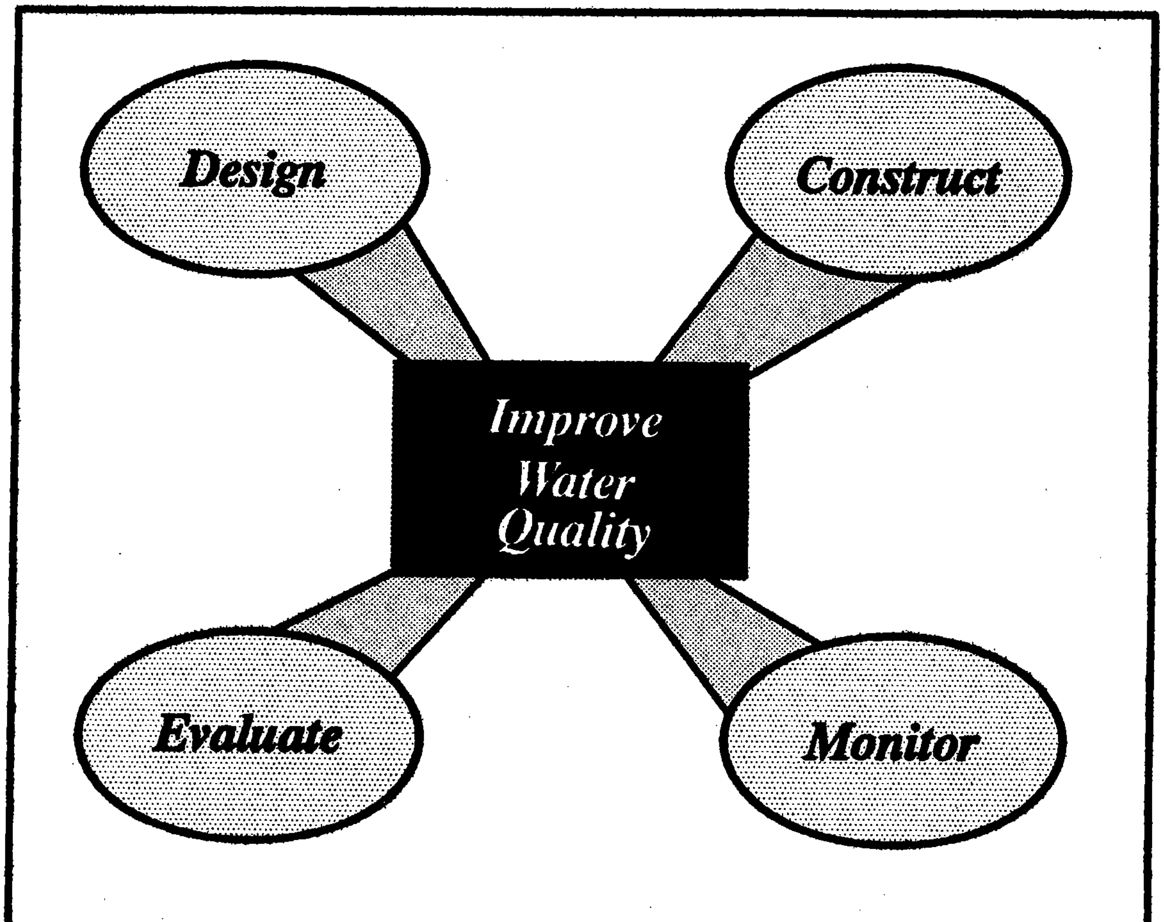
Lake Pontchartrain

Storm Water Discharge, LA

Jefferson Parish Demonstration Project



Technical Report

August 1995

DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

NEW ORLEANS, LOUISIANA

CELMV-PM-E (CELMN-PP/29 Aug 95) (1105-2-10c) 3rd End
Mr. Harden/cdw/5310
SUBJECT: Lake Pontchartrain Storm Water Discharge, Louisiana, Technical Report, Jefferson Parish Demonstration Project

CDR, Lower Mississippi Valley Division, Vicksburg, MS 39181-0080

FOR Commander, New Orleans District, ATTN: CELMN-PP

1. Referred.

2. You should complete all remaining activities on the current plan and provide your responses to the comments described in subject 2nd endorsement to CELMV-PM-E by the end of February 1996. Furthermore, you should have the draft PCA and package items completed and ready to be submitted to CECW-AR and CELMV-PM-E for concurrent review in early March 1996 if the opportunity presents itself.

FOR THE COMMANDER:

Encl
as

THOMAS F. CAVER, JR.
Director of Programs Management

FEB 2 1996

Bible

CELMV-PM-E (CELMN-PP/29 Aug 95) (1105-2-10c) 3rd End
Mr. Harden/cdw/5310
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FOR THE COMMANDER:

Encl
as

THOMAS F. CAVER, JR.
Director of Programs Management

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

CELMN-PP

29 August 1995

MEMORANDUM FOR Commander, Lower Mississippi Valley Division
ATTN: CELMV-ED-PG

SUBJECT: Lake Pontchartrain Storm Water Discharge, Louisiana, Technical Report, Jefferson Parish Demonstration Project

1. Reference CELMN-PP memorandum dated 8 March 1994 and subsequent comments.

2. The subject revised Technical Report is submitted for review and approval.

3. Approval of this Technical Report as a basis for preparation of a Project Cooperation Agreement is recommended.

FOR THE COMMANDER:

CLETIS R. WAGAHOFF
Deputy District Engineer
for Project Management

Encl
(15 cys)

Rec'd 9/26/95
@ CECW-PC

CELMV-DP-P (CELMN-PP/29 Aug 95) (1105-2-10c) 1st End
Walton/cdw/5833
SUBJECT: Lake Pontchartrain Storm Water Discharge, Louisiana, Technical Report, Jefferson Parish Demonstration Project

CDR, Lower Mississippi Valley Division, Vicksburg, MS 39181-0080

FOR HQUSACE (CECW-PC), WASH DC 20314-1000

1. Concur in the New Orleans Districts recommendation that this Technical Report be approved as a basis for preparation of a Project Cooperation Agreement.

2. The environmental assessment and FONSI, draft PCA, and initial HTRW assessment will be forwarded under separate cover.

3. Upon approval of subject report the schedule will be updated and revised to show that the financing plan will accompany the PCA.

FOR THE COMMANDER:

Encls
wd 5 cys

THOMAS F. CAVER, JR.
Director of Programs Management

CECW-EP-W (CELMN-PP/29 Aug 95) (1110-2-1150a) 2nd End
Mr. Wallace/202-761-8890/FAX 202-761-4002
SUBJECT: Lake Pontchartrain Storm Water Discharge, Louisiana, Technical Report, Jefferson Parish Demonstration Project

HQ, U.S. Army Corps of Engineers, Washington, D.C. 20314-1000 05 JAN 1996

FOR Commander, Lower Mississippi Valley Division, ATTN: CELMV-DP-P

1. References:

a. Memorandum CECW-AR-E, 3 November 1995, subject: Lake Pontchartrain Storm Water Discharge, Jefferson Parish, Louisiana, August 1995 Technical Report (enclosure 2).

b. Memorandum CECW-PC, 29 June 1995, subject: Lake Pontchartrain Storm Water Discharge Project (enclosure 3).

2. The subject report is approved subject to:

a. Satisfactory resolution of the outstanding concerns set forth in paragraph 3 of enclosure 2.

b. Assurance from the USEPA, consistent with reference 1.b., that the recommended plan complies with Section 402 of the Clean Water Act as amended in 1990 to include separate storm water systems for large and medium-sized cities.

c. That FY 96 funds be used to finalize the Technical Report, prepare and execute the PCA, and fund engineering and design and construction activities to be performed by the project sponsor in accordance with the VTC held on 14 December 1995 between HQUSACE and LMVD personnel.

3. The preceding concerns should be addressed in returned endorsement, this chain, with reconciliation prior to submission of the PCA. The returned endorsement, 8 copies, should be directed to Mr. Dave Reece, CECW-AR-E.

FOR THE DIRECTOR OF CIVIL WORKS:

David B Sanford

3 Encl
wd encl 1
Added 2 encl
2-3. as

DAVID B. SANFORD, JR.
Chief, Policy Review and
Analysis Division
Directorate of Civil Works

CECW-AR-E (1110-2-1150a) 3 November 1995

MEMORANDUM FOR CHIEF, ENGINEERING DIVISION, ATTN: CECW-EP-W

SUBJECT: Lake Pontchartrain Storm Water Discharge, Jefferson Parish, Louisiana, August 1995 Technical Report

1. The subject report was provided to this office for Washington level review by CECW-P. During subsequent discussions it was determined that approval for the report was your responsibility and any comments on the document should be forwarded directly to you.

2. By memorandum dated 24 June 1994, CECW-EP-W provided comments on an earlier report which requested that additional information be provided in a technical document sufficient enough to support preparation of a Project Cooperation Agreement. The current report did not respond specifically to the comments in the 24 June memorandum, so it was difficult to determine how adequately the district responded to those comments. Our current review focused on the adequacy of the current report, considering the comments previously provided to the district.

3. The review assessment is attached. We note several areas that need to be modified or corrected prior to report approval.

4. Any questions may be directed to the review manager, Dave Reece, at 703-355-2379.

RFSoots Jr.

Encl
as

ROBERT F. SOOTS, JR.
Acting Chief, Policy Review Branch
Policy Review and Analysis Division
Directorate of Civil Works

Enclosure

CECW-AR-E

1 November 1995
(revised 18 December 1995)

WASHINGTON LEVEL
REVIEW TEAM ASSESSMENT

LAKE PONTCHARTRAIN STORM WATER DISCHARGE
JEFFERSON PARISH, LOUISIANA, DEMONSTRATION PROJECT
AUGUST 1995

1. **BACKGROUND**. A reconnaissance study of urban flood and water quality management for Jefferson and Orleans Parishes was completed and approved in December 1993. One purpose of the study was to investigate ways to improve the water quality of storm water runoff into Lake Pontchartrain. The study concluded that more data are needed and recommended the use of demonstration projects. In a "consensus agreement" between the district and Jefferson Parish in July 1995, a plan developed by the Parish to capture and treat storm runoff using excess capacity of the Parish East Bank sewage treatment plant was adopted for a demonstration project.

2. **AUTHORITY.** The Water Resource Development Act of 1992, Public Law 102-580, Section 307, authorizes the Secretary of the Army to design and construct projects that address water quality problems associated with storm water discharges into Lake Pontchartrain and the Mississippi River. The fiscal year 1994 Energy and Water Appropriations Bill provided $2 million to prepare a Project Cooperation Agreement (PCA) and technical documentation for a storm water management demonstration project proposed by Jefferson Parish officials. Senate Report 103-291, dated September 1994, allows cost reimbursement to the Parish for their design and construction of the facility, relegating the Corps to a technical management oversight role.

3. **PURPOSE OF REPORT.** The purpose of the submitted document (referred to by the district as a technical document) is to satisfy the intent of the authorizing legislation, and to establish a basis for execution of the PCA. Furthermore, the technical document was required by CECW-EP-W because the demonstration project was authorized without a feasibility report and is needed to support the PCA. The August 1995 subject report was to furnish additional information as required by a CECW-EP-W memo dated 24 June 1994.

4. **RECOMMENDED PROJECT.** The recommended plan is to modify the existing storm water runoff collection system and pump storm water from the drainage canals to the East Bank Waste Water Treatment Plant (EBWWTP) for treatment, and subsequent discharge into the Mississippi River. The report gives the total project cost as $20 million. The cost sharing is 75 percent Federal and 25 percent non-Federal.

5. **COMMENTS**

a. The technical document under review does not strictly follow the guidance in ER 1105-2-100 regarding economic analysis. However, CECW-EP-W memorandum dated 24 June 1994 exempts the district from economic analysis requirements of the ER. The memo directs the district to provide average annual costs, but only generalized benefits. Furthermore, it explicitly states that detailed economic and NED analysis are not required.

b. There is no description of the Quality Assurance/Quality Control process that will be in place when the water quality data collection effort will be performed. A QA/QC process is necessary to assure that the samples are accurate, adequate, and meet the needs of the study, the model, or any other determined needs (reference ER 1110-2-8154). The sampling program must be carefully designed to assure the number of sampling sites, frequency of sample collection, and analysis performed are at a level that is adequate but not excessive. There are existing protocols for designing a sampling program available from WES. These efforts will greatly reduce costs and assure adequacy of the sampling program. Further, the collected data should be stored in a data system, such as STORET, that allows full access and distribution of the data to all potential users. The district should ensure that a quality control process is established prior to data collection.

c. The real estate arrangements contemplated for the project are unacceptable because they offer the local sponsor an opportunity to manipulate the fulfillment of its 25 percent cost sharing obligation. There is a lack of checks and balances in the determination of the amount of LERRD credits. The nature of the project's LERRD requirement would be determined by the local sponsor who would then acquire the LERRD and, further, submit this amount for LERRD credit. The lack of checks on such activities for the Government is disturbing, especially in the light of the findings regarding granting of LERRD credits from the 1991 Army Audit Agency Civil Works Cost Sharing Audit (Report WE 91-203).

(1) Accordingly, we must have input into establishing the LERRD requirements and in the 9th line of paragraph 12 (Real Estate) on page 27 of the technical report,"guidance" must be replaced with "approval".

(2) Additionally, an abbreviated gross appraisal should be prepared and approved by CELMV-ET-R. This abbreviated gross appraisal should, at a minimum, describe the project area, total acreage, land classification broken down on an acreage (rounded) basis, the estates to be utilized for construction of the project, HTRW assessment, cultural resources, a map or plate of the project area, relocations pursuant to PL 91-646, relocations of facilities and/or utilities, and an estimate of lands and damages. The gross appraisal should be of sufficient detail to support the final real estate cost estimate.

(3) Finally, the Attorneys' Opinions of Compensability of relocations discussed in the Technical Report must be prepared and approved by CELMV-ET-R prior to execution of the PCA.

d. A statement should be added to the top paragraph on page 28 that LERR will be credited as specified in Section 307 of Public Law 102-580.

e. The report is not clear about who is responsible for acquiring the necessary permits. This should be negotiated with the local sponsor and the draft PCA to be submitted to headquarters for review should specify who is responsible for assuring various permit actions.

signed

DAVE REECE
Review Manager

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

CECW-PC

29 JUN 1995

MEMORANDUM FOR Commander, Lower Mississippi Valley Division

SUBJECT: Lake Pontchartrain Stormwater Discharge Project

1. References:

a. CECW-PE memorandum, dated 4 Mar 94, subject: Section 307 of the Water Resources Development Act of 1992 (WRDA 92), Water Quality Projects.

b. CECW-EP-W Second Endorsement, dated 24 Jun 94, subject: Lake Pontchartrain Stormwater Discharge, Louisiana, Technical Report, Jefferson Parish.

c. CECW-PE memorandum, dated 13 Dec 94, subject: Section 307 of the Water Resources Development Act of 1992 (WRDA 92), Water Quality Projects.

d. Senate Report Number 103-291, Second Session, 34-35, 1994.

e. ASA(CW) memorandum, dated 7 Jun 95, subject: Lake Pontchartrain Stormwater Discharge Project.

2. The purpose of this memorandum is to provide additional guidance on the implementation of the subject project.

3. The ASA(CW) requested the Army General Counsel's opinion on the authority of the Corps under Section 307 of WRDA 92, Public Law 102-580, to enter into an agreement in which the stormwater discharge facility owners would design and contruct Federally authorized modifications at such facilities at Federal expense. The Army General Counsel concluded, in brief, that Section 307 provides such authority. Stating that it was the Army's policy "to comply with the intent of Congress on this matter as reflected in Senate Report Number 103-291," the ASA(CW) requested the Director of Civil Works to provide direction and guidance to

the Lower Mississippi Valley Division to prepare a draft cooperative agreement with the local sponsor of the Lake Pontchartrain Stormwater Discharge Project.

4. Accordingly, you are requested to draft a single Project Cooperation Agreement (PCA) which defines the roles of the Corps and non-Federal participants in this project. This agreement should reflect that modifications may be designed and contructed by the facility owners under the technical management oversight of the Corps. To that end, the Corps must ensure that the scope of the project is not above and beyond that which is necessary for the project to function properly to contribute toward compliance with the Federal Water Pollution Control Act. Any improvements not considered necessary for compliance with this Act will be done at 100 percent non-Federal cost.

5. The PCA should be based on the existing model PCA for the Section 307 Program which was included in the CECW-PE guidance dated 13 December 1994. Since this PCA will represent a departure from our standard PCA's you must submit the draft PCA to this office for approval prior to negotiating it with the non-Federal interests.

6. This project is not included in the President's FY 96 budget request and we cannot commit to include this project in future budgets. The PCA must be drafted to reflect this situation and execution strategies must reflect this uncertainty. We will proceed with the project within the limits of appropriations provided to date and should be fully prepared to continue with such funds as may be provided in the future.

7. The decision to allow non-Federal interests to participate in the project design and construction of the subject stormwater discharge modifications is limited to the Section 307 program authority only and is not extended to any other Corps program or project authority.

FOR THE DIRECTOR OF CIVIL WORKS:

G. EDWARD DICKEY
Chief, Planning Division
Directorate of Civil Works

CELMN-PP 25 August 1995

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Lake Pontchartrain Stormwater Discharge, LA, Jefferson Parish Demonstration Project

1. The attached technical report has been prepared to describe the project designed to demonstrate a process that will reduce the impacts of stormwater discharges to Lake Pontchartrain. This is the LMVD submission of 28 Aug 95. It also includes comments received from a previous submission and reflects coordination efforts with the Sponsor regarding the scope of the project features required to satisfy the intent of the authorizing legislation.

2. POC for the work is Alan Schulz, ext. 1562 or Gordon Hebert, ext. 2626.

TERRAL J. BROUSSARD
Senior Project Manager

DISTRIBUTION:

Engineering Division
Carl Anderson (CELMN-ED-SP)
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Bob Fairless (CELMN-ED-E)

Planning Division
Scott Clark (CELMN-PD-RP)
Rick Bush (CELMN-PD-RN)

Brown, Cunningham, & Gannuch
Bob Yokum (6 copies)

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

CELMN-PP

29 August 1995

MEMORANDUM FOR Commander, Lower Mississippi Valley Division
ATTN: CELMV-ED-PG

SUBJECT: Lake Pontchartrain Storm Water Discharge, Louisiana, Technical Report, Jefferson Parish Demonstration Project

1. Reference CELMN-PP memorandum dated 8 March 1994 and subsequent comments.

2. The subject revised Technical Report is submitted for review and approval.

3. Approval of this Technical Report as a basis for preparation of a Project Cooperation Agreement is recommended.

FOR THE COMMANDER:

Encl
(15 cys)

CLETIS R. WAGAHOFF
Deputy District Engineer
for Project Management

LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH DEMONSTRATION PROJECT

TECHNICAL REPORT AUGUST 1995

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Note: M-CACES Cost Estimates are included in a Separate Appendix from this Report.

Jefferson Parish, Louisiana Stormwater Demonstration Project

TECHNICAL REPORT EXECUTIVE SUMMARY

This Technical Report has been prepared to describe a project designed to demonstrate a process that will reduce the impacts of stormwater discharges from Jefferson Parish to Lake Pontchartrain on water quality. This addresses the comments received from HQUSACE and EPA on a previous submission and reflects the extensive negotiations with the Sponsor regarding the scope of the project features essential to satisfy the intent of the authorizing legislation. In principle, it has been agreed that the project will be comprised of the features listed below. Project features are:

1. A 20,000 gpm stormwater pump station at the intersection of the Suburban Canal and Canal No. 4 and a 36-inch diameter force main to connect the station to the existing regional force main that currently transports sewage to the East Bank Wastewater Treatment Plant (EBWWTP).

2. Approximately 12,300 feet of new force main from the existing 48" diameter regional sewer force main adjacent to West Napoleon Avenue to the EBWWTP. A 48-inch force main is the apparent size required for the design flows projected. Jefferson Parish, the non-Federal sponsor, may request a larger diameter, and has agreed to pay the cost difference (100% non-Federal).

3. Modifications to the EBWWTP deemed necessary to accommodate the hydraulic and organic loadings imposed by the introduction of stormwater. Extent of the modifications will be based on the specific effluent limits requirements of a new permit that addresses the increased average daily flows to the EBWWTP. Upgrades will be based on increased loadings and flows to the EBWWTP and the current capability of the existing facilities.

4. A monitoring and modeling program to characterize the water quality of stormwater runoff accumulated in the Jefferson Parish East Bank Canal System, determine the water quality of Lake Pontchartrain, quantify pollutant loadings from the discharged stormwater to the Lake, assess the impacts of proposed actions on the Lake and the EBWWTP, demonstrate the effectiveness of the project, and evaluate the applicability of processes to other areas.

The latest guidance for the implementation of this project indicates that the Sponsor will be allowed to design and construct the required facilities and be reimbursed for costs in excess of 25% of the total project costs. The guidance is also specific that technical oversight is the responsibility of the Corps of Engineers and costs for items considered to be betterments will be 100% non-Federal, not subject to cost sharing.

The Project Cooperation Agreement (PCA) will be prepared and negotiated based on the information contained in this Technical Document. It is recommended that all the costs incurred by the Sponsor, consistent with project requirements, for the development of this project and for work associated with design, surveys, geotechnical investigations, and initiation of plans and specifications for the construction of project features that were incurred prior to the execution of the PCA be considered as project costs and be creditable as work-in-kind. All work-in-kind credits for this project will be subject to review and approval by the Corps of Engineers and shall be verified by audit.

LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA

JEFFERSON PARISH DEMONSTRATION PROJECT

1. Authority. The Water Resource Development Act of 1992 (Oct 92), PL 102-580, Section 307, authorizes the Secretary of the Army to design and construct projects that address water quality problems associated with storm water discharges into Lake Pontchartrain and the Mississippi River. Project designs shall ensure the development of effective Federal and non-Federal actions which contribute toward compliance with the Federal Water Pollution Control Act (FWPCA). The Fiscal Year 1994 Energy and Water Appropriations Bill provided $2 million to prepare a Project Cooperation Agreement and technical documentation for a storm water management demonstration project proposed by Jefferson Parish officials.

2. Purpose of Report. The purpose of this technical document is to describe the actions proposed to satisfy the intent of the authorizing legislation and to establish a basis for execution of the Project Cooperation Agreement (PCA) between the Corps of Engineers and Jefferson Parish, Louisiana (non-Federal sponsor). The report will also provide pertinent information relating to the location of the project, the characteristics of the area, details of the proposed actions, other alternatives considered, results of NEPA, HTRW and Cultural Resources coordination, and activities planned for evaluation of the processes implemented.

3. Requirements for Local Cooperation. Section 307 (c) of the Water Resources Development Act of 1992 requires that "the total project cost be shared at 75 percent Federal and 25 percent non-Federal. The non-Federal sponsor shall receive credit for lands, easements, rights-of-way, and relocations (LERR) toward its share of project costs, but not to exceed 25 percent of total project costs. Operation and maintenance cost shall be 100 percent non-Federal." The Parish of Jefferson, Louisiana has stated their intention to be the Local Sponsor for this project. See President Michael J. Yenni's January 25, 1994 letter in Appendix A, and follow-up letter dated April 12, 1995 outlining the scope of engineering features and agreement summary for the project. The June 9, 1995, Corps agreement summary response letter is also included. Resolution of issues relating to credits for work-in-kind has resulted in guidance that allows the Corps of Engineers to reimburse the non-Federal Sponsor for actual costs incurred in excess of 25% of the total project cost.

4. Purpose and Scope of Project. The purpose of this project is to demonstrate the capability to mitigate stormwater impacts on Lake Pontchartrain water quality by collecting, storing, and removing runoff from the drainage system prior to its discharge to the Lake and to determine if this runoff can be effectively treated by treatment facilities that have handled high infiltration/inflows. Further, the new force main will be used to augment the capacity of existing sewage lift stations during wet weather to reduce the potential for sewage overflows from a taxed system. A monitoring and modeling program will be used to determine existing conditions and to validate the extent of anticipated improvements.

5. Background. A reconnaissance study of urban flood control and water quality management for Jefferson and Orleans Parishes was completed and approved in December 1993. One purpose of the study was to investigate ways to improve the water quality of storm water runoff into Lake Pontchartrain. The technical work done for the reconnaissance study is the basis for this Technical Report. In the reconnaissance study, the nature and extent of the water quality problems were estimated using existing data and computer modeling. Some improvements were identified to relieve water quality problems and were evaluated for economic justification and environmental acceptability. The study concluded that more data are needed and demonstration projects are advisable.

The reconnaissance report recommended further study to more accurately determine the existing water quality, predict the effectiveness of various plans, and determine which management practices are best suited for a totally pumped drainage system.

Subsequent to the reconnaissance study Jefferson Parish developed a scheme to capture and treat storm water runoff using the excess capacity of the Parish East Bank sewage treatment plant. The Parish summarized their project Evaluation Phase in November 1994. A consensus agreement between the Corps and Jefferson Parish was reached in July 1995. This report will present and evaluate the consensus plan for the demonstration project.

6. Description of Project Area. The project area is located in southeastern Louisiana in the vicinity of the city of New Orleans and includes the highly urbanized portion of Jefferson Parish on the east bank of the Mississippi River. See Plate 1. The area is within the Pontchartrain Basin, situated near the center of the Gulf Coastal plain in the lower reaches of the Mississippi embayment. The basin is a shallow depression

lying between the alluvial ridge of the Mississippi River to the south, and sloping uplands to the north and west. The basin consists of Lakes Maurepas, Pontchartrain, and Borgne all of which are connected in a series by relatively narrow, but considerably deeper tidal passes. This system ultimately drains into the Mississippi Sound, Chandeleur Sound, and Breton Sound to the Gulf. Lake Pontchartrain is a shallow, land-locked tidal basin approximately 640 square miles in area with an average depth of 12 feet.

Generally, the ground near the Mississippi River is above sea level and elevations decrease with distance from the river. Most of the developed areas are protected from river and hurricane flooding by levee systems and drained by pumps which discharge into estuarine water bodies. The leveed areas are divided into many subbasins, by natural and man-made barriers, and are webbed with drainage canals that terminate at pumping stations.

Approximate minimum elevations on the east bank of the Mississippi River can be as low as -8 feet National Geodetic Vertical Datum (NGVD) in the artificially drained, former marsh and swamps that are presently commercially or residentially developed. A 4-foot ridge is located about 2 to 3 miles from Lake Pontchartrain, and runs generally parallel to the lakeshore in eastern Jefferson Parish and into Orleans Parish. This ridge, known as the Metairie-Gentilly Ridge, is the remains of the natural levee of an ancient distributary of the Mississippi River, and forms a natural drainage divide between the river and the south shore of Lake Pontchartrain.

The Jefferson Parish drainage system is an intertwined network of subsurface culverts, ditches, canals and pumping stations. See Plate 2. In contrast to conventional systems, which generally rely on gravity flow and free fall discharge, the Jefferson and Orleans Parishes drainage systems, unique to others in the United States, depend on the collection and pumping of all storm water falling on the area. The pumping stations on Jefferson Parish east bank discharge into Lake Pontchartrain. The treated effluent from the sewage treatment plant is discharged into the Mississippi River.

In most areas of the Jefferson Parish east bank, land elevations are lower than the surrounding water surface elevations. Levees protect the area from hurricane and Mississippi River flooding. However, the levees assume an opposite role, that of retaining water, where rainfall is concerned.

Jefferson Parish operates their drainage pumping stations to maintain a specific water surface elevation in the major outfall canals. Once those elevations are exceeded the pumps are engaged to discharge the excess. Previous subsidence problems in the parish dictate this operation, so that ground water is not drawn out of areas adjacent to the canals. However, subsidence has to a large extent stabilized.

The east bank storage areas are laterally connected by a "grid" of canals. The lateral canals equalize flow between the major outfall canals. This allows rain water to flow in different or opposite directions depending on available capacities at the pumping stations.

7. Description of Problem. The water quality of Lake Pontchartrain and the east Jefferson Parish drainage system is described in Appendix B. Based on historical data, Lake Pontchartrain along the Jefferson Parish lakeshore is contaminated by pathogenic organisms as indicated by fecal coliform levels of a magnitude of about 6 times the level considered safe for human contact. The primary source of this contamination is storm water discharge. Even though the east bank areas now pump their treated sewage into the Mississippi River instead of Lake Pontchartrain, high fecal coliform levels persist. Raw or partially treated sewage is often combined with storm water runoff as the result of overflows at sewage lift stations and subsequent runoff into the storm water drain lines. Also the initial storm water runoff washes urban pollution into the storm water drainage system. The major part of the problem, therefore, is the sewage overflows, infiltration and initial runoff.

8. Project History. In March of 1993, New Orleans District, in coordination with Jefferson Parish and the Lake Pontchartrain Basin Foundation proposed the subject project under Section 307 of WRDA '92. Since the project involved additions and modifications to the existing Parish sewer and drainage infrastructure, Jefferson Parish presented a conceptual plan to pump stormwater from the drainage canals to the East Bank Waste Water Treatment Plant (EBWWTP) for treatment. This would be a demonstration project at an estimated cost of $20,400,000. The excess dry weather EBWWTP capacity could be used to treat stormwater runoff which remained in the canal system from the last storm event. The conceptual plan included a 32,750 gallon per minute lift station at the intersection of the Suburban Canal and Canal No. 4 at West Napoleon Avenue (see Plate 3), a 48-inch diameter sewer force main, and modifications to the EBWWTP.

With FY 94 funding, New Orleans District was directed to prepare a Technical Report as a basis for preparation of the Project Cooperation Agreement. The report was prepared, drawing heavily from Jefferson Parish input, and completed on 8 Mar 94. The report proposed that the technical design and bid documents, construction and construction management would be accomplished by the Parish. The Corps would maintain project management and technical oversight, be responsible for the monitoring plan, and reimburse the Parish to maintain the 75%-25% Federal - non-Federal cost sharing arrangement. The report was endorsed to HQUSACE and comments were forwarded to LMVD by 2nd End dated 24 Jun 94.

Upon HQUSACE review, a cost reimbursement issue arose as to the legality of transferring funds to the Parish for design and construction. Advantages existed to allowing local design and construction, including: 1) the Parish's institutional knowledge of their system; 2) their preliminary design work and familiarity with the project; and, 3) the likelihood of their completing the design expeditiously.

By separate Congressional action, Senate Report 103-291, dated September 1994, addressed the cost reimbursement issue with language that would allow cost reimbursement to the Parish. The report stated:

> "The Committee is aware that development of this project as authorized in Public Law 102-580 will involve modifications or additions to existing locally-owned and operated public utilities. Although the Committee believes that the technical and management expertise of the Corps in developing and implementing the project is essential to ensure effective Federal and non-Federal actions, it also understands that design and construction of modification or additions to such facilities may be accomplished most

> efficiently when conducted by the facility owners. Toward that end, the Committee directs the Secretary of the Army to develop the necessary agreements with the facility owners to allow them to design and construct such modifications under the technical management oversight of the Corps. The Committee has included $800,000 to continue development of this project."

On 7 Jun 95, Dr. John H. Zirschky, Acting Assistant Secretary of the Army (Civil Works), advised that the Army General Counsel issued an opinion dated May 1, 1995, that the Corps is not legally precluded from entering into such agreements with the Parish. Dr. Zirschky requested that the Director of Civil Works provide direction and guidance, in accordance with Senate Report 103-291 and the intent of the Congress, to execute a cooperative agreement with the local project sponsor (Jefferson Parish) and proceed with negotiations.

HQUSACE implementation guidance memorandum dated 29 Jun 95 to LMVD requested preparation of a draft cooperative agreement with the local sponsor Jefferson Parish. The guidance was referred to New Orleans District by LMVD on 13 Jul 95 and requested that:

> ". . . a single [PCA be prepared] which defines the roles of the Corps and non-Federal participants in this project. This agreement should reflect that modifications may be designed and constructed by the facility owners under the technical management oversight of the Corps. To that end, the Corps must ensure that the scope of the project is not above and beyond that which is necessary for the project to function properly to contribute toward compliance with the Federal Water Pollution Control Act. Any improvements not

considered necessary for compliance with this Act will be done at 100% non-Federal cost."

The guidance further advised:

"This project is not included in the President's FY96 budget request and we cannot commit to include this project in future budgets. The PCA must be drafted to reflect this situation and execution strategies must reflect this uncertainty."

Also, the guidance provided:

"The decision to allow non-Federal interests to participate in the project design and construction of the subject stormwater discharge modifications is limited to the Section 307 program authority only and is not extended to any other Corps program or project authority."

This report is being prepared in accordance with the above guidelines.

9. <u>Alternatives Considered.</u> The approved Reconnaissance Study presents alternate plans to improve water quality. This Technical Report will not repeat all that was considered in the reconnaissance report but only that required to describe the viable alternatives for a demonstration project.

The alternatives can be divided into five general categories as follows:

1. In-line Detention
    a. Concrete-Lined Canal with Bottom Collector Compartment
    b. Pump Storm Water Runoff to Wastewater Treatment Plant
2. Disinfection
    Chlorination or other disinfectants

3. Flush the System with Water
    a. Mississippi River
    b. Lake Pontchartrain
4. Diversion
    a. Diversion into St. Charles Parish wetlands
    b. Discharge storm water further into the lake (i.e. further away from existing south shore discharge points)
    c. Divert a portion of the storm water discharge from the Lake to the River.
5. Sedimentation

Alternative 1 - In-Line Detention

There are two basic alternatives to in-line detention:

a. Construct the drainage canals so that the worst of the storm water runoff or the pollutants is segregated in the canals. The scheme offered in the Reconnaissance Report was a concrete lined canal with a bottom compartment that would fill first and would collect sediments. Then the material in the bottom compartment could then be pumped to some treatment facility.

Concrete lining of all major canals associated with in-line storage would have an extremely high cost if incorporated on an East Bank Parish-wide basis. Cost estimates are of the order of magnitude of $375 million, and are deemed unfeasible since this amount is unacceptably high and engineering uncertainties would tend to drive the true cost higher.

b. Another alternative is to time the pumping of the existing canals so that the worst of the runoff is sent to an existing treatment facility and the remaining less polluted runoff is pumped out without treatment. This is the selected plan and is detailed later.

The capture and storage of the first runoff, which contains an estimated 90% of total pollutants, requires significant storage capacities (See Appendix C). The existing lateral canals have significant storage capacity since they may be pumped down prior to a rain event. The canals are pumped down only prior to anticipated major events. Thus, first runoff, mixed with existing canal water, can be pumped away from the lake, to existing East Bank Waste Water Treatment Facilities. This can likely be done cost-effectively. A detailed water quality monitoring and modeling plan can be incorporated to determine whether and to what extent pumping canal water is an efficient and economical alternative for improving the quality of storm water discharges into Lake Pontchartrain. Virtually all of the pollutants to be pumped to the plant are within the existing plant treatment capability during wet weather conditions,. Thus, modifications, if any, are deemed to be needed to the existing treatment plant to accommodate pumped storm water during dry weather conditions. Modifications may be required to satisfy EPA and LA DEQ revised discharge permit requirements.

Further, installing a new 48-inch sewer force main at the approximate midpoint of the existing sewer main (See Plate 3) will reduce the likelihood of rainfall-induced sewerage overflows. This will have positive impacts on reducing the levels of pathogenic organisms pumped into Lake Pontchartrain. The improved water quality effects of the storm water discharge should be measurable.

Alternative 2 - Disinfection

In these alternatives the storm water discharge is mixed with a disinfectant before entering Lake Pontchartrain. This is very effective against bacteria present in the water when treated but does nothing to remove inorganic compounds, poisons, metals and other pollutants present in urban run-off. And this does nothing to prevent regrowth of these organisms when the disinfectant is diluted in the Lake.

Other considerations for disinfection are that dangerous gases such as chlorine, chlorine dioxide and ozone are used, and thus highly trained personnel are required to operate the stations. Additional storage space for disinfection facilities is required, but insufficient space is available at existing stations. Also, dosage rates must be very high and uniform mixing is difficult, although modern technology has improved dosing and mixing. Chemicals formed can possibly affect other aquatic life. Further, disinfection must be accomplished on the discharge end as chlorine is corrosive to pump and equipment components.

Disinfection alternatives provide only a partial and impractical solution to improving storm water discharge quality. Therefore, the disinfection alternatives will not be considered further.

Alternative 3 - Flush the System with Water

This is a dilution method and is divided into two alternatives depending on the source of water:

a. the Mississippi River, or;

b. Lake Pontchartrain.

Either alternative involves pumping water into the system to dilute the pollutants. The regenerative effects and assimilative capacities of the water bodies, especially the Mississippi River, can dissipate the pollutants. This alternative can be combined with other alternatives that divert the storm water into adjacent wetlands. Odor problems can be diminished by flushing stagnant canals.

a. Mississippi River Water. Flushing the canal system with Mississippi River water is possible, to dilute pollutant concentrations entering Lake Pontchartrain. However, pumping the water back to the river is extremely expensive. A variable seasonal head requirement for pumps is necessary to pump water back into the river. Also, ground elevations decrease with increasing distance from the river, thus pumping must be uphill for canal reaches farther from the river. Further, using river water in the canals will likely result in canal sedimentation.

b. Lake Pontchartrain Water. Flush water from Lake Pontchartrain could be pumped into the drainage canals from the Bonnabel Pumping station (see Plate 3) and pumped out by another station. Introducing large amounts of lake water into the drainage system would cause a massive influx of marine life into the canal system which it cannot support, causing fish kills and odor problems. Further, introducing lake water into the drainage system could increase salinities of water handled by the stations, increasing maintenance and reducing equipment life.

Therefore, the flushing alternatives will not be adopted.

Alternative 4 - Diversion

This category is broken down into 3 alternatives.

a. Divert the Jefferson Parish storm water into the adjacent St. Charles Parish wetlands and allow the natural filtering action of the wetlands to cleanse the storm water before it enters the Lake. The adjacent marsh areas are probably adequate in size to treat the runoff. However, discharging all or any large portion of Jefferson runoff at one end of the Parish is prohibitively expensive. Further, local opposition of St. Charles Parish officials to receiving Jefferson Parish storm water is likely.

b. Discharge storm water further into the Lake. This would divert the concentration of pollutants away from the populated south shore. This project consists of a large diameter metal outfall pipe extending from each smaller pump discharge pipe into the lake about 1500 feet. The increased areal extent and the somewhat deeper lake mixing zone would enhance pollutant dispersion and dilution and result in smaller short-term concentration increases.

However, overall pollutant loading in the lake would remain the same. The pipes would need to be buried under the lake floor, and poor soil stability of the lake bottom might cause excessive settlements. Pile support would likely be needed. Measures to preclude lake sediments from backing up into the discharge pipe would be required. Also, an increased head on the existing lake outfall pumping stations would reduce the pumping capacity. Maintenance costs for the discharges would be substantial. Further, the lake is not significantly deeper further out than near shore.

c. Divert a portion of the storm water discharge from the Lake to the River. This would be applicable to a community like Harahan, Louisiana; and would reduce the total load going into the Lake by diverting a portion to the River. Diversion of storm water would secondarily reduce flood potential of areas south of Jefferson Highway. However, drainage pumping stations at the river would be extremely expensive and cost prohibitive on a Parish wide basis. Also, this would only address a small part of the overall volume of pollutants discharged to the lake. Significant modifications to the existing drainage system would be required by this plan. Further, this assumes that the dilution capability and natural process of the river will adequately handle the pollutant load.

Alternative 5 - Sedimentation

Sedimentation can be divided into two alternatives:

a) alum treatment, and;

b) sediment traps.

a) Alum Treatment. Alum treatment would occur at the drainage pumps and the flocculent contained in the pumping station discharge and outfall canals. The suspended sediments would be precipitated before reaching Lake Pontchartrain. The outfall canals may offer a suitable mixing and sedimentation zone for treated storm water. The alum treatment method provides high removal rates of all pollutants. No detention basins or wetlands need to be constructed, thus large real estate acquisition is not needed. Further, the alum precipitate (floc) tends to remain inert and stable under chemical conditions likely to exist in the receiving water.

However, accumulated floc would probably need to be trapped in an outfall canal settling basin (or sediment trap) rather than be discharged to the lake because of its tendency to form visible deposits on the bottom. Suspended sediments will precipitate in the pumping station stilling basin on the lake side. This may require frequent cleanout or dredging of the pumping station stilling basin. Although alum dosages can be adjusted by using variable speed injection pumps, proper alum treatment requires precise pH and temperature controls, neither of which are practical for a given subbasin, or for Parish wide implementation. Further, no locations exist for settling basins near the pumping stations without significant bank or structural modifications.

b) Sediment Traps. Sediment traps in the canals near the intakes of pumping stations would be somewhat effective in solids reduction for storm water, but would need to be located beyond the immediate vicinity of the intakes to avoid significant resuspension of solids. A sill on the outfall side would serve the same purpose, but would need to be able to withstand high dynamic loading during periods of large pumping rates.

However, frequent dredging would probably be needed in order to maintain proper storage capacity of solid material. A sill would probably require frequent repair unless armored with heavy riprap and containing geotextile lining material to retain fine sediment particles. Also, sediment traps would not greatly reduce concentrations of pathogenic organisms.

Further, the required velocities to induce settlement of suspended materials are extremely slow, which would impede pumping operations. Thus, there is no practical way to reduce the flow velocities to make this a viable alternative. Therefore, sediment traps will not be considered further.

Additional Qualitative Analyses

The alternatives were then evaluated based on three criteria;

a. cost effectiveness
b. acceptability to the citizens of Jefferson Parish and those adjacent to or using the Lake, and
c. the ability to expand the demonstration project to the entire east bank of Jefferson Parish.

The alternatives were scored by a panel of experts including representatives of Jefferson Parish and the Lake Pontchartrain Basin Foundation. The panel was chaired by the District Engineer. The panel used a 5 point scoring system. In each criterion the best score was 5; and the lowest score was 1. The scoring is relative, in that it reflects how each alternative stands against the others. The results are tabulated in the following:

ALTERNATES	COST EFFECTIVENESS	ACCEPTABILITY	EXPANDABILITY	SCORE (RANK)
1A. In-Line Detention Concrete Lined Canals	3	5	4	12 (2)
1B. Pump Worst of Runoff To Existing Treatment Plant	4	5	4	13 (1)
3A. Flush With Mississippi River Water	1	1	1	3 (7)
3B. Flush with Lake Pontchartrain Water	2	3	1	6 (6)
4A. Divert Into St. Charles Parish Wetlands	3	2	1	6 (6)
4B. Discharge Further out into Lake Pontchartrain	3	2	4	9 (4)
4C. Divert Harahan runoff to the Mississippi River	4	3	1	8 (5)
5. Alum Treatment	5	2	4	11 (3)

Alternative 1B, pumping the worst of the runoff to the existing sewage treatment plant, was selected.

10. Description and Rationale of Selected Plan.

a. General. An overview of the existing Jefferson Parish Suburban Basin Canal system layout with the stormwater discharge demonstration project selected plan features added is shown on Plate 4. The selected plan consists of a 20,000 gallon per minute (GPM) storm water lift station located on the Suburban Canal near Canal No. 4; a new 48-inch diameter sewer force main from the intersection of West Napoleon and Woodlawn to the EBWWTP; and modifications to the East Bank Waste Water Treatment plant that are necessary to produce effluent conditions that satisfy the conditions and requirements of the National Pollution Discharge Elimination System (NPDES) permit issued for the increased loadings imposed by the addition of stormwater to the system.

The Jefferson Parish East Bank Waste Water Treatment Plant has a demonstrated wet weather capacity well in excess of the required dry weather capacity. For the demonstration project, this excess capacity will be used to treat the first runoff, mixed with the contents of the drainage canals and the dry weather flow from the sewage system. The lift station and force main will be used to transport the storm water from the drainage system to the treatment facility.

b. Process. This project is intended to demonstrate that improvements in the quality of storm water discharges into Lake Pontchartrain that contribute toward compliance with the Federal Water Pollution control Act (FWPCA) can be effected by the proposed actions. The existing Jefferson Parish major drainage and sewerage networks will be operated to use the capability of each in combination with the proposed new facilities to produce improvements in the operations of both systems. Runoff from storm events is normally stored in drainage canals and is ultimately pumped along with its constituent loading to Lake

Pontchartrain. The demonstration project will direct the contents of the Suburban basin drainage canals to the EBWWTP during dry weather periods when flows to the plant are low and system capability is available. Present drainage system operations in the Suburban Canal Basin maintain a near constant elevation (approximately 9 feet Cairo Datum (C.D.) in the canals to avoid subsidence and canal bank sloughing. When a rainfall event approaches, canal levels can be lowered up to two feet (approximately elevation 7 feet C.D.) using the Lake Pontchartrain outfall pumps to create additional storage capacity. The runoff from a rainfall event fills the canals. Once an elevation 10($\pm$) C.D. is reached, the outfall pumps discharge the excess into Lake Pontchartrain (See Plate 5). The post-rainfall canal levels are restored to about elevation 9 feet C.D. The canal levels are generally static until lowering in anticipation of the next rain event. Stormwater contaminant materials are not removed or reduced prior to discharge into Lake Pontchartrain.

The Stormwater Demonstration project will direct canal water to the EBWWTP during low sewage flow periods. In lieu of using outfall pumps to lower the canals in anticipation of a rainfall event, this project will, after the effects of the rainfall event have subsided, begin pumping the canal contents to the EBWWTP. The stormwater is mixed with the sewage flows from the eastern portion of the sewer system as it enters the existing regional force main near the lift station and is transported to the EBWWTP via the new 48-inch force main. The amount of stormwater and its associated pollutant concentrations removed from the drainage canals is treated at the EBWWTP and discharged to the Mississippi River. This action will improve the water quality of Lake Pontchartrain by reducing the quantity of stormwater and pollutants discharged.
The Stormwater Demonstration project facilities and operations are expected to be capable of storing, removing, and treating runoff from

rainfall events with magnitudes of up to 1/2 inch and recurrent frequencies of three to four days. Smaller, more frequent events will be handled by the systems; but larger events must be handled by the existing drainage system outfall pumps. A large percentage of storm events in this area have be historically been within the range of capability of the proposed actions for this demonstration project. The project will not be capable of handling the larger more extraordinary rainfall events sometimes experienced in the area. These events will preclude the use of the demonstration project operations and must be handled by the existing drainage system facilities and operations procedures. The Stormwater Discharge project will not be used when there is a potential for rainfall events to produce urban flooding or when the sewerage system is surcharged by infiltration/inflows experienced during and immediately following storm events. It is anticipated that there will be a sufficient number of rainfall events of 1/2 inch or less that reliable data validating the viability of the demonstration can be accumulated.

To ensure that stormwater contaminant materials routed to the EBWWTP are properly treated prior to discharge to the Mississippi River, up to five treatment plant modifications proposed by the non-Federal Sponsor will be evaluated and incorporated, if needed, to maintain the level of treatment required to meet NPDES permit requirements. A study by Jefferson Parish, anticipated to be completed by October 1995, will determine specifically which modifications are needed, subject to review and approval of the Corps of Engineers, the Environmental Protection Agency, and the Louisiana Department of Environmental Quality. This report describes an upper limit, or "worst case scenario" of modifications needed. Required NPDES permit sampling and testing will remain in place and additional water quality monitoring and/or modeling as detailed herein will be done as part of the Stormwater Discharge project.

