency (pps)		Pulse width (msec)		Duration (sec)
Gill Net	Mesh Size		Length		Duration		
Trawl	Width		# Hauls		Duration		
Seine	Length		# Hauls		Duration		
Cast Net	Diameter		# Casts		Duration		
Other							

Collectors:

* Note: Copy on Waterproof Paper

NEKTON COLLECTIONS FIELD DATA SHEET
Collection Permit # SP4-0990-292

Page 2 of 2

Common Name/ Scientific Name	Size Classes (inches)									Total Number	Number Preserved	Physical Defects **
	1	2	3	4	5	6	7	8	≥ 9			

** 1 - Discoloration 2 - Deformities 3 - Eroded Fins 4 - Excessive Mucus 5 - Excessive Ext. Parasites 6 - Fungus
7 - Poor Condition 8 - Reddening 9 - Scoliosis 10 - Tumors 11 - Ulcers 12 - Other

Insert Nekton Data Sheet

Insert Benthic Macroinvertebrate Data Sheet

**APPENDIX D:
CHAIN OF CUSTODY FORMS**

1. Biological
2. Conventional Water Sample Parameters not including fecal coliform analysis FRA6 (A)
3. Conventional Water Sample Parameters including fecal coliform analysis FRA6 (A1)
4. Conventional Water Samples Parameters PPA2 (A)
5. Conventional Water Samples Parameters PPA7 (A)
6. Filtered Sample: Dissolved Metals FRA6 (A2)
7. Filtered Sample: Dissolved Metals PPA2 (A2)
8. Filtered Sample: Dissolved Metals PPA7 (A2)
9. Total Metals In Water FRA6 (A3)
10. Total Metals in Water PPA2 (A3)
11. Total Metals in Water PPA7 (A3)
12. Sediment Sample Parameters FRA6 (A4)
13. Sediment Sample Parameters PPA2 (A4)
14. Sediment Sample Parameters PPA7 (A4)

Paul Price Associates, Inc.
3006 Bee Caves Road Suite D-230
Austin, Texas 78746
(512) 329-0155

CHAIN OF CUSTODY RECORD
Biological

Job Name:

Job No.:

Samplers:

Page: of:

Sample Location (s):

Station (ID No.)	Date	Time	Station Location/Description	Type Sample	No. of Items

Relinquished by:

Date:
Time:

Received by:

Relinquished by:

Date:
Time:

Received by:

Relinquished by:

Date:
Time:

Received by:

**APPENDIX E:
FIELD AND LABORATORY CORRECTIVE ACTION FORM**

**Field and Laboratory Corrective Action Form
Cypress Creek Basin Clean Rivers Program**

Date:	
Problem:	
Person(s) Involved:	
Cause of Problem:	
Corrective Action:	

Date:	
Follow-up Action:	
Quality Review:	

Reviewed by:	_____	_____
	Field or Lab Supervisor	Date
Approved by:	_____	_____
	Quality Assurance Officer	Date

**APPENDIX F:
Letters of Agreement**

TO: Dwight K. Shellman, Jr., and
Dr. Roy Darville
Caddo Lake Institute

FROM: David Thomas
Cypress Creek Basin Technical Coordinator
Paul Price Associates, Inc.

Please sign and return this form by (date) to:

David Thomas
Paul Price Associates, Inc.
3006 Bee Caves Rd. Ste. D-230
Austin, TX 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

Signature

Date

Signature

Date

TO: Bill Peery
Laboratory Manager
Ana-Lab Corporation

FROM: David Thomas
Cypress Creek Basin Technical Coordinator
Paul Price Associates, Inc.

Please sign and return this form by (date) to:

David Thomas
Paul Price Associates, Inc.
3006 Bee Caves Rd. Ste. D-230
Austin, TX 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

Signature

Date

TO: David Weidman
General Manager
Franklin County Water District

FROM: David Thomas
Cypress Creek Basin Technical Coordinator
Paul Price Associates, Inc.

Please sign and return this form by (date) to:

David Thomas
Paul Price Associates, Inc.
3006 Bee Caves Rd. Ste. D-230
Austin, TX 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

Signature

Date

TO: Vernon Rowe
Pilgrim's Pride Corporation

FROM: David Thomas
Cypress Creek Basin Technical Coordinator
Paul Price Associates, Inc.

Please sign and return this form by (date) to:

David Thomas
Paul Price Associates, Inc.
3006 Bee Caves Rd. Ste. D-230
Austin, TX 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

Signature

Date

TO: Walt Sears, Jr.
General Manager
Northeast Texas Municipal Water District

FROM: David Thomas
Cypress Creek Basin Technical Coordinator
Paul Price Associates, Inc.

Please sign and return this form by (date) to:

David Thomas
Paul Price Associates, Inc.
3006 Bee Caves Rd. Ste. D-230
Austin, TX 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

Signature

Date