The Stormwater Discharge Demonstration project has four main features:

1) Force Main. A 48-inch diameter force main, tying into the existing regional force main, is required in the Suburban Canal subbasin to convey stormwater to the EBWWTP (See Plate 6). This force main is designed to convey about 13,000 gpm from the east side sewerage system (during dry weather conditions), plus up to 20,000 gpm of stormwater from the drainage canals to the EBWWTP for treatment. The force main routing is generally along an existing street alignment and through a railroad corridor adjacent to the plant. The force main will be utilized for sanitary flows during dry weather conditions in conjunction with this demonstration project and during wet weather to augment the existing sewage system capability to handle high infiltration/inflow surcharges that traditionally have been experienced. The demonstration project will be instrumented to monitor pressures within the regional force main and control when and how much stormwater can be added to the EBWWTP. Jefferson Parish may opt to construct a 60-inch diameter force main, in lieu of 48-inch diameter, to better serve future Parish needs. They have agreed to fund the incremental cost as 100% Non-Federal. An M-CACES cost estimate for the 48-inch and the 60-inch force mains is included in Appendix E. A summary of project costs is given in paragraph 18.

The stormwater project operating plan is to consider two scenarios for stormwater pumping operations: 1) discontinue pumping stormwater based on a predetermined pressure level in the force main, and, 2) continuous pumping, but only if sufficient canal water is available to maintain canal elevation 7 C.D. as a minimum. It is not anticipated that continuous pumping will occur. Canal level monitoring will be needed to ensure the "pump off" condition when canal stages warrant. Jefferson Parish has an existing system that can be set up for such controls.

Generally, during wet weather peak flows, when infiltration and inflow cause an increase in treatment plant inflow, stormwater pumping will be discontinued until dry weather conditions resume. Thus, operation of the stormwater pumps will be closely interfaced with the existing Jefferson Parish control and monitoring systems of the sewerage and drainage departments. It may be advantageous to permit stormwater pumping to continue through the early part of the rainfall event to capture as much as possible of the probably higher contaminant concentrations of first runoff, but pumping will discontinue as needed to reserve treatment plant and force main capacity for wet weather. The optimum "pump on/pump off" point will be developed.

2) Pumping Station. A 20,000 gpm lift station will be installed on the Suburban subbasin canal bank near the intersection with the West Napoleon Canal, to pump stormwater runoff (mixed with canal water), from the drainage canal into the new force main (See Plate 8). The preliminary design for the lift station proposes a concrete sump approximately 25 feet by 30 feet inside dimensions with a base slab at elevation (-)0.0 feet C.D. (See Plates 9 and 10). The structure is supported on 60 foot timber piles about three to four feet on centers. A concrete block with masonry veneer enclosure will house the mechanical and electrical features of the lift station, with a floor elevation about 17.5 feet C.D. (See Plate 10).

The mechanical features include four 5000-gpm VTSH (vertical turbine solids handling) pumps with approximately 125-horsepower motors each. Approximately 16-inch diameter suction pipes with the pump bellmouth at approximate elevation 1.0 feet C.D. in the sump are anticipated for each pump. Each pump discharge will have a gate valve and a check valve for backflow prevention and maintenance. The intake structure from the Suburban Canal has been preliminarily designed as an 18-foot wide intake channel with invert elevation 3.0 C.D. (See Plate 11). A 30-foot wide V-bottom flume channel lining will be included in the canal intake area. A Waskey type bridge is included for access to a trash rack for intake debris removal and maintenance. The discharge will be approximately a 36-inch diameter manifold routed to the existing regional force main. Electrical features include new electrical service, power distribution, a motor control center, control panels (consoles for the pumps), grounding facilities, a lightning protection system, a SCADA system and network interface, and other accessories for lighting, ventilation, communications, and maintenance.

An underground vault design concept for the lift station was studied by the Corps and presented to Jefferson Parish for consideration as a more economical alternate. The Parish opted for the masonry building presented herein, since this demonstration project, if sufficient results are not achieved, could leave non-functional storm water facilities in the Parish. Some allowance will be given to the Parish to design the lift station to avoid economic waste and to permit reusability of facilities.

The detailed cost estimate for the lift station presented is $1,300,000 plus contingencies. A detailed breakdown of the cost estimate is given in Appendix E and a cost summary is given in paragraph 18.

3) <u>Treatment Plant Modifications.</u> A brief review of existing treatment plant facilities and unit operations is presented prior to the potential modifications. The treatment plant is a conventional activated sludge process supported by appropriate support peripheral facilities. The existing plant process is shown in the schematic on plate 12. The unit operations include preliminary treatment which includes screening and grit removal, followed by primary clarifiers. Secondary treatment consists of activated sludge aeration basins followed by secondary

clarifiers. Disinfection is accomplished by chlorinating at the secondary clarifier effluent channel. Odor control facilities are also provided at several locations throughout the plant. Solids are treated by a liquid treatment train with dissolved air flotation sludge thickeners, sludge holding tanks, sludge dewatering (belt filter press) units, and disposal to a landfill. Sludge recirculation to the aeration basins is also available to maintain appropriate mixed liquor suspended solids (MLSS) concentrations.

A list of five proposed upgrades to the EBWWTP is as follows:

a) Site Work and Headworks Tie-In
b) Conversion of Primary Clarifiers to Aeration Basins
c) Add Sludge Handling Facilities - Belt Filter Presses (or alternately, Centrifuges) and Sludge Holding Tanks
d) Dechlorination Facilities
e) Electrical and Instrumentation Facilities.

All 5 features have been conditionally included in this report pending a study (August-October 1995) by Jefferson Parish consultants and subject to review. The potential need for each of these items will be explained briefly.

a) Site Work and Headworks Tie-In. Site work includes incidental building revisions for facility upgrades. The headworks tie-in includes valving of the new 48-inch (or 60-inch) force main into the treatment plant. Headworks facilities are preliminary treatment, which include mechanical bar screens and grit removal chambers. The character of inflow materials is different for stormwater and sewage (wastewater). Stormwater solid material is primarily non-biodegradable, and is composed of different-sized solids. Conversion to a smaller opening on the inlet bar screens may be required. Sieve analysis is recommended by the Parish to identify the particle sizes of total suspended solids (TSS) anticipated from stormwater. Plant process and performance may be affected if certain-sized solids are not removed.

b) Conversion of Primary Clarifiers to Aeration Basins. Preliminary estimates by the Sponsor's consultant indicate the average daily hydraulic capacity of the existing aeration basis to be 51 MGD and suggest the average daily flow to be plant with the addition of stormwater will be 71 MGD. The current measured and reported average daily flow to the plant is 35.5 MGD. The plant capacity estimate appears to be conservative and the 71 MGD applied load assumes continuous pumping of stormwater into the system. The extent of aeration basin modifications required will be governed by further and more detailed analyses and the necessity to provide expanded facilities to produce effluents that meet the new NPDES permit. Additional hydraulic, solids, and organic loads are anticipated and their impact on WWTP performance must be addressed to assure performance within the parameters outlined by the NPDES permit.

c) Add Sludge Handling Facilities - Belt Filter Presses (or alternately, Centrifuges) and Sludge Holding Tanks. Additional sludge facilities are proposed including belt filter presses, dissolved air flotation (DAF) units, and sludge holding tanks, due to the anticipated increase in sludge from pumping stormwater. This will also be reviewed in the Jefferson Parish study pending. Centrifuges involve a state-of-the-art change to the plant and may constitute a betterment.

d) Dechlorination Facilities. The addition of stormwater may result in the need to provide dechlorination of the plant effluent to the Mississippi River. Chlorination is used in the plant to control pathogenic organism levels in the treated wastewater, but must be removed prior to effluent discharge to the Mississippi River.

e) Electrical and Instrumentation Facilities. Selected electrical control systems and monitoring instrumentation are proposed to support the upgrades and modifications outlined herein.

Results of the pending study will be used to determine, after review, the actual treatment plant modifications needed. Proposed modifications will also be reviewed in the light of requirements for a new NPDES permit to accommodate the increased flows to the plant and of criteria established jointly by the Corps of Engineers and Jefferson Parish.

11. WATER QUALITY MONITORING/MODELING PROGRAM.
The preconstruction monitoring plan (See Appendix C) will provide existing conditions with respect to the storm water runoff quality in the drainage canal system and Lake Pontchartrain receiving area water quality. The sampling plan will be developed and implemented to define the characteristics (i.e. volume, duration and pollutant concentrations) of storm water runoff for the east bank of Jefferson Parish. The program will also define the duration and extent of negative impacts (i.e. depressed DO levels, elevated pathogenic organism levels, etc.) of stormwater runoff in Lake Pontchartrain.

Automatic water samplers with rain gauges and liquid level actuators will be located at the pumping stations and at the basin's interior non-pumping station locations. Flow measurements will also be taken at these locations. The samples will be analyzed for solids, oxygen demanding substances, nutrients, bacteria and metals. Sampling stations will also be established in Lake Pontchartrain to ascertain the impacts of storm water runoff in the receiving water body.

The post-construction monitoring program will provide with-project data with respect to storm water runoff and Lake Pontchartrain receiving area quality. Ideally, the same sampling locations will be used for pre- and post-construction monitoring.

Baseline data in the drainage canals will be collected during non-storm events. Further sampling will provide both quantity and quality data for all overflows, along with rainfall data from the numerous gauges located throughout the basin.

The data collected during the pre- and post-construction monitoring programs will be used in developing a receiving area water quality model and to evaluate the impacts of the demonstration project on receiving area water quality. This will allow for the evaluation of a wide range of rainfall and treatment scenarios.

12. Real Estate.

General Note: Real Estate and Relocations for Section 307 Projects.
The obligations of the Government and the Non-Federal Sponsor for Real Estate and Relocations for the Stormwater project are to be developed in the Project Cooperation Agreement (PCA). Normally, in Section 307 Water Quality projects, the Government is the designer and thus develops the details of the required rights-of-way and relocations. In the Stormwater project, Senate language and ASA(CW) guidance authorize Jefferson Parish to perform detailed design and construction under Corps technical oversight. Thus, we intend to structure the PCA, such that Jefferson Parish will develop, with Corps guidance, the general written descriptions, including maps as appropriate, of the lands, easements, rights-of-way and relocations required for this project. Any items that the Parish seeks credit for must be presented in accordance with Federal laws, regulations and policies. Relocations and rights-of-way costs are subject to audit to determine whether the costs are reasonable, allocable, and allowable.

The real estate requirements for this project with the preliminary alinement include, at a minimum, one occupied residence in the vicinity of the pumping lift station, street right-of-way for the sewer force main, and the necessary rights-of-way to install force main beneath railroad tracks and a Louisiana state highway. Acquisition of all lands, easements, rights-of-way, and relocations will be performed by Jefferson Parish as local sponsor, and in accordance with Public Law 91-646, and Chapter 12 of Engineering Regulation 405-1-2. The cost of providing same may be credited toward Jefferson Parish's 25% share of the project's first cost.

Rights-of-way furnished by Jefferson Parish must be certified prior to construction and crediting in accordance with the requirements of Chapter 12. The Parish may also desire to seek "quicktake" authority, to insure acquisition of required rights-of-way in a timely manner.

Based on information from the local sponsor, Jefferson Parish, the selected route would be entirely constructed within existing Jefferson Parish rights-of-way with two exceptions. A permit will be required from Louisiana DOTD for crossing Airline Highway. Rights-of-way will need to be purchased from three railroad companies for the east/west portion of the force main south of Airline Highway.

The lift station will be constructed within the confines of the property which is presently owned by the Jefferson Parish Department of Sewerage; however, additional rights-of-way for access of construction equipment and operations, and excavation and storage purposes is required. Also, this will allow a "buffer" between the station and adjacent residential properties to allow for maintenance access, exterior storage and to minimize negative impacts on the neighborhood.

Therefore, the property adjacent to the proposed site will be purchased and the existing residential structure demolished.

13. <u>Relocations.</u> The proposed 48-inch force main will be installed on a residential street (North Woodlawn Avenue) in Jefferson Parish. Several drainage, water supply and other utilities will be affected. These items may be compensable under LERR provisions. A compensable interest determination must be made for each item based on the type of utility, whether it is privately or publicly owned, and who performs the coordination and design of the relocation.

14. <u>Environmental Considerations.</u> Anticipated direct construction impacts would result from the placement of the new sewer lift station, and 12,300 linear feet of 48-inch diameter sewer force main. Additional modification to the existing waste water plant would be conducted within the confines of the existing waste water treatment site and would not impact any significant resources. It is expected that residential thoroughfares and grassed areas along these traffic routes would receive the greatest impact. Additional anticipated negative impacts would occur to residences and commercial establishments located along the construction corridor from increased noise, rerouting of traffic, air pollution from heavy equipment, and dust from road disturbances. The overall environmental impacts of these construction features would be expected to be minimal and short term in duration.

Potential secondary impacts of the proposed demonstration project are possible increases of certain pollutants in the effluent discharged from the Waste Water Treatment Plant to the Mississippi River and possible increases of certain pollutants in sewage sludge deposited in the parish landfill. At this time we do not expect these increases, if any, to be significant. Impacts to recreational activities are expected to be minor.

There are no anticipated direct construction impacts to buried cultural resources resulting from the construction of 12,300 linear feet of 48-inch diameter sewer force main. The construction corridor passes through an area that appears to be disturbed by utility construction. A cultural resources investigation is presented in Appendix D. The results of this study have been coordinated with the State Historic Preservation Office.

An Environmental Assessment has been prepared to address the impacts of this demonstration project. We have received and prepared responses to EPA comments for the subject work. A Finding of No Significant Impact is anticipated, based on the project contribution toward compliance with the FWPCA. Coordination with the Louisiana Department of Wildlife and Fisheries, the U. S. EPA, the U. S. Fish and Wildlife Service, and other environmental agencies has occurred. Continued discussion with these organizations and agencies, primarily U.S. EPA, is on-going at this time in an effort to resolve concerned issues. It is not anticipated that a section 404 (b)(1) evaluation and state water quality certification will be required as the proposed construction activities are confined to developed urban areas and should not impact wetlands.

15. <u>Cultural Resources Evaluation</u>. A 24 March 1994 letter outlining the cultural resources evaluation for the proposed work has been sent to the State Historic Preservation Officer (see Appendix D). No adverse impacts to cultural resources are anticipated.

16. <u>HTRW Initial Assessment</u>. An initial HTRW assessment has been made for the subject work. The results are as follows:

The project reach was examined for the presence of hazardous, toxic, and radioactive waste (HTRW). This assessment relies on site inspections, aerial photography analysis, land-use studies, historical records, and regulatory agency contacts. Based on this assessment, it is reasonable to conclude that no hazardous, toxic or radioactive waste would be encountered during construction activities for this project. No additional HTRW work is recommended, unless new information is developed or HTRW discovered.

17. NPDES Discharge Permit. The Jefferson Parish EBWWTP has an existing NPDES permit No. LA 0066630 authorizing the discharge of plant effluent to the receiving waters of the Mississippi River. The permit allows final discharge effluent limits as follows:

Item	30 Day Average (Lbs./Day)	30 Day Average Concentration mg/l	Maximum Daily Concentration mg/l
Biochemical Oxygen Demand (BOD-5)	8372	30	45
Total Suspended Solids (TSS)	8372	30	45
Fecal Coliform Bacteria (Colonies/100 ml)	n/a	200	400
Total Residual Chlorine (TRC)	Maximum at anytime 0.426 mg/l (Monitored Party)		

The WWTP must also, in accordance with Part III, Standard Conditions for NPDES permits, effect a percent removal of applied BOD-5 and TSS not less than 85%. The specific impacts of the stormwater pumping to the treatment plant will be developed further in the pending Parish treatment plant modifications study to determine specifically the predicted impact of the stormwater project on the existing permit volume and loading limitations. A permit modification will be required to address the increase in average daily flows to the treatment plant and must be secured by Jefferson Parish from EPA and LA DEQ.

18. Cost Estimates. The estimated total incremental cost for the selected demonstration plan is $20,000,000. This cost estimate is sufficient to proceed with a Project Cooperation Agreement between the Department of the Army and Jefferson Parish, Louisiana. This Technical Document presents the baseline cost estimate for the project. The breakdown of the estimate follows:

Account Code	Item	Cost Estimate
	20,000 GPM Lift Station	$1,300,000
	48"Sewer Force Main	6,900,000
	Treatment Plant Modifications (Pending)	3,500,000
	Subtotal	$11,700,000
	Contingencies 25% +/-	2,800,000
13	Pumping Plants	$14,500,000
30	Planning, Engineering and Design	$1,800,000
30	Water Quality Monitoring and Modeling Plan	$1,300,000
31	Supervision and Administration	$1,400,000
01	Lands and Damages	$800,000
02	Relocations	$200,000
	TOTAL PROJECT COST	$20,000,000

Note: The 30 account for PED includes sunk costs (Federal and non-Federal) for project development, E&D for design and preparation of contract documents (non-Federal) and technical oversight and project management (Federal).

Jefferson Parish may desire to construct a 60-inch force main in lieu of a 48-inch to better suit future Parish needs. This results in a cost increment of $800,000 ($1,000,000 with 25% contingencies), which is 100% non-Federal cost.

An M-CACES cost estimate is included in Appendix E of this report for the force main. The lift station cost estimate is detailed, but based on assumptions made on a preliminary design. The cost estimate included herein for the pending treatment plant modifications is based on preliminary criteria that must be finalized from study results. An M-CACES cost estimate will be made for these items upon final determination of the treatment plant modifications.

19. Distribution of Cost. The authorizing act specifies that the total project cost be shared as 75% Federal cost and 25% non-Federal cost. The distribution of cost therefore is as follows:

Total Cost	$ 20,000,000
Federal Cost	15,000,000
Non-Federal Cost	5,000,000

The Act further specifies that the non-Federal sponsor is responsible for lands, easements, rights-of-way, and relocations as part of the 25% share. The cost of these items is estimated at $ 1,000,000, leaving a required non-Federal contribution of $4,000,000, plus an additional $1,000,000 (non-Federal) for the incremental cost difference between the 48-inch diameter and the 60-inch diameter force mains.

Jefferson Parish has spent an estimated $160,000 in developing the concept of in-line treatment in their storm water collection system. The Reconnaissance Report presented a Parish developed scheme for in-line treatment using the surplus capacity of the East Bank Sewage Treatment

Plant. Subsequent to the Report, the Parish refined the plan to the selected plan presented in this report. Corps sunk costs through FY 95 are about $500,000.

Given the nature of the work, basically additions and modifications to existing Parish sewer and drainage infrastructure, it is prudent to allow the Parish to complete the project design, primarily the plans and specifications for the new pumping station, sewer force main, modifications to the waste water treatment facilities, and the required connections and interfacing with the existing system and to award and manage the contracts for construction of the proposed facilities. The Corps will exercise technical management oversight including review and approval of Parish detailed design and contract documents for compliance with local and industry practice and applicable CE standards. The local sponsor will be credited with the cost of this work as part of their required cash contribution and will be reimbursed for expenditures over 25%. The current estimate of the non-Federal contribution is $5,000,000. The amount finally credited to the local sponsor will be based on actual cost determined to be fair and reasonable and verified by audit.

20. Funds Control and Disbursements. A detailed financing plan must be developed between the Corps and Jefferson Parish for the 25% local cost share. Guidance for this plan has been forwarded to Jefferson Parish to begin preparation of the plan.

21. Operations, Maintenance, and Replacement. The Local Sponsor is responsible for operating and maintaining the project and furnishing any replacements as required through the life of the project. The local sponsor will do this using available operating personnel and maintenance

facilities and operate and maintain the project along with the Parish drainage and sewer system. The monitoring program as described in this report is a cost of construction. Any other water quality monitoring required for the proper operation of the project will be addressed in the operation and maintenance manual and will be part of the ordinary operation of the project.

22. Schedule of Design and Construction. A detailed schedule cannot be developed due to the current budget constraints on this project. However, the project is envisioned as follows:

Complete Environmental Assessment and FONSI	30 September 1995
Draft PCA Submission to Higher Authority	29 September 1995
Final PCA Submission to Higher Authority	31 December 1995
Financing Plan Submitted to Higher Authority	31 January 1996
Financing Plan Approval by Higher Authority	28 February 1996
Sign PCA	31 March 1996
Complete Plans and Specs	31 January 1996
Start Construction	15 May 1996
Complete Construction	15 May 1997
Evaluate and Report	30 September 1998

The Operation and Maintenance manual will be finished by the completion of construction and available for use at the start of project operation.

23. Recommendation. Approval of this report is recommended as a basis for preparing a Project Cooperation Agreement, subject to the completion of an environmental assessment and execution of a FONSI, between the Department of the Army and Jefferson Parish, Louisiana, for the design and construction of a demonstration project, as described herein, as the "Lake Pontchartrain Storm Water Discharge, Louisiana" project.

LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH DEMONSTRATION PROJECT

Jefferson Parish Conceptual Plan and Cost Estimate
Jefferson Parish Letter of Intent (25 Jan 94)
Jefferson Parish Scope of Engineering
Agreement Summary (12 Apr 95)
Corps Response to Scope of Engineering
Agreement Summary (9 Jun 95)

APPENDIX A

APPENDIX A

JEFFERSON PARISH
LOUISIANA

OFFICE OF PARISH PRESIDENT

MICHAEL J YENNI
PARISH PRESIDENT

January 25, 1994

Colonel Michael Diffley
U.S. Army Corps of Engineers
New Orleans District
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Subject: Water Resources Development Act
Section 307 - Water Quality Projects
Jefferson Parish Stormwater Quality Demonstration Project

Dear Colonel Diffley:

In accordance with agreements made on January 4, 1994 between members of our respective staffs, Jefferson Parish, by this letter, acknowledges intent to participate in this project to the fullest extent contained in the authorizing legislation.

In this regard, my staff has already begun preparation of the required request for Council authorization to solicit Statements of Qualification for selection of an engineer consultant to perform the project tasks attributable to the Parish.

As previously discussed with your staff, Jefferson Parish, via the selected consultant, will provide the preliminary and final designs for the Demonstration Project and will prepare the necessary construction documents. In addition, the Parish will prepare, in coordination with the Corps, the technical documents and design memoranda as defined in the cost sharing agreement.

At our meeting, we requested the New Orleans District to pursue with your higher authority the credits for preliminary design efforts accomplished to date and the efforts described herein. I believe that this work should be creditable toward the Non-Federal share for the project. I understand the District intends to make a formal request on behalf of the Parish in the near future. I hope that our willingness to expedite the project will be considered when the request is evaluated. Please provide acknowledgement of this letter of intent and our credit request.

As always, we appreciate the efforts of the District in providing the residents of Jefferson Parish with flood protection and now, the potential for improvements in the water quality of Lake Pontchartrain. We look forward to an early start and completion of this project.

Sincerely,

Michael J. Yenni
MICHAEL J. YENNI
PARISH PRESIDENT

MJY/pn

cc: Mr. Donald Hull
Mr. Warren Lavelle
Mr. Ali Pirsalehy
Mr. Ross Ketchum
Mr. Prat Reddy
Mr. Dennis Butler

JEFFERSON PARISH
LOUISIANA

OFFICE OF PARISH PRESIDENT

MICHAEL J. YENNI
PARISH PRESIDENT

April 12, 1995

Colonel Kenneth H. Clow, district Engineer
U.S. Army Corps of Engineers, New Orleans District
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Re: Jefferson Parish Stormwater Demonstration Project

Dear Colonel Clow:

Jefferson Parish has completed the Evaluation Phase for the Stormwater Quality Demonstration Project. The project features proposed in your Draft Technical Report of March 94 have been further evaluated. Our evaluation has been provided to your staff for review.

The Parish intends to participate in the water quality monitoring program, and proceed with preliminary design on the three main features of the project. Specifically: a new lift station; a new force main; and necessary modifications to the East Bank Wastewater Treatment Facility.

As discussed in the report, the lift station will be sized at 20,000 GPM with construction to be as economical as possible. The force main will be analyzed for both 48" and 60" capacities. The larger diameter may be better suited for future Parish requirements with the Parish funding any incremental increase in cost due to the larger diameter. The modifications to the treatment facility will include those necessary to accept flows from the additional force main; however, some additional modifications to other treatment facility components might be required if the proposed demonstration project results in any adverse impacts to our NPDES permit. This determination will be made by the Environmental Protection Agency and/or the Louisiana Department of Environmental Quality.

Upon finalization of our design contract, Mr. B. K. Sneed, Director of Public Works for the Parish, will contact your staff to initiate the Project Cooperation Agreement.

Sincerely,

BK Sneed for

Michael J. Yenni
Parish President

cc: Senator J. Bennett Johnston
Mr. B. K. Sneed

JUN 9 1995

Programs and
Project Management Division

Mr. Michael J. Yenni
Parish President
Jefferson Parish Louisiana
P. O. Box 10242
Jefferson, Louisiana 70181-0242

Dear Mr. Yenni:

In response to your letter of April 12, 1995, regarding the Lake Pontchartrain Storm Water Discharge Demonstration Project, I would like to inform you that we agree, in principle, with the scope of the proposals presented. We must focus on what is necessary to accomplish the project purpose and to satisfy the intent of the authorizing legislation. Recent meetings with your consultant have helped to shape the final design criteria for the project. Agreements on the features of the project design are being formulated.

We will proceed with revision of the Technical Report and incorporate the latest proposals for facilities design. Revisions will also include responses to issues raised by our Corps Headquarters during their earlier review of this project, data and rationale to support selection of the proposed plan, cost estimates, schedule, and allocation of resources. We also intend to initiate work on producing a draft Project Cooperation Agreement (PCA) and have your representative participate in developing the provisions of the agreement.

I am pleased that you have chosen to participate in this project and am looking forward to working with you to bring this unique project to fruition.

Sincerely,

/S/ Clow

Kenneth H. Clow
Colonel, U. S. Army
District Engineer

Copies Furnished:

Senator J. Bennett Johnston

Mr. Kenneth L. Brown
Brown Cunningham and Gannuch
2701 Kingman Street
Metairie, Louisiana 70006

Mr. Rodney J. Gannuch
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Mr. B. K. Sneed, Director
Jefferson Parish Dept. of Public Works
1221 Elmwood Park Boulevard, Suite 904
Harahan, Louisiana 70123

Mr. Dennis Butler, Director
Jefferson Parish Dept. of Sewerage
1221 Elmwood Park Boulevard, Suite 803
Harahan, Louisiana 70123

CELMN-ED (Mr. Tickner)
CELMN-PD (Mr. Schroeder)
CELMN-DD-P (Mr. Wagahoff)
CELMN-PP (Mr. Broussard)

LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH DEMONSTRATION PROJECT

Water Quality Study - 1993

APPENDIX B

APPENDIX B

APPENDIX B

JEFFERSON PARISH DEMONSTRATION PROJECT

Water Quality Study

TABLE OF CONTENTS

1.0 INTRODUCTION

1.0.1. General. This section summarizes the U.S. Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) permit application requirements for municipal separate storm water discharges to waters of the United States; how these requirements will affect Orleans and Jefferson Parishes; and the existing storm drainage systems in Orleans and Jefferson Parishes.

1.1. EPA's NPDES PERMIT REQUIREMENTS FOR STORM WATER DISCHARGES

1.1.1. General. The Clean Water Act (CWA) requires that NPDES permits for discharges from municipal separate storm sewers systems to waters of the United States include: requirements to effectively prohibit non-storm water discharges into the storm sewers; and controls to reduce the discharge of pollutants to the maximum extent practicable (including management practices, control techniques and systems, design and engineering methods, and other provisions appropriate for the control of such pollutants). EPA or authorized NPDES states may issue system-wide or jurisdiction-wide permits covering all discharges from a municipal separate storm sewer system to waters of the United States. EPA defines storm water as storm water runoff, surface runoff and drainage related to storm events or snow melt.

The new storm water regulations published November 16, 1990 (revised March 21, 1991 and November 5, 1991) by the EPA require large and medium-sized municipalities with separate storm sewer systems and many industrial facilities to obtain NPDES permits for their storm water discharges. Large municipal separate storm sewer systems are those systems serving a population of 250,000 or more. Orleans Parish is a large municipality with a separate storm sewer system. Medium municipal separate storm sewer systems are those systems serving a population of 100,000 or more, but less than 250,000. Jefferson Parish is a medium municipality with a separate storm sewer system.

Operators of large and medium-sized municipal separate storm sewer systems must submit two part permit applications. For large municipal separate storm sewer systems, Part 1 should have been submitted by November 18, 1991. Part 2 must be submitted by November 16, 1992. Medium municipal separate storm sewer systems must submit Part 1 by May 18, 1992. Part 2 must be submitted by May 17, 1993.

Part one of the application requires information regarding existing programs and the means available to the municipality to control pollutants in storm water discharges. In addition, part one requires field screening of major outfalls to detect illicit connections. Part two of the permit application requires a limited amount of representative quantitative data and a description of proposed storm water management plans.

Operators of storm water discharges associated with industrial activity, including those discharging to municipal separated storm sewers, must also apply for NPDES permits which contain controls based on best available technology (BAT) and/or best conventional technology (BCT) considerations or water quality-based controls, if necessary. Three options are available for operators of storm water discharges associated with industrial activity: (1) individual permit applications; (2) group applications; and (3) filing a notice of intent requirements to be covered by an established general permit. A general permit is a permit that covers discharges from more than one facility within a state. General permits are either issued by EPA or, in states with authorized NPDES programs, by the State. Notices of intent requirements are established in general permits, and generally only require information such as the type of industry, location and name of receiving waters. EPA is the NPDES permitting authority in Louisiana. EPA expects to issue a final general permit in Louisiana in February or March 1991. For storm water discharges associated with industrial activity which require an individual permit, applicants must submit an individual application by October 1, 1992 or participate in a group application. Part one of the group application should have been submitted by September 30, 1991, and part two of the accepted group application must be submitted by May 18, 1992. However, EPA has proposed to extend this date to October 1, 1992. If Part 1 of the group application was rejected by EPA, then the applicants have until October 1, 1992 to submit an individual permit or file a notice of intent for a general permit.

1.1.2. <u>Discharges from large and medium municipal separate storm sewers</u>. This section will cover permit application requirements and the effective prohibition on non-storm water discharges to the municipal separate storm sewer systems.

1.1.2.1. <u>Permit application requirements</u>. A two-part application process for discharges from large and medium municipal separate storm sewer systems has been established.

1. Part 1 of the application includes:
   - o General information (name, address, etc.);
   - o Description of the existing legal authority to control pollutants in storm water discharges and a plan to augment legal authority where necessary;
   - o Source identification information including:
     - Topographic map or aerial photograph equivalent to a USGS 7.5 scale map;
     - Description of the historic use of ordinances or other controls which limited the discharge of non-storm water discharges to the municipal separate storm sewer;
     - Location of known major municipal separate storm sewer outfalls;
     - Description of procedures and a proposed program to identify additional major outfalls;

- Identification of the drainage area associated with known major outfalls;
- Description of major land use classifications in each drainage area;
- Description of soils;
- Ten year projections of population growth and development activities; and
- Location of industrial facilities, open dumps, sanitary landfills, municipal incinerators or RCRA hazardous waste treatment, storage or disposal facilities which discharge storm water to the municipal separate storm sewer system;

o Discharge characterization including:

- Existing quantitative data;
- Results of a field screening analysis to detect illicit discharges (non-storm water discharges without a NPDES permit) and illegal dumping to the municipal system;
- Identification of receiving waters with known water quality impacts associated with storm water discharges; and
- Plan to obtain representative data;

o Description of existing structural and non-structural prevention and control measures to reduce the discharge of pollutants from the municipal separate storm sewer;
o Description of financial budget and resources currently available to implement the proposed management plans required in part 2 of the application.

2. Part 2 of the application includes:
   o Demonstration of adequate legal authority to control discharges, prohibit illicit discharges, require compliance, and carry out inspections, surveillance, and monitoring;
   o Supplementation of the source identification submitted in part 1 of the application indicating the location of all major outfalls and inventorying the principal products or services provided by each facility discharging storm water associated with industrial activity to the municipal separate storm sewer;
   o Discharge characterization data including:

   - Quantitative data from 5-10 representative locations in approved sampling plans;

   - For selected conventional pollutants and heavy metals, estimates of the annual pollutant load and event mean concentration of system discharges;

   - Proposed schedule to provide estimates of: seasonal pollutant loads; and the mean concentration for certain detected constituents in a representative storm event; and

   - Proposed monitoring program for representative data collection;

o Proposed management program including descriptions of:

- Additional structural and source control measures that are to be implemented to reduce pollutants in runoff from commercial and residential areas including:
  - Maintenance activities;
  - Planning procedures to develop, implement, and enforce controls for areas of new development and significant redevelopment;
  - Practices for operating and maintaining public streets and highways;
  - Procedures to assure flood management projects assess impacts on water quality;
  - Program to monitor pollutants in runoff from operating or closed municipal landfills (or other facilities for municipal waste); and
  - Program to reduce pollutants in discharges associated with the application of pesticides, herbicides, and fertilizer;

- Program to detect and remove illicit discharges including:
  - Program to implement and enforce an ordinance or order;
  - Procedures to conduct on-going field screening activities;
  - Procedures to be followed to investigate potential illicit discharges;
  - Procedures to prevent, contain, and respond to spills;
  - Program to promote, publicize, and facilitate public reporting;
  - Educational activities for management of used oil and toxic material; and
  - Controls to limit infiltration of seepage from sanitary sewers;

- Program to monitor and control pollutants from municipal landfills; hazardous waste treatment, disposal, and recovery facilities; SARA Section 313, Title III facilities; and other priority industrial facilities including:
  - Priorities and procedures for inspection and enforcement;
  - Monitoring program; and
  - Program to implement and maintain structural and non-structural BMPs;

- Program to control pollutants in construction site runoff including:
  - Site planning requirements;
  - Enforceable requirements for non-structural and structural best management practices;

- Procedures for identifying priorities for inspecting sites and enforcement actions;
- Educational and training measures for construction site operators;

- o Estimated reduction in loadings of pollutants as a result of the management program; and
- o Financial analysis estimating the cost of implementing the proposed management programs along with identifying sources of revenue.

1.1.2.2. Effective prohibition of non-storm water discharges. For many municipalities, a first priority for reducing pollutants from municipal separate storm sewer systems is to effectively prohibit non-storm water discharges to their municipal separate storm sewer system. The permit application process implements this effective prohibition by establishing requirements for a field analysis to detect illicit connections and illegal dumping. In addition, applicants are required to submit a proposed program to control illicit connections and illegal dumping as part of their proposed management programs. The EPA does not interpret the effective prohibition on non-storm water discharges to municipal separate storm sewers to apply to discharges that are not composed entirely of storm water, as long as such discharge has been issued a separate NPDES permit. Rather, an effective prohibition would require separate NPDES permits for non-storm water discharges to municipal storm sewers.

1.2 DESCRIPTION OF STUDY AREA

1.2.1 EAST BANK JEFFERSON PARISH. East Bank Jefferson Parish encompasses approximately 30,710 acres. However, Hoey's Basin, approximately 2,425 acres, drains into the 17th St. Canal which is pumped by Orleans Parish's Pumping Station #6. Most of the land area is below sea level with a natural slope away from the Mississippi River, towards the lake. Through the use of a levee system the Parish has been able to prevent both the lake and river waters from entering East Jefferson. However, the levee system also retains all of the storm water falling on East Bank Jefferson Parish. Thus, East Bank Jefferson Parish's drainage system depends on the collection and pumping of all storm water falling on the area.

The drainage system is a complex, man-made interconnected network of sub-surface culverts, ditches, canals and pumping stations. Basically, there are five major north- south outfall canals (including the St. Charles parish line canal) and several east-west feeder canals. The east-west canal system serves as a collector system for the individual subdivisions. These canals then channel the water to the five main outfall canals. Another major function of the east-west canal system is to balance the drainage between the five main outfall canals so that more than one pumping station can provide relief for a heavy, localized rain storm. Since the water elevations in Lake Pontchartrain are lower than those of the Mississippi River, it is more efficient and economical for East Bank Jefferson Parish to pump its excess rain water into Lake Pontchartrain. Major pumping stations are located on each of the main outfall canals. There are also several interior pumping stations which serve to provide localized relief from runoff. Table 1-1 list the five main East Bank Jefferson Parish pumping stations along with their pumping capacities.

Table 1-1
East Bank Jefferson Parish Drainage Pumping Stations

Station Number	Station Location	Nominal Pumping Capacity (cfs)[1]	Receiving Waterbody
1	Bonnabel	4306	Lake Pontchartrain
2	Suburban	3310	Lake Pontchartrain
3	Elmwood	3400	Lake Pontchartrain
4	Duncan	5526	Lake Pontchartrain
-	Parish Line	969	Lake Pontchartrain

SOURCE: MASTER PLAN FOR JEFFERSON PARISH DRAINAGE IMPROVEMENTS
1 Capacities noted are based on "installed" capacities.

2.0 WATER QUALITY CRITERIA AND STANDARDS

2.0.1 Introduction. Both the Louisiana Department of Environmental Quality (LDEQ) and the US Environmental Protection Agency have established ambient water quality criteria applicable to surface waters in the State of Louisiana. These criteria are discussed in the following paragraphs.

2.1 Applicable Louisiana state standards. The LDEQ has established general written water quality criteria which are applicable to all waters of the State of Louisiana. The general written standards relate to the condition of the water as affected by waste discharges or human activity as opposed to purely natural phenomena, and are as follows. The criteria were last revised in 1989.

2.1.1 Descriptive water quality standards.

(a) Aesthetics. The waters of the state shall be maintained in an aesthetically attractive condition and shall meet the generally accepted aesthetic qualifications.

All waters shall be free from such concentrations of substances attributable to wastewater or other discharges sufficient to:

1. settle to form objectionable deposits;

2. float as debris, scum, oil, or other matter to form nuisances or to negatively impact the aesthetics;

3. result in objectionable color, odor, taste, or turbidity;

4. injure, be toxic or produce demonstrated adverse physiological or behavioral responses in humans, animals, fish, shellfish, wildlife, or plants; or

5. produce undesirable or nuisance aquatic life.

(b) Color. Water color shall not be increased to the extent that it will interfere with present usage and projected future use of the state's waterbodies.

1. Waters shall be free from significant increases over natural background color levels;

2. The source of drinking water supply should not exceed 75 color units on the platinum-cobalt scale; and

3. No increases in true or apparent color shall reduce the level of light penetration below that required by desirable indigenous species of aquatic life.

(c) Floating, suspended, and settleable solids. There shall be no substances present in concentrations sufficient to produce distinctly visible solids or scum, nor shall there be any formation of long-term bottom deposits of slimes or sludge banks attributable to waste discharges from municipal, industrial, or other sources including agricultural practices, mining, dredging and the exploration for and production of oil and natural gas. Certain short-term activities, such as maintenance dredging of navigable waterways may be exempted by the administrative authority.

(d) Taste and odor. Taste- and odor- producing substances shall be limited to concentrations in the waters of the state that will not interfere with the production of potable water by conventional water treatment methods or impart unpalatable flavor to food fish, shellfish, and wildlife, or result in offensive odors arising from the waters, or otherwise interfere with the designated use of the waters.

(e) Toxic substances. Toxic substances shall not be present in the waters of the state or the sediments underlying said waters in quantities that alone or in combination will be toxic to human, plant, or animal life or significantly increase health risks due to exposure to the substances or consumption of contaminated fish or other aquatic life.

(f) Oil and grease. There shall be no free or floating oil or grease present in quantities large enough to interfere with the designated uses, nor shall emulsified oils be present in quantities large enough to interfere with the designated uses.

(g) Foaming or frothing materials. None of a persistent nature are permitted.

(h) Nutrients. The naturally occurring range of nitrogen-phosphorous ratio shall be maintained. To establish the appropriate range of ratios and compensate for natural seasonal fluctuations, the state 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. This shall not apply to designated intermittent streams.

(i) Turbidity. Turbidity other than that of natural origin shall not cause substantial visual contrast with the natural appearance of the waters of the state or impair any designated water use. Turbidity shall not significantly exceed the natural condition of the water.

As a guideline, maximum turbidity levels, expressed as nephelometric turbidity units (NTU), are established and shall apply for the following named waterbodies and major aquatic habitat types of the state:

1. Red, Mermentau, Atchafalaya, Mississippi, and Vermilion Rivers and Bayou Teche -- 150 NTU;
2. estuarine lakes, bays, bayous, and canals -- 50 NTU;
3. Amite, Pearl, Ouachita, Sabine, Calcasieu, Tangipahoa, Tickfaw, and Tchefuncte Rivers -- 50 NTU;
4. freshwater lakes, reservoirs, and oxbows -- 25 NTU;
5. designated scenic streams and outstanding natural resource waters not specifically listed above -- 25 NTU; and
6. for other state waters not included above and in waterbody segments where natural background turbidity exceeds the values specified above, the turbidity in NTU caused by any discharges shall be restricted to the appropriate background value plus 10 percent. This shall not apply to designated intermittent streams.

Certain short-term activities, such as maintenance dredging of navigable waterways may be exempted by the administrative authority.

(j) Flow. The natural flow of state waters shall not be altered to such an extent that the basic character and water quality of the ecosystem are adversely affected except in situations where alterations are necessary to protect human life or property. If alterations to the natural flow are deemed necessary, all reasonable steps shall be taken to minimize the adverse impacts of such alterations. Additionally, all reasonable steps shall be taken to mitigate the adverse impacts of unavoidable alterations.

(k) Radioactive materials. Radioactive materials in the surface waters of the state designated for drinking water supply use shall not exceed levels established pursuant to the Federal Safe Drinking Water Act (P.L. 93-523 et Seq.).

(l) Other materials. Limits on other substances not specified in these revised water quality standards shall be in accordance with recommendations set by the LDEQ and/or the Louisiana Department of

Health and Human Resources Administration for municipal raw water sources.

2.1.2 <u>Numerical water quality standards</u>. Additionally, LDEQ has established numerical criteria which apply to specified waterbodies, and to their tributaries, distributaries, and interconnected streams and waterbodies if they are not specifically named therein, unless it can be shown through a use attainability analysis that unique chemical, physical, and/or biological conditions preclude the attainment of the criteria. In those cases, natural background levels of these conditions may be used to establish site-specific water quality criteria. Those waterbodies officially approved and designated by the state and EPA as intermittent streams, man-made watercourses, or naturally dystrophic waters may be excluded from some or all numerical criteria during specified seasonal periods. The numerical criteria apply specifically with respect to substances or conditions attributed to waste discharges or activities of man as opposed to purely natural phenomena. A list of surface waters in the study area for which numerical criteria are included in the published tables is shown in Table 2-1. Table 2-1 also includes designated use categories for the surface waters listed. Designated water uses for each stream are represented as follows:

A = Primary Contact Recreation
B = Secondary Contact Recreation
C = Propagation of Fish and Wildlife
D = Drinking Water Supply
E = Oyster Propagation
F = Agriculture
G = Outstanding Natural Resource Waters

The following is a description of the numerical water quality criteria presented in Table 2-1.

(a) <u>pH</u>. The pH represents minimum and maximum conditions throughout the segment with reasonable gradients applying toward segment boundaries.

In all cases, the pH shall fall within the range of 6.0 to 9.0 standard units (su) unless otherwise specified in the tables. No discharge of wastes shall cause the pH of the water body to vary by more than one pH unit within the specified pH range for that segment where the discharge occurs.

(b) <u>Chlorides, sulfates, and dissolved solids</u>. Values for these parameters apply to the approximate midpoint of the stream segment with reasonable gradients applying toward segment boundaries. Values listed in the standards, in general, represent the arithmetic mean of existing data plus one standard deviation.

(c) Dissolved oxygen. The following dissolved oxygen (DO) values represent minimum values for the type of water specified. These values shall apply at all times except in naturally dystrophic waters or where natural conditions cause the DO to be depressed. For short periods of time, diurnal variations below the standard specified might occur. However, no waste discharge or activity of man shall lower the DO concentration to the point where the diurnal variation falls below the specified minimum.

1. Freshwater. For a diversified population of warmwater biota including sport fish, the DO concentration shall be at or above 5 mg/L.

2. Estuarine water. DO concentrations in estuaries and tidal tributaries shall not be less than 4 mg/L at any time.

3. Coastal marine water. DO concentration in surface coastal waters shall not be less than 5 mg/L except when the upwellings and other natural phenomena might cause this value to be depressed.

(d) Temperature. The temperature standards enumerated in Table 2-1, in most cases, represent maximum values obtained from existing data. However, in a few cases, a limited number of unusually high temperatures in the range of 35 degrees to 36 degrees have been deleted as it is felt that these values were recorded during conditions of unseasonably high air temperatures and/or unusually low flows or water levels, and, therefore, do not represent normal maximum temperatures.

In order to protect a diversified warm water biota including game fish, the following temperature criteria shall apply (except when natural conditions cause the temperature to be raised above these limits).

The standard shall consist of two parts, a temperature differential and a maximum temperature. The temperature differential represents the maximum permissible rise above ambient conditions. There shall be no addition of artificial heat once the ambient temperature reaches the maximum temperature specified in the standards.

1. Freshwater (Temperature Differential).

   a. Maximum of 5°F [2.8° Centigrade (C)] rise above ambient for streams and rivers.

   b. Maximum of 3°F (1.7°C) rise above ambient for lakes and reservoirs.

2. Freshwater (Maximum Temperature). Ninety °F (32.2°C) except where otherwise listed in Table 2-1 or due to natural conditions such as unusually hot and/or dry weather.

3. Estuarine and Coastal (Temperature Differential).

a. Maximum of 4°F (2.2°C) rise above ambient during the period October through May.

b. Maximum of °F (1.1°C) during the period June through September.

4. Estuarine and Coastal (Maximum Temperature). Ninety-five °F (35°C) except when natural conditions elevate temperature above this level.

These temperature criteria shall not apply to privately-owned reservoirs, or reservoirs constructed solely for industrial cooling purposes.

(e) Bacterial standards. The bacterial standard applicable to a particular stream segment depends upon the use classification of that individual stream segment. Limitations are placed on either fecal coliform content, most probable number (MPN) total coliform content, or a combination of both in order to achieve the stream sanitary quality required for the most restrictive stream water usage.

Table 2-1, which contains applicable criteria for each water body, designates one of the following four standards as applicable according to present and anticipated usage of the waters.

Standard #1. PRIMARY CONTACT RECREATION - Based on a minimum of not less than five samples taken over not more than a 30-day period, the fecal coliform content shall not exceed a log mean of 200/100 mL nor shall more than 10 percent of the total samples during any 30-day period or 25 percent of the total samples collected annually exceed 400/100 mL.

Standard #2. SECONDARY CONTACT RECREATION - Based on a minimum of not less than 5 samples taken over not more than a 30-day period, the fecal coliform content shall not exceed a log mean of 1,000/100 mL nor shall more than 10 percent of the total samples during any 30-day period or 25 percent of the total samples collected exceed 2,000/100 mL.

Standard #3. DRINKING WATER SUPPLY - The monthly arithmetic mean of total coliform MPN shall not exceed 10,000/100 mL, nor shall the monthly arithmetic mean of fecal coliforms exceed 2,000/100 mL.

Standard #4. OYSTER PROPAGATION - The fecal coliform median MPN shall not exceed 14 fecal coliforms per 100 mL, and not more than 10 percent of the samples shall exceed an MPN of 43/100 mL for a 5-tube decimal dilution test in those portions of the area most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.

(f) Toxic substances. The LDEQ has also established numerical criteria for several toxic substances that are of particular concern for the State of Louisiana. These substances were selected for human health considerations, taste and odor problems, persistence and bioaccumulative capabilities, and potential negative effects on aquatic biota. Table 2-2 is a listing of these substances and their criteria.

Table 2-1

1989 LDEQ NUMERICAL STANDARDS APPLICABLE TO SURFACE WATERS IN THE STUDY AREA

Stream Description	Water Uses A	B	C	D	E	F	G	CL mg/L	SO_4 mg/L	DO mg/L	pH Range su	Bacterial Standard BAC	Temperature °C	TDS mg/L
Mississippi River: from Monte Sano Bayou to Head of Passes	X	X	X	X				75	120	5.0	6.0-9.0	1	32	400
Lake Cataouatche and Tribs	X	X	X					500	150	5.0	6.0-8.5	1	32	1000
Bayou Segnette - origin to Bayou Villars	X	X	X					600	100	5.0	6.0-8.5	1	32	1320
Intracoastal Waterway - Larose to Bayou Villars and Bayou Barataria (Estuarine)	X	X	X					N/A[1]	N/A	4.0	6.5-9.0	1	35	N/A
Intracoastal Waterway - Bayou Villars to Mississippi River (Estuarine)	X	X	X					N/A	N/A	4.0	6.5-9.0	1	35	N/A
Intracoastal Waterway - IHNC to Chef Menteur Pass (Estuarine)	X	X	X		X			N/A	N/A	4.0	6.5-9.0	4	35	N/A
Bayou Barataria/Barataria Waterway - Intracoastal Waterway to Bayou Rigolettes (Estuarine)	X	X	X					N/A	N/A	4.0	6.5-9.0	1	35	N/A
Lake Pontchartrain - West of Highway 11 Bridge (Estuarine)	X	X	X					N/A	N/A	4.0	6.5-9.0	1	32	N/A

Table 2-1 (cont.)

1989 LDEQ NUMERICAL STANDARDS APPLICABLE TO SURFACE WATERS IN THE STUDY AREA

Stream Description	Water Uses A	B	C	D	E	F	G	CL mg/L	SO_4 mg/L	DO mg/L	pH Range su	Bacterial Standard BAC	Temperature °C	TDS mg/L
Lake Pontchartrain - East of Highway 11 Bridge (Estuarine)	X	X	X		X			N/A	N/A	4.0	6.5-9.0	1	32	N/A
Lake Pontchartrain Drainage Canals, Jefferson and Orleans Parishes	X	X	X					N/A	N/A	4.0	6.0-8.5	1	32	N/A
New Orleans East Leveed Waterbodies	X	X	X					N/A	N/A	4.0	6.0-8.5	1	32	N/A
IHNC - Mississippi River Lock to Lake Pontchartrain (Estuarine)	X	X	X					N/A	N/A	4.0	6.5-9.0	1	35	N/A
MRGO - Intracoastal Waterway to Breton Sound (mile 30) (Estuarine)	X	X	X		X			N/A	N/A	5.0	6.5-9.0	1	35	N/A
Bayou Bienvenue - headwaters to hurricane gate at MRGO	X	X	X		X			N/A	N/A	4.0	6.5-9.0	1	35	N/A
Bayou Bienvenue - Bayou Villere to Lake Borgne (Scenic) (Estuarine)	X	X	X		X		X	N/A	N/A	4.0	6.5-9.0	4	35	N/A

1 N/A - not applicable at present

Table 2-2

1989 LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

NUMERICAL CRITERIA FOR SPECIFIC TOXIC SUBSTANCES

(In micrograms per liter (ug/L) or parts per billion (ppb) unless otherwise stated)

Toxic Substance	Freshwater Acute	Freshwater Chronic	Marine Acute	Marine Chronic	Drinking Supply[1]	Non Drinking Supply[2]
	Aquatic Life Protection				Human Health	
Pesticides and PCB's						
Aldrin	3.00	-	1.300	-	0.04 ng/L	0.04 ng/L[3]
Chlordane	2.40	0.0043	0.090	0.0040	0.19 ng/L	0.19 ng/L
DDT	1.10	0.0010	0.130	0.0010	0.19 ng/L	0.19 ng/L
TDE (DDD)	0.03	0.0060	1.250	0.2500	-	-
DDE	52.5	10.500	0.700	0.1400	-	-
Dieldrin	2.50	0.0019	0.710	0.0019	0.05 ng/L	0.05 ng/L
Endosulfan	0.22	0.0560	0.034	0.0087	0.47	0.64
Endrin	0.18	0.0023	0.037	0.0023	0.26	0.26
Heptachlor	0.52	0.0038	0.053	0.0036	0.07 ng/L	0.07 ng/L
Hexachlorocyclohexane (gamma BHC, Lindane)	2.00	0.0800	0.160	-	0.011	0.02
Polychlorinated Biphenols, Total (PCB's)	2.00	0.0140	10.00	0.0300	0.03 ng/L	0.03 ng/L
Toxaphene	0.73	0.0002	0.210	0.0002	0.24 ng/L	0.24 ng/L
2,4-Dichlorophenoxyacetic acid (2,4-D)	-	-	-	-	100.0	-
2-(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP, Silvex)	-	-	-	-	10.00	-
Volatile Organic Chemicals						
Benzene	2249	1125	2700	1350	1.1	12.5
Carbon Tetrachloride (Tetrachloromethane)	2730	1365	15000	7500	0.22	1.2
Chloroform (Trichloromethane)	2890	1445	8150	4075	5.3	70
Ethylbenzene	3200	1600	8760	4380	2.39 mg/L	8.1 mg/L[4]
1, 2-Dichloroethane (EDC)	11800	5900	11300	5650	0.36	6.8
1, 1, 1-Trichloroethane	5280	2640	3120	1560	200	31.34 mg/L
1, 1, 2-Trichloroethane	1800	900	-	-	0.56	6.9
1, 1, 2, 2-Tetrachloroethane	923	462	902	451	0.16	1.8
1, 1-Dichloroethylene	1160	580	22400	11200	0.05	0.58
Trichloroethylene	3900	1950	200	100	2.8	21
Tetrachloroethylene	850	425	130	65	0.65	2.5
Toluene	1270	635	950	475	9.1 mg/L	69.3 mg/L
Vinyl Chloride (Chloroethylene)	-	-	-	-	1.9	35.8
Bromoform (Tribromomethane)	2930	1465	1790	895	5.1	45
Bromodichloromethane	-	-	-	-	5.3	70
Methylene chloride (Dichloromethane)	19300	9650	25600	12800	4.4	87
Methyl chloride (Chloromethane)	55000	27500	27000	13500	5.3	70
Dibromochloromethane	-	-	-	-	5.3	70
1-3 Dichloropropene	606	303	79	39.5	0.18	3.0

Table 2-2 (cont.)

1989 LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
NUMERICAL CRITERIA FOR SPECIFIC TOXIC SUBSTANCES

(In micrograms per liter (ug/L) or parts per billion (ppb) unless otherwise stated)

	Aquatic Life Protection				Human Health	
Toxic Substance	Freshwater Acute	Freshwater Chronic	Marine Acute	Marine Chronic	Drinking Supply[1]	Non Drinking Supply[2]
			Acid - Extractable Organic Chemicals			
2-Chlorophenol	258	129	-	-	0.100	126.4
3-Chlorophenol	-	-	-	-	0.100	-
4-Chlorophenol	383	192	535	268	0.100	-
2, 3-Dichlorophenol	-	-	-	-	0.040	-
2, 4-Dichlorophenol	202	101	-	-	0.300	232.6
2, 5-Dichlorophenol	-	-	-	-	0.500	-
2, 6-Dichlorophenol	-	-	-	-	0.200	-
3, 4-Dichlorophenol	-	-	-	-	0.300	-
Phenol (Total)	700	350	580	290	5.000	5.000[5]
			Base/Neutral Extractable Organic Chemicals			
Benzidine	250	125	-	-	0.08 ng/L	0.17 ng/L
Hexachlorobenzene	-	-	-	-	0.24 ng/L	0.24 ng/L
Hexachlorobutadiene[6]	5.1	1.02	1.6	0.32	0.09	0.11
			Metals			
Arsenic	360	190	69.00	36.00	50.00	-
Chromium III (Tri)[7]	(980,1700,3100)	(120,210,370)	515	103.0	50.00	-
Chromium VI (Hex)	16	11	1.100 mg/L	50.00	50.00	-
Zinc[8]	(65,120,210)	(59,110,190)	95.00	86.00	5.000 mg/L	-

1 Applies to surface waterbodies designated as a Drinking Water Supply and also protects for primary and secondary contact recreation and fish consumption.
2 Applies to surface waterbodies not designated as a Drinking Water Supply and protects for primary and secondary contact recreation and fish consumption.
3 ng/L = nanograms per liter, parts per trillion
4 mg/L = milligrams per liter, parts per million
5 total phenol as measured by the 4 - aminoantipyrine (4AAP) method
6 Includes Hexachloro-1,3-butadiene
7 Hardness-dependent criteria for fresh water based on the following natural logarithm formulas for acute and chronic protection respectively: acute = e(0.8190[1n(hardness)]+3.688), chronic = e(0.8190[1n(hardness)]+1.561), numbers in parenthesis represent criteria in ug/L at hardness values of 50, 100, 200 mg/L $CaCo_3$ rounded off a whole numbers
8 Hardness-dependent criteria for fresh water based on the following natural logarithm formulas for acute and chronic protection respectively: acute = e(0.8473[1n(hardness)]+0.8604), chronic = e(0.8473[1n(hardness)]+0.7614), numbers in parenthesis represent criteria in ug/L at hardness values of 50, 100, 200 mg/L $CaCo_3$ rounded off to whole numbers

2.2 EPA water quality criteria. The EPA has established ambient water quality criteria applicable to surface waters in the study area. These criteria are shown in Tables 2-3 and 2-4. The numerical criteria listed in Tables 2-3 and 2-4 have been developed for various physical parameters, nutrients, metals, PCB's, and organic pesticides for uses of freshwater aquatic life and marine/estuarine aquatic life, respectively.

2.2.1 <u>EPA water quality tables</u>. EPA water quality tables follow.

<u>Table 2-3</u>

1986 EPA **FRESHWATER** AQUATIC LIFE CRITERIA

(All values in ug/L except where noted)

Parameter	Chronic (24-Hour Average)	Acute (Maximum at Any Time)	Chronic[1] (4-Day Average)	Acute[2] (1-Hour Average)
Aesthetic Qualities	(Narrative statement - SEE CRITERIA DOCUMENT)			
Aldrin[P]	-	3.0	-	-
Alkalinity	(20 mg/L MINIMUM)			
Ammonia	(Criteria are pH and temperature dependent-SEE CRITERIA DOCUMENT)			
Arsenic(III)[P]	-	-	190	360
Boron	(750 ug/L for long-term irrigation on sensitive crops)			
Cadmium[4,P]	-	-	1.1/1.6/2	3.9/1.6/8.6
Chlordane[P]	0.0043	2.4	-	-
Chlorine	-	-	11	19
Chlorpyrifos	-	-	0.041	0.083
Chromium (VI)[P]	-	-	11	16
Chromium(III)[4]	-	-	210/289/370	1700/2420/3100
Color	(Narrative statement - SEE CRITERIA DOCUMENT)			
Copper[4,P]	-	-	12/17/21	18/22/34
Cyanide[P]	-	-	5.2	22
DDT[P]	0.0010	1.1	-	-
Demeton[P]	0.1	-	-	-
Dieldrin[P]	0.0019	2.5	-	-
Endosulfan[P]	0.056	0.22	-	-
Endrin[P]	0.0023	0.18	-	-
Gases, Total Dissolved	(Narrative statement - SEE CRITERIA DOCUMENT)			
Guthion	0.01	-	-	-
Heptachlor[P]	0.0038	0.52	-	-
Hexachlorocyclohexane (Lindane)[P]	0.080	2.0	-	-
Iron	1000	-	-	-
Lead[4,P]	-	-	3.2/5.3/7.7	82/137/200
Malathion	0.1	-	-	-
Mercury[P]	-	-	0.012	2.4
Methoxychlor	0.03	-	-	-
Mirex	0.001	-	-	-
Nickel[4,P]	-	-	160/222/280	1400/1999/2500
Oil and Grease	(Narrative statement - SEE CRITERIA DOCUMENT)			
Oxygen, Dissolved	(Warmwater and Coldwater Matrix - SEE CRITERIA DOCUMENT)			
Parathion	-	-	0.013	0.065
Polychlorinated Biphenyls (PCB's)[P]	0.014	2.0	-	-
Pentachlorophenol (PCP)[3,P]	-	-	3.5/13/43	5.5/20/68
pH	(6.5 - 9.0 su)	-	-	-

Selenite (inorganic)[P]	35	260	-	-

Table 2-3 (cont.)

1986 EPA **FRESHWATER** AQUATIC LIFE CRITERIA

(All values in ug/L except where noted)

Parameter	Chronic (24-Hour Average)	Acute (Maximum at Any Time)	Chronic[1] (4-Day Average)	Acute[2] (1-Hour Average)
Silver[4,P]	-	4.1/8.2/13	-	-
Solids (Suspended) and Turbidity	(Narrative statement - SEE CRITERIA DOCUMENT)			
Sulfide-Hydrogen Sulfide	2.0	-	-	-
Temperature	(Species dependent criteria - SEE CRITERIA DOCUMENT)			
Toxaphene[P]	-	-	0.0002	0.73
Zinc[4,P]	-	-	110/149/190	120/165/210

1 4-day average concentration not to be exceeded more than once every 3 years on the average.
2 1-hour average concentration not to be exceeded more than once every 3 years on the average.
3 pH dependent criteria. Values presented are for 6.5/7.8/9.0 standard pH units.
4 Hardness dependent criteria. Values presented are for 100/150/200 mg/L as $CaCO_3$.
P Priority Pollutant

Table 2-4

1986 EPA **SALTWATER** AQUATIC LIFE CRITERIA

(All values in ug/L)

Parameter	Chronic (24-Hour Average)	Acute (Maximum at Any Time)	Chronic[1] (4-Day Average)	Acute[2] (1-Hour Average)
Aesthetic Qualities	(Narrative statement - SEE CRITERIA DOCUMENT)			
Aldrin[P]	-	1.3	-	-
Arsenic(III)[P]	-	-	36	69
Cadmium[P]	-	-	9.3	43
Chlordane[P]	0.004	0.09	-	-
Chlorine	-	-	7.5	13
Chlorpyrifos	-	-	0.0056	0.011
Chromium (VI)[P]	-	-	50	1,100
Color	(Narrative statement - SEE CRITERIA DOCUMENT)			
Copper[P]	-	-	-	2.9
Cyanide[P]	-	-	-	1.0
DDT[P]	0.0010	0.13	-	-
Demeton[P]	0.1	-	-	-
Dieldrin[P]	0.0019	0.71	-	-
Endosulfan[P]	0.0087	0.034	-	-
Endrin[P]	0.0023	0.037	-	-
Gases, Total Dissolved	(Narrative statement - SEE CRITERIA DOCUMENT)			

Guthion	0.01	-	-	-
Heptachlor[P]	0.0036	0.053	-	-

Table 2-4 (cont.)

1986 EPA SALTWATER AQUATIC LIFE CRITERIA

Parameter	Chronic (24-Hour Average)	Acute (Maximum at Any Time)	Chronic[1] (4-Day Average)	Acute[2] (1-Hour Average)
	(All values in ug/L)			
Hexachlorocyclohexane (Lindane)[P]	-	0.16	-	-
Lead[P]	-	-	5.6	140
Malathion	0.1	-	-	-
Mercury[P]	-	-	0.025	2.1
Methoxychlor	0.03	-	-	-
Mirex	0.001	-	-	-
Nickel[P]	-	-	8.3	75
Oil and Grease	(Narrative statement - SEE CRITERIA DOCUMENT)			
Polychlorinated Biphenyls (PCB's)[P]	0.030	10	-	-
Pentachlorophenol (PCP)[P]	-	-	7.9	13
pH	(6.5 - 8.5 su)	-	-	-
Phosphorus (elemental)	0.10	-	-	-
Selenite (inorganic)[P]	54	410	-	-
Silver[P]	-	2.3	-	-
Sulfide-Hydrogen Sulfide	2.0	-	-	-
Temperature	(Species dependent criteria - SEE CRITERIA DOCUMENT)			
Toxaphene[P]	-	-	0.0002	0.21
Zinc[P]	-	-	86	95

1 4-day average concentration not to be exceeded more than once every 3 years on the average.
2 1-hour average concentration not to be exceeded more than once every 3 years on the average.
P Priority Pollutant

2.2.2 Descriptive water quality criteria.

(a) Aesthetic qualities. All waters free from substances attributable to wastewater or other discharges that:

1. settle to form objectionable deposits;

2. float as debris, scum, oil, or other matter to form nuisances;

3. produce objectionable color, odor, taste, or turbidity;

4. injure or are toxic or produce adverse physiological responses in humans, animals or plants; and

5. produce undesirable or nuisance aquatic life.

(b) Color. Waters shall be virtually free from substances producing objectionable color for aesthetic purposes; the source of supply should not exceed 75 color units on the platinum-cobalt scale for domestic water supplies, and increased color (in combination with turbidity) should not reduce the depth of the compensation point for photosynthetic activity by more than 10 percent from the seasonally established norm for aquatic life.

(c) Dissolved oxygen. Water should contain sufficient DO to maintain aerobic conditions in the water column and, except as affected by natural phenomena, at the sediment-water interface. Numerical criteria are available for varying aquatic life stages for coldwater and warmwater species.

(d) Fecal coliform bacteria.

1. Bathing waters. Based on a minimum of five samples equally spaced over a 30-day period, the geometric mean of the E. coli density should not exceed 126 per 100 mL for freshwater bathing. For the above sampling period, the geometric means of the enterococci density should not exceed 33 and 35 per 100 mL for freshwater and marine bathing, respectively.

2. Shellfish harvesting waters. The median fecal coliform bacterial concentration should not exceed 14 MPN/100 mL for the taking of shellfish, with not more than 10 percent of samples exceeding 43 MPN/100 mL.

(e) Oil and grease. For domestic water supply: virtually free from oil and grease, particularly from the tastes and odors that emanate from petroleum products. For aquatic life: (1) levels of individual petrochemicals in the water column should not exceed 0.01 times the lowest continuous flow 96-hour LC_{50} to several important freshwater or marine species, each having a demonstrated high susceptibility to oils and petrochemicals; (2) levels of oils or petrochemicals in the sediment which cause deleterious effects to the biota should not be allowed; and (3) surface waters shall be virtually free from floating nonpetroleum oils of vegetable or animal origin, as well as petroleum derived oils.

(f) Settleable and suspended solids. Freshwater fish and aquatic life: settleable and suspended solids should not reduce the depth of the compensation point for photosynthetic activity by more than 10 percent from the seasonally established norm for aquatic life.

(g) Tainting substances. Materials should not be present in concentrations that individually or in combination produce undesirable flavors which are detectable by organoleptic tests performed on the edible portions of aquatic organisms.

The LDEQ general criteria state that "all waters of the state shall be capable of supporting desirable diversified species of fish, shellfish and wildlife." Therefore, EPA criteria for freshwater or marine aquatic life, Tables 2-3 and 2-4, respectively, are held to apply to all surface waters. Also, EPA criteria for the protection of human health apply to all surface waters.

2.3 GENERAL DESCRIPTION OF WATER QUALITY PARAMETERS

Suspended solids in urban runoff consist mainly of particulate material which has accumulated along curbs and gutters of streets and roadways, although much of it had originated in other parts of the drainage area. Some of the more important sources of solids are eroded soil particles, particularly from construction sites or other unvegetated soil surfaces but also to an important extent from grassed areas, dirt and dust, fuel residue and other material including rubber, metal and synthetic substances associated with vehicular traffic, fallout from combustion of fossil fuels and other materials, solid waste and debris from poorly managed or exposed material storage sites, dumps and landfills, animal wastes, and leaves and other plant residue. Many pollutants become attached to the accumulating solid particles, and metals and organic compounds become physically or chemically adsorbed to clay particles. Excessive suspended solids levels in water generate unsightly turbidity plumes, and may interfere with the ability of sight - dependent fish and other organisms to obtain food, or may clog their gills or feeding apparatus.

Turbidity in water is caused by materials that inhibit light penetration and reduce the clarity of the water. It may be caused by microorganisms or various minerals, including plant detritus, silica and sediment particles. The turbidity of a water sample is a measure of the reduction in intensity of visible light passing through the sample. Turbidity affects the aquatic system by limiting light transmission and the process of photosynthesis which is vital to biological productivity. It is sometimes used as a broad indicator of suspended solids levels.

The pH level of a water body is a chemical measure of its tendency toward acidity or alkalinity. A pH value of 7.0 indicates neutrality. Most natural waters are slightly basic, with pH values between 7.0 and 8.0. Technically, pH is the $\log_{10}$ of the reciprocal of the hydrogen ion concentration in water. Wide deviations of pH from the neutral or slightly basic range may signal the presence of important contaminants, particularly toxic substances. Industrial wastewater, for example, is often highly acidic.

Biochemical oxygen demand (BOD) is a useful indicator of biodegradable organic material, including natural materials such as simple sugars, fats and proteins, and more complex organic chemicals synthesized by man. For the most part, biodegradable materials are not toxic to aquatic organisms. Their primary importance from a water quality perspective is that their decaying process requires either dissolved or combined oxygen, and the oxygen supply of the receiving water body may become dangerously depleted. Since certain levels of dissolved oxygen are needed to sustain life and permit normal functioning of aquatic species and to prevent the existence of undesirable anaerobic conditions, excessive BOD levels in runoff may produce oxygen deficits, depending on the assimilative capacity of the receiving water and its rate of natural reaeration. The most common BOD measurement is an oxygen consumption test over a five-day period. The ultimate BOD level may be estimated by extrapolation from test results over different time periods.

Chemical oxygen demand (COD) is a general indicator of the amount of potentially biodegradable material in water. Various industrial chemicals and other organic chemicals that degrade slowly or only under highly oxidized conditions are better represented by COD than by BOD. The COD test does not distinguish between stable and unstable organic matter and is therefore not directly related to BOD values in samples of industrial wastewater, urban runoff or receiving water.

Nutrients occur in nature in many forms. Nitrogen is an essential component of all proteins, chlorophyll and other important biological compounds. In organic matter, nitrogen decomposes from complex proteins through amino acids to ammonia, nitrites and nitrates, and is also synthesized from nitrates into plant and animal biomass (nitrogen fixation). The natural nitrogen cycle depends on microbiological activity for these processes. Nitrogen is present in urban runoff in many forms, including ammonia, organic nitrogen, nitrites and nitrates. Kjeldahl nitrogen refers to a laboratory process that is used to measure the ammonia content of a nitrogen sample.

Nitrates are the end product of the aerobic stabilization of organic nitrogen, but they may also result from excessive fertilizer applications or from untreated domestic wastewater. Chemical fertilizer plants produce high nitrate levels in their wastewater. Despite their many sources, nitrates do not normally persist at high levels in natural water bodies, but become converted to biomass by natural processes. When nitrate levels in runoff greatly exceed the biological requirements of a receiving water body, eutrophication (over - enrichment) may occur, resulting in algal blooms or other undesirable conditions. Nitrites are seldom present in natural surface waters at significant levels except under polluted conditions and in the presence of ammonia.

Phosphorus occurs most commonly in nature as phosphates and orthophosphates and is a constituent of fertile soils, plants and animal tissue. It is an essential nutrient along with nitrogen for biological productivity and also undergoes cycles of decomposition and photosynthesis. It is ordinarily more abundant in urban runoff than in natural waters, and originates in domestic and industrial wastes, detergents and fertilizers. Phosphorus is often the critical parameter in the eutrophication of lakes and other water bodies that act as nutrient sinks.

Pathogenic bacteria in water may be harmful to humans, particularly if ingested while swimming. Organisms that are discharged from the intestinal tracts of humans or animals in fecal material may be pathogenic to humans or may alternatively serve as useful indicators of fecal pollution and the probable presence of pathogens. The most commonly employed pathogenic indicators are in the coliform group of bacteria, which consist predominantly of harmless organisms.

Fecal coliforms are measured by federal and state regulatory agencies to monitor for the presence of human and/or animal fecal pollution in water. Total coliforms are also measured as a more general indicator of fecal pollution, but these organisms may also originate in natural soils. None of the coliform group are ideal indicators of fecal pollution since they do not always exist in the same proportions to the pathogens. In order to be a reliable indicator of fecal pollution, an indicator should have a somewhat longer survival time in water than intestinal pathogens, but should nevertheless die off soon after the pathogens, so that their absence would assure the bacteriological safety of the water. The E. coli bacterial strain has been promoted as a superior indicator of fecal pollution, and has been adopted by EPA as the regulatory parameter for human health in bathing waters. E. coli is expected to eventually replace fecal coliform as the official State of Louisiana indicator organism for primary contact recreation.

Many metals are known to be chronically or acutely toxic to various aquatic species above certain concentration levels in saltwater and in freshwater, usually as a function of hardness, or the levels of ionized calcium and magnesium in the water expressed as the equivalent concentration of calcium carbonate. Six metals, cadmium, chromium, copper, mercury, lead and arsenic, have been regularly monitored by Jefferson Parish in the study area and also by other agencies in the receiving waters. These metals and a seventh, zinc, will be briefly discussed as they relate to this study in the following paragraphs.

Cadmium usually occurs at low levels in the natural freshwater environment, often below 0.01 ug/L, but waters affected by municipal and/or industrial development probably have much higher concentrations. Industrial sources include effluents from petrochemical plants, metallurgical processes and electroplating. Since it is extremely toxic to fish, its EPA chronic and acute criteria are set at 1.6 and 6.2 ug/L, respectively for a carbonate hardness level of 150 mg/L.

Chromium is more common than cadmium in natural freshwater, typically at about 0.5 ug/L. Chromium salts are used for electroplating and in cleaning agents, and are also present in paints, fungicides and wood preservatives. The EPA and Louisiana criteria for chronic and acute toxicity to freshwater aquatic life are 11 and 16 ug/L, respectively at a hardness of 150 mg/L.

Copper is relatively plentiful in the natural freshwater environment, ranging from about 1 to 10 ug/L. Pertinent industrial sources of copper include petroleum refineries. The EPA chronic and toxic criteria for freshwater aquatic life are 17 and 26 ug/L at a hardness of 150 mg/L.

Lead occurs in most natural freshwater at 1 ug/L or less. It is much more plentiful, however, in waters in and near inhabited areas. It is used in storage batteries and other metal products, but is no longer permitted in paint pigments and gasoline additives. The EPA chronic and acute freshwater aquatic life criteria for lead are 5.3 and 137 ug/L at a hardness of 150 mg/L.

Mercury background levels in natural freshwater may range from 0.01 to 0.1 ug/L. It is used in the electrolytic preparation of chlorine and caustic soda, in mercury battery cells and thermometers, and in various other laboratory and industrial applications. The EPA freshwater aquatic life criteria for mercury are 0.012 ug/L (chronic) and 2.4 ug/L (acute). The chronic criterion was derived on the basis that all mercury discharged to the environment is methylmercury, the form that evolves in sediment and in fish and the aquatic food chain. It is known, however, that almost all mercury discharged is mercury (II), a much less toxic form. The FDA action level for the concentration of methylmercury in the edible portions of fish is considered to be a more relevant criterion for consumable species than the referenced chronic criterion.

Arsenic concentrations in freshwater areas vary widely but are usually 5 ug/L or more. Arsenic is emitted to the environment by coal - fuel power plants. The EPA and Louisiana criteria for chronic and acute toxicity to freshwater aquatic life are 190 and 360 ug/L, respectively.

The chemistry of zinc is similar to that of cadmium, but it is much more abundant in the environment, with a median surface water concentration in the United States of about 20 ug/L. It is used as an oxide pigment in rubber and paint, in agricultural fertilizers and sprays and battery production. It is also used in galvanizing of metal and in the production of metal alloys. Its EPA chronic and acute criteria for freshwater aquatic life are 149 and 165 ug/L at a hardness of 150 mg/L.

3.0 <u>EXISTING WATER QUALITY IN THE RECEIVING AREA</u>

3.1 <u>LAKE PONTCHARTRAIN RECEIVING AREA</u>.

The following paragraphs briefly address water quality by parameter groups in Lake Pontchartrain. Currently, there are three active water quality stations maintained by LDEQ. These three stations were initiated in January 1986 and are sampled monthly. All three stations are located along the Causeway Bridge. The parameters sampled are general physical parameters, such as temperature and solids, along with oxygen demanding substances, nutrients and metals. No pesticides are sampled. For parameter completeness, numerous historical stations which are now discontinued were also examined. Statistical summaries of these data can be found in Tables 3-1 through 3-12. Data presented in these tables was retrieved from EPA's water quality database, STORET. The Louisiana Department of Health and Hospitals' (LDHH) oyster monitoring data along the south shore of Lake Pontchartrain was also reviewed. Except for the LDHH data, the stations presented are, for the most part, indicative of the water quality on a lake-wide basis.

Turbidity levels are usually well below the LDEQ's guideline of 50 NTU for estuarine lakes with a mean level of 20 NTU. Suspended solids average about 27 mg/L. Mean BOD and COD values are approximately 2 and 75 mg/L, respectively.

As can be seen from Tables 3-3 and 3-4, there are rarely contraventions of the LDEQ standards for DO, pH and temperature. DO values are typically around 8 mg/L, well above the state standard of 4 mg/L.

On a lake-wide basis, in regard to eutrophication, nutrient levels do not seem excessive. However, Table 3-10 shows that phosphorus levels exceeded the chronic marine aquatic life criteria 23 percent of the time. Though the marsh areas surrounding Lake Pontchartrain are considered hypereutrophic (excessively nutrient rich), Lake Pontchartrain is considered to be oligotrophic to mesatrophic overall (nutrient deficient to moderately nutrient rich). One theory to explain Lake Pontchartrain's resistance to nutrient enrichment is that the nutrients are continuously removed from the water column by settling sediment particles.

Due to the wide range of salinities found in Lake Pontchartrain, both metals and pesticides were compared to both freshwater and marine aquatic life criteria. However, the saltwater criteria are more applicable as the mean salinity is approximately 4 parts per thousand. For metals, EPA recommends comparing only the dissolved fraction to the freshwater criteria. However, comparisons were also made for the total metal parameters at the Causeway water quality stations.

Tables 3-5 through 3-8 show exceedances for metals for both freshwater and marine aquatic life criteria. Generally, only copper significantly (greater than one percent) exceeded the acute marine water criteria.

Copper exceeded this criteria 78 percent of the time at the inactive water quality stations and 34 percent of the time at the Causeway stations. Both cadmium and copper significantly exceeded the acute freshwater criteria at the inactive stations. Their exceedances were 13 and 1.5, respectively. At the Causeway stations, the detection limit used in the analysis of mercury, 0.2 ug/L, was greater than both the freshwater and marine water chronic criteria. At the inactive stations cadmium, mercury and lead exceeded the chronic freshwater criteria 19, 22 and 6 percent of the time, respectively. Their respective chronic marine criteria exceedances were 1, 52 and 45. Many of the metal concentrations were remarked as "known to be less than the value shown". Therefore, these exceedances should be regarded as possible exceedances only.

As can be seen from Tables 3-9 and 3-10, aldrin and dieldrin are the pesticides most frequently detected in the water column in Lake Pontchartrain. Their percent frequency of detection levels are 35 and 31 percent, respectively. However, none of the pesticides sampled exceeded either the freshwater or marine acute aquatic life criteria by more than one percent.

Table 3-11 gives statistical information of fecal coliform densities along the south shore of Lake Pontchartrain and on a lake-wide basis. As mentioned in Section 2 of this report, the primary contact recreation criteria states that the log mean of the fecal coliform content shall not exceed 200 colonies per 100 mL and that 25 percent of the samples collected shall not exceed 400 colonies per 100 mL. Lake-wide the log mean of the fecal coliforms is 18 and the 75th percentile is approximately 90. Thus, lake-wide bacterial contamination is minimal. Along the south shore of Lake Pontchartrain the log mean is 430 and the 75th percentile is approximately 1900 colonies per 100 mL. Although the data presented is not the most recent data collected by the LDHH, it is still typical of the conditions that exist in Lake Pontchartrain today.

TABLE 3-1

SUMMARY OF LAKE PONTCHARTRAIN: CAUSEWAY WATER QUALITY STATIONS

		CAUSEWAY BRIDGE[1]			
		#7	CROSSOVER #4	CROSSOVER #1	CROSSOVER AGGREGATE
TEMP. ($^{\circ}$C)	# of Obs.	76	75	75	226
	Maximum	31.5	31.8	31.8	31.8
	Minimum	6.3	6.6	6.5	6.3
	Mean	20.1	20.0	20.4	20.2
	St. Dev.	7.1	7.3	7.2	7.2

TABLE 3-1 (cont.)

SUMMARY OF LAKE PONTCHARTRAIN: CAUSEWAY WATER QUALITY STATIONS

		CAUSEWAY BRIDGE[1]			
		#7	CROSSOVER #4	CROSSOVER #1	CROSSOVER AGGREGATE
COND. (umhos)	# of Obs.	77	76	76	229
	Maximum	12,800	13,400	11,400	13,400
	Minimum	1,730	3,140	467	467
	Mean	7,533	7,589	6,382	7,170
	St. Dev.	2,309	2,216	2,497	2,398
TURBIDITY (NTU)	# of Obs.	77	76	76	229
	Maximum	342	280	351	351
	Minimum	2.0	2.2	1.0	1.0
	Mean	24	19	18	20
	St. Dev.	55	44	51	50
HARDNESS (mg/L as $CaCO_3$)	# of Obs.	76	75	75	226
	Maximum	1,573	1,570	1,477	1,573
	Minimum	201	318	40	40
	Mean	792	797	671	753
	St. Dev.	265	265	294	280
DO (mg/L)	# of Obs.	75	72	72	219
	Maximum	11.8	12.4	11.8	12.4
	Minimum	0.0	5.0	4.7	0.0
	Mean	8.2	8.5	8.4	8.4
	St. Dev.	1.9	1.7	1.6	1.7
DO. SAT. (%)	# of Obs.	75	72	72	219
	Maximum	118.3	118.1	113.3	118.3
	Minimum	0.0	66.2	63.3	0.0
	Mean	88.7	91.7	91.8	90.7
	St. Dev.	16.4	9.2	8.6	12.0
COD HI LEVEL (mg/L)	# of Obs.	42	44	41	127
	Maximum	300	242	320	320
	Minimum	17	15	12	12
	Mean	76.4	73.4	75.9	75.2
	St. Dev.	76.3	69.1	69.6	71.2
pH (su)	# of Obs.	76	75	75	226
	Maximum	8.7	9.6	8.9	9.6
	Minimum	7.0	5.8	6.3	5.8
	Mean	7.8	7.8	7.7	7.8
	St. Dev.	0.3	0.5	0.5	0.4

TABLE 3-1 (cont.)

SUMMARY OF LAKE PONTCHARTRAIN: CAUSEWAY WATER QUALITY STATIONS

		CAUSEWAY BRIDGE[1]			
		#7	CROSSOVER #4	CROSSOVER #1	CROSSOVER AGGREGATE
ALKALINITY (mg/L as $CaCO_3$)	# of Obs.	75	76	76	227
	Maximum	52	50	47	52
	Minimum	23	19	17	17
	Mean	36.8	36.2	31.9	35.0
	St. Dev.	7.7	7.6	8.2	8.1
SALINITY (ppt)	# of Obs.	70	70	72	212
	Maximum	8.9	11.8	11.3	11.8
	Minimum	0.4	0.4	0.3	0.3
	Mean	4.2	4.4	3.8	4.2
	St. Dev.	1.8	2.0	1.9	1.9
SOLIDS, TOTAL (mg/L)	# of Obs.	76	74	75	225
	Maximum	8,646	8,998	8,834	8,998
	Minimum	1,210	1,990	910	910
	Mean	4,765	4,827	4,060	4,550
	St. Dev.	1,511	1,473	1,668	1,585
SOLIDS, TOTAL DISSOLVED (mg/L)	# of Obs.	76	74	75	225
	Maximum	8,646	8,984	8,824	8,984
	Minimum	1,205	1,972	895	895
	Mean	4,729	4,801	4,080	4,536
	St. Dev.	1,535	1,486	1,751	1,621
SOLIDS, TOTAL SUSPENDED (mg/L)	# of Obs.	77	76	76	229
	Maximum	440	310	350	440
	Minimum	0	0	0	0
	Mean	36	25	20	27
	St. Dev.	76	50	50	60
KJEL N (mg/L)	# of Obs.	64	63	62	189
	Maximum	1.93	1.56	1.58	1.93
	Minimum	0.35	0.16	0.08	0.08
	Mean	0.77	0.67	0.67	0.71
	St. Dev.	0.33	0.27	0.29	0.30
NO_2&NO_3 TOTAL (mg/L)	# of Obs.	54	40	33	127
	Maximum	0.26	0.47	0.20	0.47
	Minimum	0.01	0.02	0.02	0.01
	Mean	0.08	0.05	0.06	0.07
	St. Dev.	0.06	0.07	0.05	0.06

TABLE 3-1 (cont.)

SUMMARY OF LAKE PONTCHARTRAIN: CAUSEWAY WATER QUALITY STATIONS

		CAUSEWAY BRIDGE[1]			
		#7	CROSSOVER #4	CROSSOVER #1	CROSSOVER AGGREGATE
PHOSPHORUS TOTAL (mg/L)	# of Obs.	61	60	59	180
	Maximum	0.36	0.30	0.31	0.36
	Minimum	0.03	0.02	0.02	0.02
	Mean	0.10	0.07	0.06	0.08
	St. Dev.	0.08	0.05	0.05	0.06
ORGANIC C TOTAL (mg/L)	# of Obs.	77	76	76	229
	Maximum	10.0	14.1	12.4	14.1
	Minimum	4.4	4.5	4.2	4.2
	Mean	6.0	5.7	5.9	5.9
	St. Dev.	1.2	1.4	1.4	1.3
CHLORIDE (mg/L)	# of Obs.	77	76	76	229
	Maximum	4,781	4,858	4,485	4,858
	Minimum	549	486	384	384
	Mean	2,448	2,387	2,100	2,312
	St. Dev.	794	841	905	857
SO_4 (mg/L)	# of Obs.	76	73	76	225
	Maximum	800	865	903	903
	Minimum	86	5	54	5
	Mean	361	357	326	348
	St. Dev.	137	152	168	153
As, TOTAL (ug/L)	# of Obs.	77	76	76	229
	Maximum	6	6	5	6
	Minimum	<0.1	<0.1	<0.1	<0.1
	Mean	<1.3	<1.4	<1.3	<1.3
	St. Dev.	0.9	1.1	1.1	1.0
Cd, TOTAL (ug/L)	# of Obs.	76	75	75	226
	Maximum	16	14	10	16
	Minimum	<0.1	<0.1	<0.1	<0.1
	Mean	<3.3	<3.0	<2.7	<3.0
	St. Dev.	3.5	3.1	2.8	3.1
Cr, TOTAL (ug/L)	# of Obs.	77	76	76	229
	Maximum	47	46	51	51
	Minimum	<0.1	<0.1	<0.1	<0.1
	Mean	<4.2	<3.0	<2.8	<3.3
	St. Dev.	8.0	6.6	7.5	7.4

TABLE 3-1 (cont.)

SUMMARY OF LAKE PONTCHARTRAIN: CAUSEWAY WATER QUALITY STATIONS

		CAUSEWAY BRIDGE[1]			
		#7	CROSSOVER #4	CROSSOVER #1	CROSSOVER AGGREGATE
Cu, TOTAL (ug/L)	# of Obs.	77	76	76	229
	Maximum	50	55	32	55
	Minimum	<0.2	<0.1	<0.1	<0.1
	Mean	<4.3	<4.1	<3.0	<3.8
	St. Dev.	7.5	7.1	4.5	6.5
Hg, TOTAL (ug/L)	# of Obs.	73	72	72	217
	Maximum	0.4	50.2	1.3	50.2
	Minimum	<0.2	<0.2	<0.2	<0.2
	Mean	<0.2	<0.9	<0.2	<0.4
	St. Dev.	0.02	5.9	0.13	3.4
Pb, TOTAL (ug/L)	# of Obs.	77	76	76	229
	Maximum	10	24	13	24
	Minimum	<0.1	<0.1	<0.1	<0.1
	Mean	<1.6	<1.3	<1.0	<1.3
	St. Dev.	2.3	3.1	1.9	5

Source: EPA STORET System

1 PERIOD OF RECORD: 1986 to Present
Crossover #7, near Metairie, Louisiana.
Crossover #4, mid-lake.
Crossover #1, near Covington, Louisiana.

TABLE 3-2

SUMMARY OF LAKE PONTCHARTRAIN: INACTIVE WATER QUALITY STATIONS[1]

		AGGREGATE
TEMP. (^{o}C)	# of Obs.	19,341
	Maximum	36.6
	Minimum	5.0
	Mean	21.6
	St. Dev.	6.6
COND* (umhos)	# of Obs.	188,054
	Maximum	25,000
	Minimum	100
	Mean	4,035
	St. Dev.	2,599
TURBIDITY (JTU)	# of Obs.	1,923
	Maximum	640
	Minimum	0
	Mean	41
	St. Dev.	47
HARDNESS (mg/L as $CaCO_3$)	# of Obs.	1,993
	Maximum	2,500
	Minimum	7
	Mean	273
	St. Dev.	255
DO (mg/L)	# of Obs.	8,116
	Maximum	14.4
	Minimum	0.0
	Mean	8.2
	St. Dev.	1.7
DO. SAT. (%)	# of Obs.	7,107
	Maximum	182
	Minimum	0
	Mean	92.5
	St. Dev.	17.8
COD, HI LEVEL (mg+L)	# of Obs.	883
	Maximum	850
	Minimum	5
	Mean	43.1
	St. Dev.	54

TABLE 3-2 (cont.)

SUMMARY OF LAKE PONTCHARTRAIN: INACTIVE WATER QUALITY STATIONS[1]

		AGGREGATE
pH	# of Obs.	8,702
(su)	Maximum	14.3
	Minimum	1.0
	Mean	7.5
	St. Dev.	0.7
ALKALINITY	# of Obs.	2,034
(mg/L as	Maximum	250
$CaCO_3$)	Minimum	0
	Mean	46.0
	St. Dev.	25.4
SALINITY	# of Obs.	32,233
(ppt)	Maximum	9
	Minimum	0.2
	Mean	4.5
	St. Dev.	1.1
BOD_5	# of Obs.	1,893
(mg/L)	Maximum	98
	Minimum	0
	Mean	2.0
	St. Dev.	3.4
SOLIDS,	# of Obs.	1,191
TOTAL	Maximum	32,504
DISSOLVED	Minimum	105
(mg/L)	Mean	4,441
	St. Dev.	3,250
SOLIDS,	# of Obs.	814
TOTAL	Maximum	334
SUSPENDED	Minimum	0
(mg/L)	Mean	24
	St. Dev.	32
VOLATILE	# of Obs.	789
SOLIDS,	Maximum	460
TOTAL	Minimum	0
SUSPENDED	Mean	14
(mg/L)	St. Dev.	26

TABLE 3-2 (cont.)

SUMMARY OF LAKE PONTCHARTRAIN: INACTIVE WATER QUALITY STATIONS[1]

		AGGREGATE
NITROGEN TOTAL (mg/L)	# of Obs.	19
	Maximum	2.0
	Minimum	0.34
	Mean	0.66
	St. Dev.	0.37
KJEL NITROGEN TOTAL (mg/L)	# of Obs.	21
	Maximum	1.1
	Minimum	0.34
	Mean	0.55
	St. Dev.	0.19
KJEL NITROGEN DISSOLVED (mg/L)	# of Obs.	941
	Maximum	3.3
	Minimum	0.001
	Mean	0.60
	St. Dev.	0.26
NO_3 - N, TOTAL (mg/L)	# of Obs.	1,982
	Maximum	10
	Minimum	0
	Mean	0.56
	St. Dev.	0.72
NO_3 - N DISSOLVED (mg/L)	# of Obs.	14
	Maximum	1.1
	Minimum	0.01
	Mean	0.14
	St. Dev.	0.28
NO_2&NO_3 TOTAL (mg/L)	# of Obs.	1,134
	Maximum	2.5
	Minimum	0.0
	Mean	0.34
	St. Dev.	0.48
ORGANIC N TOTAL (mg/L)	# of Obs.	4
	Maximum	0.65
	Minimum	0.37
	Mean	0.46
	St. Dev.	0.13

TABLE 3-2 (cont.)

SUMMARY OF LAKE PONTCHARTRAIN: INACTIVE WATER QUALITY STATIONS[1]

		AGGREGATE
ORGANIC N DISSOLVED (mg/L)	# of Obs.	6
	Maximum	1.9
	Minimum	0.27
	Mean	0.68
	St. Dev.	0.62
PO_4, TOTAL (mg/L)	# of Obs.	496
	Maximum	1.9
	Minimum	0.03
	Mean	0.24
	St. Dev.	0.18
PHOSPHORUS TOTAL (mg/L)	# of Obs.	1,219
	Maximum	4.2
	Minimum	0.01
	Mean	0.10
	St. Dev.	0.21
OPO_4, TOTAL (mg/L P)	# of Obs.	777
	Maximum	7.0
	Minimum	0.0
	Mean	0.30
	St. Dev.	0.49
ORGANIC C TOTAL (mg/L)	# of Obs.	1,569
	Maximum	52
	Minimum	0.0
	Mean	7.6
	St. Dev.	3.3
CHLORIDE, (mg/L)	# of Obs.	31,860
	Maximum	17,250
	Minimum	0
	Mean	1,902
	St. Dev.	1,378
SO_4, (mg/L)	# of Obs.	2,025
	Maximum	1,100
	Minimum	0
	Mean	113
	St. Dev.	112

Source: EPA STORET System
1 OVERALL PERIOD OF RECORD: 1954 - 1984

TABLE 3-3

SUMMARY OF STATE (LDEQ) STANDARDS VIOLATIONS
LAKE PONTCHARTRAIN CAUSEWAY WATER QUALITY STATIONS[1]

Parameter(units)	Number Values	Mean Value	State Criteria	Number Violations	Percent Violations
DO (mg/L)	219	8.4	4 min	3	1
pH (su)	226	7.8	6.5 min	2	1
pH (su)	226	7.8	9.0 max	1	<1
Temperature (°C)	226	20.2	32 max	0	0

Source: EPA STORET System

1 Aggregate of 3 stations. Period of record: 1986 to present.

TABLE 3-4

SUMMARY OF STATE (LDEQ) STANDARDS VIOLATIONS
LAKE PONTCHARTRAIN INACTIVE WATER QUALITY STATIONS[1]

Parameter(units)	Number Values	Mean Value	State Criteria	Number Violations	Percent Violations
DO (mg/L)	8116	8.2	4 min	124	1.5
pH (su)	8702	7.5	6.5 min	494	6
pH (su)	8702	7.5	9.0 min	108	1
Temperature (°C)	19341	21.6	32 max	260	1

Source: EPA STORET System

1 Aggregate of discontinued stations.
Overall period of record: 1954 - 1984.

TABLE 3-5

LDEQ AND EPA FRESHWATER CRITERIA EVALUATIONS
SELECTED METALS AT THE LAKE PONTCHARTRAIN CAUSEWAY STATIONS[1]

Parameter	Number of Samples	Concentrations Mean[2]	Concentrations 99%[3]	Frequency of Detection(%)	Chronic % Excd.	Chronic Criteria	Acute % Excd.	Acute Criteria
Arsenic, total (ug/L)	229	<1.3	5.5	100	0	190	0	360
Cadmium, total (ug/L)	223	<3.0	13.1	100	<34	HD	0	HD
Copper, total (ug/L)	226	<3.8	44.4	100	<1	HD	0	HD
Lead, total (ug/L)	226	<1.3	12.1	100	<1	HD	0	HD
Mercury, total (ug/L)	217	<0.4	1.1	100	100[4]	0.012	<1	2.4

Source: EPA STORET System

1 Aggregate of 3 stations. Period of record: 1986 to present
2 Some values are known to be less than the value reported.
3 99 percent of the values are less than or equal to the value shown.
4 Hardness dependent criteria. Actual hardness values used in exceedance calculations.
5 Lower detection limit is above criteria.

TABLE 3-6

LDEQ AND EPA MARINE WATER CRITERIA EVALUATIONS
SELECTED METALS AND NUTRIENTS AT THE LAKE PONTCHARTRAIN CAUSEWAY STATIONS[1]

Parameter	Number of Samples	Concentrations Mean[2]	Concentrations 99%[3]	Frequency of Detection(%)	Chronic % Excd.	Chronic Criteria	Acute % Excd.	Acute Criteria
Arsenic, total (ug/L)	229	<1.3	5.5	100	0	36	0	69
Cadmium, total (ug/L)	226	<3.0	13.1	100	<4	9.3	0	43
Copper, total (ug/L)	229	<3.8	44.4	100	--	--	34	2.9
Mercury, total (ug/L)	217	<0.4	1.1	100	100[4]	0.025	<1	2.1
Phosphorus, total (mg/L)	189	0.08	0.4	N/A[5]	13	100	--	--

Source: EPA STORET System

1 Aggregate of 3 stations. Period of record: 1986 to present
2 Some values are known to be less than the value reported.
3 99 percent of the values are less than or equal to the value shown.
4 Lower detection limit is above criteria.
5 N/A - not applicable.

TABLE 3-7

LDEQ AND EPA FRESHWATER AQUATIC LIFE CRITERIA EVALUATIONS
LAKE PONTCHARTRAIN INACTIVE WATER QUALITY STATIONS[1]
(conc. in ug/L)

Parameter	Number of Samples	Concentrations Mean[2]	Concentrations 99%[3]	Frequency of Detection(%)	Chronic % Excd.	Chronic Criteria	Acute % Excd.	Acute Criteria
					METALS			
Arsenic, diss.	1250	<1.03	2.49	96	0	190	0	360
Cadmium, diss.	1198	<0.70	4.00	34	<19	HD[4]	<13	HD
Chromium, diss.	1229	<0.05	1.00	4	0	11	0	16
Copper, diss.	926	<2.4	8.00	87	<2	HD	<1.5	HD
Iron, diss.	1238	<63.2	410	100	0	1000	--	--
Lead, diss.	1206	<0.8	10.00	30	<6	HD	0	HD
Mercury, diss.	1252	<0.25	<0.50	91	22	0.012	0	2.4
Nickel, diss.	935	<1.5	6.00	54	0	HD	0	HD
Selenium, diss.	849	<0.85	1.00	85	0	35	0	260
Zinc, diss.	1207	<14.5	40.00	83	<1	HD	<0.6	HD
Cyanide, diss.	1246	<0.003	0.01	3	0	5.2	0	22

Source: EPA STORET System

1 Aggregate of discontinued stations. Overall period of record: 1973 to 1984
2 Some values are known to be less than the value reported.
3 99 percent of the values are less than or equal to the value shown.
4 Hardness dependent criteria. Actual hardness values used in exceedance calculations.

TABLE 3-8

LDEQ AND EPA MARINE AQUATIC LIFE CRITERIA EVALUATIONS
LAKE PONTCHARTRAIN INACTIVE WATER QUALITY STATIONS[1]

(conc. in ug/L)

Parameter	Number of Samples	Concentrations Mean[2]		Frequency of Detection(%)	Chronic % Excd.		Acute % Excd.	
		Mean[2]	99%[3]		% Excd.	Criteria	% Excd.	Criteria
METALS								
Arsenic, total	1984	6.37	37.0	99	1	36	<1	69
Cadmium, total	1231	1.46	20.0	48	1	9.3	0	43
Chromium, hexv.	1229	0.05	1.00	4	0	50	0	1100
Copper, total	940	5.22	24.2	97	--	--	78	2.9
Lead, total	1227	11.09	147.4	87	45	5.6	<1	140
Mercury, total	1211	0.249	<0.05	93	52	0.025	0	2.1
Nickel, total	937	4.81	31.3	94	7	8.3	0	75
Selenium, total	847	0.85	1.0	85	0	54	0	410
Zinc, total	1218	24.14	90.0	97	1	86	<1	95
Cyanide, total	1246	<0.003	0.01	3	--	--	0	1

Source: EPA STORET System

1 Aggregate of discontinued stations. Overall period of record: 1973 to 1984.
2 Some values are known to be less than the value reported.
3 99 percent of the values are less than or equal to the value shown.

TABLE 3-9

LDEQ AND EPA FRESHWATER AQUATIC LIFE CRITERIA EVALUATIONS
LAKE PONTCHARTRAIN INACTIVE WATER QUALITY STATIONS[1]

(conc. in ug/L)

Parameter	Number of Samples	Concentrations Mean[2]	Concentrations 99%[3]	Frequency of Detection(%)	Chronic % Excd.	Chronic Criteria	Acute % Excd.	Acute Criteria
PESTICIDES & OTHERS								
Aldrin, total	1607	0.007	0.025	31	--	--	0	3.0
Chlordane, total	1165	0.005	0.10	4	<1	0.0043	0	2.4
DDT, total	1164	0.0001	0.001	5	1	0.001	0	1.1
DDD, total	1164	0.00004	.001	4	0	0.006	0	0.03
DDE, total	1164	0.00004	.001	4	0	10.5	0	52.5
Dieldrin, total	1610	0.008	0.025	35	1	0.0019	0	2.5
Endosulfan, total	729	0.0001	0.001	6	0	0.056	0	0.22
Endrin, total	1164	0.0005	0.001	4	0	0.0023	0	0.18
Heptachlor, total	1165	0.0005	0.001	4	0	0.0038	0	0.52
Lindane, total	1164	0.0002	0.001	8	<1	0.08	0	2.0
Malathion, total	953	0.001	0.01	5	0	0.1	--	--
Methyoxychlor, tot	732	0.0006	0.01	6	0	0.03	--	--
Mirex, total	765	0.0006	0.01	6	1	0.001	--	--
Parathion, total	955	0.007	0.01	5	<1	0.013	<1	0.065
PCB's, total	1164	0.005	0.1	5	1	0.014	0	2.0
Toxaphene, total	1165	0.02	1.0	4	<1	0.0002	<1	0.73
Alkalinity, total	2034	46	--	--	--	--	11	20

Source: EPA STORET System

1 Aggregate of discontinued stations. Overall period of record: 1973 to 1984.

2 Some values are known to be less than the value reported.

3 99 percent of the values are less than or equal to the value shown.

TABLE 3-10

LDEQ AND EPA MARINE WATER AQUATIC LIFE CRITERIA EVALUATIONS
LAKE PONTCHARTRAIN INACTIVE WATER QUALITY STATIONS[1]

(conc. in ug/L)

Parameter	Number of Samples	Concentrations Mean[2]	Concentrations 99%[3]	Frequency of Detection(%)	Chronic % Excd.	Chronic Criteria	Acute % Excd.	Acute Criteria
		PESTICIDES & OTHERS						
Aldrin, total	1607	0.007	0.025	31	--	--	0	1.3
Chlordane, total	1165	0.005	0.10	4	<1	0.004	0	0.09
DDT, total	1164	0.0001	0.001	5	1	0.001	0	0.13
DDD, total	1164	0.00004	0.001	4	0	0.25	0	1.25
DDE, total	1164	0.00004	0.001	4	0	0.14	0	0.7
Dieldrin, total	1610	0.008	0.025	35	1	0.0019	0	0.71
Endosulfan, total	729	0.0001	0.001	6	0	0.0087	0	0.034
Endrin, total	1164	0.0005	0.001	4	0	0.0023	0	0.037
Heptachlor, total	1165	0.0005	0.001	4	0	0.0036	0	0.053
Lindane, total	1164	0.0002	0.001	8	--	--	0	0.16
PCB's, total	1164	0.005	0.01	5	1	0.03	0	10.0
Toxaphene, total	1165	0.02	1.0	4	<1	0.0002	<1	0.21
Malathion, total	953	0.001	0.01	5	0	0.1	--	--
Methyoxychlor, tot	732	0.0006	0.01	6	0	0.03	--	--
Mirex, total	765	0.0006	0.01	6	1	0.001	--	--
Phosphorus, total	1228	0.099	0.93	--	23	0.10	--	--

Source: EPA STORET System

1 Aggregate of discontinued stations. Overall period of record: 1973 to 1984.
2 Some values are known to be less than the value reported.
3 99 percent of the values are less than or equal to the value shown.

TABLE 3-11

LAKE PONTCHARTRAIN - FECAL COLIFORM[1] DATA

	LDHH[2]	INACTIVE STATIONS[3]
Number of Observations	385	1,104
Mean	7,109	113
Mean (Logarithmic)	430	18
Range	2 - 540,000	1 - 4,200
Period of Record	8/75 - 3/81	4/73 - 4/84
Weighted Percentiles[4]		
5	20	0
10	40	0
20	70	0
30	130	6
40	214	12
50	330	20
60	490	40
80	2,400	110
90	6,041	240
95	13,700	508

Source: EPA STORET System

1 Number of colonies per 100 mL.
2 Aggregate of Louisiana Department of Health and Hospital's south shore oyster monitoring stations.
3 Aggregate of inactive Lake Pontchartrain's water quality stations (excluding LDHH oyster monitoring stations).
4 Percentage of time values were less than or equal to those shown.

TABLE 3-12

INACTIVE LAKE PONTCHARTRAIN SEDIMENT QUALITY STATIONS[1]

Parameter	Units	Number of Samples	Frequency of Detection (%)	Concentrations[2] Mean	Max	Min
COD	MG/KG	6	100	18617	41000	7700
Loss on Ignition	MG/KG	6	100	26300	45500	17900
Oil & Grease (FRGR)	MG/KG	4	25	25	100	0
Organic-N	MG/KG	6	100	1329	4400	2
Arsenic	MG/KG	6	100	3.3	5	2
Cadmium	MG/KG	3	100	0.15	0.20	0.12
Chromium	MG/KG	6	100	<10	10	<10
Copper	MG/KG	6	100	<11.7	20	<10
Cyanide	MG/KG	6	0	0	0	0
Lead	MG/KG	6	100	<10	<10	<10
Manganese	MG/KG	3	100	280	300	260
Nickel	MG/KG	6	100	<13.3	20	<10
Selenium	MG/KG	3	0	0	0	0
Zinc	MG/KG	6	100	18.3	20	10
Mercury	MG/KG	6	67	0.37	1.3	0
Aldrin	UG/KG	6	0	0	0	0
GBHC-Lindane	UG/KG	6	0	0	0	0
Chlordane	UG/KG	6	33	1.3	6	0
DDD	UG/KG	6	50	0.3	0.8	0
DDE	UG/KG	6	17	0.12	0.7	0
DDT	UG/KG	1	0	0	0	0
Dieldrin	UG/KG	6	33	0.03	0.10	0
Endrin	UG/KG	6	0	0	0	0
Toxaphene	UG/KG	6	0	0	0	0
Heptachlor	UG/KG	6	0	0	0	0
Heptachlor Epoxide	UG/KG	6	0	0	0	0
PCB'S	UG/KG	6	33	3.5	13	0
PCN'S	UG/KG	4	0	0	0	0
Ethion	UG/KG	3	0	0	0	0

Source: EPA STORET System

1 Aggregate of discontinued stations.
OVERALL PERIOD OF RECORD: Feb 1976 - Jun 1977

2 Some values are known to be less than the value reported.
value reported

4.0 URBAN RUNOFF WATER QUALITY

4.1 MEASURED WATER QUALITY IN THE STORMWATER DRAINAGE CANALS .

Measured Water Quality in the Stormwater Drainage Canals (East Bank)

Thirteen stations were sampled monthly. The station locations are listed in Table 4-1. Analysis on the east bank of Jefferson Parish was also limited to samples collected after the operation of the east bank regional sewage treatment plan in 1988. Table 4-2 compares the canal data (aggregated) to the chronic freshwater and marine aquatic life criteria. However, since all but one of the stations are located on the protected side of the Lake Pontchartrain levee, the freshwater criteria are more applicable. Chronic criteria were chosen for comparison purposes since the canal data are more representative of the long term quality of water in the canal as opposed to stormwater runoff concentrations.

The TSS solids mean concentration is 46 mg/L although the maximum concentration recorded is 767 mg/L. This high concentration is likely the result of a high intensity runoff event and/or the resuspension or erosion of sediment in the drainage canals. The average BOD and COD levels are 6 and 56 mg/L, respectively. Their respective maximum concentrations are 29 and 360 mg/L. Seven percent of the pH values are greater than the LDEQ standard of 8.5 su; the mean pH level is 7.8 su.

Jefferson Parish stopped sampling for total coliforms in early 1989 since total coliforms are a poor indicator of fecal pollution and associated health risks. At the same time, they began sampling for E. coli, the indicator that EPA now uses as an indicator of fecal pollution in bathing waters. The LDEQ currently uses fecal coliform as its indicator as discussed in Section 2. Even with the recently improved sewage treatment plant, violations remain frequent. The log mean of the fecal coliform counts is 3,533 per 100 mL, well above the state standard of 200. However, the state standard is based on a minimum of not less than 5 samples taken over not less than a 30 day period. Fully 85 percent of the fecal coliform counts were greater than the state standard of not more than 25 percent of the total samples collected annually being greater than 400 colonies per 100 mL.

Since the minimum detection limits available for the analysis of water quality samples for mercury were 0.14 or 0.20 ug/L, the actual number of occurrences of chronic criterion violations in the canals is unknown. Concentrations above the minimum detection limit, and therefore violations of the criteria, were reported in approximately 35 percent of the 200 samples. No arsenic values are above the chronic aquatic life criteria for either freshwater or marine water. The percent exceedances for the freshwater chronic criteria for cadmium, chromium, copper and lead were 13, 6, 12 and 44, respectively.

Table 4-1
JEFFERSON PARISH EAST BANK CANALS WATER QUALITY STATIONS

Station	Canal and Location
1.	Bonnabel Canal at the intake of Pumping Station No. 1
2.	Suburban Canal at the intake of Pumping Station No. 2
3.	Elmwood Canal at the intake of Pumping Station No. 4
4.	Duncan Canal at the intake of Pumping Station No. 4
5.	Canal Number 3 just east of the Duncan Canal (at I-10 Expressway and Williams Blvd.)
6.	Soniat Canal below the West Napoleon Canal; at the eastern end of Norfolk St. (just off Starrett Rd.)
7.	Suburban Canal below West Napoleon Canal; eastern end of Eureka St. (off of Houma Blvd.)
8.	Bonnabel Canal below Interstate-10 Highway; Beverly Garden Dr. at 1-10 Service Rd. Bridge
9.	Soniat Canal below Cross Canal; north end of Generes Rd.
10.	Hoey Canal below Geisenheimer Canal; corner of New Orleans Cold Storage Warehouse Rd. and L & A Rd. (off of Airline Hwy.)
11.	Inlake side of Kenner Pumping Station on Grand Lake Blvd.
12.	Intersection of Hoey's Canal and 17th St. Canal
13.	17th St. Canal on the discharge side of New Orleans Pumping Station

Table 4-2
JEFFERSON PARISH EAST BANK CANAL DATA
AGGREGATE OF ALL STATIONS
1989-1990

Parameter	Chronic Criteria (Aquatic Life) Saltwater (ug/L)	Chronic Criteria (Aquatic Life) Freshwater (ug/L)	No. of Obs.	Mean (log)	Max	Min	No. of Viols.
BOD (mg/L)			200	6.0	29.0	1.0	
Susp. Solids (mg/L)			200	46	767	4	
pH (s.u. units)	6.0-8.5 units		199	7.8	10.28	6.81	0/14
T. Coliform #/100mL			9	93,434 (23368)	580000	1000	
F. Coliform #/100mL	400/100 ml *		200	21,268 (3533)	480000	10	169
E. Coli #/100mL	35/100 ml **	126/100 ml **	142	(2967)	560000	100	142/136
COD (mg/L)			198	56	360	0	
Cadmium, Total ug/L	9.3	1.6 ***	200	0.85	16.36	0.01	4/25
Chromium, Total ug/L	50	11	200	3.34	79.1	0.01	1/11
Copper, Total (ug/L)	2.9 *****	17 ***	200	8.81	57.75	0.1	168/24
Mercury, Total ug/L	0.025	0.012	200	0.31	3.81	0.14	-/-
Lead, Total (ug/L)	5.6	5.3 ***	200	6.41	70.5	0.1	78/87
Arsenic, Total ug/L	36	190	200	4.7	28.8	0.22	0/0

Notes:
* No more than 25 percent of the samples collected annually shall exceed 400 colonies per 100 mL. Based on a minimum of not less than 5 samples taken over not more than a 30 day period, count should not exceed 200.
** Geometric mean should not exceed a one-sided confidence limit, based on a site-specific log standard deviation.
*** Corresponds to hardness of 150 mg/L as CaCO3.
**** Criteria are below analytical detection limits.
***** Acute criterion, since there is no chronic criterion.

5.0 WATER QUALITY IMPACTS OF URBAN RUNOFF

5.1 LAKE PONTCHARTRAIN RECEIVING AREA.

To assess the impacts of urban stormwater runoff upon the receiving waters, it was essential to determine the quantity and quality of the urban stormwater runoff from the study area. For this type of receiving water quality analysis use of measured data would be preferable. However, useful water quality data were very limited. In Jefferson Parish, samples were collected approximately monthly since 1983, throughout the drainage systems on both the East Bank and the West Bank. These data were of little use in assessing runoff quality because of the timing of sample collection. To be useful, samples must be collected during storms in order to effectively characterize the quality of the runoff water. The available monthly data are, for the most part, not associated with storm events. They were, however, used as a general guide in assessing runoff quality.

Because insufficient stormwater quality data were available to assess runoff quality characteristics, mathematical simulation models were utilized to estimate runoff quality in the study area. An "Event Load Runoff" model was applied to the study area. This basic model was obtained from the following publication of the U.S. Environmental Protection Agency:

> "Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water - Part I (Revised 1985)."

This model was designed for "desktop" analysis to provide a highly simplified first estimate of urban stormwater pollution quantities. The results from this model are rough estimates of urban runoff quality. A wide margin of error can be expected when default model parameter values are used. Local estimates of these parameters are preferable. We used default values, values from several other stormwater quality studies, and local estimated values. Due to the limited available data, we relied primarily on model parameter values obtained from other stormwater quality studies. The unique local character of the study area was considered when evaluating the appropriateness of these values.

Table 5-1 shows freshwater and marine acute aquatic life criteria comparisons for those modeled pollutants for which acute criteria exist, and chronic criteria comparisons where they exist in the absence of acute criteria. The marine criteria are more applicable to Lake Pontchartrain. The values listed in the tables represent the average pollutant concentrations in stormwater runoff at the pump station locations for the previously defined "worse case" storm event.

Of the metals modeled, only copper, lead and zinc exceed the marine acute aquatic life criteria. On a lake-wide basis only copper consistently exceeds this criteria with a percent exceedance value of 78 percent. Both lead and zinc exceed this criteria less than one percent of the time. As discussed earlier, the predicted lead concentration seems excessive. However, lead values reported in the NURP study, 160 to 500 ug/L, would still exceed the acute marine aquatic life criterion of 140 ug/L. The NURP study identified copper as the key toxic metal pollutant in urban runoff. The study further said that lead and zinc only pose a problem where copper poses a problem. Perhaps as important is that metals have a high affinity for sediments where they could adversely impact the benthic aquatic life. Data indicate that the metal concentrations in the near shore sediments greatly exceed those in the mid-lake area. At approximately 4 miles from the south shore of Lake Pontchartrain, the metal concentrations in the sediments approach those found in the mid-lake sediments, although no sediment levels in Lake Pontchartrain exceeded or approached the USGS proposed alert levels for copper, lead or zinc (Schurtz, 1984). Thus, even though criteria are violated during runoff events, we are not aware of any aquatic life use impairment directly attributable to high metal concentrations in stormwater runoff pumped into Lake Pontchartrain. However, there is potential for long-term, subtle adverse impacts such as a decrease in the benthic microinvertebrate ecosystem, the foundation of the aquatic food chain (Whipple, 1977) or a reduction in aquatic species reproduction levels (Hart, 1986).

The most visible impact of stormwater runoff into Lake Pontchartrain is the impairment of the primary contact recreation use classification along the south shore of Lake Pontchartrain. Swimming is currently inadvisable within 1/4 mile of the south shore of Lake Pontchartrain in both Jefferson and Orleans Parishes due to high fecal coliform levels. The model predicted fecal coliform counts of about 15,000 colonies per 100 mL in the stormwater runoff. Predicted total coliform counts were about an order of magnitude larger. Numerous reports have demonstrated that the highest coliform levels were found near pumping station outfalls and occurred during wet weather. Even though the east bank areas now pump their treated sewage into the Mississippi River instead of Lake Pontchartrain, high fecal levels persist. Aggravating the problem is that the stormwater runoff is often combined with raw or partially treated sewage as the result of bypasses and overflows.

The south shore of Lake Pontchartrain is known to experience severe oxygen depletion in the near shore areas. The model predicted BOD and COD levels around 22 and 130 mg/L, respectively. The average lake BOD and COD levels are 2 and 43 mg/L. Sewage bypasses and overflows also add to the oxygen demand of the stormwater runoff.

The modeled suspended solids concentrations were about 1,000 mg/L. While there is no criterion for this parameter, excessive sediment loads decrease light transmission in surface waters, leading to reduced photosynthesis and associated primary productivity. Suspended sediment can impact digestion and respiration of fish species. Aquatic species diversity can diminish (Hart, 1986). Also, when the solids settle out, they represent potential water use threats if physical or chemical conditions would occur to cause the pollutants adsorbed to the sediments to be released into the water column and become bioavailable.

The predicted nutrient levels in the storm event were approximately an order of magnitude larger than the background levels found in Lake Pontchartrain. Earlier studies have shown that even though the runoff from the New Orleans metropolitan area constitutes only approximately 5% of Lake Pontchartrain's water supply, the runoff contributes around 20% of the total phosphorus loading to Lake Pontchartrain. It has been reported that phosphorus in Lake Pontchartrain had almost doubled between 1900 and 1980 (Houck, 1989). As mentioned earlier, Lake Pontchartrain has been classified as oligotrophic to mesotrophic. Organic enrichment of bottom sediments has been reported in the near shore areas of the pump station outfalls (USACE, 1989). Excessive levels of nutrients have the potential to cause eutrophication which can lead to the premature aging of the lake.

None of the predicted pesticide concentrations exceeded the acute marine aquatic life criteria. However, like metals they also tend to accumulate in the sediments where they could potentially adversely impact the benthic ecosystems.

Table 5-1
EAST BANK JEFFERSON PARISH STORM EVENT MODEL RESULTS CRITERIA COMPARISON

Parameter	Units	Concentration	ACUTE MARINE CRITERIA		ACUTE FRESH CRITERIA	
			Criteria	Exceeded?	Criteria	Exceeded?
Total Solids	mg/L	1052.1				
BOD - 5 Day	mg/L	25.67				
COD	mg/L	142.00				
TKN	mg/L	1.77				
Nitrate	mg/L	1.32				
Phosphate-P	mg/L	2.80				
Orthophosphate-P	mg/L	1.32				
Organic Nitrogen-N	mg/L	3.15				
Total Coliform	#/100mL	172055				
Fecal Coliform	#/100mL	17094	400**	Y	400**	Y
Cadmium	ug/L	3.509	43	N	6.2***	N
Chromium	ug/L	217.823	1100	N	16	Y
Copper	ug/L	108.325	2.9	Y	26***	Y
Iron	mg/L	22.420			1.00*	Y
Lead	ug/L	2018.806	140	Y	137***	Y
Manganese	ug/L	423.321				
Nickel	ug/L	35.194	75	N	2000***	N
Strontium	ug/L	21.357				
Zinc	ug/L	396.024	95	Y	165***	Y
Mercury	ug/L	0.087	2.1	N	2.4	N
Endrin	ug/L	0.0002	0.037	N	0.18	N
Dieldrin	ug/L	0.0294	0.71	N	2.5	N
PCB's	ug/L	0.8098	10	N	2.0	N
Methoxychlor	ug/L	0.5259	0.03*	Y	0.03*	Y
DDT	ug/L	0.0799	0.13	N	1.1	N
Lindane	ug/L	0.0030	0.16	N	2.0	N
Methyl Parathion	ug/L	0.0021				
DDD	ug/L	0.0862				

Notes:
* Chronic criterion
** Exceeds no more than 10% of samples during 30 days, or no more than 25% of samples in one year
*** Corresponds to hardness of 150 mg/L as CaCO3

6.0 WATER QUALITY MONITORING/MODELING PROGRAM

The preconstruction monitoring plan will provide existing conditions with respect to the storm water runoff quality. The sampling plan will be developed and implemented to define the first flush characteristics (i.e. volume or duration and pollutant concentrations) of storm water runoff for the Eastbank of Jefferson Parish.

Automatic water samplers will be used at the pumping station locations and automatic water samplers with rain gauges and liquid level actuators will be utilized at the basin's interior non-pumping station locations. Velocity meters will also be installed in the interior station locations. The samples will be analyzed for solids, oxygen demanding substances, nutrients, bacteria and metals. Sampling stations will also be established in Lake Pontchartrain to ascertain the impacts of storm water runoff in the receiving area.

The postconstruction monitoring program will provide with-project data with respect to storm water runoff quality. Ideally, the same sampling locations will be used for pre- and postconstruction monitoring.

The data collected during the pre- and postconstruction monitoring programs will then be entered into a database so that it can be manipulated or interfaced with other statistical software.

Jefferson Parish will continue to collect baseline data in the drainage canals as in their current program with 13 sampling stations on the Eastbank. However, in conjunction with the Corps of Engineers, the sampling frequency would be increased to once monthly. Also, it would be preferable that this sampling not be conducted during or within three days of a rainfall event. Futher sampling will provide both quantity and quality data for all bypasses and overflows along with rainfall data from the numerous gauges located throughout the basin.

The Stormwater Water Management Model, SWMM, will be developed for the Eastbank of Jefferson Parish. The model will be run in both the event mode and the continuous simulation mode using data collected during the pre- and post construction monitoring period for input and verification. A receiving water quality model will also be developed in ordered to predict the impacts of storm water runoff on the south shore of Lake Pontchartrain. These models, used together, will allow for the evaluation of a wide range of rainfall and treatment scenarios.

LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH DEMONSTRATION PROJECT

Water Quality Monitoring and Modeling Plan (1995)

APPENDIX C

APPENDIX C

LAKE PONTCHARTRAIN STORM WATER DISCHARGE, LOUISIANA

JEFFERSON PARISH DEMONSTRATION PROJECT

WATER QUALITY MONITORING - MODELING PROGRAM

JUNE 1995

TABLE OF CONTENTS

SECTION 1

INTRODUCTION

The Jefferson Parish Demonstration Project water quality monitoring/modeling program consists of two major components: the monitoring program and the modeling program. The monitoring program will collect and compile water quality, meteorologic, hydrologic, and hydraulic data which will be used in evaluating the demonstration project and for input to a receiving water quality simulation model. The modeling program will consist of a receiving water quality simulation model which will aid in evaluating the Demonstration Project's impacts to Lake Pontchartrain for a wide range of conditions and in assessing potential alternatives and applications throughout Jefferson Parish.

Any aspect of the monitoring - modeling program may be changed or adjusted during implementation of the program in response to new information, unanticipated field conditions, changing data requirements, or other reasons.

Monitoring Program

The monitoring program will consist of a pre-construction phase and a post-construction phase. The pre-construction phase of the program will take place prior to completion of construction of the Demonstration Project. The post-construction phase will take place after the Demonstration Project begins operating, upon completion of construction.

Pre-construction Monitoring Program - The pre-construction monitoring program will determine existing storm water runoff quality in the Jefferson Parish east bank drainage canal system. Existing water quality in Lake Pontchartrain and the impact of storm water runoff on the Lake Pontchartrain receiving area will also be determined.

The program will define the characteristics (i.e. volume or duration and pollutant concentrations) of storm water runoff from a major portion of the east bank of Jefferson Parish. It will also quantify the pollutant loading from that portion of the Jefferson Parish east bank drainage system to Lake Pontchartrain for various rainfall events. The program will define the duration and extent of negative impacts (e.g. depressed dissolved oxygen levels and elevated fecal coliform levels) of storm water runoff from Jefferson Parish on the Lake.

The pre-construction monitoring program will be active for approximately a twelve month period. Within this time frame, data from ten to twelve rainfall events of varied intensity and duration will be collected and analyzed. The program will determine if a first flush phenomenon occurs in Jefferson Parish's drainage system. This information will be valuable for designing and operating the Demonstration Project and in designing, operating, and evaluating the feasibility of any other proposed storm water treatment alternatives.

Post-construction Monitoring Program - The post-construction monitoring program will be similar to the pre-construction monitoring program. It will determine storm water runoff quality in the Jefferson Parish east bank drainage canal system for with project conditions. Water quality in Lake Pontchartrain and the impacts of storm water runoff on the Lake Pontchartrain receiving area will also be determined for post-construction conditions.

The post-construction monitoring program will define the characteristics of storm water runoff under post-construction conditions from the same portion of the Jefferson Parish east bank drainage system that the pre-construction monitoring program defined. It will also quantify the pollutant loading from that same portion of the Jefferson Parish east bank drainage system to Lake Pontchartrain for various rainfall events under post-construction conditions.

The post-construction monitoring program will also be active for approximately a twelve month period. Within this time frame, data from ten to twelve rainfall events of varied intensity and duration will be collected and analyzed.

Monitoring data from each program will be compared to evaluate the impacts of the Demonstration Project on drainage canal effluents and Lake Pontchartrain receiving area water quality.

Modeling Program

A receiving area water quality model will be developed to evaluate the impacts of the Demonstration Project on Lake Pontchartrain water quality. This will allow for a wide range of rainfall events, in addition to the ones for which data were collected, to be evaluated. The modeling program will also provide information to evaluate the feasibility and effectiveness of expanding Demonstration Project concepts to a larger scale that would cover a wider area. In addition, the model will be useful in evaluating the effectiveness of other potential alternative storm water pollution control projects.

SECTION 2

SAMPLING LOCATIONS

Sampling site locations have been selected to support the goals of the monitoring and modeling programs. Automatic samplers will be positioned to obtain samples in the drainage canals on the intake side of three East Bank drainage pump stations that discharge directly to receiving waters. These sampling sites will provide information to characterize the composition and pollutant loading of storm water entering Lake Pontchartrain for pre and post-construction conditions. An automatic sampler located at the intake of the proposed lift station will provide data about the composition of storm water that will be pumped to the wastewater treatment plant via the proposed force main. Two other automatic samplers will be located at strategic sites within the Jefferson Parish East Bank drainage system. These sites have been chosen for their proximity to sewage lift stations that are chronically bypassed during rainfall events. Data from these sites will show the effects of the Demonstration Project on water quality problems in the drainage canals caused by sewage lift station bypasses. These two sites may be moved from time to time during the sampling period depending upon evaluation of ongoing data. Near shore and far shore sampling sites located offshore of three drainage pump stations on Lake Pontchartrain will generate data to assess the impacts of storm water discharge on the Lake for pre and post-construction conditions. These data will be used in formulating a receiving water quality model and will aid in assessing the effectiveness of the Demonstration Project. Five sample sites throughout the drainage canal system will be used to establish baseline water quality conditions in the system.

Figure 1 shows the locations of all the sampling sites.

Sampling site descriptions follow:

Automatic Water Samplers

Automatic water samplers will be utilized to collect water samples during rainfall events. These samplers provide continuous unattended collection of samples under a wide variety of sampling configurations and options. Automatic water samplers will be deployed to collect samples at the following six sites:

SITE JPPS001

Bonnabel Canal near the inflow to Pumping Station No. 1 (Bonnabel Pumping Station). The Bonnabel Pumping Station is located in Metairie at the north end of Hesper Ave., which is two blocks west of Bonnabel Blvd., at Lake Pontchartrain.

SITE JPPS002

Suburban Canal near the inflow to Pumping Station No. 2 (Suburban Pumping Station). The Suburban Pumping Station is located in Metairie at the north end of Lake Villa Dr., which is two blocks east of Houma Blvd., at Lake Pontchartrain.

SITE JPPS003

Elmwood Canal near the inflow to Pumping Station No. 3 (Elmwood Pumping Station). The Elmwood Pumping Station is located in Metairie at the north end of Caryota Dr. at Lake Pontchartrain.

SITE JPLS004

Suburban Canal just south of its intersection with the West Napoleon Canal in Metairie. This is one block east of the intersection of Houma Blvd. and West Napoleon Ave. The intake for the proposed lift station will be at this location.

SITE JPIN005

West Napoleon Canal at Athania Parkway in Metairie.

SITE JPIN006

West Esplanade Canal at West William David Parkway in Metairie.

Receiving Water Grab Samples

Near shore and far shore grab samples will be collected in the receiving waters of Lake Pontchartrain offshore of three lakeside pumping stations. Personnel will access these sites by watercraft. These grab samples will be collected at the following six sites:

SITE JPG1N07

Lake Pontchartrain approximately 200 ft. north of the shoreline at Pumping Station No. 1 (Bonnabel Pumping Station).

SITE JPG1F08

Lake Pontchartrain approximately 1000 ft. north of the shoreline at Pumping Station No. 1 (Bonnabel Pumping Station).

SITE JPG2N09

Lake Pontchartrain approximately 200 ft. north of the shoreline at Pumping Station No. 2 (Suburban Pumping Station).

SITE JPG2F10

Lake Pontchartrain approximately 1000 ft. north of the shoreline at Pumping Station No. 2 (Suburban Pumping Station).

SITE JPG3N11

Lake Pontchartrain approximately 200 ft. north of the shoreline at Pumping Station No. 3 (Elmwood Pumping Station).

SITE JPG3F12

Lake Pontchartrain approximately 1000 ft. north of the shoreline at Pumping Station No. 3 (Elmwood Pumping Station).

Wastewater Treatment Plant Effluent Samples

Data collection currently in progress at the East Bank Waste Water Treatment Plant will be relied upon for these data.

Drainage Canal Grab Samples

Grab samples will be collected from drainage canals throughout the East Bank of Jefferson Parish. These grab samples will be collected at the following five sites:

SITE JPG0113

The location of this site is the same as the location of SITE JPLS004 - Suburban Canal just south of its intersection with the West Napoleon Canal in Metairie. This is one block east of the intersection of Houma Blvd. and West Napoleon Ave. This is the location of the intake for the proposed lift station.

SITE JPG0214

The location of this site is the same as the location of SITE JPIN006 - W.Esplanade Canal @ W.William David Parkway in Metairie.

SITE JPG0315

The location of this site is the same as the location of SITE JPIN005 - West Napoleon Canal at Athania Parkway in Metairie.

SITE JPG0416

Suburban Canal at the west end of Jasper St. in Metairie.

SITE JPG0517

West Metairie Canal at Waltham St. in Metairie.

SECTION 3

SAMPLING PERIOD AND FREQUENCY

Sampling Period

Pre-construction Sampling -

In order to assess the impacts of urban storm water runoff on water quality in the drainage canals and the receiving waters of Lake Pontchartrain for a wide range of existing conditions, water samples from rainfall events of many different intensities and durations will be collected and analyzed. Samples from rainfall events ranging from a light rain to major storms of three inches of rainfall or more, and a range of events in between, will be collected and analyzed. Collection of samples from ten to twelve events will cover the range of events needed. At least a three day dry period between sampled events will be necessary to allow time for the buildup of pollutants on land surfaces. Otherwise, the sampled runoff will be relatively free of pollutants and the analyses will not be indicative of the kind of runoff that could be improved by the Demonstration Project. It is anticipated that the necessary ten to twelve rainfall events will occur within a period of twelve months or less. Therefore, the pre-construction monitoring program will be ongoing for a period of approximately twelve months. It will be completed before operation of the Demonstration Project begins in order to accurately assess existing conditions.

Post-construction Sampling -

In order to evaluate the performance of the Demonstration Project for a wide range of conditions, water samples will be collected during rainfall events of many different intensities and durations.

During the post-construction sampling period, as in the pre-construction sampling period, water samples from ten to twelve rainfall events of many different intensities and durations will be collected and analyzed. These data will be used to compare with project conditions to existing conditions. It is expected that the ten to twelve rainfall events needed for the post-construction monitoring program would also occur within a period of twelve months or less. Therefore, the post-construction monitoring program will be ongoing for a period of approximately twelve months, starting some time after construction of the Demonstration Project is complete.

Sampling Frequency

The sample collection frequency will vary for the different types of sampling methods and/or locations (i.e. automatic sampler samples, receiving water grab samples, drainage canal grab samples, etc.). The sample collection frequencies for the different types of samples are shown below.

Automatic Water Samplers -

The collection frequency for each of the sites with automatic samplers will depend upon the occurrence of rainfall events which meet the needs of the sampling program. The automatic samplers will be programmed to collect samples based on rainfall and flow in the canals in which they are sampling. While the samplers may collect samples for many rainfall events, the samples will not necessarily be analyzed unless the event meets the needs of the monitoring program. If the event will not be used for the program then the samples will be discarded. In either case, after the samples are retrieved the automatic samplers will be re-programmed in preparation for the next event.

In the beginning of the program most rainfall events that produce runoff will be analyzed, provided the three day inter-event dry period is satisfied. As the program proceeds, more critical selection criteria will be necessary for analysis to proceed so that samples for the entire program will be derived from many different and varied rainfall events.

The automatic samplers will be programmed to collect composited flow-weighted samples for each rainfall event. The analyses of these composited samples will provide mean event pollutant concentrations which will be used to quantify total event pollutant loadings.

The automatic samplers will also be programmed to collect separate samples during the early stages of rainfall events to determine first flush characteristics, if they exist. Analyses of these samples will determine if pollutant concentrations are greater in the early stages of storm water runoff events than at other times during the event. This is known as the first flush phenomenon.

The installation and programming of the automatic samplers will be adjusted as the monitoring program progresses. Based on experience and data derived during the program, the locations, sampling frequencies, and timing of sample collection may be changed in order to obtain the data needed to properly evaluate the Demonstration Project.

The automatic sampler sites are described in Section 2. They include sites at inflows to pumping stations, inflows to the proposed lift station, and some drainage system interior canal sites.

Receiving Water Grab Samples -

The timing of grab samples in Lake Pontchartrain in the vicinity of the pumping stations will also depend upon the occurrence of rainfall events which meet the needs of the sampling program.

Near Shore Samples - The near shore grab sample sites, which are described in Section 2, are located approximately 200 ft. into the Lake from three lakeside pumping stations. Samples from these sites will be collected at the beginning of rainfall events, prior to operation of the pumps. Data from these samples will provide information about background conditions in the Lake prior to the pumping of storm water during rainfall events. At the beginning of a rainfall event, it will not be known if the event will meet the needs of the monitoring program. This would not be known until the conclusion of the event, at which time it will be decided to either analyze or discard the samples.

Samples from these sites will also be collected approximately 12, 24, and 48 hours after pumping ceases for rainfall events which will be used for the monitoring program. Data from these samples will be compared to the pre-event data to provide information about the effects of a rainfall event on Lake Pontchartrain water quality. These samples will be collected and analyzed only after it has been concluded that an event meets the needs of the monitoring program. Therefore, none of these samples will be discarded.

Far Shore Samples - The far shore grab sample sites, which are described in Section 2, are located approximately 1000 ft. into the Lake from three lakeside pumping stations. Samples from these sites will be collected approximately 12, 24, and 48 hours after pumping ceases for rainfall events which will be used for the monitoring program. Data from these samples will be compared to the pre-event data to provide information about the effects of a rainfall event on Lake Pontchartrain water quality. These samples will be collected and analyzed only after it has been concluded that an event meets the needs of the monitoring program. Therefore, none of these samples will be discarded.

Wastewater Treatment Plant Effluent Samples -

Data collection currently in progress at the East Bank Waste Water Treatment Plant will be relied upon for these data.

Drainage Canal Grab Samples -

The drainage canal grab sample sites, which are described in Section 2, are located throughout the East Bank drainage canal system. Samples from these sites will be collected once a month throughout the duration of the pre-construction and post-construction monitoring programs. These samples will be collected at least three days after any rainfall event to insure that they are representative of ambient dry weather canal water conditions.

SECTION 4

SAMPLE COLLECTION

The sampling effort will require close coordination among Jefferson Parish departments, field personnel, the analytical laboratories, and the managing organizations (i.e. Jefferson Parish, the Corps of Engineers, consultants, etc.). Each type of sampling site will have different deployment, collection, and maintenance requirements. For example, the automatic sampler sites will require almost constant effort to assure that samples are collected and preserved properly, while the samples offshore of the pumping stations in the Lake will require a crew to operate watercraft for access to the sampling sites.

All sample collection will be conducted in accordance with applicable and accepted quality control/quality assurance procedures.

It is intended that sampling will be conducted during normal working hours (i.e. 7:00 AM to 5:30 PM Monday through Friday). Over the course of a year, at least ten to twelve rainfall events that meet the needs of the monitoring program should occur during these hours. If it becomes apparent that not enough events will be captured during normal working hours then arrangements will be made to conduct sampling during extended hours.

Automatic Water Samplers

Six sites will be equipped with automatic water samplers. All of them will be located at drainage canals within the drainage system. In order to obtain flow proportioned composite samples, which are needed to quantify pollutant loadings, the flow rates in the drainage canals at which the automatic samplers are located must be known. Rainfall data at these sites will also be needed to correlate canal flow and rainfall with pollutant concentrations in the samples to derive pollutographs and to determine if a first flush occurs in this drainage system.

In order to obtain all the required data, each of the six sites will be furnished with the following equipment:

* Automatic Sampler	-	ISCO 6700 Sampler (Or equivalent)
* Area-Velocity Flow Meter	-	ISCO 4250 Area-Velocity Flow Meter (Or equivalent)
* Automatic Rain Gauge	-	ISCO 674 Rain Gauge (Or equivalent)

* Remote Power Source
* Protective enclosure for the equipment
* Sample containers
* Miscellaneous hoses, cables, containers, etc.

Several manufacturers market this kind of equipment. For illustrative purposes, ISCO, Inc. product names and model numbers for this equipment are shown. Citation of ISCO trade names does not constitute an official endorsement or approval of the use of such commercial products.

Extensive preparations will be made to set up each automatic sampler site. Proper installation of the equipment will insure that suitable samples are collected and that accurate data are acquired. Discharge measurements at the sampling sites in the drainage canals will be taken to calibrate the area-velocity flow meters. The rain gages will be installed on poles, away from obstructions. Intakes for the water samples, velocity probes, and water level probes will be securely mounted in the water column. The automatic samplers, area-velocity flow meters, power supplies, and other electronic equipment will be housed in weatherproof enclosures. This will provide shelter from the elements and minimize vandalism.

When the sampler sites are set up and ready to be activated, collection of water samples will proceed. For each automatic sampler site a repeating sequence of site visits will take place during the monitoring program. A typical series of sampling site visits is shown below.

* <u>Site Visit 1</u> - The following tasks will be performed:

  - Program sampler
  - Load sample containers into sampler
  - Check power supply (Replace battery if necessary)
  - Conduct total sampling site system check

* Site Visit 2 - If there has been at least a three day period without rain, and rain is predicted, the samplers will be prepared for sample collection. The following tasks will be performed:

  - Check sampler program
  - Fill sampler with ice
  - Check sample containers
  - Check power supply (Replace battery if necessary)
  - Conduct total sampling site system check

* Site Visit 3 - If conditions indicate that enough rain has fallen for a first flush to have occurred, the following tasks will be performed:

  - Remove first flush samples for fecal coliform, BOD, and E. Coli analyses; label; preserve with ice; fill out chain of custody tags; and deliver to lab within six hours from when the first sample was collected
  - Remove first flush samples for all other analyses, label, preserve with ice, fill out chain of custody tags, and deliver to lab within a day after sample collection
  - Check sampler program
  - Check sample containers
  - Check & add ice if needed

* Site Visit 4 - When the rainfall event is over (When pumping related to the event is completed) a decision will be made to use, or not use, the event as one of the ten to twelve events that will be analyzed for the monitoring program. If it is decided that the event will be used, the following tasks will be performed:

  - Remove the flow-weighted composite samples and pollutograph samples (if there are any), label, preserve with ice, fill out chain of custody tags, and deliver to lab within a day after sample collection
  - Download flow and rainfall data
  - Within the next two days perform site visit 1 tasks, in preparation for the next rainfall event that will be sampled, and continue from there

If it is decided that the event will not be used, the following tasks will be performed:

- Remove any samples and discard them
- Download flow and rainfall data
- Perform the site visit 1 tasks in preparation for the next rainfall event and continue from there

Upon completion of the pre-construction monitoring program, the automatic sampler site equipment will be dismantled and stored until completion of Demonstration Project construction. The equipment will be redeployed for the post-construction monitoring program.

Receiving Water Grab Samples

The collection of receiving water grab samples will be associated with rainfall events that will be analyzed for the monitoring program. Any event for which the automatic samplers collect samples that are analyzed will be an event for which receiving water grab samples will also be collected and analyzed.

Because the receiving water grab sample sites are in Lake Pontchartrain, they will be accessed by watercraft. A crew of at least two persons will collect samples at these sites. The water samples will be collected at mid-depth with a free flushing, messenger-triggered type sampler. Samples for fecal coliform, BOD, and E. Coli analyses will be labeled, preserved with ice, chain of custody tags filled out, and delivered to the lab within the six hour holding time. All other samples will be labeled, preserved with ice, chain of custody tags filled out, and delivered to the lab within a day after sample collection.

Sampling sites will be located using a geographical positioning system (GPS). The GPS will be used to locate the sampling sites for each sampling event. This will assure that samples will be collected from the same locations for each sampling event.

Near Shore Samples - The near shore samples will be collected at the beginning of rainfall events before pumping begins. A crew will be ready to collect samples at almost all times. Since it will not be known in advance whether a rainfall event will be used for the monitoring program, samples will be collected for almost all rainfall events for which storm water pumping is expected to occur (provided that the three day inter event dry period is met). If it turns out that the rainfall event does not meet the needs of the monitoring program the samples will be discarded.

Near shore samples will also be collected after rainfall events which will be used for the monitoring program. Since these samples will be collected approximately 12 and 24 hours after the conclusion of pumping for rainfall events, it will be known if an event will be used before it would be time to collect the samples. A crew would have time to plan to collect the samples and none of them would be discarded.

Far Shore Samples - The far shore samples will be collected only for rainfall events which will be used for the monitoring program. Since the samples will be collected approximately 12, 24, and 48 hours after the conclusion of pumping for rainfall events, it will be known if an event will be used before it would be time to collect the samples. A crew would have time to plan to collect the samples and none of them would be discarded. The far shore samples that will be collected 12 and 24 hours after the conclusion of pumping will be collected at the same time as the after event near shore samples.

Wastewater Treatment Plant Effluent Samples

Sample collection currently in progress at the East Bank Waste Water Treatment Plant will be relied upon for collection of these samples.

Drainage Canal Grab Samples

The grab samples at the five drainage canal sites will be collected once a month throughout the duration of the pre-construction and post-construction monitoring programs. The sampling schedule will allow for at least the required three days of dry weather before any sample collection. Each month's sampling at these five sites will be conducted on the same day. Theses sites will be land based and easily accessible. Samples will be obtained from approximately two feet below the water surface except where the canal depth is less than two feet. If that is the case, samples will be obtained from directly below the water surface. Samples for fecal coliform, BOD, and E. Coli analyses will be labeled, preserved with ice, chain of custody tags filled out, and delivered to the lab within the six hour holding time after collection of that day's initial sample. All other samples will be labeled, preserved with ice, chain of custody tags filled out, and delivered to the lab within a day after sample collection.

SECTION 5

SAMPLE PARAMETERS

Because of the great number of samples associated with this program a selective number of water quality parameters will be analyzed. Emphasis will be placed on pollutants that are common in storm water and on pollutants that affect the designated uses of Lake Pontchartrain.

The following parameters will be analyzed for all samples:

- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Total Volatile Solids (TVS)
- Biochemical Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Total Phosphorus
- Dissolved Phosphorus
- Total Ammonia
- Nitrate + Nitrite
- Total Kjeldahl Nitrogen (TKN)
- Total Organic Carbon (TOC)
- Dissolved Copper
- Dissolved Lead
- Dissolved Zinc
- Hardness
- Diazinon
- Malathion
- Glyphosate
- pH
- Oil & Grease

The holding time for samples to be analyzed for Fecal Coliform, E. Coli, and BOD is six hours. Because of this short holding time, not all of the automatic sampler samples will be analyzed for these parameters. The first flush samples collected by the automatic samplers will be retrieved in time for these analyses to be conducted. However, the rest of the samples, including the flow-weighted composites, may not be retrieved in time for the proper analysis of these parameters. If conditions allow, they will be analyzed for these parameters. All grab samples will include Fecal Coliform, E. Coli, and BOD analyses.

The laboratories selected to perform the analyses for the monitoring program will utilize applicable and accepted quality control/quality assurance procedures. They will be inspected and approved by the Corps of Engineers Waterways Experiment Station.

SECTION 6

RECEIVING AREA WATER QUALITY MODEL

A receiving area water quality model will be developed to evaluate the impacts of the Demonstration Project on Lake Pontchartrain water quality. This will allow for a wide range of rainfall events, in addition to the ones for which data were collected, to be evaluated. The modeling program will also provide information to evaluate the feasibility and effectiveness of expanding Demonstration Project concepts to a larger scale that would cover a wider area. In addition, the model will be useful in evaluating the effectiveness of other potential alternative storm water pollution control projects.

Selection of an appropriate receiving water quality simulation model will take place during the execution of the monitoring program. The model that is chosen will have the capability to simulate the transport and transformation of conventional pollutants; such as dissolved oxygen, biochemical oxygen demand, and bacteria; and toxic pollutants; such as heavy metals; in the water column of large open water bodies such as Lake Pontchartrain.

The model will be adapted to the Lake Pontchartrain receiving water area. Data collected during the monitoring program, as well as other geophysical data, will be used for model input and for model verification. The model will be an effective tool in evaluating the Demonstration Project for a wide range of conditions and potential alternatives.

SECTION 7

COST ESTIMATE

This cost estimate includes the costs for execution of the Jefferson Parish Demonstration Project Water Quality Monitoring - Modeling program as described in this report. In generating the cost estimate, it was assumed that all work would be performed by the Corps of Engineers. The assumption was also made that all laboratory work would be performed by the water quality laboratory at the Corps of Engineers Waterways Experiment Station (WES) and at the New Orleans District's water quality laboratory. The estimate is based on current labor, overhead, material, equipment, and laboratory costs. Any major changes to the program will affect the costs associated with its execution.

SUMMARY OF COSTS FOR LAKE PONTCHARTRAIN DEMONSTRATION PROJECT
WATER QUALITY MONITORING - MODELING PROGRAM

		Cost
Pre-Construction		
1. Lake Pontchartrain Water Sample Collection		$40,000
2. Monthly Grab Samples		$3,150
3. Auto Samplers		$245,160
a) Installation &set-up	$75,500.00	
b) Monitoring & collection	$166,660.00	
c) Demobilization	$3,000.00	
4. Data Management		$19,000
5. Lab Costs		$240,300
Total Pre-Construction Cost		**$547,610**
Post-Construction		
1. Lake Pontchartrain Water Sample Collection		$40,000
2. Monthly Grab Samples		$3,150
3. Auto Samplers		$176,440
a) Installation &set-up	$6,780.00	
b) Monitoring & collection	$166,660.00	
c) Demobilization	$3,000.00	
4. Data Management		$19,000
5. Lab Costs		$240,300
Total Post-Construction Cost		**$478,890**
6. Water Quality Modeling		$50,775
7. Documentation & Report		$54,350
Sub-Total		$1,131,625
Contingencies	15.00%	$169,744
Grand Total		**$1,301,369**

	COST ESTIMATE WORKSHEET	PAGE 1 OF 2
Jefferson Parish Demo		
ake Pontchartrain Water Sample Collection		LS
	shifts per day:	1.00
	hours per shift:	8.00

PLAN OF OPERATION

This item is for all equipment, labor, and materials required for the collection of Lake Pontchartrain water quality samples in the vicinity of 3 pumping stations for 12 rainfall events. The water samples will be collected 200' from the stations before the rainfall event. In order to capture 12 events, it is assumed that the crew will collect samples 24 times for the before rainfall event.

After the rainfall event, the water samples will be collected as follows:

Hours after event	# of samples/event	distance from pumping station (ft)	total # of sample
12	3	200.00	36
12	3	1000.00	36
24	3	200.00	36
24	3	1000.00	36
48	3	200.00	36
48	3	1000.00	36

Crew:

1 GS-09 Technician & 1 GS-05 Technician
1 skiff
1 truck

Production: The crew can collect samples from the 3 sites in one day. When collecting the samples for 12 hours at 200' and 1,000'; 24 hours at 200' and 1,000'; and 48 hours at 200' and 1,000' ; the crew can collect from all 6 sites in one day.

Before event Quantity:	24.00	Sample Days
Days:	24	
After event Quantity:	36.00	Sample Days
Days:	36	
Total Sample Days	60.00	

COST ESTIMATE WORKSHEET					page 2 of 2
' ake Pontchartrain Water Sample Collection					
EQUIPMENT					
..nit of equipment	size	no.	days	rate	amou
skiff		1.00	60	$35.00	$2,100
truck		1.00	60	$20.00	$1,200
				subtotal	$3,300
		tools	2%	of labor	$694
				total equipment cost	$3,994
LABOR					
craft		no.	days	rate	amou
GS-09 technician		1.00	60	$348.00	$20,880
GS-05 technician		1.00	60	$230.00	$13,800
				total labor cost	$34,680
SUPPLIES					
description	unit		quantity	price	amou
safety and misc	LS		1	$1,326.00	$1,326
				total supply cost	$1,326
Filename: ponttest.WQ1				TOTAL COST	$40,000
				$667 /day	

COST ESTIMATE WORKSHEET		page 1 of 2
Jefferson Parish Demo		
Monthly Grab Samples		LS
	shifts per day:	1.00
	hours per shift:	8.00

PLAN OF OPERATION

This item is for all equipment, labor and materials required for the monthly collection of grab samples. The grab samples will be taken at 5 locations on the east bank of Jefferson Parish. The samples will be taken by 1 technician. The technician will collect grab samples at various canals by taking samples from bridges and culverts. All collection sites will be accessible by car.

Crew:
- 1 GS-9 Technician
- 1 Truck

Quantity:	12.00	Sample collection days (5 sites)
Production Rate:	5.00	Hrs/day
Total Hours:	60	
Total Days:	8.00	

	COST ESTIMATE WORKSHEET				page 2 of 2
Monthly Grab Samples					

EQUIPMENT

unit of equipment	size	no.	days	rate	amou
Truck		1.00	12.00	$20.00	$240
				subtotal	$240
		tools	2%	of labor	$56
			total equipment cost		$296

LABOR

craft	no.	days	rate	amou
GS-09 technician	1.00	8.00	$348.00	$2,784
		total labor cost		$2,784

SUPPLIES

description	unit	quantity	price	amou
safety and misc	LS	1	$70.00	$70
		total supply cost		$70
Filename: ponttest.WQ1			TOTAL COST	$3,150

Jefferson Parish Demo

ˈuto Samplers LS

, Installation & Set-up (Pre-Construction)

shifts per day:	1.00
hours per shift:	8.00

PLAN OF OPERATION

This item is for all equipment, labor, and materials required for the installation & set-up of 6 automatic samplers. In addition to the automatic samplers, rain gauges and area-velocity meters will be placed at the sample sites.

A GS-9, GS-11, and GS-12 will set-up and program the instrumentation. Approximately 2 days will be required per site for the initial set-up. The instrumentation will be housed in a temporary enclosure which will be constructed and delivered to each sample site. Access to all sites will be by car, however, access for placement of collection tubes and probes may require the use of a small boat at some sites. The cost for the use of a boat will be included under safety and miscellaneous. The cost for the GS-12 will be included in the item "Monitoring & Collection."

Crew:

1 GS-9, 1 GS -11, (1 GS-12 cost included in "monitoring & collection")

1 truck

Quantity:	6.00 Sites
Production Rate:	2.00 Days/Site
Total Days:	12

REASONABLE CONTRACT ESTIMATE WORKSHEET	page 2 of 2

^uto Samplers

EQUIPMENT

unit of equipment	size	no.	days	rate	amou
truck		1.00	12	$20.00	240
				subtotal	240
		tools	2%	of labor	192
			total equipment cost		432

LABOR

craft	no.	days	rate	amou
GS-09 technician	1.00	12	$348.00	4,176
GS-11 engineer	1.00	12	$453.00	5,436
		total labor cost		9,612

MATERIALS

description	unit	quantity	price	amou
ISCO 6700 Storm water sampler (# 68-6700-063)	@	6	$2,495.00	14,970
ISCO rain gauge w/ connect cable (#60-3284-001)	@	6	$575.00	3,450
ISCO 4250 Area-vel. meter w/ pl (#68-4230-002)	@	6	$5,500.00	33,000
ISCO 3/8" x 25' Suction Line(#60-3704-072)	@	6	$75.00	450
ISCO Sampler to flow meter connect cable	@	6	$75.00	450
Flowlink software (#60-3004-107)	@	1	$495.00	495
Iterrogator Communication line kit	@	1.00	$65.00	65
Lead acid battery(#60-3004-106)	@	12.00	135.00	1,620
12V connect cable (#60-1394-023)	@	6.00	55.00	330
Start up training	Day	2.00	600.00	1,200
Enclosures	@	6.00	1000.00	6,000
24 Polypropylene bottles configuration (68-6700-006)		6.00	175.00	1,050
100 Polypropylene bottles (68-3700-046)		1.00	350.00	350
				63,430
safety and misc	LS	1	$2,026.00	2,026
		total supply cost		2,026
Filename: autosamp.WQ1			TOTAL COST	75,500

	COST ESTIMATE WORKSHEET		
Jefferson Parish Demo			
Auto Samplers		LS	
Installation & Set-up (Post-Construction)	shifts per day:		1.00
	hours per shift:		8.00

PLAN OF OPERATION

This item is for all equipment, labor, and materials required for the installation & set-up of 6 automatic samplers. In addition to the automatic samplers, rain gauges and area-velocity meters will be placed at the sample sites.

A GS-9, GS-11, and GS-12 will set-up and program the instrumentation. Approximately 1 day will be required per site for the initial set-up. The instrumentation will be housed in a temporary enclosure which will be constructed and delivered to each sample site. Access to all sites will be by car, however, access for placement of collection tubes and probes may require the use of a small boat at some sites. The cost for the use of a boat will be included under safety and miscellaneous. The cost for the GS-12 will be included in the item "Monitoring & Collection."

Crew:
1 GS-9, 1 GS -11, (1 GS-12 cost included in "monitoring & collection")
1 truck

Quantity:	6.00	Sites
Production Rate:	1.00	Day/Site
Total Days:	6	

Auto Samplers

EQUIPMENT

.iit of equipment	size	no.	days	rate	amou
truck		1.00	6	$20.00	$120
				subtotal	$120
		tools	2%	of labor	$96
			total equipment cost		$216

LABOR

craft	no.	days	rate	amou
GS-09 technician	1.00	6	$348.00	$2,088
GS-11 engineer	1.00	6	$453.00	$2,718
		total labor cost		$4,806

MATERIALS

description	unit	quantity	price	amou
EQUIPMENT ALREADY AQUIRED				
safety and misc	LS	1	$1,008.00	$1,008
Transport of equipment (flat bed truck)		1	$750.00	$750
		total supply cost		$1,758
ייlename: autospost.WQ1		TOTAL COST		$6,780

Jefferson Parish Demo

Auto Samplers LS

Monitoring & Collection

shifts per day:	1.00
hours per shift:	8.00

PLAN OF OPERATION

This item is for all equipment, labor, and materials required for the monitoring & collection of water samples from 6 automatic samplers.

The monitoring & collection operation will consist of several sub-features as follows:	**ESTIMATED HR**
Ice-application to samplers - 1 GS-9 with a truck will apply ice to samplers approximately 50 times. It will take a total of 4 hrs to apply ice to all samplers @ time.	200.00 (GS-9)
Monitoring & Collection - 1 GS-12 will manage the study and monitor the samplers on a daily basis. It is assumed that the GS-12 will work six hours/day for a year to complete the monitoring process. The GS-12 will go out to the samplers approximately 50 times throughout the year to collect samples, reprogram samplers, and set new containers. 400 hours will be included for a truck for collecting samples 50 times. The time for the GS-12 is based on 260 days X 6hrs.	1560.00 (GS-12)
In order to satisfy an additional requirement of collecting first flush samples, a GS-11 will collect samples and analyze data approximately 50 times. The time required to collect all samples will be approximately 8 hours/ event. A total of 400 hours will be required for a GS-11 and a truck for collecting first flush samples.	400.00 (GS-11)
The samples for the 12 chosen events will be packed and shipped to WES.	
Also included in this item is the washing of sample bottles. While the cost for cleaning bottles is included in the testing cost for the 12 chosen events, the remaining 38 events will require the cleaning of sample bottles. 9 bottles per site will be cleaned by a GS-9 technician. The time required to clean bottles is approximately 1.5 hrs / 9 bottles. The estimated time is based on 6 sites (9bottles/site) X 38 events X 1.5 hours.	342.00 (GS-9)

COST ESTIMATE WORKSHEET					page 2 of 2
Auto Samplers					

EQUIPMENT

t of equipment	size	no.	days	rate	amou
truck		1.00	150	$20.00	$3,000
				subtotal	$3,000
		tools	2%	of labor	$2,950
				total equipment cost	$5,950

LABOR

craft	no.	hours	rate	amou
GS-09 technician	1.00	542	$43.49	$23,572
GS-11 engineer	1.00	400	$56.68	$22,672
GS-12 engineer	1.00	1,560	$64.91	$101,260
			total labor cost	$147,503

SUPPLIES

description	unit	quantity	price	amou
safety and misc	LS	1	$10,047.00	$10,047
ice	20 # Bag	500	$2.00	$1,000
Fed Ex (1 box per sampler)	Boxes	72	$30.00	$2,160
			total supply cost	$13,207
ıame: autosam2.WQ1			TOTAL COST	$166,660

	COST ESTIMATE WORKSHEET		page 1 of 2
Jefferson Parish Demo			
Data Management		LS	
	shifts per day:		1.00
	hours per shift:		8.00

PLAN OF OPERATION

This item is for the management of data collected from
all sampling devices for the Lake Pontchartrain Demonstration Project.

The proposed grade level and respective task is listed below:

Task	Grade Level	time (weeks)
Data Management (8hrs/week)	GS-9	52 (8 hrs/week = 416 hours)

	COST ESTIMATE WORKSHEET				page 2 of 2
Data Management					
		EQUIPMENT			
unit of equipment	size	no.	hours	rate	amou
				subtotal	
		tools	2%	of labor	$362
			total equipment cost		$362

		LABOR		
craft	no.	hours	rate	amou
GS-09 technician	1.00	416.00	$43.49	$18,092
		total labor cost		$18,092

		SUPPLIES		
description	unit	quantity	price	amou
safety and misc	LS	1	$546.00	$546
		total supply cost		$546
Filename: dataman.WQ1			TOTAL COST	$19,000

	COST ESTIMATE WORKSHEET	page 1 of 2
Jefferson Parish Demo		
Water Quality Modeling		LS
	shifts per day:	1.00
	hours per shift:	8.00

PLAN OF OPERATION

This item is for the modeling of data collected from
all sampling devices for the Lake Pontchartrain Demonstration Project.

The proposed grade level and respective task is listed below:

Task	Grade Level	time (weeks)
Modeling	GS-12	12
	GS-11	8

	COST ESTIMATE WORKSHEET				page 2 of 2
'Vater Quality Modeling					
		EQUIPMENT			
unit of equipment	size	no.	hours	rate	amou
				subtotal	
		tools	2%	of labor	986
			total equipment cost		986
		LABOR			
craft		no.	weeks	rate	amou
GS-11 engineer		1.00	8	$2,267.00	18,136
GS-12 engineer		1.00	12	$2,596.00	31,152
			total labor cost		49,288
		SUPPLIES			
description	unit		quantity	price	amou
safety and misc	LS		1	$501.00	501
			total supply cost		501
				TOTAL COST	$50,775

	COST ESTIMATE WORKSHEET	page 1 of 2
Jefferson Parish Demo		
Data Documentation & Reporting		LS
	shifts per day:	1.00
	hours per shift:	8.00

PLAN OF OPERATION

This item is for the documentation and reporting of data collected from all sampling devices for the Lake Pontchartrain Demonstration Project.

The proposed grade level and respective task is listed below:

Task	Grade Level	time (weeks)
Documentation & Report	GS-12	8
	GS-11	8
	GS-9	8

	COST ESTIMATE WORKSHEET				page 2 of 2
Data Documentation & Reporting					
		EQUIPMENT			
unit of equipment	size	no.	hours	rate	amou
				subtotal	
		tools	2%	of labor	$1,056
			total equipment cost		$1,056
		LABOR			
craft		no.	weeks	rate	amou
GS-09 technician		1.00	8	$1,739.00	$13,912
GS-11 engineer		1.00	8	$2,267.00	$18,136
GS-12 engineer		1.00	8	$2,596.00	$20,768
			total labor cost		$52,816
		SUPPLIES			
description	unit		quantity	price	amou
safety and misc	LS		1	$478.00	$478
			total supply cost		$478
				TOTAL COST	$54,350

TABLE 1

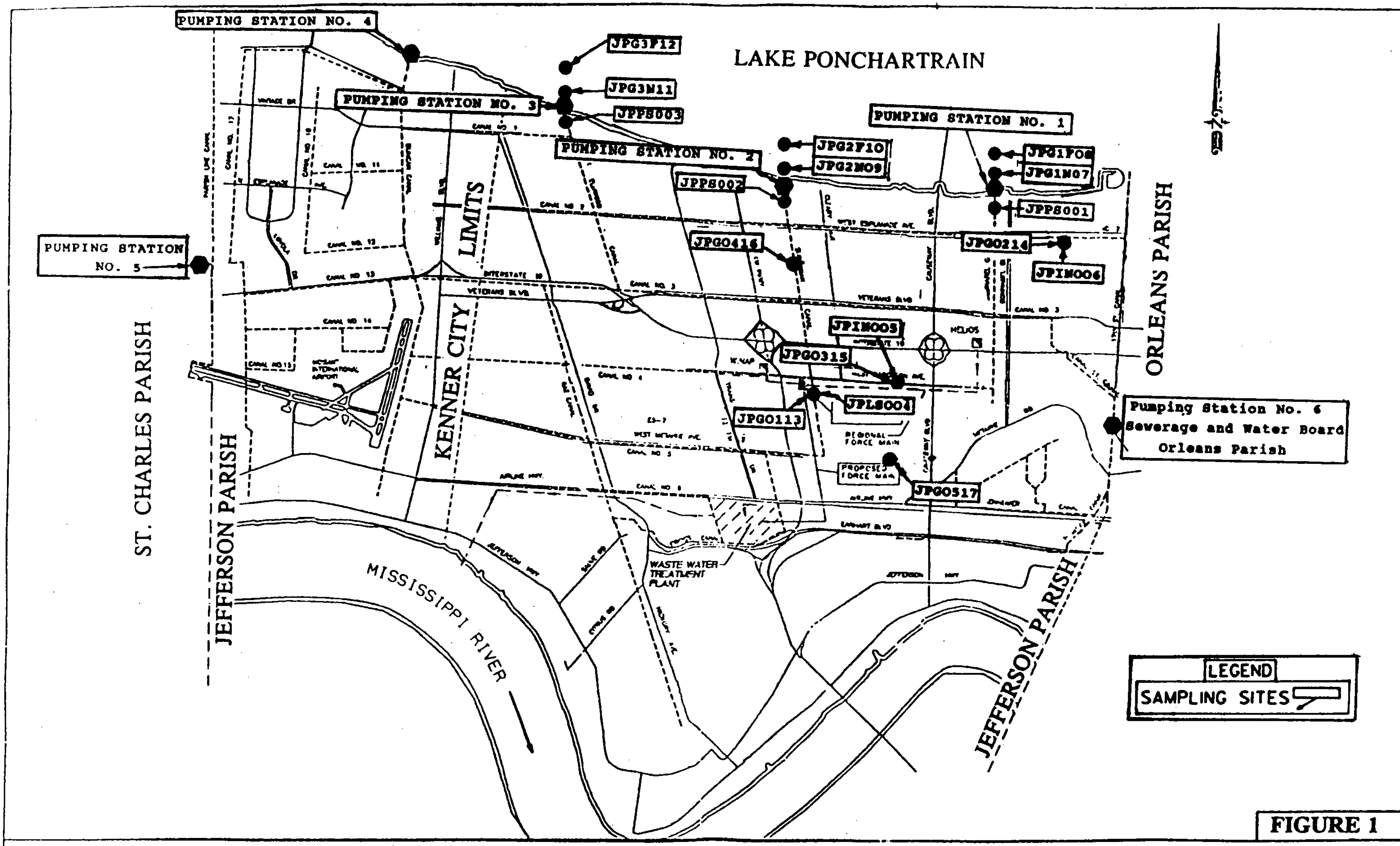
WATER QUALITY LABORATORY COST ESTIMATE

Parameters	COST/EA	Total Samples at Site JPPS001	COST	Total Samples at Site JPPS002	COST	Total Samples at Site JPPS003	COST	Total Samples at Site JPLS004	COST	Total Samples at Site JPIN005	COST	Total Samples at Site JPIN006	COST	Total Samples at Site JPG1N07	COST	Total Samples at Site JPG1F08	COST	Total Samples at Site JPG2N09	COST
Total Suspended Solids (TSS)	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Total Dissolved Solids (TDS)	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Volatile Solids	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Biochemical Oxygen Demand (BOD)	$20	24	$480	24	$480	24	$480	24	$480	24	$480	24	$480	48	$960	36	$720	48	$960
Chemical Oxygen Demand (COD)	$20	24	$480	24	$480	24	$480	24	$480	24	$480	24	$480	48	$960	36	$720	48	$960
Total Phosphorus	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Dissolved Phosphorus	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Fecal Coliform	$25	24	$600	24	$600	24	$600	24	$600	24	$600	24	$600	48	$1,200	36	$900	48	$1,200
E. Coli	$25	24	$600	24	$600	24	$600	24	$600	24	$600	24	$600	48	$1,200	36	$900	48	$1,200
Hardness (as CaCO3)	$20	24	$480	24	$480	24	$480	24	$480	24	$480	24	$480	48	$960	36	$720	48	$960
Total Kieldahl Nitrogen (TKN)	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Nitrate + Nitrite	$30	24	$720	24	$720	24	$720	24	$720	24	$720	24	$720	48	$1,440	36	$1,080	48	$1,440
Total Organic Carbon (TOC)	$20	24	$480	24	$480	24	$480	24	$480	24	$480	24	$480	48	$960	36	$720	48	$960
Total Copper	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Total Lead	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Total Zinc	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Liquid Sample Digest	$20	24	$480	24	$480	24	$480	24	$480	24	$480	24	$480	48	$960	36	$720	48	$960
pH	$5	24	$120	24	$120	24	$120	24	$120	24	$120	24	$120	48	$240	36	$180	48	$240
Oil & Grease	$40	24	$960	24	$960	24	$960	24	$960	24	$960	24	$960	48	$1,920	36	$1,440	48	$1,920
Ammonia	$15	24	$360	24	$360	24	$360	24	$360	24	$360	24	$360	48	$720	36	$540	48	$720
Diazinon	$70	24	$1,680	24	$1,680	24	$1,680	24	$1,680	24	$1,680	24	$1,680	48	$3,360	36	$2,520	48	$3,360
Malathion	$12	24	$288	24	$288	24	$288	24	$288	24	$288	24	$288	48	$576	36	$432	48	$576
Glyphosate	$70	24	$1,680	24	$1,680	24	$1,680	24	$1,680	24	$1,680	24	$1,680	48	$3,360	36	$2,520	48	$3,360
TOTAL			$12,648		$12,648		$12,648		$12,648		$12,648		$12,648		$25,296		$18,972		$25,296

TABLE 1 (CONTINUED)

WATER QUALITY LABORATORY COST ESTIMATE

Parameters	COST/EA	Total Samples at Site JPG2F10	COST	Total Samples at Site JPG3N11	COST	Total Samples at Site JPG3F12	COST	Total Samples at Site JPG0113	COST	Total Samples at Site JPG0214	COST	Total Samples at Site JPG0315	COST	Total Samples at Site JPG0416	COST	Total Samples at Site JPG0517	COST	GRAND TOTAL
Total Suspended Solids (TSS)	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$180	12	$180	$6,840
Total Dissolved Solids (TDS)	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$180	12	$180	$6,840
Volatile Solids	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$180	12	$180	$6,840
Biochemical Oxygen Demand (BOD)	$20	36	$720	48	$960	36	$720	12	$240	12	$240	12	$240	12	$240	12	$240	$6,840
Chemical Oxygen Demand (COD)	$20	36	$720	48	$960	36	$720	12	$240	12	$240	12	$240	12	$240	12	$240	$9,120
Total Phosphorus	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$240	12	$240	$9,120
Dissolved Phosphorus	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$180	12	$180	$6,840
Fecal Coliform	$25	36	$900	48	$1,200	36	$900	12	$300	12	$300	12	$300	12	$180	12	$180	$6,840
E. Coli	$25	36	$900	48	$1,200	36	$900	12	$300	12	$300	12	$300	12	$300	12	$300	$11,400
Hardness (as CaCO3)	$20	36	$720	48	$960	36	$720	12	$240	12	$240	12	$240	12	$300	12	$300	$11,400
Total Kieldahl Nitrogen (TKN)	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$240	12	$240	$9,120
Nitrate + Nitrite	$30	36	$1,080	48	$1,440	36	$1,080	12	$360	12	$360	12	$360	12	$180	12	$180	$6,840
Total Organic Carbon (TOC)	$20	36	$720	48	$960	36	$720	12	$240	12	$240	12	$240	12	$360	12	$360	$13,680
Total Copper	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$240	12	$240	$9,120
Total Lead	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$180	12	$180	$6,840
Total Zinc	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$180	12	$180	$6,840
Liquid Sample Digest	$20	36	$720	48	$960	36	$720	12	$240	12	$240	12	$240	12	$180	12	$180	$6,840
pH	$5	36	$180	48	$240	36	$180	12	$60	12	$60	12	$60	12	$240	12	$240	$9,120
Oil & Grease	$40	36	$1,440	48	$1,920	36	$1,440	12	$480	12	$480	12	$480	12	$60	12	$60	$2,280
Ammonia	$15	36	$540	48	$720	36	$540	12	$180	12	$180	12	$180	12	$480	12	$480	$18,240
Diazinon	$70	36	$2,520	48	$3,360	36	$2,520	12	$840	12	$840	12	$840	12	$180	12	$180	$6,840
Malathion	$12	36	$432	48	$576	36	$432	12	$144	12	$144	12	$144	12	$840	12	$840	$31,920
Glyphosate	$70	36	$2,520	48	$3,360	36	$2,520	12	$840	12	$840	12	$840	12	$144	12	$144	$5,472
														12	$840	12	$840	$31,920
TOTAL			$18,972		$25,296		$18,972		$6,324		$6,324		$6,324		$6,324		$6,324	$240,312



SAMPLING SITE LOCATIONS

LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH DEMONSTRATION PROJECT

Cultural Resources Survey

APPENDIX D

APPENDIX D

4

Edwin W. Edwards
Governor

Melinda Schwegmann
Lieutenant Governor
and Commissioner

Mark H. Hilzim
Secretary

Gerri Hobdy
Assistant Secretary

State of Louisiana
Department of Culture, Recreation and Tourism
OFFICE OF CULTURAL DEVELOPMENT

April 29, 1994

Mr. R. H. Schroeder, Jr.
Chief, Planning Division
Department of the Army
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

Re: Proposed Demonstration Project
Urban Storm Water Runoff
Metairie, Jefferson Parish, LA

Dear Mr. Schroeder:

Reference is made to your letter dated March 24, 1994 concerning the above. We have completed our review of the proposed project plans and have the following comments to offer.

Based on the information contained in your letter describing the nature of the proposed construction and its location, it is our opinion that significant historic properties should not be affected. The protocol you have established for reporting unanticipated archaeological discoveries will insure that any finds of this nature will be properly assessed.

We concur with your assessment that additional cultural resources work is not warranted for this project. Should you have any questions concerning our comments, please contact Mr. Duke Rivet in the Division of Archaeology at (504) 342-8170.

Sincerely,

Gerri Hobdy

Gerri Hobdy
State Historic Preservation Officer

GH:PR:s

Division of Archaeology
P.O.Box 44247 (1051 N. Third Street)
Baton Rouge, LA 70804
(504) 342-8170
Fax: (504) 342-3207
"An Equal Opportunity Employer"

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

0 . \ 9-276

OK
HP 4/7/94
AB

March 24, 1994

REPLY TO
ATTENTION OF:

Planning Division
Environmental Analysis Branch

MAR 25 94

Ms. Gerri Hobdy
State Historic Preservation Officer
Department of Culture, Recreation, and Tourism
Office of Cultural Development
P.O. Box 44247
Baton Rouge, Louisiana 70804

Dear Ms. Hobdy:

The New Orleans District is planning a demonstration project to select a practical method of improving the water quality of Lake Pontchartrain and the Mississippi River by improving the quality of storm water discharges into these bodies of water. This demonstration project for urban storm water runoff is authorized under Section 307 of the Water Resources Development Act of 1992 (Public Law 102-580).

The proposed demonstration project will consist of constructing a 33,000-gallon-per-minute (gpm) sewer lift pumping station adjacent to the Suburban Canal near the intersection of Canal No. 4 and West Napoleon Avenue in Metairie. In addition, approximately 13,500 linear feet of 48-inch diameter sewer force main will be placed along the existing utility corridor on West Napoleon and North Woodlawn Avenues, and along the right-of-way of the Louisiana and Arkansas Railroad until the sewer force main enters the Eastbank Wastewater Treatment Plant.

The work completed for the report titled Preserving the Past for the Future: A Comprehensive Archeological and Historic Sites Inventory of Jefferson Parish, Louisiana, by R. Christopher Goodwin in 1985, did not identify any prehistoric or historic sites in the project area.

In the prehistoric and historic periods, the area between the natural levee of the Mississippi River and Lake Pontchartrain was marsh and swamp. Early French settlers established plantations along the Mississippi River with ownership of land from the Mississippi River to Lake Pontchartrain, but the land in the swamp was uninhabited until drained.

The sewer lift pumping station will be constructed adjacent to the Suburban Canal. This area is located adjacent to Canal No. 4 and the Suburban Canal and is presently occupied by a house built in recent years. Construction of these canals severely disturbed this area of the project.

The sewer main will be constructed under a 50-foot right-of-way along urban streets and a railroad corridor. Research in drainage, sewerage, and utilities maps has shown that the ground under and around Woodlawn Street and other streets in the project corridor has been severely disturbed by construction activities. Sewer lines are the deepest of all utility lines in the area and range from 4 feet to 12 feet deep with most sewers approximately 8 feet under present ground level. Construction of the sewers required disturbing the area below this level to place the utilities in the trench. Engineers estimate that an area two feet below the bottom of the trench was disturbed during construction. Other utilities, including drainage, are located along the project corridor either under the road or immediately on either side of the road within the 50-foot right-of-way.

Parts of the project area have been filled during construction of houses, particularly in the area of recent construction closest to Lake Pontchartrain. Streets were dug into the ground and the dirt was used for fill for the front yards of houses.

The entire project area was inspected by a New Orleans District archeologist. Houses are all of post-World War II construction and many were built in the 1960s. There are no standing structures eligible for the National Register of Historic Places.

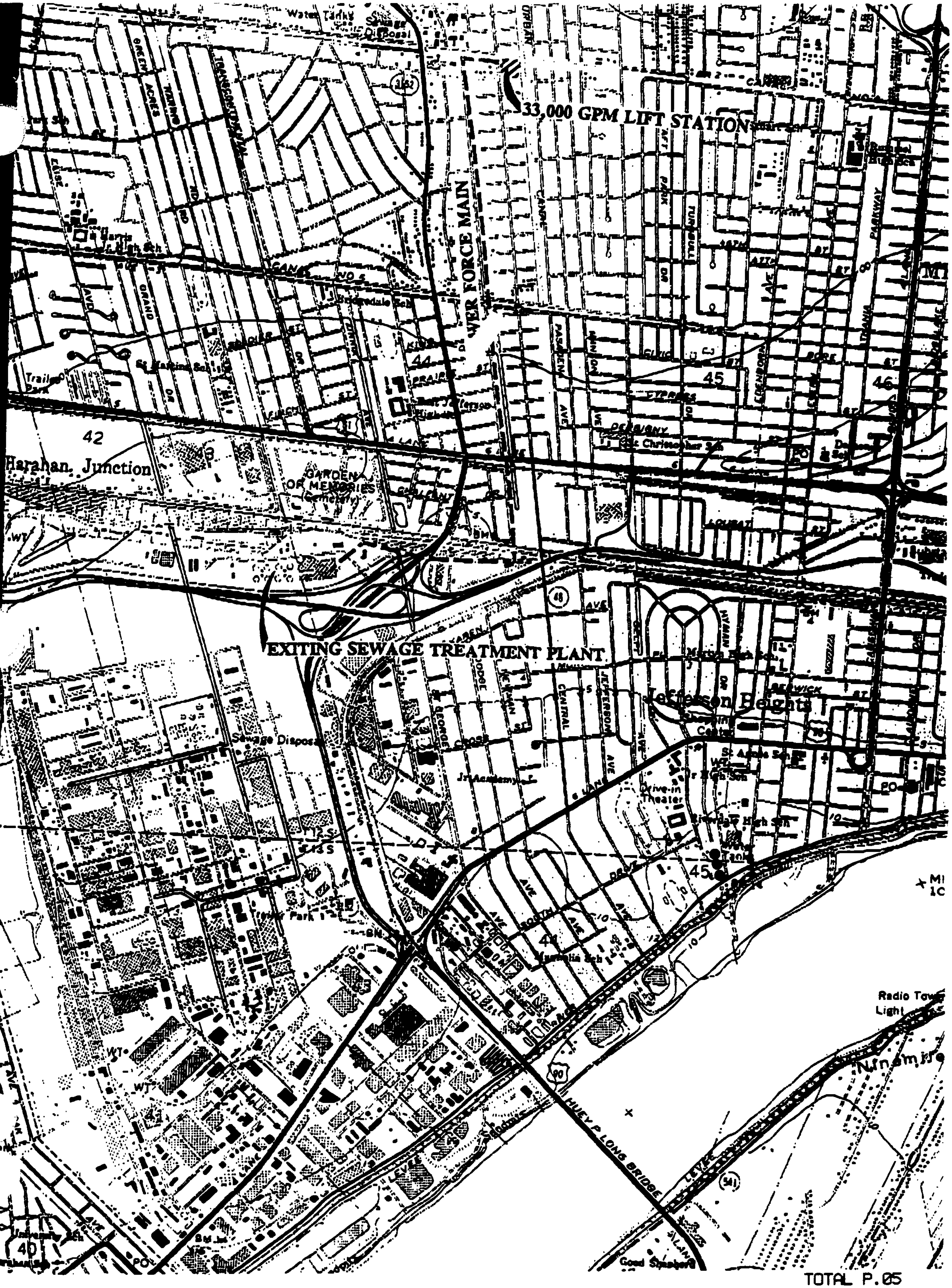
In the unlikely event that construction disturbs a site potentially eligible for the National Register of Historic Places, construction inspectors and other construction personnel will be instructed to avoid adverse impacts to the buried site. If any archeological or historical remains are discovered in the course of construction, the contractor will leave the archeological material undisturbed and will immediately report the discovery to the Contracting Officer. At that time, procedures will be implemented to avoid adverse impacts to any sites potentially eligible for the National Register of Historic Places.

We are confident that no significant cultural resources exist in the project area and we do not plan to undertake additional cultural resources work for this project. Please contact Dr. Edwin Lyon at (504) 862-2038 if you have any questions.

Sincerely,

R. H. Schroeder, Jr.
Chief, Planning Division

Enclosure


33,000 GPM LIFT STATION
WER FORCE MAIN
EXITING SEWAGE TREATMENT PLANT
Harahan Junction
GARDEN OF MEMORIES (Cemetery)
Jefferson Heights
Sewage Disposal
Drive-in Theater
HUEY P LONG BRIDGE
Trailer Park
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APPENDIX E

LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH DEMONSTRATION PROJECT

M-CACES Cost Estimate
Preliminary Construction Costs
48-Inch Sewer Force Main
60-Inch Sewer Force Main

Detailed Cost Estimate
20,000 GPM Pumping Lift Station

APPENDIX E

Jeff Parish Stormwtr Quality-48"
Demonstration Project

Preliminary Construction Costs
48" Dia. Sewer Force Main

Designed By:
Estimated By: Cost Engineering Branch, NOD

Prepared By: Cost Engineering Branch
New Orleans District

Preparation Date: 08/23/95
Effective Date of Pricing: 08/23/95

Sales Tax: 8.75%

* * * END TABLE OF CONTENTS * * *

** PROJECT OWNER SUMMARY - Feature **

	QUANTITY UOM	CONTRACT	CONTINGN	Contingn	OTHER	TOTAL COST	UNIT COST
A Stormwater Qualtiy Demo Project							
A 19 Buildings, Grounds, & Utilities		6,857,900	0	0	0	6,857,900	
TOTAL Stormwater Qualtiy Demo Project		6,857,900	0	0	0	6,857,900	
TOTAL Jeff Parish Stormwtr Quality-48"	1.00 EA	6,857,900	0	0	0	6,857,900	6857900

** PROJECT OWNER SUMMARY - bid-item **

		QUANTITY	UOM	CONTRACT	CONTINGN	Contingn	OTHER	TOTAL COST	UNIT COST
A	Stormwater Qualtiy Demo Project								
A 19	Buildings, Grounds, & Utilities								
A 1900	Buildings, Grounds, & Utilities								
A 190018	Utility Work & Associated Item								
A 19001800	48" Dia. Sewer Force Main								
A 19001800 01	Mob & Demob	4.00	WD	120,000	0	0	0	120,000	30000.00
A 19001800 02	Removal of Structures and			46,000	0	0	0	46,000	
A 19001800 03	Traffic Control			42,000	0	0	0	42,000	
A 19001800 04	Constr Photo and Video			31,000	0	0	0	31,000	
A 19001800 05	seismic monitoring			16,000	0	0	0	16,000	
A 19001800 06	48" dia force main	12300.00	LF	2,583,000	0	0	0	2,583,000	210.00
A 19001800 07	limestone bedding	8200.00	CY	266,500	0	0	0	266,500	32.50
A 19001800 08	riversand backfill	45100.00	CY	394,625	0	0	0	394,625	8.75
A 19001800 09	wood sheeting	825.00	MFB	445,500	0	0	0	445,500	540.00
19001800 10	geotextile fabric	32800.00	SY	131,200	0	0	0	131,200	4.00
19001800 11	unclassified excavation	65600.00	CY	246,000	0	0	0	246,000	3.75
A 19001800 12	remove and replace concre	22500.00	SY	978,750	0	0	0	978,750	43.50
A 19001800 13	remove and replace asphal	900.00	SY	25,200	0	0	0	25,200	28.00
A 19001800 14	riversand subbase	17500.00	CY	157,500	0	0	0	157,500	9.00
A 19001800 15	remove & replace conc dri	1800.00	SY	78,300	0	0	0	78,300	43.50
A 19001800 16	remove & replace conc sid	2850.00	SY	123,975	0	0	0	123,975	43.50
A 19001800 17	sod	4000.00	SY	25,000	0	0	0	25,000	6.25
A 19001800 18	adjust sewer house connec	25.00	EA	27,500	0	0	0	27,500	1100.00
A 19001800 19	adjust water house connec	25.00	EA	8,750	0	0	0	8,750	350.00
A 19001800 20	waterline offsets	21.00	EA	44,100	0	0	0	44,100	2100.00
A 19001800 21	conflict box	30.00	EA	177,000	0	0	0	177,000	5900.00
A 19001800 22	catch basins	40.00	EA	148,000	0	0	0	148,000	3700.00
A 19001800 23	48"x36" tapping sleeve &	1.00	EA	32,000	0	0	0	32,000	32000.00
A 19001800 24	aerial crossing @ W. Meta			14,000	0	0	0	14,000	
A 19001800 25	Connection to Existing F.			216,000	0	0	0	216,000	
A 19001800 26	jack & bore @ Airline Hwy			225,000	0	0	0	225,000	
A 19001800 27	jack & bore @ railroad			225,000	0	0	0	225,000	
A 19001800 28	tie in at S.T.P.			30,000	0	0	0	30,000	
	TOTAL 48" Dia. Sewer Force Main			6,857,900	0	0	0	6,857,900	
	TOTAL Utility Work & Associated			6,857,900	0	0	0	6,857,900	
	TOTAL Buildings, Grounds, & Uti			6,857,900	0	0	0	6,857,900	
	TOTAL Buildings, Grounds, & Uti			6,857,900	0	0	0	6,857,900	
	TOTAL Stormwater Qualtiy Demo P			6,857,900	0	0	0	6,857,900	
	TOTAL Jeff Parish Stormwtr Qual	1.00	EA	6,857,900	0	0	0	6,857,900	6857900

** PROJECT INDIRECT SUMMARY - Feature **

	QUANTITY UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A Stormwater Qualtiy Demo P									
A 19 Buildings, Grounds, &		5,486,320	1,371,580	0	0	0	0	6,857,900	
TOTAL Stormwater Qualtiy Dem		5,486,320	1,371,580	0	0	0	0	6,857,900	
TOTAL Jeff Parish Stormwtr Q	1.00 EA	5,486,320	1,371,580	0	0	0	0	6,857,900	6857900

** PROJECT INDIRECT SUMMARY - bid-item **

		QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A	Stormwater Qualtiy Demo P										
A 19	Buildings, Grounds, &										
A 1900	Buildings, Grounds,										
A 190018	Utility Work & Ass										
A 19001800	48" Dia. Sewer F										
A 19001800 01	Mob & Demob	4.00	WD	96,000	24,000	0	0	0	0	120,000	30000.00
A 19001800 02	Removal of St			36,800	9,200	0	0	0	0	46,000	
A 19001800 03	Traffic Contr			33,600	8,400	0	0	0	0	42,000	
A 19001800 04	Constr Photo			24,800	6,200	0	0	0	0	31,000	
A 19001800 05	seismic monit			12,800	3,200	0	0	0	0	16,000	
A 19001800 06	48" dia force	12300.00	LF	2,066,400	516,600	0	0	0	0	2,583,000	210.00
A 19001800 07	limestone bed	8200.00	CY	213,200	53,300	0	0	0	0	266,500	32.50
A 19001800 08	riversand bac	45100.00	CY	315,700	78,925	0	0	0	0	394,625	8.75
A 19001800 09	wood sheeting	825.00	MFB	356,400	89,100	0	0	0	0	445,500	540.00
A 19001800 10	geotextile fa	32800.00	SY	104,960	26,240	0	0	0	0	131,200	4.00
A 19001800 11	unclassified	65600.00	CY	196,800	49,200	0	0	0	0	246,000	3.75
A 19001800 12	remove and re	22500.00	SY	783,000	195,750	0	0	0	0	978,750	43.50
A 19001800 13	remove and re	900.00	SY	20,160	5,040	0	0	0	0	25,200	28.00
A 19001800 14	riversand sub	17500.00	CY	126,000	31,500	0	0	0	0	157,500	9.00
A 19001800 15	remove & repl	1800.00	SY	62,640	15,660	0	0	0	0	78,300	43.50
A 19001800 16	remove & repl	2850.00	SY	99,180	24,795	0	0	0	0	123,975	43.50
A 19001800 17	sod	4000.00	SY	20,000	5,000	0	0	0	0	25,000	6.25
A 19001800 18	adjust sewer	25.00	EA	22,000	5,500	0	0	0	0	27,500	1100.00
A 19001800 19	adjust water	25.00	EA	7,000	1,750	0	0	0	0	8,750	350.00
A 19001800 20	waterline off	21.00	EA	35,280	8,820	0	0	0	0	44,100	2100.00
A 19001800 21	conflict box	30.00	EA	141,600	35,400	0	0	0	0	177,000	5900.00
A 19001800 22	catch basins	40.00	EA	118,400	29,600	0	0	0	0	148,000	3700.00
A 19001800 23	48"x36" tappi	1.00	EA	25,600	6,400	0	0	0	0	32,000	32000.00
A 19001800 24	aerial crossi			11,200	2,800	0	0	0	0	14,000	
A 19001800 25	Connection to			172,800	43,200	0	0	0	0	216,000	
A 19001800 26	jack & bore @			180,000	45,000	0	0	0	0	225,000	
A 19001800 27	jack & bore @			180,000	45,000	0	0	0	0	225,000	
A 19001800 28	tie in at S.T			24,000	6,000	0	0	0	0	30,000	
	TOTAL 48" Dia. Sewe			5,486,320	1,371,580	0	0	0	0	6,857,900	
	TOTAL Utility Work			5,486,320	1,371,580	0	0	0	0	6,857,900	
	TOTAL Buildings, Gr			5,486,320	1,371,580	0	0	0	0	6,857,900	
	TOTAL Buildings, Gr			5,486,320	1,371,580	0	0	0	0	6,857,900	
	TOTAL Stormwater Qu			5,486,320	1,371,580	0	0	0	0	6,857,900	
	TOTAL Jeff Parish S	1.00	EA	5,486,320	1,371,580	0	0	0	0	6,857,900	6857900

** PROJECT DIRECT SUMMARY - Feature **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A Stormwater Qualtiy Demo Project								
A 19 Buildings, Grounds, & Utilities			873,557	411,890	2,540,418	1,660,456	5,486,320	
TOTAL Stormwater Qualtiy Demo Project			873,557	411,890	2,540,418	1,660,456	5,486,320	
TOTAL Jeff Parish Stormwtr Quality-48"	1.00	EA	873,557	411,890	2,540,418	1,660,456	5,486,320	5486320
Distribution							1,371,580	
TOTAL INCL INDIRECTS							6,857,900	

** PROJECT DIRECT SUMMARY - bid-item **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A	Stormwater Qualtiy Demo Project								
A 19	Buildings, Grounds, & Utilities								
A 1900	Buildings, Grounds, & Utilities								
A 190018	Utility Work & Associated Items								
A 19001800	48" Dia. Sewer Force Main								
A 19001800 01	Mob & Demob	4.00	WD	27,576	57,989	0	10,436	96,000	24000.00
A 19001800 02	Removal of Structures and O			17,837	16,576	0	2,387	36,800	
A 19001800 03	Traffic Control			3,480	3,055	20,669	6,396	33,600	
A 19001800 04	Constr Photo and Video			0	0	0	24,800	24,800	
A 19001800 05	seismic monitoring			0	0	0	12,800	12,800	
A 19001800 06	48" dia force main	12300.00	LF	322,227	105,116	1,566,489	72,568	2,066,400	168.00
A 19001800 07	limestone bedding	8200.00	CY	23,185	8,704	178,350	2,961	213,200	26.00
A 19001800 08	riversand backfill	45100.00	CY	51,008	17,679	245,231	1,781	315,700	7.00
A 19001800 09	wood sheeting	825.00	MFB	62,673	22,385	269,156	2,186	356,400	432.00
A 19001800 10	geotextile fabric	32800.00	SY	37,097	12,858	53,505	1,501	104,960	3.20
19001800 11	unclassified excavation	65600.00	CY	76,457	112,886	0	7,458	196,800	3.00
A 19001800 12	remove and replace concrete	22500.00	SY	0	0	0	783,000	783,000	34.80
A 19001800 13	remove and replace asphalt	900.00	SY	0	0	0	20,160	20,160	22.40
A 19001800 14	riversand subbase	17500.00	CY	13,963	13,729	95,156	3,152	126,000	7.20
A 19001800 15	remove & replace conc drive	1800.00	SY	0	0	0	62,640	62,640	34.80
A 19001800 16	remove & replace conc sidew	2850.00	SY	0	0	0	99,180	99,180	34.80
A 19001800 17	sod	4000.00	SY	4,926	0	14,790	284	20,000	5.00
A 19001800 18	adjust sewer house connecti	25.00	EA	16,710	3,213	1,414	664	22,000	880.00
A 19001800 19	adjust water house connecti	25.00	EA	5,570	1,071	272	87	7,000	280.00
A 19001800 20	waterline offsets	21.00	EA	14,036	2,699	16,900	1,646	35,280	1680.00
A 19001800 21	conflict box	30.00	EA	107,830	17,359	14,029	2,382	141,600	4720.00
A 19001800 22	catch basins	40.00	EA	79,821	12,850	25,013	717	118,400	2960.00
A 19001800 23	48"x36" tapping sleeve & va	1.00	EA	0	0	0	25,600	25,600	25600.00
A 19001800 24	aerial crossing @ W. Metair			4,212	1,992	4,851	145	11,200	
A 19001800 25	Connection to Existing F.M.			1,572	513	16,965	153,750	172,800	
A 19001800 26	jack & bore @ Airline Hwy.			0	0	0	180,000	180,000	
A 19001800 27	jack & bore @ railroad			0	0	0	180,000	180,000	
A 19001800 28	tie in at S.T.P.			3,379	1,218	17,628	1,775	24,000	
	TOTAL 48" Dia. Sewer Force Main			873,557	411,890	2,540,418	1,660,456	5,486,320	
	TOTAL Utility Work & Associated I			873,557	411,890	2,540,418	1,660,456	5,486,320	
	TOTAL Buildings, Grounds, & Utili			873,557	411,890	2,540,418	1,660,456	5,486,320	
	TOTAL Buildings, Grounds, & Utili			873,557	411,890	2,540,418	1,660,456	5,486,320	
	TOTAL Stormwater Qualtiy Demo Pro			873,557	411,890	2,540,418	1,660,456	5,486,320	
	TOTAL Jeff Parish Stormwtr Qualit	1.00	EA	873,557	411,890	2,540,418	1,660,456	5,486,320	5486320

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
Distribution							1,371,580	
TOTAL INCL INDIRECTS							6,857,900	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds, & Utilities

A 19001800 01. Mob & Demob

This item is for labor, equipment, and materials required to mobilize to the jobsite. This item includes enough equipment for 2 crews. Allow 2 wd for mobilization. Demobilization will be 1/2 mob time. Also allow 1 wd for various movement around the project site.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM AIR COMPRESSOR 9					0.00	7.79	0.00	0.00	7.79	
00 CFM	64.00	HR	AIRC	1.00	0	499	0	0	499	7.79
USR PM LDR/BKHOE KENT R					0.00	1.94	0.00	0.00	1.94	
AM 999,CHISEL	64.00	HR	BKHF	1.00	0	124	0	0	124	1.94
USR PM 2.0 concrete buc					0.00	0.33	0.00	0.00	0.33	
ket - manual	64.00	HR	BKTA	1.00	0	21	0	0	21	0.33
USR PM CHERRYPICKER GRO					0.00	13.99	0.00	0.00	13.99	
VE 18 TON	64.00	HR	CHYA	1.00	0	895	0	0	895	13.99
USR PM MANUAL COMPACTOR					0.00	0.53	0.00	0.00	0.53	
WACKER GVR 151	192.00	HR	COMP	1.00	0	102	0	0	102	0.53
USR PM DOZER D-4 W/BLAD					0.00	8.12	0.00	0.00	8.12	
E	128.00	HR	DOZA	1.00	0	1,039	0	0	1,039	8.12
USR PM DOZER D-6 W/BLAD					0.00	13.98	0.00	0.00	13.98	
E	64.00	HR	DOZB	1.00	0	895	0	0	895	13.98
USR PM MOTOR GRADER CAT					0.00	13.56	0.00	0.00	13.56	
12-G	64.00	HR	MOTG	1.00	0	868	0	0	868	13.56
USR PM PILE HAMMER VULC					0.00	6.48	0.00	0.00	6.48	
AN 06 900 CFM	32.00	HR	PILC	1.00	0	207	0	0	207	6.48
USR PM WELDER 400 AMP					0.00	1.08	0.00	0.00	1.08	
	128.00	HR	WELD	1.00	0	138	0	0	138	1.08
USR PM PEO DRAGLINE - M					19.60	0.00	0.00	0.00	19.60	
ETRO RATE	96.00	HR	DOPM	1.00	1,882	0	0	0	1,882	19.60

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM LABORER - METRO					12.32	0.00	0.00	0.00	12.32	
RATE	128.00	HR	LABM	1.00	1,576	0	0	0	1,576	12.32
USR PM OILER - METRO RA					12.32	0.00	0.00	0.00	12.32	
TE	224.00	HR	OILM	1.00	2,759	0	0	0	2,759	12.32
USR PM PEO-ALL EXCPT DR					19.60	0.00	0.00	0.00	19.60	
GLNE-METRO RATE	800.00	HR	PEOM	1.00	15,680	0	0	0	15,680	19.60
USR PM TRUCK DRIVER - M					12.68	0.00	0.00	0.00	12.68	
ETRO RATE	448.00	HR	TRKM	1.00	5,678	0	0	0	5,678	12.68
USR PM trailering charg					0.00	1300.00	0.00	0.00	1300.00	
es - large	26.00	EA		0.00	0	33,800	0	0	33,800	1300.00
USR PM trailering charg					0.00	900.00	0.00	0.00	900.00	
es - small	8.00	EA		0.00	0	7,200	0	0	7,200	900.00
USR PM safety & misc					0.00	0.00	0.00	10435.52	10435.52	
	1.00	LS		0.00	0	0	0	10,436	10,436	10435.52
USR PM AIR COMPRESSOR					0.00	2.90	0.00	0.00	2.90	
250 CFM	64.00	HR	AIRF	1.00	0	186	0	0	186	2.90
USR PM BACKHOE CAT 225B					0.00	21.27	0.00	0.00	21.27	
1.25 CY	128.00	HR	BKHB	1.00	0	2,723	0	0	2,723	21.27
USR PM BKHOE JD 510C 1.					0.00	5.85	0.00	0.00	5.85	
25cy FEL,18"bkh	160.00	HR	BKHD1	1.00	0	936	0	0	936	5.85
USR PM chainsaw, Homeli					0.00	0.18	0.00	0.00	0.18	
te 31"	96.00	HR	CHNSAW	1.00	0	17	0	0	17	0.18
USR PM CRANE LS 138 75					0.00	36.20	0.00	0.00	36.20	
T 150' boom	32.00	HR	CRNE	1.00	0	1,158	0	0	1,158	36.20
USR PM PILE DRIVING LEA					0.00	3.36	0.00	0.00	3.36	
DS -10"x37" 60'	32.00	HR	CRNL1	1.00	0	108	0	0	108	3.36

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM F E LOADER CAT 9					0.00	9.42	0.00	0.00	9.42	
26 2.0 CY wheel	128.00	HR	FELB	1.00	0	1,206	0	0	1,206	9.42
USR PM WATER PUMP 3" HO					0.00	0.15	0.00	0.00	0.15	
MELITE	160.00	HR	PMPC	1.00	0	24	0	0	24	0.15
USR PM PAVING BREAKER					0.00	0.24	0.00	0.00	0.24	
B87C 50CFM	128.00	HR	PVBA	1.00	0	31	0	0	31	0.24
USR PM ROLLER smooth,					0.00	6.77	0.00	0.00	6.77	
SP, 8-12T	64.00	HR	ROLD	1.00	0	433	0	0	433	6.77
USR PM Hydr crane, 7T,					0.00	6.16	0.00	0.00	6.16	
ADD truck	64.00	HR	T40XX002	1.00	0	394	0	0	394	6.16
USR PM Ford trk, LTS800					0.00	8.60	0.00	0.00	8.60	
0, 54k GVW, 3 ax	64.00	HR	T50F0014	1.00	0	550	0	0	550	8.60
USR PM FARM TRACTOR JD					0.00	2.31	0.00	0.00	2.31	
2355	64.00	HR	TRCB	1.00	0	148	0	0	148	2.31
USR PM WATER TRUCK 2000					0.00	5.89	0.00	0.00	5.89	
GAL	32.00	HR	TRKA	1.00	0	188	0	0	188	5.89
USR PM PICKUP TRUCK .7					0.00	1.61	0.00	0.00	1.61	
5 TON GAS	64.00	HR	TRKC	1.00	0	103	0	0	103	1.61
USR PM DUMP TRUCK 12 C					0.00	7.77	0.00	0.00	7.77	
Y	192.00	HR	TRKE	1.00	0	1,492	0	0	1,492	7.77
USR PM flatbed trk,8x16					0.00	11.35	0.00	0.00	11.35	
,64k GVW,350HP	96.00	HR	TRKJ	1.00	0	1,090	0	0	1,090	11.35
USR PM Hydr crane, trk					0.00	22.09	0.00	0.00	22.09	
mtd, 25T, 80' bm	64.00	HR	CRNM	1.00	0	1,414	0	0	1,414	22.09
TOTAL Mob & Demob	4.00	WD			27,576	57,989	0	10,436	96,000	24000.00

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 02. Removal of Structures and Obstrc

This item is for all labor, equipment, and materials required for the removal of miscellaneous concrete obstructions. This item allows for the removal of 20 seperate concrete obstructions using a ldr/bkh with a air ram chisel and dump trucks to dispose of the debris. A second ldr/bkh will be used to load the debris into the trucks. Allow 16 cy debris/obstruction = 32 tons/obstruction with a disposal fee of $3/ton. Removal will be done at a rate of 1 obstruction per day.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM demolish & remv					891.83	828.80	0.00	0.00	1720.63	
obstructions	20.00	EA	DEMCM2	0.10	17,837	16,576	0	0	34,413	1720.63
USR PM disposal fee 20					0.00	0.00	0.00	3.00	3.00	
@ 32 tons	640.00	TON		0.00	0	0	0	1,920	1,920	3.00
USR PM safety & misc					0.00	0.00	0.00	467.48	467.48	
	1.00	LS		0.00	0	0	0	467	467	467.48
TOTAL Removal of Struc					17,837	16,576	0	2,387	36,800	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 03. Traffic Control

This item is for all labor, equipment, and materials required to provide traffic control for the project. Three methods are used: a temporary by-pass road, concrete lane barricades, and traffic signs.

A) Temporary By-pass road
Use 2 temporary by-pass roads, 150' long each x 15' wide. Use 8" crushed stone = 120 cy. The material will be truck delivered, placed and spread by a small dozer assisted by a laborer/spotter, and compacted by a roller. Allow 2 wd.

B) Jersey Barricades
Use 450 lf of concrete lane barriers. The barriers will be delivered by a supplier and placed by a truck crane. Allow 1 wd to set out initially, 1 wd to move to the other side, and 1 wd to pick up and remove.

C) Signs
Allow for the following traffic signs:

12 rectangular "caution" type signs (5 sf/ea) = 40 sf
4 rectangular gen. construction signs (12 sf/ea) = 48 sf
16 diamond "warning" type signs (16 sf/ea) = 256 sf
8 diamond "caution" type signs (9 sf/ea) = 72 sf
44 sign posts
88 bolt & nut assemblies

Allow for misc reflectors and barrels also

Allow 3 wd to install the signs/traffic controls and 1 wd for removal.

Item	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM place surfacing					8.59	5.41	0.00	0.00	13.99	
for bypass road	120.00	CY	SURFACING	6.00	1,030	649	0	0	1,679	13.99
USR PM surfacing materi					0.00	0.00	23.93	0.00	23.93	
al	120.00	CY		0.00	0	0	2,871	0	2,871	23.93
USR PM set out Jersey B					0.71	0.79	0.00	0.00	1.50	
arricades	450.00	LF	TRUCKCRANE	45.00	319	355	0	0	674	1.50
USR PM Jersey Barricade					0.00	0.00	32.63	0.00	32.63	
s - material,del	450.00	LF		0.00	0	0	14,681	0	14,681	32.63
USR PM sign, rect, "cau					0.00	0.00	5.71	0.00	5.71	
tion" 5 sf/ea	40.00	SF		0.00	0	0	228	0	228	5.71

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM sign, rect, cons					0.00	0.00	5.71	0.00	5.71	
t, 12 sf/ea	48.00	SF		0.00	0	0	274	0	274	5.71
USR PM sign,diamond,"wa					0.00	0.00	5.71	0.00	5.71	
rning",16sf/ea	256.00	SF		0.00	0	0	1,462	0	1,462	5.71
USR PM sign,diamond,"ca					0.00	0.00	5.71	0.00	5.71	
ution",9sf/ea	72.00	SF		0.00	0	0	411	0	411	5.71
USR PM sign, post					0.00	0.00	13.59	0.00	13.59	
	44.00	EA		0.00	0	0	598	0	598	13.59
USR PM sign, post bolts					0.00	0.00	1.63	0.00	1.63	
& nut assembly	88.00	EA		0.00	0	0	144	0	144	1.63
USR PM install signs					25.44	22.87	0.00	0.00	48.31	
	44.00	EA	TRUCK1	1.47	1,119	1,006	0	0	2,126	48.31
USR PM remove signs					8.48	7.63	0.00	0.00	16.10	
	44.00	EA	TRUCK1	4.40	373	336	0	0	709	16.10
USR PM small tools					0.00	0.00	0.00	0.00	0.00	
	1.00	LS		0.00	0	0	0	0	0	0.00
USR PM reflectors, barr					0.00	0.00	0.00	5000.00	5000.00	
els, etc.	1.00	LS		0.00	0	0	0	5,000	5,000	5000.00
USR PM move Jersey Barr					0.71	0.79	0.00	0.00	1.50	
icades	450.00	LF	TRUCKCRANE	45.00	319	355	0	0	674	1.50
USR PM pickup & remove					0.71	0.79	0.00	0.00	1.50	
Jersey Barricade	450.00	LF	TRUCKCRANE	45.00	319	355	0	0	674	1.50
USR PM safety & misc					0.00	0.00	0.00	1396.07	1396.07	
	1.00	LS		0.00	0	0	0	1,396	1,396	1396.07
TOTAL Traffic Control					3,480	3,055	20,669	6,396	33,600	

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 04. Constr Photo and Video

This item is for providing construction photographs and videos for the project.

Subcontracted.

USR PM Construction Pho				0.00	0.00	0.00	2.00	2.00	
to and Videos	12300 LF		0.00	0	0	0	24,600	24,600	2.00
USR PM safety & misc				0.00	0.00	0.00	200.00	200.00	
	1.00 LS		0.00	0	0	0	200	200	200.00
TOTAL Constr Photo and				0	0	0	24,800	24,800	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 05. seismic monitoring

This item is for providing seismic monitoring during construction activities to ensure the surrounding areas are not disturbed, especially during the jacking and boring operation and cofferdam excavation.

Subcontracted.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM seismic monitori					0.00	0.00	0.00	312.00	312.00	
ng	40.00	DAY		0.00	0	0	0	12,480	12,480	312.00
USR PM safety & misc					0.00	0.00	0.00	320.00	320.00	
	1.00	LS		0.00	0	0	0	320	320	320.00
TOTAL seismic monitori					0	0	0	12,800	12,800	

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 06. 48" dia force main

This item is for all labor, equipment, and materials to install the concrete drainage pipe. A truck crane, 1 pipefitter, and 3 laborers will place and join the pipe at a rate of 50 lf/wd.

Price quote on pipe from N.O. Cement Products.

Item	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM place conc drain				26.20	8.55	0.00	0.00	34.74	
age pipe	12300 LF	DRAINAGE01	5.00	322,227	105,116	0	0	427,343	34.74
USR PM 48" dia concrete				0.00	0.00	127.24	0.00	127.24	
cylinder pipe	12300 LF		0.00	0	0	1,565,021	0	1,565,021	127.24
price: Price Brothers 8/21/95									
incl freight and lining									
USR PM small tools / sa				0.00	0.00	0.00	72567.80	72567.80	
fety & misc	1.00 LS		0.00	0	0	0	72,568	72,568	72567.80
USR PM restrained joint				0.00	0.00	244.69	0.00	244.69	
s for bends	6.00 EA		0.00	0	0	1,468	0	1,468	244.69
TOTAL 48" dia force ma	12300 LF			322,227	105,116	1,566,489	72,568	2,066,400	168.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 07. limestone bedding										
This item is for all equipment, labor, and materials required to furnish and install a crushed stone bedding for the new pipeline. The design section is to be 2' deep x 9' wide. The material will be truck delivered and placed into the trench by a front end loader and compacted by laborers with hand tampers at a rate of 20 cy/hr.										
USR PM place stone bedd					2.83	1.06	0.00	0.00	3.89	
ing	8200.00	CY	BEDDING01	20.00	23,185	8,704	0	0	31,889	3.89
USR PM stone bedding -					0.00	0.00	21.75	0.00	21.75	
material	8200.00	CY		0.00	0	0	178,350	0	178,350	21.75
USR PM safety & misc/sm					0.00	0.00	0.00	2961.02	2961.02	
all tools	1.00	LS		0.00	0	0	0	2,961	2,961	2961.02
TOTAL limestone beddin	8200.00	CY			23,185	8,704	178,350	2,961	213,200	26.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 08. riversand backfill										
This item is for all equipment, labor, and materials required to furnish and install sand backfill for the pipe trench. The design section is an avg. of 11' deep and 9' wide, neglecting the pipe area. The material will be truck delivered and placed into the trench by a FEL assisted by laborers.										
USR PM place sand backf					1.13	0.39	0.00	0.00	1.52	
ill	45100	CY	FEL001	50.00	51,008	17,679	0	0	68,687	1.52
USR PM sand backfill -					0.00	0.00	5.44	0.00	5.44	
material	45100	CY		0.00	0	0	245,231	0	245,231	5.44
USR PM safety & misc/ s					0.00	0.00	0.00	1781.45	1781.45	
mall tools	1.00	LS		0.00	0	0	0	1,781	1,781	1781.45
TOTAL riversand backfi	45100	CY			51,008	17,679	245,231	1,781	315,700	7.00

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A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 09. wood sheeting

This item is for all labor, equipment, and materials required to furnish and install 2" x 12" x 14' timber sheeting on both sides of the trench for the pipe installation work. The quantity also includes 10 BF/lf for bracing. The sheeting will be placed by a Cat 225 excavator, carpenters, and laborers.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM install wood she					75.97	27.13	0.00	0.00	103.10	
eting	825.00	MBF	SHEETING01	1.50	62,673	22,385	0	0	85,058	103.10
USR PM wood sheeting -					0.00	0.00	326.25	0.00	326.25	
material	825.00	MBF		0.00	0	0	269,156	0	269,156	326.25
USR PM safety & misc/sm					0.00	0.00	0.00	2185.92	2185.92	
all tools	1.00	LS		0.00	0	0	0	2,186	2,186	2185.92
TOTAL wood sheeting	825.00	MFB			62,673	22,385	269,156	2,186	356,400	432.00

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 10. geotextile fabric

This item is for all labor, equipment, and materials required to furnish and install geotextile fabric (~200 #/in) under the new pipe. The fabric is to be 24' wide x the length of the pipeline. The fabric will be placed by 3 laborers with the assistance of a front end loader at a rate of 50 sy/hr.

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM place geotextile				1.13	0.39	0.00	0.00	1.52	
	32800 SY	FEL001	50.00	37,097	12,858	0	0	49,954	1.52
USR PM geotextile - mat				0.00	0.00	1.63	0.00	1.63	
erial	32800 SY		0.00	0	0	53,505	0	53,505	1.63
USR PM safety & misc/ s				0.00	0.00	0.00	1500.60	1500.60	
mall tools	1.00 LS		0.00	0	0	0	1,501	1,501	1500.60
TOTAL geotextile fabri	32800 SY			37,097	12,858	53,505	1,501	104,960	3.20

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 11. unclassified excavation

This item is for all labor, equipment, and materials required to excavate the trench for the pipeline. The design section will use an avg. depth of 16' and a 9' width. The material will be excavated by a backhoe and loaded into dump trucks and hauled to a disposal area within an 8 mile or 30 min roundtrip.

Description	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM safety & misc					0.00	0.00	0.00	7458.00	7458.00	
	1.00	LS		0.00	0	0	0	7,458	7,458	7458.00
USR PM BACKHOE CAT 225B					0.00	37.74	0.00	0.00	37.74	
1.25 CY	525.00	HR	BKHB	1.00	0	19,814	0	0	19,814	37.74
USR PM DUMP TRUCK 12 C					0.00	22.16	0.00	0.00	22.16	
Y	4200.00	HR	TRKE	1.00	0	93,072	0	0	93,072	22.16
USR PM OILER					12.32	0.00	0.00	0.00	12.32	
	525.00	HR	OILM	1.00	6,466	0	0	0	6,466	12.32
USR PM TRUCK DRIVER					12.68	0.00	0.00	0.00	12.68	
	4200.00	HR	TRKM	1.00	53,235	0	0	0	53,235	12.68
USR PM PEO-backhoe					19.60	0.00	0.00	0.00	19.60	
	525.00	HR	PEOM	1.00	10,290	0	0	0	10,290	19.60
USR PM LABORER					12.32	0.00	0.00	0.00	12.32	
	525.00	HR	LABM	1.00	6,466	0	0	0	6,466	12.32
TOTAL unclassified exc	65600	CY			76,457	112,886	0	7,458	196,800	3.00

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A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 12. remove and replace concrete road

This item is for all equipment, labor, and materials required to remove and replace the concrete roadway (7800' of existing pavement x 26' wide).

Price reference: Louisiana DOTD job #062-03-0007

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM remove concrete					0.00	0.00	0.00	10.00	10.00	
roadway	22500	SY		0.00	0	0	0	225,000	225,000	10.00
USR PM replace concrete					0.00	0.00	0.00	24.50	24.50	
roadway	22500	SY		0.00	0	0	0	551,250	551,250	24.50
USR PM safety & misc					0.00	0.00	0.00	6750.00	6750.00	
	1.00	LS		0.00	0	0	0	6,750	6,750	6750.00
TOTAL remove and repla	22500	SY			0	0	0	783,000	783,000	34.80

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 13. remove and replace asphalt road										

This item is for all labor, equipment, and materials to remove and replace the asphalt roadway at West Napoleon Ave (300' of road x 26' wide) for the forced main tie-in.

Price reference: Louisiana DOTD job #062-03-0007

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM remove asphalt r					0.00	0.00	0.00	10.00	10.00	
oadway	900.00	SY		0.00	0	0	0	9,000	9,000	10.00
USR PM install asphalt					0.00	0.00	0.00	12.00	12.00	
roadway	900.00	SY		0.00	0	0	0	10,800	10,800	12.00
USR PM safety & misc					0.00	0.00	0.00	360.00	360.00	
	1.00	LS		0.00	0	0	0	360	360	360.00
TOTAL remove and repla	900.00	SY			0	0	0	20,160	20,160	22.40

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 14. riversand subbase

This item is for all labor, equipment, and materials required to furnish and install a sand subbase for the new roadway. The design section is 7800' of raodway x 2' depth x 30' wide. The material will be truck delivered and placed by a dozer assisted by a laborer at a production rate of 40 cy/hr.

USR PM place and spread				**0.80**	**0.78**	**0.00**	**0.00**	**1.58**	
sand	**17500 CY**	**DGRDM**	**40.00**	**13,963**	**13,729**	**0**	**0**	**27,692**	**1.58**
USR PM sand - material,				**0.00**	**0.00**	**5.44**	**0.00**	**5.44**	
delivered	**17500 CY**		**0.00**	**0**	**0**	**95,156**	**0**	**95,156**	**5.44**
USR PM safety & misc/sm				**0.00**	**0.00**	**0.00**	**3151.75**	**3151.75**	
all tools	**1.00 LS**		**0.00**	**0**	**0**	**0**	**3,152**	**3,152**	**3151.75**
TOTAL riversand subbas	**17500 CY**			**13,963**	**13,729**	**95,156**	**3,152**	**126,000**	**7.20**

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 15. remove & replace conc drives

This item is for all labor, equipment, and materials required to remove and replace 110 concrete driveways that are in the pipeline path. Avg. drive apron assumed to be 12' x 12' = 16 sy/ea.

Price reference: Louisiana DOTD job #062-03-0007

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM remove concrete					0.00	0.00	0.00	10.00	10.00	
driveways	1800.00	SY		0.00	0	0	0	18,000	18,000	10.00
USR PM install concrete					0.00	0.00	0.00	24.50	24.50	
driveways	1800.00	SY		0.00	0	0	0	44,100	44,100	24.50
USR PM safety & misc					0.00	0.00	0.00	540.00	540.00	
	1.00	LS		0.00	0	0	0	540	540	540.00
TOTAL remove & replace	1800.00	SY			0	0	0	62,640	62,640	34.80

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 16. remove & replace conc sidewalks

This item is for all labor, equipment, and materials required to remove and replace concrete sidewalks that are in the pipeline path. The project design assumed to replace one side from W. Napoleon to Airline Hwy (6400' x 4').

Price reference: Louisiana DOTD job #062-03-0007

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM remove concrete					**0.00**	**0.00**	**0.00**	**10.00**	**10.00**	
sidewalks	**2850.00**	**SY**		**0.00**	**0**	**0**	**0**	**28,500**	**28,500**	**10.00**
USR PM install concrete					**0.00**	**0.00**	**0.00**	**24.50**	**24.50**	
sidewalks	**2850.00**	**SY**		**0.00**	**0**	**0**	**0**	**69,825**	**69,825**	**24.50**
USR PM safety & misc					**0.00**	**0.00**	**0.00**	**855.00**	**855.00**	
	1.00	**LS**		**0.00**	**0**	**0**	**0**	**855**	**855**	**855.00**
TOTAL remove & replace	**2850.00**	**SY**			**0**	**0**	**0**	**99,180**	**99,180**	**34.80**

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A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 17. sod

This item is for all labor, equipment, and materials required to replace sod where disturbed during construction. The project design used a 7' width behind curb (7800' x 7') and subtracted out driveways (1800 sy) and cross streets (300 sy). The sod will be delivered by a supplier and placed by a laborer.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM install sod					**1.23**	**0.00**	**0.00**	**0.00**	**1.23**	
	4000.00	**SY**	**LABR1**	**10.00**	**4,926**	**0**	**0**	**0**	**4,926**	**1.23**
USR PM sod - material,					**0.00**	**0.00**	**3.70**	**0.00**	**3.70**	
delivered	**4000.00**	**SY**		**0.00**	**0**	**0**	**14,790**	**0**	**14,790**	**3.70**
USR PM safety & misc					**0.00**	**0.00**	**0.00**	**283.60**	**283.60**	
	1.00	**LS**		**0.00**	**0**	**0**	**0**	**284**	**284**	**283.60**
TOTAL sod	**4000.00**	**SY**			**4,926**	**0**	**14,790**	**284**	**20,000**	**5.00**

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 18. adjust sewer house connections

This item is for all labor, equipment, and materials required to adjust the house sewer connections that are in the way of the new pipeline. The project design estimated 1/5 of the total 125 lots will require adjustments. Allow 1 wd for each sewer adjustment.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM adjust sewer hou					668.38	128.50	0.00	0.00	796.88	
se connections	25.00	EA	UTIL4	0.10	16,710	3,213	0	0	19,922	796.88
USR PM 6" PVC pipe - 20					0.00	0.00	45.68	0.00	45.68	
LF @ $2.10/lf	25.00	EA		0.00	0	0	1,142	0	1,142	45.68
USR PM glue, cleaner, &					0.00	0.00	10.88	0.00	10.88	
misc supplies	25.00	EA		0.00	0	0	272	0	272	10.88
USR PM safety & misc -					0.00	0.00	0.00	664.25	664.25	
small tools	1.00	LS		0.00	0	0	0	664	664	664.25
TOTAL adjust sewer hou	25.00	EA			16,710	3,213	1,414	664	22,000	880.00

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A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 19. adjust water house connections

This item is for all labor, equipment, and materials required to adjust the house waterline connections that are in the way of the new pipeline. The project design estimated that 1/5 of the total 125 lots will require adjustments. Allow 3 waterline adjustments per wd.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM adjust water hou					**222.79**	**42.83**	**0.00**	**0.00**	**265.63**	
se connections	**25.00**	**EA**	**UTIL4**	**0.30**	**5,570**	**1,071**	**0**	**0**	**6,641**	**265.63**
USR PM Plumbing & hardw					**0.00**	**0.00**	**10.88**	**0.00**	**10.88**	
are supplies	**25.00**	**EA**		**0.00**	**0**	**0**	**272**	**0**	**272**	**10.88**
USR PM safety & misc -					**0.00**	**0.00**	**0.00**	**87.46**	**87.46**	
small tools	**1.00**	**LS**		**0.00**	**0**	**0**	**0**	**87**	**87**	**87.46**
TOTAL adjust water hou	**25.00**	**EA**			**5,570**	**1,071**	**272**	**87**	**7,000**	**280.00**

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A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 20. waterline offsets

This item is for all equipment, labor, and materials required to offset waterlines where necessary. The project will cross 21 waterlines. A small plumbing/utility crew will offset 2 waterline locations per day.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM modify waterline					668.38	128.50	0.00	0.00	796.88	
s	21.00	EA	UTIL4	0.10	14,036	2,699	0	0	16,734	796.88
USR PM 40'- 6" plastic					0.00	0.00	15.23	0.00	15.23	
pipe per offset	840.00	LF		0.00	0	0	12,789	0	12,789	15.23
-fiberglass filament wound										
USR PM plastic pipe - s					0.00	0.00	59.81	0.00	59.81	
addle & coupling	21.00	EA		0.00	0	0	1,256	0	1,256	59.81
USR PM 20' - 1" copper					0.00	0.00	4.35	0.00	4.35	
pipe	420.00	LF		0.00	0	0	1,827	0	1,827	4.35
USR PM misc couplings					0.00	0.00	27.19	0.00	27.19	
	21.00	EA		0.00	0	0	571	0	571	27.19
USR PM 4 elbows/offset					0.00	0.00	5.44	0.00	5.44	
	84.00	EA		0.00	0	0	457	0	457	5.44
USR PM safety & misc					0.00	0.00	0.00	1645.77	1645.77	
	1.00	LS		0.00	0	0	0	1,646	1,646	1645.77
TOTAL waterline offset	21.00	EA			14,036	2,699	16,900	1,646	35,280	1680.00

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 21. conflict box

This item is for all equipment, labor, and materials required to furnish and construct conflict boxes. The project design will cross 30 drainlines. 3 days will be allowed for excavation, slab pouring, brick construction, and backfilling. An additional day will be allowed for the additional hook up due to conflicts. An additional 1/2 wd will be allowed for installation of the frame and cover.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM construct confli					2397.03	385.89	0.00	0.00	2782.91	
ct box	30.00	EA	CATBM2	0.03	71,911	11,577	0	0	83,487	2782.91
USR PM install frame an					399.11	64.25	0.00	0.00	463.36	
d cover	30.00	EA	CATBM2	0.20	11,973	1,928	0	0	13,901	463.36
USR PM frame and cover					0.00	0.00	271.88	0.00	271.88	
	30.00	EA		0.00	0	0	8,156	0	8,156	271.88
USR PM bricks - 1,000 @					0.00	0.00	54.37	0.00	54.37	
$0.50 / c box	30.00	EA		0.00	0	0	1,631	0	1,631	54.37
USR PM mortor					0.00	0.00	32.63	0.00	32.63	
	30.00	EA		0.00	0	0	979	0	979	32.63
USR PM base slab					0.00	0.00	108.75	0.00	108.75	
	30.00	EA		0.00	0	0	3,263	0	3,263	108.75
USR PM additional hook-					798.21	128.50	0.00	0.00	926.71	
ups	30.00	EA	CATBM2	0.10	23,946	3,855	0	0	27,801	926.71
USR PM safety & misc					0.00	0.00	0.00	2381.91	2381.91	
	1.00	LS		0.00	0	0	0	2,382	2,382	2381.91
TOTAL conflict box	30.00	EA			107,830	17,359	14,029	2,382	141,600	4720.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 22. catch basins										

This item is for all equipment, labor, and materials required to furnish and install pre-cast catch basins to replace the 40 on the east side of N. Woodlawn that are in the project path. 2 days will be allowed for excavation, basin placing, and backfilling. An additional 1/2 wd will be allowed for installation of the frame and cover.

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM install catch ba					1596.42	257.00	0.00	0.00	1853.42	
sins	40.00	EA	CATBM2	0.05	63,857	10,280	0	0	74,137	1853.42
USR PM install frame an					399.11	64.25	0.00	0.00	463.36	
d cover	40.00	EA	CATBM2	0.20	15,964	2,570	0	0	18,534	463.36
USR PM frame and cover					0.00	0.00	271.88	0.00	271.88	
	40.00	EA		0.00	0	0	10,875	0	10,875	271.88
USR PM pre-cast conc. b					0.00	0.00	326.25	0.00	326.25	
asin box	40.00	EA		0.00	0	0	13,050	0	13,050	326.25
USR PM mortor					0.00	0.00	27.19	0.00	27.19	
	40.00	EA		0.00	0	0	1,088	0	1,088	27.19
USR PM safety & misc					0.00	0.00	0.00	716.50	716.50	
	1.00	LS		0.00	0	0	0	717	717	716.50
TOTAL catch basins	40.00	EA			79,821	12,850	25,013	717	118,400	2960.00

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 23. 48"x36" tapping sleeve & valve

This item is for all labor, equipment, and materials required to tap the new output line (36") from the new Suburban Canal lift station into the existing 48" forced main.

This item will be done by a subcontractor.

Quote: Price Brothers 6/13/94 $20,310/ea - valve not included.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM tap new 36" line					**0.00**	**0.00**	**0.00**	**25000.00**	**25000.00**	
into 48" main	**1.00**	**LS**		**0.00**	**0**	**0**	**0**	**25,000**	**25,000**	**25000.00**
USR PM safety & misc					**0.00**	**0.00**	**0.00**	**600.00**	**600.00**	
	1.00	**LS**		**0.00**	**0**	**0**	**0**	**600**	**600**	**600.00**
TOTAL 48"x36" tapping	**1.00**	**EA**			**0**	**0**	**0**	**25,600**	**25,600**	**25600.00**

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 24. aerial crossing @ W. Metairie

This item is all labor, equipment, and materials required for construction of concrete pile bents to cross the W. Metairie canal. 4 pile bents will be used consisting of 2 -12" x 70' prestressed concrete piles and a 2' sq.x 6' cast in place cap for bracing, pipe support, and pile cap.

Allow 2 wd to do all formwork, including stripping the forms. Allow 1 wd for resteel installation, and allow 1 wd to pour the concrete caps.

NOTE: This item does NOT include the pipe for the crossing.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM drive conc piles					4.46	3.56	0.00	0.00	8.02	
	560.00	LF	CNPLM2	28.00	2,499	1,992	0	0	4,491	8.02
USR PM 12" conc piles -					0.00	0.00	7.61	0.00	7.61	
8 @ 70 lf	560.00	LF		0.00	0	0	4,263	0	4,263	7.61
USR PM concrete materia					0.00	0.00	65.25	0.00	65.25	
l	3.55	CY		0.00	0	0	232	0	232	65.25
USR PM form materials					0.00	0.00	1.09	0.00	1.09	
	224.00	SF		0.00	0	0	244	0	244	1.09
USR PM resteel material					0.00	0.00	0.25	0.00	0.25	
	450.00	SF		0.00	0	0	113	0	113	0.25
USR PM form pile caps					3.73	0.00	0.00	0.00	3.73	
	224.00	SF	CP1HLPM	11.20	836	0	0	0	836	3.73
USR PM place resteel					0.99	0.00	0.00	0.00	0.99	
	450.00	LBS	IRLB5	45.00	443	0	0	0	443	0.99
USR PM place concrete					121.91	0.00	0.00	0.00	121.91	
	3.55	CY	MASONRY3	0.36	433	0	0	0	433	121.91
USR PM safety & misc					0.00	0.00	0.00	145.09	145.09	
	1.00	LS		0.00	0	0	0	145	145	145.09
TOTAL aerial crossing					4,212	1,992	4,851	145	11,200	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 25. Connection to Existing F.M.

This item is for all labor, equipment, and materials required to tie the new 48" pipeline into the existing 48" forced main. The installation requires a 36" bypass line in order to have un-interrupted service in the main line. The 36" by-pass line will be hot-tapped into the existing 48" line, then the 48" line will be plugged, and the TEE installed to connect the new 48" concrete pipeline.

Prices for 36" bypass line work are referenced from items #7 - 11.
Price quote on hot-tap from TDW Services.
Price quote on pipe from N.O. Cement Products.

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM bypass line hot-					0.00	0.00	0.00	62281.00	62281.00	
tap 36" x 48"	2.00	EA		0.00	0	0	0	124,562	124,562	62281.00
USR PM safety & misc					0.00	0.00	0.00	1380.89	1380.89	
	1.00	LS		0.00	0	0	0	1,381	1,381	1380.89
USR PM place conc drain					5.24	1.71	0.00	0.00	6.95	
age pipe	300.00	LF	DRAINAGE01	25.00	1,572	513	0	0	2,085	6.95
USR PM 36" dia concrete					0.00	0.00	56.55	0.00	56.55	
pipe	300.00	LF		0.00	0	0	16,965	0	16,965	56.55
USR PM small tools / sa					0.00	0.00	0.00	0.00	0.00	
fety & misc	1.00	LS		0.00	0	0	0	0	0	0.00
USR PM excavation for b					0.00	0.00	0.00	3.00	3.00	
ypass	1000.00	CY		0.00	0	0	0	3,000	3,000	3.00
USR PM sheeting for tre					0.00	0.00	0.00	450.00	450.00	
nching	25.00	MBF		0.00	0	0	0	11,250	11,250	450.00
USR PM fabric under pip					0.00	0.00	0.00	3.25	3.25	
e	270.00	SY		0.00	0	0	0	878	878	3.25
USR PM bedding under pi					0.00	0.00	0.00	26.00	26.00	
peline	180.00	CY		0.00	0	0	0	4,680	4,680	26.00
USR PM backfill for byp					0.00	0.00	0.00	8.00	8.00	
ass line	1000.00	CY		0.00	0	0	0	8,000	8,000	8.00

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL Connection to Ex					1,572	513	16,965	153,750	172,800	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 26. jack & bore @ Airline Hwy.

This item is for all labor, equipment, and materials required to install a 150' - 66" dia. casing under Airline Hwy for the new pipeline to go through. The casing will be installed by jacking and boring. This includes excavation for the pit, all permits, materials, etc. This item will be done by a subcontractor.

Price quote: Tri-State Jacking & Boring
3/24/95

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM jack & bore 66"					0.00	0.00	0.00	1200.00	1200.00	
dia casing	150.00	LF		0.00	0	0	0	180,000	180,000	1200.00
					-----------	-----------	-----------	-----------	-----------	
TOTAL jack & bore @ Ai					0	0	0	180,000	180,000	

A. Stormwater Quality Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 27. jack & bore @ railroad

This item is for all labor, equipment, and materials required to install a 150' - 66" dia. casing under the KCS railroad tracks at Airline Hwy for the new pipeline to go through. This includes all excavation for the pit, all permits, casing, etc. The casing will be jacked and bored under the railroad. This will be done by a subcontractor.

Price quote: Tri-State Jacking & Boring
3/24/95

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM jack & bore 66"					0.00	0.00	0.00	1200.00	1200.00	
dia casing	150.00	LF		0.00	0	0	0	180,000	180,000	1200.00
TOTAL jack & bore @ ra					0	0	0	180,000	180,000	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 28. tie in at S.T.P.										

This item is for all equipment, labor, and materials required to tie-in the new pipeline at the sewer treatment plant. Allow 3 wd with 2 welders and a fitter to complete the tie-in. Allow steel members for supporting frame work.

Item	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM tie-in at s.t.p.					3378.51	1217.72	0.00	0.00	4596.23	
	1.00	LS	WELDER2	0.03	3,379	1,218	0	0	4,596	4596.23
USR PM structural steel					0.00	0.00	0.41	0.00	0.41	
for frame work	2000.00	LBS		0.00	0	0	826	0	826	0.41
USR PM cutting torches					0.00	0.00	0.00	500.00	500.00	
& gas	1.00	LS		0.00	0	0	0	500	500	500.00
USR PM misc welding sup					0.00	0.00	0.00	200.00	200.00	
plies	1.00	LS		0.00	0	0	0	200	200	200.00
USR PM 48" dia pipe					0.00	0.00	146.81	0.00	146.81	
	50.00	LF		0.00	0	0	7,341	0	7,341	146.81
USR PM 24" pipe					0.00	0.00	54.37	0.00	54.37	
	100.00	LF		0.00	0	0	5,437	0	5,437	54.37
USR PM 24" valves					0.00	0.00	1305.00	0.00	1305.00	
	2.00	EA		0.00	0	0	2,610	0	2,610	1305.00
USR PM 24" flanges					0.00	0.00	217.50	0.00	217.50	
	4.00	EA		0.00	0	0	870	0	870	217.50
USR PM 48" junction pip					0.00	0.00	543.75	0.00	543.75	
e	1.00	EA		0.00	0	0	544	0	544	543.75
USR PM safety & misc					0.00	0.00	0.00	1075.40	1075.40	
	1.00	LS		0.00	0	0	0	1,075	1,075	1075.40
TOTAL tie in at S.T.P.					3,379	1,218	17,628	1,775	24,000	
TOTAL Buildings, Groun					873,557	411,890	2,540,418	1,660,456	5,486,320	
TOTAL Stormwater Qualt					873,557	411,890	2,540,418	1,660,456	5,486,320	
TOTAL Jeff Parish Stor	1.00	EA			873,557	411,890	2,540,418	1,660,456	5,486,320	5486320

** CREW BACKUP - bid-item **

ITEM ID	DESCRIPTION		
A 19001800 01.	Mob & Demob		
A 19001800 02.	Removal of Structures and Obstrc		
DEMCM2	DEMOLISH CONCRETE 2	PROD = 100%	CREW HOURS = 200
A 19001800 03.	Traffic Control		
SURFACING	surfacing - d4 dozer, roller smth,SP,12T	PROD = 100%	CREW HOURS = 20
TRUCK1	8x16 flatbed truck, 1 driver, 2 laborer	PROD = 100%	CREW HOURS = 40
TRUCKCRANE	truck crane and operator	PROD = 100%	CREW HOURS = 30
A 19001800 04.	Constr Photo and Video		
A 19001800 05.	seismic monitoring		
A 19001800 06.	48" dia force main		
DRAINAGE01	place pipe - trk crn,peo,oiler,pipeftr,3 lab,frm	PROD = 100%	CREW HOURS = 2460
A 19001800 07.	limestone bedding		
BEDDING01	cat 926 FEL, 1 tamper, 1 peo, 3 laborers	PROD = 100%	CREW HOURS = 410
A 19001800 08.	riversand backfill		
FEL001	Cat 926 FEL, 1 peo, 3 laborers	PROD = 100%	CREW HOURS = 902
19001800 09.	wood sheeting		
SHEETING01	place sheeting- 2 carp,4 lab,cat225,peo,chn saw	PROD = 100%	CREW HOURS = 550
A 19001800 10.	geotextile fabric		
FEL001	Cat 926 FEL, 1 peo, 3 laborers	PROD = 100%	CREW HOURS = 656
A 19001800 11.	unclassified excavation		
A 19001800 12.	remove and replace concrete road		
A 19001800 13.	remove and replace asphalt road		
A 19001800 14.	riversand subbase		
DGRDM	DEGRADING LEVEE - METRO	PROD = 100%	CREW HOURS = 438
A 19001800 15.	remove & replace conc drives		
A 19001800 16.	remove & replace conc sidewalks		
A 19001800 17.	sod		
LABR1	1 laborer (metro)	PROD = 100%	CREW HOURS = 400
A 19001800 18.	adjust sewer house connections		
UTIL4	Util/plumbng work 4, JD 510, plumber, hlp,labore	PROD = 100%	CREW HOURS = 250
A 19001800 19.	adjust water house connections		
UTIL4	Util/plumbng work 4, JD 510, plumber, hlp,labore	PROD = 100%	CREW HOURS = 83
A 19001800 20.	waterline offsets		
UTIL4	Util/plumbng work 4, JD 510, plumber, hlp,labore	PROD = 100%	CREW HOURS = 210
19001800 21.	conflict box		
CATBM2	CATCH BASIN - JD 510, 1 cement mason, 3 laborer	PROD = 100%	CREW HOURS = 1351
A 19001800 22.	catch basins		
CATBM2	CATCH BASIN - JD 510, 1 cement mason, 3 laborer	PROD = 100%	CREW HOURS = 1000

** CREW BACKUP - bid-item **

ITEM ID	DESCRIPTION				
A 19001800 23.	48"x36" tapping sleeve & valve				
A 19001800 24.	aerial crossing @ W. Metairie				
CNPLM2	PRESTRESSED CONC. PILE	PROD =	100%	CREW HOURS =	20
CP1HLPM	carpenter, 1 carp. helper - metro	PROD =	100%	CREW HOURS =	20
IRLB5	1 Ironworker, 1 irnwk helper, no equipment	PROD =	0.00%	CREW HOURS =	10
MASONRY3	masonry crew - 1 mason, 1 helper	PROD =	100%	CREW HOURS =	10
A 19001800 25.	Connection to Existing F.M.				
DRAINAGE01	place pipe - trk crn,peo,oiler,pipeftr,3 lab,frm	PROD =	100%	CREW HOURS =	12
A 19001800 26.	jack & bore @ Airline Hwy.				
A 19001800 27.	jack & bore @ railroad				
A 19001800 28.	tie in at S.T.P.				
WELDER2	2 welders, 1 hlp, 1 pfitter, 1 hlp, weld mach	PROD =	100%	CREW HOURS =	30

** LABOR BACKUP - [illegible] **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	19001800 01.	Mob & Demob										
USR	DOPM	PEO DRAGLINE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	96
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	128
USR	OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	224
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	800
USR	TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	448
A	19001800 02.	Removal of Structures and Obstrc										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	400
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	400
USR	TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	400
A	19001800 03.	Traffic Control										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	130
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	70
USR	TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	40
A	19001800 04.	Constr Photo and Video										
A	19001800 05.	seismic monitoring										
A	19001800 06.	48" dia force main										
R	FOREMAN2	foreman 2 $26/hr	26.00	0.0%	0.0%	0.00	0.00	26.00	HR	01/21/93	0.00	2460
R	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	9840
USR	OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	2460
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	2460
USR	PIPM	PIPEFITTER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	2460
A	19001800 07.	limestone bedding										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	1230
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	410
A	19001800 08.	riversand backfill										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	2706
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	902
A	19001800 09.	wood sheeting										
USR	CARM	CARPENTER	12.21	16.7%	40.0%	2.60	0.00	22.54	HR	02/21/95	0.00	1100
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	2200
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	550
A	19001800 10.	geotextile fabric										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	1968
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	656
A	19001800 11.	unclassified excavation										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	525
USR	OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	525
SR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	525
R	TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	4200
A	19001800 12.	remove and replace concrete road										
A	19001800 13.	remove and replace asphalt road										

** LABOR BACKUP - [illegible] **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	19001800 14.	riversand subbase										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	438
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	438
A	19001800 15.	remove & replace conc drives										
A	19001800 16.	remove & replace conc sidewalks										
A	19001800 17.	sod										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	400
A	19001800 18.	adjust sewer house connections										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	250
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	250
USR	PLMM	PLUMBER	12.69	16.7%	40.0%	0.00	0.00	20.73	HR	02/21/95	0.00	250
USR	PLMMHLP	PLUMBER helper	8.69	16.7%	40.0%	0.00	0.00	14.19	HR	03/03/95	0.00	250
A	19001800 19.	adjust water house connections										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	83
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	83
USR	PLMM	PLUMBER	12.69	16.7%	40.0%	0.00	0.00	20.73	HR	02/21/95	0.00	83
USR	PLMMHLP	PLUMBER helper	8.69	16.7%	40.0%	0.00	0.00	14.19	HR	03/03/95	0.00	83
A	19001800 20.	waterline offsets										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	210
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	210
USR	PLMM	PLUMBER	12.69	16.7%	40.0%	0.00	0.00	20.73	HR	02/21/95	0.00	210
USR	PLMMHLP	PLUMBER helper	8.69	16.7%	40.0%	0.00	0.00	14.19	HR	03/03/95	0.00	210
A	19001800 21.	conflict box										
USR	CMNM	CEMENT MASON	13.22	16.7%	40.0%	1.68	0.00	23.27	HR	02/21/95	0.00	1351
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	4053
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	1351
A	19001800 22.	catch basins										
USR	CMNM	CEMENT MASON	13.22	16.7%	40.0%	1.68	0.00	23.27	HR	02/21/95	0.00	1000
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	3000
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	1000
A	19001800 23.	48"x36" tapping sleeve & valve										
A	19001800 24.	aerial crossing @ W. Metairie										
USR	CARM	CARPENTER	12.21	16.7%	40.0%	2.60	0.00	22.54	HR	02/21/95	0.00	20
USR	CMNM	CEMENT MASON	13.22	16.7%	40.0%	1.68	0.00	23.27	HR	02/21/95	0.00	10
USR	CMNMH	CEMENT MASON HELPER	11.22	16.7%	40.0%	1.68	0.00	20.01	HR	02/21/95	0.00	10
USR	CRHM	CARPENTER HELPER	10.21	16.7%	40.0%	2.60	0.00	19.28	HR	02/21/95	0.00	20
USR	FOREMAN1	foreman 1 $24/hr	24.00	0.0%	0.0%	0.00	0.00	24.00	HR	06/20/91	0.00	20
USR	IRNM	IRONWORKER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/21/95	0.00	10
USR	IRNMH	IRONWORKER HELPER	10.69	16.7%	40.0%	3.08	0.00	20.54	HR	02/21/95	0.00	10
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	40
USR	OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	20
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	20
USR	PILM	PILEDRIVERMAN	12.00	16.7%	40.0%	2.60	0.00	22.20	HR	02/21/95	0.00	40

** LABOR BACKUP - Bid-item **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	19001800	25. Connection to Existing F.M.										
USR	FOREMAN2	foreman 2 $26/hr	26.00	0.0%	0.0%	0.00	0.00	26.00	HR	01/21/93	0.00	12
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	48
USR	OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	12
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	12
USR	PIPM	PIPEFITTER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	12
A	19001800	26. jack & bore @ Airline Hwy.										
A	19001800	27. jack & bore @ railroad										
A	19001800	28. tie in at S.T.P.										
USR	PIPM	PIPEFITTER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	30
USR	PIPMH	PIPEFITTER HELPER	10.69	16.7%	40.0%	3.08	0.00	20.54	HR	02/22/95	0.00	30
USR	WELM	WELDER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	60
USR	WELMH	WELDER helper	10.69	16.7%	40.0%	3.08	0.00	20.54	HR	03/23/95	0.00	30

LABOR ID: JEFPSH EQUIP ID: JEFPSH Currency in DOLLARS CREW ID: JEFPSH UPB ID: JEFPSH

** EQUIPMENT BACKUP [illegible] **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	TOTAL HOURS
A	19001800 01.	Mob & Demob									
USR	AIRC	AIR COMPRESSOR 900 CFM	5.94	1.85	7.39				6.77	21.95 HR	64
USR	AIRF	AIR COMPRESSOR 250 CFM	2.22	0.68	2.70				2.48	8.08 HR	64
USR	BKHB	BACKHOE CAT 225B 1.25 CY	16.65	4.62	4.30				12.17	37.74 HR	128
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	160
USR	BKHF	LDR/BKHOE KENT RAM 999,CHISEL	1.65	0.29					2.84	4.78 HR	64
USR	BKTA	2.0 concrete bucket - manual	0.26	0.07					0.17	0.50 HR	64
USR	CHNSAW	chainsaw, Homelite 31"	0.16	0.02	0.31				0.99	1.48 HR	96
USR	CHYA	CHERRYPICKER GROVE 18 TON	10.34	3.65	4.15				8.52	26.66 HR	64
USR	COMP	MANUAL COMPACTOR WACKER GVR 151	0.46	0.07	0.42				0.68	1.63 HR	192
USR	CRNE	CRANE LS 138 75 T 150' boom	25.23	10.97	3.39				14.39	53.98 HR	32
USR	CRNL1	PILE DRIVING LEADS -10"x37" 60'	2.72	0.64					5.82	9.18 HR	32
USR	CRNM	Hydr crane, trk mtd, 25T, 80' bm	16.38	5.71	5.97				13.34	41.40 HR	64
USR	DOZA	DOZER D-4 W/BLADE	6.24	1.88	2.93				7.74	18.79 HR	128
USR	DOZB	DOZER D-6 W/BLADE	10.74	3.24	4.31				13.09	31.38 HR	64
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	128
USR	MOTG	MOTOR GRADER CAT 12-G	9.90	3.66	3.52				7.84	24.92 HR	64
USR	PILC	PILE HAMMER VULCAN 06 900 CFM	5.25	1.23					7.38	13.86 HR	32
USR	PMPC	WATER PUMP 3" HOMELITE	0.12	0.03	0.83				0.35	1.33 HR	160
USR	PVBA	PAVING BREAKER B87C 50CFM	0.21	0.03					0.41	0.65 HR	128
R	ROLD	ROLLER smooth, SP, 8-12T	5.30	1.47	2.28				4.61	13.66 HR	64
	T40XX002	Hydr crane, 7T, ADD truck	5.02	1.14					4.73	10.89 HR	64
USR	T50FO014	Ford trk, LTS8000, 54k GVW, 3 ax	6.94	1.66	7.59				8.38	24.57 HR	64
USR	TRCB	FARM TRACTOR JD 2355	1.89	0.42	1.82				2.04	6.17 HR	64
USR	TRKA	WATER TRUCK 2000 GAL	4.68	1.21	4.75				5.54	16.18 HR	32
USR	TRKC	PICKUP TRUCK .75 TON GAS	1.31	0.30	2.46				1.92	5.99 HR	64
USR	TRKE	DUMP TRUCK 12 CY	6.26	1.51	6.80				7.59	22.16 HR	192
USR	TRKJ	flatbed trk,8x16,64k GVW,350HP	9.15	2.20	11.07				11.13	33.55 HR	96
USR	WELD	WELDER 400 AMP	0.84	0.24	2.28				1.27	4.63 HR	128
A	19001800 02.	Removal of Structures and Obstrc									
USR	AIRF	AIR COMPRESSOR 250 CFM	2.22	0.68	2.70				2.48	8.08 HR	200
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	400
USR	BKHF	LDR/BKHOE KENT RAM 999,CHISEL	1.65	0.29					2.84	4.78 HR	200
USR	TRKE	DUMP TRUCK 12 CY	6.26	1.51	6.80				7.59	22.16 HR	400
A	19001800 03.	Traffic Control									
USR	DOZA	DOZER D-4 W/BLADE	6.24	1.88	2.93				7.74	18.79 HR	20
USR	ROLD	ROLLER smooth, SP, 8-12T	5.30	1.47	2.28				4.61	13.66 HR	20
USR	T40XX002	Hydr crane, 7T, ADD truck	5.02	1.14					4.73	10.89 HR	30
USR	T50FO014	Ford trk, LTS8000, 54k GVW, 3 ax	6.94	1.66	7.59				8.38	24.57 HR	30
USR	TRKJ	flatbed trk,8x16,64k GVW,350HP	9.15	2.20	11.07				11.13	33.55 HR	40
A	19001800 04.	Constr Photo and Video									
A	19001800 05.	seismic monitoring									
A	19001800 06.	48" dia force main									
R	CRNM	Hydr crane, trk mtd, 25T, 80' bm	16.38	5.71	5.97				13.34	41.40 HR	2460
	PMPC	WATER PUMP 3" HOMELITE	0.12	0.03	0.83				0.35	1.33 HR	2460
A	19001800 07.	limestone bedding									
USR	COMP	MANUAL COMPACTOR WACKER GVR 151	0.46	0.07	0.42				0.68	1.63 HR	410

** EQUIPMENT BACKUP - bid-item **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	410
A	19001800 08.	riversand backfill									
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	902
A	19001800 09.	wood sheeting									
USR	BKHB	BACKHOE CAT 225B 1.25 CY	16.65	4.62	4.30				12.17	37.74 HR	550
USR	CHNSAW	chainsaw, Homelite 31"	0.16	0.02	0.31				0.99	1.48 HR	1100
A	19001800 10.	geotextile fabric									
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	656
A	19001800 11.	unclassified excavation									
USR	BKHB	BACKHOE CAT 225B 1.25 CY	16.65	4.62	4.30				12.17	37.74 HR	525
USR	TRKE	DUMP TRUCK 12 CY	6.26	1.51	6.80				7.59	22.16 HR	4200
A	19001800 12.	remove and replace concrete road									
A	19001800 13.	remove and replace asphalt road									
A	19001800 14.	riversand subbase									
USR	DOZB	DOZER D-6 W/BLADE	10.74	3.24	4.31				13.09	31.38 HR	438
	19001800 15.	remove & replace conc drives									
A	19001800 16.	remove & replace conc sidewalks									
A	19001800 17.	sod									
A	19001800 18.	adjust sewer house connections									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	250
A	19001800 19.	adjust water house connections									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	83
A	19001800 20.	waterline offsets									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	210
A	19001800 21.	conflict box									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	1351
A	19001800 22.	catch basins									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	1000
A	19001800 23.	48"x36" tapping sleeve & valve									
A	19001800 24.	aerial crossing @ W. Metairie									
USR	AIRC	AIR COMPRESSOR 900 CFM	5.94	1.85	7.39				6.77	21.95 HR	20
USR	CRNE	CRANE LS 138 75 T 150' boom	25.23	10.97	3.39				14.39	53.98 HR	20
USR	CRNL1	PILE DRIVING LEADS -10"x37" 60'	2.72	0.64					5.82	9.18 HR	20
USR	PILC	PILE HAMMER VULCAN 06 900 CFM	5.25	1.23					7.38	13.86 HR	20
USR	PVBA	PAVING BREAKER B87C 50CFM	0.21	0.03					0.41	0.65 HR	20
	19001800 25.	Connection to Existing F.M.									
USR	CRNM	Hydr crane, trk mtd, 25T, 80' bm	16.38	5.71	5.97				13.34	41.40 HR	12
USR	PMPC	WATER PUMP 3" HOMELITE	0.12	0.03	0.83				0.35	1.33 HR	12

** EQUIPMENT BACKUP - bid-item **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
A	19001800	26. jack & bore @ Airline Hwy.									
A	19001800	27. jack & bore @ railroad									
A	19001800	28. tie in at S.T.P.									
USR	CHYA	CHERRYPICKER GROVE 18 TON	10.34	3.65	4.15				8.52	26.66 HR	30
USR	WELD	WELDER 400 AMP	0.84	0.24	2.28				1.27	4.63 HR	90

No errors detected...

* * * END OF ERROR REPORT * * *

A 19001800. 48" Dia. Sewer Force Main	REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
A 19001800 48" Dia. Sewer Force Main					1.0000 LS
A 19001800 01 Mob & Demob					4.0000 WD
LBHR016 mob/demob labor hours					
number of days of mob & demob	A 01	4.0000	* Multiply by		WD
hours per wd	N	8.0000			HRS
LBHR016 mob/demob labor hours					32.0000 HRS
MOBHR16					
	N	0.0000	N None		
	N	0.0000	N None		
	N	0.0000			
ˀBHR16					0.0000 HOURS
MOBHR26 mob hours					
mob & demob time	A 01	4.0000	* Multiply by		WD
hours per day	N	8.0000			HR/WD
MOBHR26 mob hours					32.0000 HOURS
AIR COMPRESSOR 900 CFM	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
LDR/BKHOE KENT RAM 999,CHISEL	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
2.0 concrete bucket - manual	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
CHERRYPICKER GROVE 18 TON	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
MANUAL COMPACTOR WACKER GVR 151	W MOBHR26	32.0000 HOU	* Multiply by	6.0000	192.0000 HR
DOZER D-4 W/BLADE	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
DOZER D-6 W/BLADE	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
MOTOR GRADER CAT 12-G	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
PILE HAMMER VULCAN 06 900 CFM	W MOBHR26	32.0000 HOU	* Multiply by	1.0000	32.0000 HR
WELDER 400 AMP	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
PEO DRAGLINE - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	3.0000	96.0000 HR
LABORER - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	4.0000	128.0000 HR
OILER - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	7.0000	224.0000 HR
PEO-ALL EXCPT DRGLNE-METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	25.0000	800.0000 HR
TRUCK DRIVER - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	14.0000	448.0000 HR
AIR COMPRESSOR 250 CFM	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
BACKHOE CAT 225B 1.25 CY	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
BKHOE JD 510C 1.25cy FEL,18"bkh	W MOBHR26	32.0000 HOU	* Multiply by	5.0000	160.0000 HR
chainsaw, Homelite 31"	W MOBHR26	32.0000 HOU	* Multiply by	3.0000	96.0000 HR
CRANE LS 138 75 T 150' boom	W MOBHR26	32.0000 HOU	* Multiply by	1.0000	32.0000 HR

A 19001800 01. Mob & Demob	REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
PILE DRIVING LEADS -10"x37" 60'	W MOBHR26	32.0000 HOU *	Multiply by	1.0000	32.0000 HR
F E LOADER CAT 926 2.0 CY wheel	W MOBHR26	32.0000 HOU *	Multiply by	4.0000	128.0000 HR
WATER PUMP 3" HOMELITE	W MOBHR26	32.0000 HOU *	Multiply by	5.0000	160.0000 HR
PAVING BREAKER B87C 50CFM	W MOBHR26	32.0000 HOU *	Multiply by	4.0000	128.0000 HR
ROLLER smooth, SP, 8-12T	W MOBHR26	32.0000 HOU *	Multiply by	2.0000	64.0000 HR
Hydr crane, 7T, ADD truck	W MOBHR26	32.0000 HOU *	Multiply by	2.0000	64.0000 HR
Ford trk, LTS8000, 54k GVW, 3 ax	W MOBHR26	32.0000 HOU *	Multiply by	2.0000	64.0000 HR
FARM TRACTOR JD 2355	W MOBHR26	32.0000 HOU *	Multiply by	2.0000	64.0000 HR
WATER TRUCK 2000 GAL	W MOBHR26	32.0000 HOU *	Multiply by	1.0000	32.0000 HR
PICKUP TRUCK .75 TON GAS	W MOBHR26	32.0000 HOU *	Multiply by	2.0000	64.0000 HR
DUMP TRUCK 12 CY	W MOBHR26	32.0000 HOU *	Multiply by	6.0000	192.0000 HR
flatbed trk,8x16,64k GVW,350HP	W MOBHR26	32.0000 HOU *	Multiply by	3.0000	96.0000 HR
Hydr crane, trk mtd, 25T, 80' bm	W MOBHR26	32.0000 HOU *	Multiply by	2.0000	64.0000 HR

A 19001800 11 unclassified excavation — 65600.0000 CY

DUMPTI6 dump time(in hours)

dump time(in minutes)	N	2.5000	/ Divide by	MIN
minutes per hour	N	60.0000		MIN/HR
DUMPTI6 dump time(in hours)				0.0417 HR

HAULD 6 haul distance (round trip)

haul distance (1 way)	N	4.0000	* Multiply by	MI
make round trip	N	2.0000		MI
HAULD 6 haul distance (round trip)				8.0000 MI

LOADTI6 load time (in hours)

load time (in minutes)	N	2.0000	/ Divide by	MIN
minutes per hour	N	60.0000		MIN/HR
LOADTI6 load time (in hours)				0.0333 HR

NTRUCK6 number of trucks needed

production rate	W PRODRT6 (	125.0000	/ Divide by	CY/HR
work time per hour	W WKTIME6 (	0.8000	/ Divide by	HR
truck cycle time	W TRKCYC6	0.3950	* Multiply by	HR
truck payload	W TRKPAY6	8.0000)	* Multiply by	CY
	N	1.0000)	U Round Up	TRUCKS
round UP to whole number	N	1.0000		TRUCKS
NTRUCK6 number of trucks needed				8.0000 TRUCKS

A 19001800 11. unclassified excavation	REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
PRODRT6 production rate					
production rate (CY/HR)	N	125.0000			CY/HR
PRODRT6 production rate					125.0000 CY/HR
TIME1 6 total work hours					
excavation quantity	A 11 (	65600.0000	/ Divide by		CY
production rate	W PRODRT6	125.0000)	R Round		CY/HR
(round UP to whole number)	N	1.0000			FACTOR
TIME1 6 total work hours					525.0000 HRS
TLOADF6 truck load factor					
load factor	N	0.6667			FACTOR
OADF6 truck load factor					0.6667 FACTOR
TRKCAP6 truck capacity					
truck capacity	N	12.0000			CY
TRKCAP6 truck capacity					12.0000 CY
TRKCYC6 truck cycle time					
truck load time	W LOADTI6	0.0333	+ Add to		HR
haul distance	W HAULD 6 (	8.0000	/ Divide by		MI
travel speed	W TRKSPD6	25.0000)	+ Add to		MPH
dump time	W DUMPTI6	0.0417			HR
TRKCYC6 truck cycle time					0.3950 HR
TRKHRS6 total truck hours					
work time	W TIME1 6	525.0000	* Multiply by		HRS
number of trucks needed	W NTRUCK6	8.0000			TRUCKS
TRKHRS6 total truck hours					4200.0000 HR
TRKPAY6 truck payload - CY per cycle					
truck capacity	W TRKCAP6 (	12.0000	* Multiply by		CY

A 19001800 11. unclassified excavation
** LINK LISTING **

A 19001800 11. unclassified excavation	REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
truck load factor (80%)	W TLOADF6	0.6667)	R Round		FACTOR
round number	N	1.0000			CY
TRKPAY6 truck payload - CY per cycle					8.0000 CY
TRKSPD6 truck speed					
truck speed	N	25.0000			MPH
TRKSPD6 truck speed					25.0000 MPH
WKTIME6 work time per hour					
time efficiency per hour	N	0.8000			FACTOR
WKTIME6 work time per hour					0.8000 HR
1 BACKHOE CAT 225B 1.25 CY	W TIME1 6	525.0000 HRS *	Multiply by	1.0000	525.0000 HR
3 DUMP TRUCK 12 CY	W TRKHRS6	4200.0000 HR *	Multiply by	1.0000	4200.0000 HR
LB1 OILER	A EQ1	525.0000 HR *	Multiply by	1.0000	525.0000 HR
LB2 TRUCK DRIVER	A EQ3	4200.0000 HR *	Multiply by	1.0000	4200.0000 HR
LB3 PEO-backhoe	A EQ1	525.0000 HR *	Multiply by	1.0000	525.0000 HR
LB8 LABORER	W TIME1 6	525.0000 HRS *	Multiply by	1.0000	525.0000 HR

A 19001800 18 adjust sewer house connections

25.0000 EA

Jeff Parish Stormwtr Quality-60"
Demonstration Project

Preliminary Construction Costs
60" Dia. Sewer Force Main

Designed By:
Estimated By: Cost Engineering Branch, NOD

Prepared By: Cost Engineering Branch
New Orleans District

Preparation Date: 05/22/95
Effective Date of Pricing: 05/22/95

Sales Tax: 8.75%

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Release 5.30A

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DETAILED ESTIMATE DETAIL PAGE

BACKUP REPORTS BACKUP PAGE

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** PROJECT OWNER SUMMARY Feature **

	QUANTITY	UOM	CONTRACT	CONTINGN	Contingn	OTHER	TOTAL COST	UNIT COST
A Stormwater Qualtiy Demo Project								
A 19 Buildings, Grounds, & Utilities			7,700,000	0	0	0	7,700,000	
TOTAL Stormwater Qualtiy Demo Project			7,700,000	0	0	0	7,700,000	
TOTAL Jeff Parish Stormwtr Quality-60"	1.00	EA	7,700,000	0	0	0	7,700,000	7700000

** PROJECT OWNER SUMMARY [illegible] **

		QUANTITY	UOM	CONTRACT	CONTINGN	Contingn	OTHER	TOTAL COST	UNIT COST
A	Stormwater Qualtiy Demo Project								
A 19	Buildings, Grounds, & Utilities								
A 1900	Buildings, Grounds, & Utilities								
A 190018	Utility Work & Associated Item								
A 19001800	60" Dia. Sewer Force Main								
A 19001800 01	Mob & Demob	4.00	WD	120,000	0	0	0	120,000	30000.00
A 19001800 02	Removal of Structures and			46,000	0	0	0	46,000	
A 19001800 03	Traffic Control			42,000	0	0	0	42,000	
A 19001800 04	Constr Photo and Video			31,000	0	0	0	31,000	
A 19001800 05	seismic monitoring			16,000	0	0	0	16,000	
A 19001800 06	60" dia force main	12300.00	LF	3,259,500	0	0	0	3,259,500	265.00
A 19001800 07	limestone bedding	9100.00	CY	295,750	0	0	0	295,750	32.50
A 19001800 08	riversand backfill	50100.00	CY	438,375	0	0	0	438,375	8.75
A 19001800 09	wood sheeting	825.00	MFB	445,500	0	0	0	445,500	540.00
A 19001800 10	geotextile fabric	35500.00	SY	142,000	0	0	0	142,000	4.00
19001800 11	unclassified excavation	77400.00	CY	290,250	0	0	0	290,250	3.75
19001800 12	remove and replace concre	22500.00	SY	978,750	0	0	0	978,750	43.50
A 19001800 13	remove and replace asphal	900.00	SY	25,200	0	0	0	25,200	28.00
A 19001800 14	riversand subbase	17500.00	CY	157,500	0	0	0	157,500	9.00
A 19001800 15	remove & replace conc dri	1800.00	SY	78,300	0	0	0	78,300	43.50
A 19001800 16	remove & replace conc sid	2850.00	SY	123,975	0	0	0	123,975	43.50
A 19001800 17	sod	4000.00	SY	25,000	0	0	0	25,000	6.25
A 19001800 18	adjust sewer house connec	25.00	EA	27,500	0	0	0	27,500	1100.00
A 19001800 19	adjust water house connec	25.00	EA	8,750	0	0	0	8,750	350.00
A 19001800 20	waterline offsets	21.00	EA	44,100	0	0	0	44,100	2100.00
A 19001800 21	conflict box	30.00	EA	177,000	0	0	0	177,000	5900.00
A 19001800 22	catch basins	40.00	EA	148,000	0	0	0	148,000	3700.00
A 19001800 23	48"x36" tapping sleeve &	1.00	EA	32,000	0	0	0	32,000	32000.00
A 19001800 24	aerial crossing @ W. Meta			14,000	0	0	0	14,000	
A 19001800 25	Connection to Existing F.			216,000	0	0	0	216,000	
A 19001800 26	jack & bore @ Airline Hwy			243,775	0	0	0	243,775	
A 19001800 27	jack & bore @ railroad			243,775	0	0	0	243,775	
A 19001800 28	tie in at S.T.P.			30,000	0	0	0	30,000	
	TOTAL 60" Dia. Sewer Force Main			7,700,000	0	0	0	7,700,000	
	TOTAL Utility Work & Associated			7,700,000	0	0	0	7,700,000	
	TOTAL Buildings, Grounds, & Uti			7,700,000	0	0	0	7,700,000	
	TOTAL Buildings, Grounds, & Uti			7,700,000	0	0	0	7,700,000	
	TOTAL Stormwater Qualtiy Demo P			7,700,000	0	0	0	7,700,000	
	TOTAL Jeff Parish Stormwtr Qual	1.00	EA	7,700,000	0	0	0	7,700,000	7700000

** PROJECT INDIRECT SUMMARY - Feature **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A Stormwater Qualtiy Demo P										
A 19 Buildings, Grounds, &			6,160,000	1,540,000	0	0	0	0	7,700,000	
TOTAL Stormwater Qualtiy Dem			6,160,000	1,540,000	0	0	0	0	7,700,000	
TOTAL Jeff Parish Stormwtr Q	1.00	EA	6,160,000	1,540,000	0	0	0	0	7,700,000	7700000

** PROJECT INDIRECT SUMMARY - [illegible] **

		QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A	Stormwater Qualtiy Demo P										
A 19	Buildings, Grounds, &										
A 1900	Buildings, Grounds,										
A 190018	Utility Work & Ass										
A 19001800	60" Dia. Sewer F										
A 19001800 01	Mob & Demob	4.00	WD	96,000	24,000	0	0	0	0	120,000	30000.00
A 19001800 02	Removal of St			36,800	9,200	0	0	0	0	46,000	
A 19001800 03	Traffic Contr			33,600	8,400	0	0	0	0	42,000	
A 19001800 04	Constr Photo			24,800	6,200	0	0	0	0	31,000	
A 19001800 05	seismic monit			12,800	3,200	0	0	0	0	16,000	
A 19001800 06	60" dia force	12300.00	LF	2,607,600	651,900	0	0	0	0	3,259,500	265.00
A 19001800 07	limestone bed	9100.00	CY	236,600	59,150	0	0	0	0	295,750	32.50
A 19001800 08	riversand bac	50100.00	CY	350,700	87,675	0	0	0	0	438,375	8.75
A 19001800 09	wood sheeting	825.00	MFB	356,400	89,100	0	0	0	0	445,500	540.00
A 19001800 10	geotextile fa	35500.00	SY	113,600	28,400	0	0	0	0	142,000	4.00
19001800 11	unclassified	77400.00	CY	232,200	58,050	0	0	0	0	290,250	3.75
A 19001800 12	remove and re	22500.00	SY	783,000	195,750	0	0	0	0	978,750	43.50
A 19001800 13	remove and re	900.00	SY	20,160	5,040	0	0	0	0	25,200	28.00
A 19001800 14	riversand sub	17500.00	CY	126,000	31,500	0	0	0	0	157,500	9.00
A 19001800 15	remove & repl	1800.00	SY	62,640	15,660	0	0	0	0	78,300	43.50
A 19001800 16	remove & repl	2850.00	SY	99,180	24,795	0	0	0	0	123,975	43.50
A 19001800 17	sod	4000.00	SY	20,000	5,000	0	0	0	0	25,000	6.25
A 19001800 18	adjust sewer	25.00	EA	22,000	5,500	0	0	0	0	27,500	1100.00
A 19001800 19	adjust water	25.00	EA	7,000	1,750	0	0	0	0	8,750	350.00
A 19001800 20	waterline off	21.00	EA	35,280	8,820	0	0	0	0	44,100	2100.00
A 19001800 21	conflict box	30.00	EA	141,600	35,400	0	0	0	0	177,000	5900.00
A 19001800 22	catch basins	40.00	EA	118,400	29,600	0	0	0	0	148,000	3700.00
A 19001800 23	48"x36" tappi	1.00	EA	25,600	6,400	0	0	0	0	32,000	32000.00
A 19001800 24	aerial crossi			11,200	2,800	0	0	0	0	14,000	
A 19001800 25	Connection to			172,800	43,200	0	0	0	0	216,000	
A 19001800 26	jack & bore @			195,020	48,755	0	0	0	0	243,775	
A 19001800 27	jack & bore @			195,020	48,755	0	0	0	0	243,775	
A 19001800 28	tie in at S.T			24,000	6,000	0	0	0	0	30,000	
	TOTAL 60" Dia. Sewe			6,160,000	1,540,000	0	0	0	0	7,700,000	
	TOTAL Utility Work			6,160,000	1,540,000	0	0	0	0	7,700,000	
	TOTAL Buildings, Gr			6,160,000	1,540,000	0	0	0	0	7,700,000	
	TOTAL Buildings, Gr			6,160,000	1,540,000	0	0	0	0	7,700,000	
	TOTAL Stormwater Qu			6,160,000	1,540,000	0	0	0	0	7,700,000	
	TOTAL Jeff Parish S	1.00	EA	6,160,000	1,540,000	0	0	0	0	7,700,000	7700000

** PROJECT DIRECT SUMMARY - Feature **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A Stormwater Qualtiy Demo Project								
A 19 Buildings, Grounds, & Utilities			979,057	462,354	3,048,433	1,670,156	6,160,000	
TOTAL Stormwater Qualtiy Demo Project			979,057	462,354	3,048,433	1,670,156	6,160,000	
TOTAL Jeff Parish Stormwtr Quality-60"	1.00	EA	979,057	462,354	3,048,433	1,670,156	6,160,000	6160000
Distribution							1,540,000	
TOTAL INCL INDIRECTS							7,700,000	

** PROJECT DIRECT SUMMARY - [illegible] **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
Distribution							1,540,000	
TOTAL INCL INDIRECTS							7,700,000	

** PROJECT [illegible] SUMMARY [illegible] **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A	Stormwater Qualtiy Demo Project								
A 19	Buildings, Grounds, & Utilities								
A 1900	Buildings, Grounds, & Utilities								
A 190018	Utility Work & Associated Items								
A 19001800	60" Dia. Sewer Force Main								
A 19001800 01	Mob & Demob	4.00	WD	27,576	57,989	0	10,436	96,000	24000.00
A 19001800 02	Removal of Structures and O			17,837	16,576	0	2,387	36,800	
A 19001800 03	Traffic Control			3,480	3,055	20,669	6,396	33,600	
A 19001800 04	Constr Photo and Video			0	0	0	24,800	24,800	
A 19001800 05	seismic monitoring			0	0	0	12,800	12,800	
A 19001800 06	60" dia force main	12300.00	LF	402,784	131,395	2,023,337	50,083	2,607,600	212.00
A 19001800 07	limestone bedding	9100.00	CY	25,729	9,660	197,925	3,286	236,600	26.00
A 19001800 08	riversand backfill	50100.00	CY	56,663	19,639	272,419	1,979	350,700	7.00
A 19001800 09	wood sheeting	825.00	MFB	62,673	22,385	269,156	2,186	356,400	432.00
A 19001800 10	geotextile fabric	35500.00	SY	40,151	13,916	57,909	1,624	113,600	3.20
19001800 11	unclassified excavation	77400.00	CY	90,146	133,097	0	8,956	232,200	3.00
A 19001800 12	remove and replace concrete	22500.00	SY	0	0	0	783,000	783,000	34.80
A 19001800 13	remove and replace asphalt	900.00	SY	0	0	0	20,160	20,160	22.40
A 19001800 14	riversand subbase	17500.00	CY	13,963	13,729	95,156	3,152	126,000	7.20
A 19001800 15	remove & replace conc drive	1800.00	SY	0	0	0	62,640	62,640	34.80
A 19001800 16	remove & replace conc sidew	2850.00	SY	0	0	0	99,180	99,180	34.80
A 19001800 17	sod	4000.00	SY	4,926	0	14,790	284	20,000	5.00
A 19001800 18	adjust sewer house connecti	25.00	EA	16,710	3,213	1,414	664	22,000	880.00
A 19001800 19	adjust water house connecti	25.00	EA	5,570	1,071	272	87	7,000	280.00
A 19001800 20	waterline offsets	21.00	EA	14,036	2,699	16,900	1,646	35,280	1680.00
A 19001800 21	conflict box	30.00	EA	107,830	17,359	14,029	2,382	141,600	4720.00
A 19001800 22	catch basins	40.00	EA	79,821	12,850	25,013	717	118,400	2960.00
A 19001800 23	48"x36" tapping sleeve & va	1.00	EA	0	0	0	25,600	25,600	25600.00
A 19001800 24	aerial crossing @ W. Metair			4,212	1,992	4,851	145	11,200	
A 19001800 25	Connection to Existing F.M.			1,572	513	16,965	153,750	172,800	
A 19001800 26	jack & bore @ Airline Hwy.			0	0	0	195,020	195,020	
A 19001800 27	jack & bore @ railroad			0	0	0	195,020	195,020	
A 19001800 28	tie in at S.T.P.			3,379	1,218	17,628	1,775	24,000	
	TOTAL 60" Dia. Sewer Force Main			979,057	462,354	3,048,433	1,670,156	6,160,000	
	TOTAL Utility Work & Associated I			979,057	462,354	3,048,433	1,670,156	6,160,000	
	TOTAL Buildings, Grounds, & Utili			979,057	462,354	3,048,433	1,670,156	6,160,000	
	TOTAL Buildings, Grounds, & Utili			979,057	462,354	3,048,433	1,670,156	6,160,000	
	TOTAL Stormwater Qualtiy Demo Pro			979,057	462,354	3,048,433	1,670,156	6,160,000	
	TOTAL Jeff Parish Stormwtr Qualit	1.00	EA	979,057	462,354	3,048,433	1,670,156	6,160,000	6160000

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A. Stormwater Qualtiy Demo Project

A 19. Buildings, Grounds, & Utilities

A 19001800 01. Mob & Demob

This item is for labor, equipment, and materials required to mobilize to the jobsite. This item includes enough equipment for 2 crews. Allow 2 wd for mobilization. Demobilization will be 1/2 mob time. Also allow 1 wd for various movement around the project site.

USR PM AIR COMPRESSOR 9					0.00	7.79	0.00	0.00	7.79	
00 CFM	64.00	HR	AIRC	1.00	0	499	0	0	499	7.79
USR PM LDR/BKHOE KENT R					0.00	1.94	0.00	0.00	1.94	
AM 999,CHISEL	64.00	HR	BKHF	1.00	0	124	0	0	124	1.94
USR PM 2.0 concrete buc					0.00	0.33	0.00	0.00	0.33	
ket - manual	64.00	HR	BKTA	1.00	0	21	0	0	21	0.33
USR PM CHERRYPICKER GRO					0.00	13.99	0.00	0.00	13.99	
VE 18 TON	64.00	HR	CHYA	1.00	0	895	0	0	895	13.99
USR PM MANUAL COMPACTOR					0.00	0.53	0.00	0.00	0.53	
WACKER GVR 151	192.00	HR	COMP	1.00	0	102	0	0	102	0.53
USR PM DOZER D-4 W/BLAD					0.00	8.12	0.00	0.00	8.12	
E	128.00	HR	DOZA	1.00	0	1,039	0	0	1,039	8.12
USR PM DOZER D-6 W/BLAD					0.00	13.98	0.00	0.00	13.98	
E	64.00	HR	DOZB	1.00	0	895	0	0	895	13.98
USR PM MOTOR GRADER CAT					0.00	13.56	0.00	0.00	13.56	
12-G	64.00	HR	MOTG	1.00	0	868	0	0	868	13.56
USR PM PILE HAMMER VULC					0.00	6.48	0.00	0.00	6.48	
AN 06 900 CFM	32.00	HR	PILC	1.00	0	207	0	0	207	6.48
USR PM WELDER 400 AMP					0.00	1.08	0.00	0.00	1.08	
	128.00	HR	WELD	1.00	0	138	0	0	138	1.08
USR PM PEO DRAGLINE - M					19.60	0.00	0.00	0.00	19.60	
ETRO RATE	96.00	HR	DOPM	1.00	1,882	0	0	0	1,882	19.60

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM LABORER - METRO					12.32	0.00	0.00	0.00	12.32	
RATE	128.00	HR	LABM	1.00	1,576	0	0	0	1,576	12.32
USR PM OILER - METRO RA					12.32	0.00	0.00	0.00	12.32	
TE	224.00	HR	OILM	1.00	2,759	0	0	0	2,759	12.32
USR PM PEO-ALL EXCPT DR					19.60	0.00	0.00	0.00	19.60	
GLNE-METRO RATE	800.00	HR	PEOM	1.00	15,680	0	0	0	15,680	19.60
USR PM TRUCK DRIVER - M					12.68	0.00	0.00	0.00	12.68	
ETRO RATE	448.00	HR	TRKM	1.00	5,678	0	0	0	5,678	12.68
USR PM trailering charg					0.00	1300.00	0.00	0.00	1300.00	
es - large	26.00	EA		0.00	0	33,800	0	0	33,800	1300.00
USR PM trailering charg					0.00	900.00	0.00	0.00	900.00	
es - small	8.00	EA		0.00	0	7,200	0	0	7,200	900.00
USR PM safety & misc					0.00	0.00	0.00	10435.52	10435.52	
	1.00	LS		0.00	0	0	0	10,436	10,436	10435.52
USR PM AIR COMPRESSOR					0.00	2.90	0.00	0.00	2.90	
250 CFM	64.00	HR	AIRF	1.00	0	186	0	0	186	2.90
USR PM BACKHOE CAT 225B					0.00	21.27	0.00	0.00	21.27	
1.25 CY	128.00	HR	BKHB	1.00	0	2,723	0	0	2,723	21.27
USR PM BKHOE JD 510C 1.					0.00	5.85	0.00	0.00	5.85	
25cy FEL,18"bkh	160.00	HR	BKHD1	1.00	0	936	0	0	936	5.85
USR PM chainsaw, Homeli					0.00	0.18	0.00	0.00	0.18	
te 31"	96.00	HR	CHNSAW	1.00	0	17	0	0	17	0.18
USR PM CRANE LS 138 75					0.00	36.20	0.00	0.00	36.20	
T 150' boom	32.00	HR	CRNE	1.00	0	1,158	0	0	1,158	36.20
USR PM PILE DRIVING LEA					0.00	3.36	0.00	0.00	3.36	
DS -10"x37" 60'	32.00	HR	CRNL1	1.00	0	108	0	0	108	3.36

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM F E LOADER CAT 9					0.00	9.42	0.00	0.00	9.42	
26 2.0 CY wheel	128.00	HR	FELB	1.00	0	1,206	0	0	1,206	9.42
USR PM WATER PUMP 3" HO					0.00	0.15	0.00	0.00	0.15	
MELITE	160.00	HR	PMPC	1.00	0	24	0	0	24	0.15
USR PM PAVING BREAKER					0.00	0.24	0.00	0.00	0.24	
B87C 50CFM	128.00	HR	PVBA	1.00	0	31	0	0	31	0.24
USR PM ROLLER smooth,					0.00	6.77	0.00	0.00	6.77	
SP, 8-12T	64.00	HR	ROLD	1.00	0	433	0	0	433	6.77
USR PM Hydr crane, 7T,					0.00	6.16	0.00	0.00	6.16	
ADD truck	64.00	HR	T40XX002	1.00	0	394	0	0	394	6.16
USR PM Ford trk, LTS800					0.00	8.60	0.00	0.00	8.60	
0, 54k GVW, 3 ax	64.00	HR	T50F0014	1.00	0	550	0	0	550	8.60
USR PM FARM TRACTOR JD					0.00	2.31	0.00	0.00	2.31	
2355	64.00	HR	TRCB	1.00	0	148	0	0	148	2.31
USR PM WATER TRUCK 2000					0.00	5.89	0.00	0.00	5.89	
GAL	32.00	HR	TRKA	1.00	0	188	0	0	188	5.89
USR PM PICKUP TRUCK .7					0.00	1.61	0.00	0.00	1.61	
5 TON GAS	64.00	HR	TRKC	1.00	0	103	0	0	103	1.61
USR PM DUMP TRUCK 12 C					0.00	7.77	0.00	0.00	7.77	
Y	192.00	HR	TRKE	1.00	0	1,492	0	0	1,492	7.77
USR PM flatbed trk,8x16					0.00	11.35	0.00	0.00	11.35	
,64k GVW,350HP	96.00	HR	TRKJ	1.00	0	1,090	0	0	1,090	11.35
USR PM Hydr crane, trk					0.00	22.09	0.00	0.00	22.09	
mtd, 25T, 80' bm	64.00	HR	CRNM	1.00	0	1,414	0	0	1,414	22.09
TOTAL Mob & Demob	4.00	WD			27,576	57,989	0	10,436	96,000	24000.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 02. Removal of Structures and Obstrc

This item is for all labor, equipment, and materials required for the removal of miscellaneous concrete obstructions. This item allows for the removal of 20 seperate concrete obstructions using a ldr/bkh with a air ram chisel and dump trucks to dispose of the debris. A second ldr/bkh will be used to load the debris into the trucks. Allow 16 cy debris/obstruction = 32 tons/obstruction with a disposal fee of $3/ton. Removal will be done at a rate of 1 obstruction per day.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM demolish & remv					891.83	828.80	0.00	0.00	1720.63	
obstructions	20.00	EA	DEMCM2	0.10	17,837	16,576	0	0	34,413	1720.63
USR PM disposal fee 20					0.00	0.00	0.00	3.00	3.00	
@ 32 tons	640.00	TON		0.00	0	0	0	1,920	1,920	3.00
USR PM safety & misc					0.00	0.00	0.00	467.48	467.48	
	1.00	LS		0.00	0	0	0	467	467	467.48
TOTAL Removal of Struc					17,837	16,576	0	2,387	36,800	

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 03. Traffic Control

This item is for all labor, equipment, and materials required to provide traffic control for the project. Three methods are used: a temporary by-pass road, concrete lane barricades, and traffic signs.

A) Temporary By-pass road
Use 2 temporary by-pass roads, 150' long each x 15' wide. Use 8" crushed stone = 120 cy. The material will be truck delivered, placed and spread by a small dozer assisted by a laborer/spotter, and compacted by a roller. Allow 2 wd.

B) Jersey Barricades
Use 450 lf of concrete lane barriers. The barriers will be delivered by a supplier and placed by a truck crane. Allow 1 wd to set out initially, 1 wd to move to the other side, and 1 wd to pick up and remove.

C) Signs
Allow for the following traffic signs:
12 rectangular "caution" type signs (5 sf/ea) = 40 sf
4 rectangular gen. construction signs (12 sf/ea) = 48 sf
16 diamond "warning" type signs (16 sf/ea) = 256 sf
8 diamond "caution" type signs (9 sf/ea) = 72 sf
44 sign posts
88 bolt & nut assemblies

Allow for misc reflectors and barrels also

Allow 3 wd to install the signs/traffic controls and 1 wd for removal.

USR PM place surfacing				8.59	5.41	0.00	0.00	13.99	
for bypass road	120.00 CY	SURFACING	6.00	1,030	649	0	0	1,679	13.99
USR PM surfacing materi				0.00	0.00	23.93	0.00	23.93	
al	120.00 CY		0.00	0	0	2,871	0	2,871	23.93
USR PM set out Jersey B				0.71	0.79	0.00	0.00	1.50	
arricades	450.00 LF	TRUCKCRANE	45.00	319	355	0	0	674	1.50
USR PM Jersey Barricade				0.00	0.00	32.63	0.00	32.63	
s - material,del	450.00 LF		0.00	0	0	14,681	0	14,681	32.63
USR PM sign, rect, "cau				0.00	0.00	5.71	0.00	5.71	
tion" 5 sf/ea	40.00 SF		0.00	0	0	228	0	228	5.71

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM sign, rect, cons					0.00	0.00	5.71	0.00	5.71	
t, 12 sf/ea	48.00	SF		0.00	0	0	274	0	274	5.71
USR PM sign,diamond,"wa					0.00	0.00	5.71	0.00	5.71	
rning",16sf/ea	256.00	SF		0.00	0	0	1,462	0	1,462	5.71
USR PM sign,diamond,"ca					0.00	0.00	5.71	0.00	5.71	
ution",9sf/ea	72.00	SF		0.00	0	0	411	0	411	5.71
USR PM sign, post					0.00	0.00	13.59	0.00	13.59	
	44.00	EA		0.00	0	0	598	0	598	13.59
USR PM sign, post bolts					0.00	0.00	1.63	0.00	1.63	
& nut assembly	88.00	EA		0.00	0	0	144	0	144	1.63
USR PM install signs					25.44	22.87	0.00	0.00	48.31	
	44.00	EA	TRUCK1	1.47	1,119	1,006	0	0	2,126	48.31
USR PM remove signs					8.48	7.63	0.00	0.00	16.10	
	44.00	EA	TRUCK1	4.40	373	336	0	0	709	16.10
USR PM small tools					0.00	0.00	0.00	0.00	0.00	
	1.00	LS		0.00	0	0	0	0	0	0.00
USR PM reflectors, barr					0.00	0.00	0.00	5000.00	5000.00	
els, etc.	1.00	LS		0.00	0	0	0	5,000	5,000	5000.00
USR PM move Jersey Barr					0.71	0.79	0.00	0.00	1.50	
icades	450.00	LF	TRUCKCRANE	45.00	319	355	0	0	674	1.50
USR PM pickup & remove					0.71	0.79	0.00	0.00	1.50	
Jersey Barricade	450.00	LF	TRUCKCRANE	45.00	319	355	0	0	674	1.50
USR PM safety & misc					0.00	0.00	0.00	1396.07	1396.07	
	1.00	LS		0.00	0	0	0	1,396	1,396	1396.07
TOTAL Traffic Control					3,480	3,055	20,669	6,396	33,600	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 04. Constr Photo and Video

This item is for providing construction photographs and videos for the project.

Subcontracted.

Description	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM Construction Pho					0.00	0.00	0.00	2.00	2.00	
to and Videos	12300	LF		0.00	0	0	0	24,600	24,600	2.00
USR PM safety & misc					0.00	0.00	0.00	200.00	200.00	
	1.00	LS		0.00	0	0	0	200	200	200.00
TOTAL Constr Photo and					0	0	0	24,800	24,800	

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 05. seismic monitoring

This item is for providing seismic monitoring during construction activities to ensure the surrounding areas are not disturbed, especially during the jacking and boring operation and cofferdam excavation.

Subcontracted.

	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM seismic monitori				0.00	0.00	0.00	312.00	312.00	
ng	40.00 DAY		0.00	0	0	0	12,480	12,480	312.00
USR PM safety & misc				0.00	0.00	0.00	320.00	320.00	
	1.00 LS		0.00	0	0	0	320	320	320.00
TOTAL seismic monitori				0	0	0	12,800	12,800	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 06. 60" dia force main

This item is for all labor, equipment, and materials to install the concrete drainage pipe. A truck crane, 1 pipefitter, and 3 laborers will place and join the pipe at a rate of 50 lf/wd.

Price quote on pipe from N.O. Cement Products.

Item	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM place conc drain					32.75	10.68	0.00	0.00	43.43	
age pipe	12300	LF	DRAINAGE01	4.00	402,784	131,395	0	0	534,179	43.43
USR PM 60" dia concrete					0.00	0.00	164.21	0.00	164.21	
cylinder pipe	12300	LF		0.00	0	0	2,019,814	0	2,019,814	164.21
price: Price Brothers 8/21/95										
freight & lining										
USR PM small tools / sa					0.00	0.00	0.00	50083.40	50083.40	
fety & misc	1.00	LS		0.00	0	0	0	50,083	50,083	50083.40
USR PM restrained joint					0.00	0.00	587.25	0.00	587.25	
s for bends	6.00	EA		0.00	0	0	3,524	0	3,524	587.25
TOTAL 60" dia force ma	12300	LF			402,784	131,395	2,023,337	50,083	2,607,600	212.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 07. limestone bedding

This item is for all equipment, labor, and materials required to furnish and install a crushed stone bedding for the new pipeline. The design section is to be 2' deep x 9' wide. The material will be truck delivered and placed into the trench by a front end loader and compacted by laborers with hand tampers at a rate of 20 cy/hr.

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM place stone bedd					2.83	1.06	0.00	0.00	3.89	
ing	9100.00	CY	BEDDING01	20.00	25,729	9,660	0	0	35,389	3.89
USR PM stone bedding -					0.00	0.00	21.75	0.00	21.75	
material	9100.00	CY		0.00	0	0	197,925	0	197,925	21.75
USR PM safety & misc/sm					0.00	0.00	0.00	3286.00	3286.00	
all tools	1.00	LS		0.00	0	0	0	3,286	3,286	3286.00
TOTAL limestone beddin	9100.00	CY			25,729	9,660	197,925	3,286	236,600	26.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 08. riversand backfill This item is for all equipment, labor, and materials required to furnish and install sand backfill for the pipe trench. The design section is an avg. of 11' deep and 9' wide, neglecting the pipe area. The material will be truck delivered and placed into the trench by a FEL assisted by laborers.										
USR PM place sand backfill	50100	CY	FEL001	50.00	1.13 56,663	0.39 19,639	0.00 0	0.00 0	1.52 76,302	1.52
USR PM sand backfill - material	50100	CY		0.00	0.00 0	0.00 0	5.44 272,419	0.00 0	5.44 272,419	5.44
USR PM safety & misc/ small tools	1.00	LS		0.00	0.00 0	0.00 0	0.00 0	1979.00 1,979	1979.00 1,979	1979.00
TOTAL riversand backfi	50100	CY			56,663	19,639	272,419	1,979	350,700	7.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 09. wood sheeting

This item is for all labor, equipment, and materials required to furnish and install 2" x 12" x 14' timber sheeting on both sides of the trench for the pipe installation work. The quantity also includes 10 BF/lf for bracing. The sheeting will be placed by a Cat 225 excavator, carpenters, and laborers.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM install wood she					75.97	27.13	0.00	0.00	103.10	
eting	825.00	MBF	SHEETING01	1.50	62,673	22,385	0	0	85,058	103.10
USR PM wood sheeting -					0.00	0.00	326.25	0.00	326.25	
material	825.00	MBF		0.00	0	0	269,156	0	269,156	326.25
USR PM safety & misc/sm					0.00	0.00	0.00	2185.92	2185.92	
all tools	1.00	LS		0.00	0	0	0	2,186	2,186	2185.92
TOTAL wood sheeting	825.00	MFB			62,673	22,385	269,156	2,186	356,400	432.00

A 19001800 10. geotextile fabric

This item is for all labor, equipment, and materials required to furnish and install geotextile fabric (~200 #/in) under the new pipe. The fabric is to be 24' wide x the length of the pipeline. The fabric will be placed by 3 laborers with the assistance of a front end loader at a rate of 50 sy/hr.

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM place geotextile					1.13	0.39	0.00	0.00	1.52	
	35500	SY	FEL001	50.00	40,151	13,916	0	0	54,067	1.52
USR PM geotextile - mat					0.00	0.00	1.63	0.00	1.63	
erial	35500	SY		0.00	0	0	57,909	0	57,909	1.63
USR PM safety & misc/ s					0.00	0.00	0.00	1624.00	1624.00	
mall tools	1.00	LS		0.00	0	0	0	1,624	1,624	1624.00
TOTAL geotextile fabri	35500	SY			40,151	13,916	57,909	1,624	113,600	3.20

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 11. unclassified excavation

This item is for all labor, equipment, and materials required to excavate the trench for the pipeline. The design section will use an avg. depth of 16' and a 9' width. The material will be excavated by a backhoe and loaded into dump trucks and hauled to a disposal area within an 8 mile or 30 min roundtrip.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM safety & misc					0.00	0.00	0.00	8956.40	8956.40	
	1.00	LS		0.00	0	0	0	8,956	8,956	8956.40
USR PM BACKHOE CAT 225B					0.00	37.74	0.00	0.00	37.74	
1.25 CY	619.00	HR	BKHB	1.00	0	23,361	0	0	23,361	37.74
USR PM DUMP TRUCK 12 C					0.00	22.16	0.00	0.00	22.16	
Y	4952.00	HR	TRKE	1.00	0	109,736	0	0	109,736	22.16
USR PM OILER					12.32	0.00	0.00	0.00	12.32	
	619.00	HR	OILM	1.00	7,623	0	0	0	7,623	12.32
USR PM TRUCK DRIVER					12.68	0.00	0.00	0.00	12.68	
	4952.00	HR	TRKM	1.00	62,767	0	0	0	62,767	12.68
USR PM PEO-backhoe					19.60	0.00	0.00	0.00	19.60	
	619.00	HR	PEOM	1.00	12,133	0	0	0	12,133	19.60
USR PM LABORER					12.32	0.00	0.00	0.00	12.32	
	619.00	HR	LABM	1.00	7,623	0	0	0	7,623	12.32
TOTAL unclassified exc	77400	CY			90,146	133,097	0	8,956	232,200	3.00

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 12. remove and replace concrete road

This item is for all equipment, labor, and materials required to remove and replace the concrete roadway (7800' of existing pavement x 26' wide).

Price reference: Louisiana DOTD job #062-03-0007

	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM remove concrete				0.00	0.00	0.00	10.00	10.00	
roadway	22500 SY		0.00	0	0	0	225,000	225,000	10.00
USR PM replace concrete				0.00	0.00	0.00	24.50	24.50	
roadway	22500 SY		0.00	0	0	0	551,250	551,250	24.50
USR PM safety & misc				0.00	0.00	0.00	6750.00	6750.00	
	1.00 LS		0.00	0	0	0	6,750	6,750	6750.00
TOTAL remove and repla	22500 SY			0	0	0	783,000	783,000	34.80

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 13. remove and replace asphalt road

This item is for all labor, equipment, and materials to remove and replace the asphalt roadway at West Napoleon Ave (300' of road x 26' wide) for the forced main tie-in.

Price reference: Louisiana DOTD job #062-03-0007

USR PM remove asphalt r					0.00	0.00	0.00	10.00	10.00	
oadway	900.00	SY		0.00	0	0	0	9,000	9,000	10.00
USR PM install asphalt					0.00	0.00	0.00	12.00	12.00	
roadway	900.00	SY		0.00	0	0	0	10,800	10,800	12.00
USR PM safety & misc					0.00	0.00	0.00	360.00	360.00	
	1.00	LS		0.00	0	0	0	360	360	360.00
TOTAL remove and repla	900.00	SY			0	0	0	20,160	20,160	22.40

A. Stormwater Quality Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 14. riversand subbase										
USR PM place and spread					0.80	0.78	0.00	0.00	1.58	
sand	17500	CY	DGRDM	40.00	13,963	13,729	0	0	27,692	1.58
USR PM sand - material,					0.00	0.00	5.44	0.00	5.44	
delivered	17500	CY		0.00	0	0	95,156	0	95,156	5.44
USR PM safety & misc/sm					0.00	0.00	0.00	3151.75	3151.75	
all tools	1.00	LS		0.00	0	0	0	3,152	3,152	3151.75
TOTAL riversand subbas	17500	CY			13,963	13,729	95,156	3,152	126,000	7.20

A 19001800 14. riversand subbase: This item is for all labor, equipment, and materials required to furnish and install a sand subbase for the new roadway. The design section is 7800' of raodway x 2' depth x 30' wide. The material will be truck delivered and placed by a dozer assisted by a laborer at a production rate of 40 cy/hr.

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 15. remove & replace conc drives

This item is for all labor, equipment, and materials required to remove and replace 110 concrete driveways that are in the pipeline path. Avg. drive apron assumed to be 12' x 12' = 16 sy/ea.

Price reference: Louisiana DOTD job #062-03-0007

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM remove concrete driveways	1800.00	SY		0.00	0.00 0	0.00 0	0.00 0	10.00 18,000	10.00 18,000	10.00
USR PM install concrete driveways	1800.00	SY		0.00	0.00 0	0.00 0	0.00 0	24.50 44,100	24.50 44,100	24.50
USR PM safety & misc	1.00	LS		0.00	0.00 0	0.00 0	0.00 0	540.00 540	540.00 540	540.00
TOTAL remove & replace	1800.00	SY			0	0	0	62,640	62,640	34.80

A. Stormwater Quality Demo Project

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 16. remove & replace conc sidewalks

This item is for all labor, equipment, and materials required to remove and replace concrete sidewalks that are in the pipeline path. The project design assumed to replace one side from W. Napoleon to Airline Hwy (6400' x 4')

Price reference: Louisiana DOTD job #062-03-0007

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM remove concrete					0.00	0.00	0.00	10.00	10.00	
sidewalks	2850.00	SY		0.00	0	0	0	28,500	28,500	10.00
USR PM install concrete					0.00	0.00	0.00	24.50	24.50	
sidewalks	2850.00	SY		0.00	0	0	0	69,825	69,825	24.50
USR PM safety & misc					0.00	0.00	0.00	855.00	855.00	
	1.00	LS		0.00	0	0	0	855	855	855.00
TOTAL remove & replace	2850.00	SY			0	0	0	99,180	99,180	34.80

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 17. sod

This item is for all labor, equipment, and materials required to replace sod where disturbed during construction. The project design used a 7' width behind curb (7800' x 7') and subtracted out driveways (1800 sy) and cross streets (300 sy). The sod will be delivered by a supplier and placed by a laborer.

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM install sod					**1.23**	**0.00**	**0.00**	**0.00**	**1.23**	
	4000.00	**SY**	**LABR1**	**10.00**	**4,926**	**0**	**0**	**0**	**4,926**	**1.23**
USR PM sod - material,					**0.00**	**0.00**	**3.70**	**0.00**	**3.70**	
delivered	**4000.00**	**SY**		**0.00**	**0**	**0**	**14,790**	**0**	**14,790**	**3.70**
USR PM safety & misc					**0.00**	**0.00**	**0.00**	**283.60**	**283.60**	
	1.00	**LS**		**0.00**	**0**	**0**	**0**	**284**	**284**	**283.60**
TOTAL sod	**4000.00**	**SY**			**4,926**	**0**	**14,790**	**284**	**20,000**	**5.00**

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 18. adjust sewer house connections

This item is for all labor, equipment, and materials required to adjust the house sewer connections that are in the way of the new pipeline. The project design estimated 1/5 of the total 125 lots will require adjustments. Allow 1 wd for each sewer adjustment.

USR PM adjust sewer hou					668.38	128.50	0.00	0.00	796.88	
se connections	25.00	EA	UTIL4	0.10	16,710	3,213	0	0	19,922	796.88
USR PM 6" PVC pipe - 20					0.00	0.00	45.68	0.00	45.68	
LF @ $2.10/lf	25.00	EA		0.00	0	0	1,142	0	1,142	45.68
USR PM glue, cleaner, &					0.00	0.00	10.88	0.00	10.88	
misc supplies	25.00	EA		0.00	0	0	272	0	272	10.88
USR PM safety & misc -					0.00	0.00	0.00	664.25	664.25	
small tools	1.00	LS		0.00	0	0	0	664	664	664.25
TOTAL adjust sewer hou	25.00	EA			16,710	3,213	1,414	664	22,000	880.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 19001800 19. adjust water house connections This item is for all labor, equipment, and materials required to adjust the house waterline connections that are in the way of the new pipeline. The project design estimated that 1/5 of the total 125 lots will require adjustments. Allow 3 waterline adjustments per wd.										
USR PM adjust water hou					222.79	42.83	0.00	0.00	265.63	
se connections	25.00	EA	UTIL4	0.30	5,570	1,071	0	0	6,641	265.63
USR PM Plumbing & hardw					0.00	0.00	10.88	0.00	10.88	
are supplies	25.00	EA		0.00	0	0	272	0	272	10.88
USR PM safety & misc -					0.00	0.00	0.00	87.46	87.46	
small tools	1.00	LS		0.00	0	0	0	87	87	87.46
TOTAL adjust water hou	25.00	EA			5,570	1,071	272	87	7,000	280.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 20. waterline offsets

This item is for all equipment, labor, and materials required to offset waterlines where necessary. The project will cross 21 waterlines. A small plumbing/utility crew will offset 2 waterline locations per day.

USR PM modify waterline					668.38	128.50	0.00	0.00	796.88	
s	21.00	EA	UTIL4	0.10	14,036	2,699	0	0	16,734	796.88
USR PM 40'- 6" plastic					0.00	0.00	15.23	0.00	15.23	
pipe per offset -fiberglass filament wound	840.00	LF		0.00	0	0	12,789	0	12,789	15.23
USR PM plastic pipe - s					0.00	0.00	59.81	0.00	59.81	
addle & coupling	21.00	EA		0.00	0	0	1,256	0	1,256	59.81
USR PM 20' - 1" copper					0.00	0.00	4.35	0.00	4.35	
pipe	420.00	LF		0.00	0	0	1,827	0	1,827	4.35
USR PM misc couplings					0.00	0.00	27.19	0.00	27.19	
	21.00	EA		0.00	0	0	571	0	571	27.19
USR PM 4 elbows/offset					0.00	0.00	5.44	0.00	5.44	
	84.00	EA		0.00	0	0	457	0	457	5.44
USR PM safety & misc					0.00	0.00	0.00	1645.77	1645.77	
	1.00	LS		0.00	0	0	0	1,646	1,646	1645.77
TOTAL waterline offset	21.00	EA			14,036	2,699	16,900	1,646	35,280	1680.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 21. conflict box

This item is for all equipment, labor, and materials required to furnish and construct conflict boxes. The project design will cross 30 drainlines. 3 days will be allowed for excavation, slab pouring, brick construction, and backfilling. An additional day will be allowed for the additional hook up due to conflicts. An additional 1/2 wd will be allowed for installation of the frame and cover.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM construct confli					2397.03	385.89	0.00	0.00	2782.91	
ct box	30.00	EA	CATBM2	0.03	71,911	11,577	0	0	83,487	2782.91
USR PM install frame an					399.11	64.25	0.00	0.00	463.36	
d cover	30.00	EA	CATBM2	0.20	11,973	1,928	0	0	13,901	463.36
USR PM frame and cover					0.00	0.00	271.88	0.00	271.88	
	30.00	EA		0.00	0	0	8,156	0	8,156	271.88
USR PM bricks - 1,000 @					0.00	0.00	54.37	0.00	54.37	
$0.50 / c box	30.00	EA		0.00	0	0	1,631	0	1,631	54.37
USR PM mortor					0.00	0.00	32.63	0.00	32.63	
	30.00	EA		0.00	0	0	979	0	979	32.63
USR PM base slab					0.00	0.00	108.75	0.00	108.75	
	30.00	EA		0.00	0	0	3,263	0	3,263	108.75
USR PM additional hook-					798.21	128.50	0.00	0.00	926.71	
ups	30.00	EA	CATBM2	0.10	23,946	3,855	0	0	27,801	926.71
USR PM safety & misc					0.00	0.00	0.00	2381.91	2381.91	
	1.00	LS		0.00	0	0	0	2,382	2,382	2381.91
TOTAL conflict box	30.00	EA			107,830	17,359	14,029	2,382	141,600	4720.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 22. catch basins

This item is for all equipment, labor, and materials required to furnish and install pre-cast catch basins to replace the 40 on the east side of N. Woodlawn that are in the project path. 2 days will be allowed for excavation, basin placing, and backfilling. An additional 1/2 wd will be allowed for installation of the frame and cover.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM install catch ba					1596.42	257.00	0.00	0.00	1853.42	
sins	40.00	EA	CATBM2	0.05	63,857	10,280	0	0	74,137	1853.42
USR PM install frame an					399.11	64.25	0.00	0.00	463.36	
d cover	40.00	EA	CATBM2	0.20	15,964	2,570	0	0	18,534	463.36
USR PM frame and cover					0.00	0.00	271.88	0.00	271.88	
	40.00	EA		0.00	0	0	10,875	0	10,875	271.88
USR PM pre-cast conc. b					0.00	0.00	326.25	0.00	326.25	
asin box	40.00	EA		0.00	0	0	13,050	0	13,050	326.25
USR PM mortor					0.00	0.00	27.19	0.00	27.19	
	40.00	EA		0.00	0	0	1,088	0	1,088	27.19
USR PM safety & misc					0.00	0.00	0.00	716.50	716.50	
	1.00	LS		0.00	0	0	0	717	717	716.50
TOTAL catch basins	40.00	EA			79,821	12,850	25,013	717	118,400	2960.00

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 23. 48"x36" tapping sleeve & valve

This item is for all labor, equipment, and materials required to tap the new output line (36") from the new Suburban Canal lift station into the existing 48" forced main.

This item will be done by a subcontractor.

Quote: Price Brothers 6/13/94 $20,310/ea - valve not included.

USR PM tap new 36" line				0.00	0.00	0.00	25000.00	25000.00	
into 48" main	1.00 LS		0.00	0	0	0	25,000	25,000	25000.00
USR PM safety & misc				0.00	0.00	0.00	600.00	600.00	
	1.00 LS		0.00	0	0	0	600	600	600.00
TOTAL 48"x36" tapping	1.00 EA			0	0	0	25,600	25,600	25600.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 24. aerial crossing @ W. Metairie

This item is all labor, equipment, and materials required for construction of concrete pile bents to cross the W. Metairie canal. 4 pile bents will be used consisting of 2 -12" x 70' prestressed concrete piles and a 2' sq.x 6' cast in place cap for bracing, pipe support, and pile cap.

Allow 2 wd to do all formwork, including stripping the forms. Allow 1 wd for resteel installation, and allow 1 wd to pour the concrete caps.

NOTE: This item does NOT include the pipe for the crossing.

	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM drive conc piles					4.46	3.56	0.00	0.00	8.02	
	560.00	LF	CNPLM2	28.00	2,499	1,992	0	0	4,491	8.02
USR PM 12" conc piles -					0.00	0.00	7.61	0.00	7.61	
8 @ 70 lf	560.00	LF		0.00	0	0	4,263	0	4,263	7.61
USR PM concrete materia					0.00	0.00	65.25	0.00	65.25	
l	3.55	CY		0.00	0	0	232	0	232	65.25
USR PM form materials					0.00	0.00	1.09	0.00	1.09	
	224.00	SF		0.00	0	0	244	0	244	1.09
USR PM resteel material					0.00	0.00	0.25	0.00	0.25	
	450.00	SF		0.00	0	0	113	0	113	0.25
USR PM form pile caps					3.73	0.00	0.00	0.00	3.73	
	224.00	SF	CP1HLPM	11.20	836	0	0	0	836	3.73
USR PM place resteel					0.99	0.00	0.00	0.00	0.99	
	450.00	LBS	IRLB5	45.00	443	0	0	0	443	0.99
USR PM place concrete					121.91	0.00	0.00	0.00	121.91	
	3.55	CY	MASONRY3	0.36	433	0	0	0	433	121.91
USR PM safety & misc					0.00	0.00	0.00	145.09	145.09	
	1.00	LS		0.00	0	0	0	145	145	145.09
TOTAL aerial crossing					4,212	1,992	4,851	145	11,200	

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 25. Connection to Existing F.M.

This item is for all labor, equipment, and materials required to tie the new 48" pipeline into the existing 48" forced main. The installation requires a 36" bypass line in order to have un-interrupted service in the main line. The 36" by-pass line will be hot-tapped into the existing 48" line, then the 48" line will be plugged, and the TEE installed to connect the new 48" concrete pipeline.

Prices for 36" bypass line work are referenced from items #7 - 11.
Price quote on hot-tap from TDW Services.
Price quote on pipe from N.O. Cement Products.

USR PM bypass line hot-					0.00	0.00	0.00	62281.00	62281.00	
tap 36" x 48"	2.00	EA		0.00	0	0	0	124,562	124,562	62281.00
USR PM safety & misc					0.00	0.00	0.00	1380.89	1380.89	
	1.00	LS		0.00	0	0	0	1,381	1,381	1380.89
USR PM place conc drain					5.24	1.71	0.00	0.00	6.95	
age pipe	300.00	LF	DRAINAGE01	25.00	1,572	513	0	0	2,085	6.95
USR PM 36" dia concrete					0.00	0.00	56.55	0.00	56.55	
pipe	300.00	LF		0.00	0	0	16,965	0	16,965	56.55
USR PM small tools / sa					0.00	0.00	0.00	0.00	0.00	
fety & misc	1.00	LS		0.00	0	0	0	0	0	0.00
USR PM excavation for b					0.00	0.00	0.00	3.00	3.00	
ypass	1000.00	CY		0.00	0	0	0	3,000	3,000	3.00
USR PM sheeting for tre					0.00	0.00	0.00	450.00	450.00	
nching	25.00	MBF		0.00	0	0	0	11,250	11,250	450.00
USR PM fabric under pip					0.00	0.00	0.00	3.25	3.25	
e	270.00	SY		0.00	0	0	0	878	878	3.25
USR PM bedding under pi					0.00	0.00	0.00	26.00	26.00	
peline	180.00	CY		0.00	0	0	0	4,680	4,680	26.00
USR PM backfill for byp					0.00	0.00	0.00	8.00	8.00	
ass line	1000.00	CY		0.00	0	0	0	8,000	8,000	8.00

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL Connection to Ex					1,572	513	16,965	153,750	172,800	

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 26. jack & bore @ Airline Hwy.

This item is for all labor, equipment, and materials required to install a 150' - 78" dia. casing under Airline Hwy for the new pipeline to go through. The casing will be installed by jacking and boring. This includes excavation for the pit, all permits, materials, etc. This item will be done by a subcontractor.

Price quote: Tri-State Jacking & Boring

	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM jack & bore 78"				0.00	0.00	0.00	1300.00	1300.00	
dia casing	150.00 LF		0.00	0	0	0	195,000	195,000	1300.00
USR PM round				0.00	0.00	0.00	20.00	20.00	
	1.00 LS		0.00	0	0	0	20	20	20.00
TOTAL jack & bore @ Ai				0	0	0	195,020	195,020	

A 19. Buildings, Grounds,	QUANTY UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 19001800 27. jack & bore @ railroad

This item is for all labor, equipment, and materials required to install a 150' - 78" dia. casing under the KCS railroad tracks at Airline Hwy for the new pipeline to go through. This includes all excavation for the pit, all permits, casing, etc. The casing will be jacked and bored under the railroad. This will be done by a subcontractor.

Price quote: Tri-State Jacking & Boring

USR PM jack & bore 78"				0.00	0.00	0.00	1300.00	1300.00	
dia casing	150.00 LF		0.00	0	0	0	195,000	195,000	1300.00
USR PM round off				0.00	0.00	0.00	20.00	20.00	
	1.00 LS		0.00	0	0	0	20	20	20.00
TOTAL jack & bore @ ra				0	0	0	195,020	195,020	

A 19001800 28. tie in at S.T.P.

This item is for all equipment, labor, and materials required to tie-in the new pipeline at the sewer treatment plant. Allow 3 wd with 2 welders and a fitter to complete the tie-in. Allow steel members for supporting frame work.

A 19. Buildings, Grounds,	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR PM tie-in at s.t.p.					3378.51	1217.72	0.00	0.00	4596.23	
	1.00	LS	WELDER2	0.03	3,379	1,218	0	0	4,596	4596.23
USR PM structural steel					0.00	0.00	0.41	0.00	0.41	
for frame work	2000.00	LBS		0.00	0	0	826	0	826	0.41
USR PM cutting torches					0.00	0.00	0.00	500.00	500.00	
& gas	1.00	LS		0.00	0	0	0	500	500	500.00
USR PM misc welding sup					0.00	0.00	0.00	200.00	200.00	
plies	1.00	LS		0.00	0	0	0	200	200	200.00
USR PM 48" dia pipe					0.00	0.00	146.81	0.00	146.81	
	50.00	LF		0.00	0	0	7,341	0	7,341	146.81
USR PM 24" pipe					0.00	0.00	54.37	0.00	54.37	
	100.00	LF		0.00	0	0	5,437	0	5,437	54.37
USR PM 24" valves					0.00	0.00	1305.00	0.00	1305.00	
	2.00	EA		0.00	0	0	2,610	0	2,610	1305.00
USR PM 24" flanges					0.00	0.00	217.50	0.00	217.50	
	4.00	EA		0.00	0	0	870	0	870	217.50
USR PM 48" junction pip					0.00	0.00	543.75	0.00	543.75	
e	1.00	EA		0.00	0	0	544	0	544	543.75
USR PM safety & misc					0.00	0.00	0.00	1075.40	1075.40	
	1.00	LS		0.00	0	0	0	1,075	1,075	1075.40
TOTAL tie in at S.T.P.					3,379	1,218	17,628	1,775	24,000	
TOTAL Buildings, Groun					979,057	462,354	3,048,433	1,670,156	6,160,000	
TOTAL Stormwater Qualt					979,057	462,354	3,048,433	1,670,156	6,160,000	
TOTAL Jeff Parish Stor	1.00	EA			979,057	462,354	3,048,433	1,670,156	6,160,000	6160000

ITEM ID	DESCRIPTION		
A 19001800 01.	Mob & Demob		
A 19001800 02.	Removal of Structures and Obstrc		
DEMCM2	DEMOLISH CONCRETE 2	PROD = 100%	CREW HOURS = 200
A 19001800 03.	Traffic Control		
SURFACING	surfacing - d4 dozer, roller smth,SP,12T	PROD = 100%	CREW HOURS = 20
TRUCK1	8x16 flatbed truck, 1 driver, 2 laborer	PROD = 100%	CREW HOURS = 40
TRUCKCRANE	truck crane and operator	PROD = 100%	CREW HOURS = 30
A 19001800 04.	Constr Photo and Video		
A 19001800 05.	seismic monitoring		
A 19001800 06.	60" dia force main		
DRAINAGE01	place pipe - trk crn,peo,oiler,pipeftr,3 lab,frm	PROD = 100%	CREW HOURS = 3075
A 19001800 07.	limestone bedding		
BEDDING01	cat 926 FEL, 1 tamper, 1 peo, 3 laborers	PROD = 100%	CREW HOURS = 455
A 19001800 08.	riversand backfill		
FEL001	Cat 926 FEL, 1 peo, 3 laborers	PROD = 100%	CREW HOURS = 1002
A 19001800 09.	wood sheeting		
SHEETING01	place sheeting- 2 carp,4 lab,cat225,peo,chn saw	PROD = 100%	CREW HOURS = 550
A 19001800 10.	geotextile fabric		
FEL001	Cat 926 FEL, 1 peo, 3 laborers	PROD = 100%	CREW HOURS = 710
A 19001800 11.	unclassified excavation		
A 19001800 12.	remove and replace concrete road		
A 19001800 13.	remove and replace asphalt road		
A 19001800 14.	riversand subbase		
DGRDM	DEGRADING LEVEE - METRO	PROD = 100%	CREW HOURS = 438
A 19001800 15.	remove & replace conc drives		
A 19001800 16.	remove & replace conc sidewalks		
A 19001800 17.	sod		
LABR1	1 laborer (metro)	PROD = 100%	CREW HOURS = 400
A 19001800 18.	adjust sewer house connections		
UTIL4	Util/plumbng work 4, JD 510, plumber, hlp,labore	PROD = 100%	CREW HOURS = 250
A 19001800 19.	adjust water house connections		
UTIL4	Util/plumbng work 4, JD 510, plumber, hlp,labore	PROD = 100%	CREW HOURS = 83
A 19001800 20.	waterline offsets		
UTIL4	Util/plumbng work 4, JD 510, plumber, hlp,labore	PROD = 100%	CREW HOURS = 210
A 19001800 21.	conflict box		
CATBM2	CATCH BASIN - JD 510, 1 cement mason, 3 laborer	PROD = 100%	CREW HOURS = 1351
A 19001800 22.	catch basins		
CATBM2	CATCH BASIN - JD 510, 1 cement mason, 3 laborer	PROD = 100%	CREW HOURS = 1000

ITEM ID DESCRIPTION

A 19001800 23.	48"x36" tapping sleeve & valve		
A 19001800 24.	aerial crossing @ W. Metairie		
CNPLM2	PRESTRESSED CONC. PILE	PROD = 100%	CREW HOURS = 20
CP1HLPM	carpenter, 1 carp. helper - metro	PROD = 100%	CREW HOURS = 20
IRLB5	1 Ironworker, 1 irnwk helper, no equipment	PROD = 0.00%	CREW HOURS = 10
MASONRY3	masonry crew - 1 mason, 1 helper	PROD = 100%	CREW HOURS = 10
A 19001800 25.	Connection to Existing F.M.		
DRAINAGE01	place pipe - trk crn,peo,oiler,pipeftr,3 lab,frm	PROD = 100%	CREW HOURS = 12
A 19001800 26.	jack & bore @ Airline Hwy.		
A 19001800 27.	jack & bore @ railroad		
A 19001800 28.	tie in at S.T.P.		
WELDER2	2 welders, 1 hlp, 1 pfitter, 1 hlp, weld mach	PROD = 100%	CREW HOURS = 30

** [illegible] **

SRC LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A 19001800 01.	Mob & Demob										
USR DOPM	PEO DRAGLINE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	96
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	128
USR OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	224
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	800
USR TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	448
A 19001800 02.	Removal of Structures and Obstrc										
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	400
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	400
USR TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	400
A 19001800 03.	Traffic Control										
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	130
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	70
USR TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	40
A 19001800 04.	Constr Photo and Video										
A 19001800 05.	seismic monitoring										
A 19001800 06.	60" dia force main										
USR FOREMAN2	foreman 2 $26/hr	26.00	0.0%	0.0%	0.00	0.00	26.00	HR	01/21/93	0.00	3075
'R LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	12300
R OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	3075
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	3075
USR PIPM	PIPEFITTER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	3075
A 19001800 07.	limestone bedding										
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	1365
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	455
A 19001800 08.	riversand backfill										
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	3006
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	1002
A 19001800 09.	wood sheeting										
USR CARM	CARPENTER	12.21	16.7%	40.0%	2.60	0.00	22.54	HR	02/21/95	0.00	1100
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	2200
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	550
A 19001800 10.	geotextile fabric										
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	2130
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	710
A 19001800 11.	unclassified excavation										
USR LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	619
USR OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	619
USR PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	619
'SR TRKM	TRUCK DRIVER	7.76	16.7%	40.0%	0.00	0.00	12.68	HR	02/21/95	0.00	4952
A 19001800 12.	remove and replace concrete road										
A 19001800 13.	remove and replace asphalt road										

** LAB R BACKUP [illegible] **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS-INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	19001800 14.	riversand subbase										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	438
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	438
A	19001800 15.	remove & replace conc drives										
A	19001800 16.	remove & replace conc sidewalks										
A	19001800 17.	sod										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	400
A	19001800 18.	adjust sewer house connections										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	250
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	250
USR	PLMM	PLUMBER	12.69	16.7%	40.0%	0.00	0.00	20.73	HR	02/21/95	0.00	250
USR	PLMMHLP	PLUMBER helper	8.69	16.7%	40.0%	0.00	0.00	14.19	HR	03/03/95	0.00	250
A	19001800 19.	adjust water house connections										
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	83
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	83
USR	PLMM	PLUMBER	12.69	16.7%	40.0%	0.00	0.00	20.73	HR	02/21/95	0.00	83
USR	PLMMHLP	PLUMBER helper	8.69	16.7%	40.0%	0.00	0.00	14.19	HR	03/03/95	0.00	83
	19001800 20.	waterline offsets										
R	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	210
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	210
USR	PLMM	PLUMBER	12.69	16.7%	40.0%	0.00	0.00	20.73	HR	02/21/95	0.00	210
USR	PLMMHLP	PLUMBER helper	8.69	16.7%	40.0%	0.00	0.00	14.19	HR	03/03/95	0.00	210
A	19001800 21.	conflict box										
USR	CMNM	CEMENT MASON	13.22	16.7%	40.0%	1.68	0.00	23.27	HR	02/21/95	0.00	1351
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	4053
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	1351
A	19001800 22.	catch basins										
USR	CMNM	CEMENT MASON	13.22	16.7%	40.0%	1.68	0.00	23.27	HR	02/21/95	0.00	1000
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	3000
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	1000
A	19001800 23.	48"x36" tapping sleeve & valve										
A	19001800 24.	aerial crossing @ W. Metairie										
USR	CARM	CARPENTER	12.21	16.7%	40.0%	2.60	0.00	22.54	HR	02/21/95	0.00	20
USR	CMNM	CEMENT MASON	13.22	16.7%	40.0%	1.68	0.00	23.27	HR	02/21/95	0.00	10
USR	CMNMH	CEMENT MASON HELPER	11.22	16.7%	40.0%	1.68	0.00	20.01	HR	02/21/95	0.00	10
USR	CRHM	CARPENTER HELPER	10.21	16.7%	40.0%	2.60	0.00	19.28	HR	02/21/95	0.00	20
USR	FOREMAN1	foreman 1 $24/hr	24.00	0.0%	0.0%	0.00	0.00	24.00	HR	06/20/91	0.00	20
USR	IRNM	IRONWORKER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/21/95	0.00	10
USR	IRNMH	IRONWORKER HELPER	10.69	16.7%	40.0%	3.08	0.00	20.54	HR	02/21/95	0.00	10
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	40
SR	OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	20
R	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	20
USR	PILM	PILEDRIVERMAN	12.00	16.7%	40.0%	2.60	0.00	22.20	HR	02/21/95	0.00	40

** LAB R BACKUP - [illegible] **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	19001800 25.	Connection to Existing F.M.										
USR	FOREMAN2	foreman 2 $26/hr	26.00	0.0%	0.0%	0.00	0.00	26.00	HR	01/21/93	0.00	12
USR	LABM	LABORER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	48
USR	OILM	OILER	7.54	16.7%	40.0%	0.00	0.00	12.32	HR	02/21/95	0.00	12
USR	PEOM	PEO-ALL EXCPT DRGLNE	12.00	16.7%	40.0%	0.00	0.00	19.60	HR	02/21/95	0.00	12
USR	PIPM	PIPEFITTER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	12
A	19001800 26.	jack & bore @ Airline Hwy.										
A	19001800 27.	jack & bore @ railroad										
A	19001800 28.	tie in at S.T.P.										
USR	PIPM	PIPEFITTER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	30
USR	PIPMH	PIPEFITTER HELPER	10.69	16.7%	40.0%	3.08	0.00	20.54	HR	02/22/95	0.00	30
USR	WELM	WELDER	12.69	16.7%	40.0%	3.08	0.00	23.81	HR	02/22/95	0.00	60
USR	WELMH	WELDER helper	10.69	16.7%	40.0%	3.08	0.00	20.54	HR	03/23/95	0.00	30

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	TOTAL HOURS
A	19001800 01.	Mob & Demob									
USR	AIRC	AIR COMPRESSOR 900 CFM	5.94	1.85	7.39				6.77	21.95 HR	64
USR	AIRF	AIR COMPRESSOR 250 CFM	2.22	0.68	2.70				2.48	8.08 HR	64
USR	BKHB	BACKHOE CAT 225B 1.25 CY	16.65	4.62	4.30				12.17	37.74 HR	128
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	160
USR	BKHF	LDR/BKHOE KENT RAM 999,CHISEL	1.65	0.29					2.84	4.78 HR	64
USR	BKTA	2.0 concrete bucket - manual	0.26	0.07					0.17	0.50 HR	64
USR	CHNSAW	chainsaw, Homelite 31"	0.16	0.02	0.31				0.99	1.48 HR	96
USR	CHYA	CHERRYPICKER GROVE 18 TON	10.34	3.65	4.15				8.52	26.66 HR	64
USR	COMP	MANUAL COMPACTOR WACKER GVR 151	0.46	0.07	0.42				0.68	1.63 HR	192
USR	CRNE	CRANE LS 138 75 T 150' boom	25.23	10.97	3.39				14.39	53.98 HR	32
USR	CRNL1	PILE DRIVING LEADS -10"x37" 60'	2.72	0.64					5.82	9.18 HR	32
USR	CRNM	Hydr crane, trk mtd, 25T, 80' bm	16.38	5.71	5.97				13.34	41.40 HR	64
USR	DOZA	DOZER D-4 W/BLADE	6.24	1.88	2.93				7.74	18.79 HR	128
USR	DOZB	DOZER D-6 W/BLADE	10.74	3.24	4.31				13.09	31.38 HR	64
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	128
USR	MOTG	MOTOR GRADER CAT 12-G	9.90	3.66	3.52				7.84	24.92 HR	64
USR	PILC	PILE HAMMER VULCAN 06 900 CFM	5.25	1.23					7.38	13.86 HR	32
USR	PMPC	WATER PUMP 3" HOMELITE	0.12	0.03	0.83				0.35	1.33 HR	160
USR	PVBA	PAVING BREAKER B87C 50CFM	0.21	0.03					0.41	0.65 HR	128
USR	ROLD	ROLLER smooth, SP, 8-12T	5.30	1.47	2.28				4.61	13.66 HR	64
R	T40XX002	Hydr crane, 7T, ADD truck	5.02	1.14					4.73	10.89 HR	64
SR	T50F0014	Ford trk, LTS8000, 54k GVW, 3 ax	6.94	1.66	7.59				8.38	24.57 HR	64
USR	TRCB	FARM TRACTOR JD 2355	1.89	0.42	1.82				2.04	6.17 HR	64
USR	TRKA	WATER TRUCK 2000 GAL	4.68	1.21	4.75				5.54	16.18 HR	32
USR	TRKC	PICKUP TRUCK .75 TON GAS	1.31	0.30	2.46				1.92	5.99 HR	64
USR	TRKE	DUMP TRUCK 12 CY	6.26	1.51	6.80				7.59	22.16 HR	192
USR	TRKJ	flatbed trk,8x16,64k GVW,350HP	9.15	2.20	11.07				11.13	33.55 HR	96
USR	WELD	WELDER 400 AMP	0.84	0.24	2.28				1.27	4.63 HR	128
A	19001800 02.	Removal of Structures and Obstrc									
USR	AIRF	AIR COMPRESSOR 250 CFM	2.22	0.68	2.70				2.48	8.08 HR	200
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	400
USR	BKHF	LDR/BKHOE KENT RAM 999,CHISEL	1.65	0.29					2.84	4.78 HR	200
USR	TRKE	DUMP TRUCK 12 CY	6.26	1.51	6.80				7.59	22.16 HR	400
A	19001800 03.	Traffic Control									
USR	DOZA	DOZER D-4 W/BLADE	6.24	1.88	2.93				7.74	18.79 HR	20
USR	ROLD	ROLLER smooth, SP, 8-12T	5.30	1.47	2.28				4.61	13.66 HR	20
USR	T40XX002	Hydr crane, 7T, ADD truck	5.02	1.14					4.73	10.89 HR	30
USR	T50F0014	Ford trk, LTS8000, 54k GVW, 3 ax	6.94	1.66	7.59				8.38	24.57 HR	30
USR	TRKJ	flatbed trk,8x16,64k GVW,350HP	9.15	2.20	11.07				11.13	33.55 HR	40
A	19001800 04.	Constr Photo and Video									
A	19001800 05.	seismic monitoring									
A	19001800 06.	60" dia force main									
USR	CRNM	Hydr crane, trk mtd, 25T, 80' bm	16.38	5.71	5.97				13.34	41.40 HR	3075
SR	PMPC	WATER PUMP 3" HOMELITE	0.12	0.03	0.83				0.35	1.33 HR	3075
A	19001800 07.	limestone bedding									
USR	COMP	MANUAL COMPACTOR WACKER GVR 151	0.46	0.07	0.42				0.68	1.63 HR	455

** EQUIPMENT [illegible] **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	455
A	19001800 08.	riversand backfill									
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	1002
A	19001800 09.	wood sheeting									
USR	BKHB	BACKHOE CAT 225B 1.25 CY	16.65	4.62	4.30				12.17	37.74 HR	550
USR	CHNSAW	chainsaw, Homelite 31"	0.16	0.02	0.31				0.99	1.48 HR	1100
A	19001800 10.	geotextile fabric									
USR	FELB	F E LOADER CAT 926 2.0 CY wheel	7.14	2.28	3.13				7.05	19.60 HR	710
A	19001800 11.	unclassified excavation									
USR	BKHB	BACKHOE CAT 225B 1.25 CY	16.65	4.62	4.30				12.17	37.74 HR	619
USR	TRKE	DUMP TRUCK 12 CY	6.26	1.51	6.80				7.59	22.16 HR	4952
A	19001800 12.	remove and replace concrete road									
A	19001800 13.	remove and replace asphalt road									
A	19001800 14.	riversand subbase									
USR	DOZB	DOZER D-6 W/BLADE	10.74	3.24	4.31				13.09	31.38 HR	438
	19001800 15.	remove & replace conc drives									
	19001800 16.	remove & replace conc sidewalks									
A	19001800 17.	sod									
A	19001800 18.	adjust sewer house connections									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	250
A	19001800 19.	adjust water house connections									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	83
A	19001800 20.	waterline offsets									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	210
A	19001800 21.	conflict box									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	1351
A	19001800 22.	catch basins									
USR	BKHD1	BKHOE JD 510C 1.25cy FEL,18"bkh	4.44	1.41	2.42				4.58	12.85 HR	1000
A	19001800 23.	48"x36" tapping sleeve & valve									
A	19001800 24.	aerial crossing @ W. Metairie									
USR	AIRC	AIR COMPRESSOR 900 CFM	5.94	1.85	7.39				6.77	21.95 HR	20
USR	CRNE	CRANE LS 138 75 T 150' boom	25.23	10.97	3.39				14.39	53.98 HR	20
USR	CRNL1	PILE DRIVING LEADS -10"x37" 60'	2.72	0.64					5.82	9.18 HR	20
USR	PILC	PILE HAMMER VULCAN 06 900 CFM	5.25	1.23					7.38	13.86 HR	20
USR	PVBA	PAVING BREAKER B87C 50CFM	0.21	0.03					0.41	0.65 HR	20
\	19001800 25.	Connection to Existing F.M.									
R	CRNM	Hydr crane, trk mtd, 25T, 80' bm	16.38	5.71	5.97				13.34	41.40 HR	12
USR	PMPC	WATER PUMP 3" HOMELITE	0.12	0.03	0.83				0.35	1.33 HR	12

** EQUIPMENT BACKUP [illegible] **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
A	19001800 26.	jack & bore @ Airline Hwy.									
A	19001800 27.	jack & bore @ railroad									
A	19001800 28.	tie in at S.T.P.									
USR	CHYA	CHERRYPICKER GROVE 18 TON	10.34	3.65	4.15				8.52	26.66 HR	30
USR	WELD	WELDER 400 AMP	0.84	0.24	2.28				1.27	4.63 HR	90

No errors detected...

* * * END OF ERROR REPORT * * *

A 19001800. 60" Dia. Sewer Force Main	REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
A 19001800 60" Dia. Sewer Force Main					1.0000 LS
A 19001800 01 Mob & Demob					4.0000 WD
LBHR016 mob/demob labor hours					
number of days of mob & demob	A 01	4.0000	* Multiply by		WD
hours per wd	N	8.0000			HRS
LBHR016 mob/demob labor hours					32.0000 HRS
MOBHR16					
	N	0.0000	N None		
	N	0.0000	N None		
	N	0.0000			
MOBHR16					0.0000 HOURS
MOBHR26 mob hours					
mob & demob time	A 01	4.0000	* Multiply by		WD
hours per day	N	8.0000			HR/WD
MOBHR26 mob hours					32.0000 HOURS
AIR COMPRESSOR 900 CFM	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
LDR/BKHOE KENT RAM 999,CHISEL	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
2.0 concrete bucket - manual	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
CHERRYPICKER GROVE 18 TON	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
MANUAL COMPACTOR WACKER GVR 151	W MOBHR26	32.0000 HOU	* Multiply by	6.0000	192.0000 HR
DOZER D-4 W/BLADE	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
DOZER D-6 W/BLADE	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
MOTOR GRADER CAT 12-G	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
PILE HAMMER VULCAN 06 900 CFM	W MOBHR26	32.0000 HOU	* Multiply by	1.0000	32.0000 HR
WELDER 400 AMP	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
PEO DRAGLINE - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	3.0000	96.0000 HR
LABORER - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	4.0000	128.0000 HR
OILER - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	7.0000	224.0000 HR
PEO-ALL EXCPT DRGLNE-METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	25.0000	800.0000 HR
TRUCK DRIVER - METRO RATE	W LBHR016	32.0000 HRS	* Multiply by	14.0000	448.0000 HR
AIR COMPRESSOR 250 CFM	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
BACKHOE CAT 225B 1.25 CY	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
BKHOE JD 510C 1.25cy FEL,18"bkh	W MOBHR26	32.0000 HOU	* Multiply by	5.0000	160.0000 HR
chainsaw, Homelite 31"	W MOBHR26	32.0000 HOU	* Multiply by	3.0000	96.0000 HR
CRANE LS 138 75 T 150' boom	W MOBHR26	32.0000 HOU	* Multiply by	1.0000	32.0000 HR

A 19001800 01. Mob & Demob	REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
PILE DRIVING LEADS -10"x37" 60'	W MOBHR26	32.0000 HOU	* Multiply by	1.0000	32.0000 HR
F E LOADER CAT 926 2.0 CY wheel	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
WATER PUMP 3" HOMELITE	W MOBHR26	32.0000 HOU	* Multiply by	5.0000	160.0000 HR
PAVING BREAKER B87C 50CFM	W MOBHR26	32.0000 HOU	* Multiply by	4.0000	128.0000 HR
ROLLER smooth, SP, 8-12T	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
Hydr crane, 7T, ADD truck	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
Ford trk, LTS8000, 54k GVW, 3 ax	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
FARM TRACTOR JD 2355	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
WATER TRUCK 2000 GAL	W MOBHR26	32.0000 HOU	* Multiply by	1.0000	32.0000 HR
PICKUP TRUCK .75 TON GAS	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
DUMP TRUCK 12 CY	W MOBHR26	32.0000 HOU	* Multiply by	6.0000	192.0000 HR
flatbed trk,8x16,64k GVW,350HP	W MOBHR26	32.0000 HOU	* Multiply by	3.0000	96.0000 HR
Hydr crane, trk mtd, 25T, 80' bm	W MOBHR26	32.0000 HOU	* Multiply by	2.0000	64.0000 HR
A 19001800 11 unclassified excavation					77400.0000 CY
DUMPTI6 dump time(in hours)					
dump time(in minutes)	N	2.5000	/ Divide by		MIN
minutes per hour	N	60.0000			MIN/HR
JMPTI6 dump time(in hours)					0.0417 HR
HAULD 6 haul distance (round trip)					
haul distance (1 way)	N	4.0000	* Multiply by		MI
make round trip	N	2.0000			MI
HAULD 6 haul distance (round trip)					8.0000 MI
LOADTI6 load time (in hours)					
load time (in minutes)	N	2.0000	/ Divide by		MIN
minutes per hour	N	60.0000			MIN/HR
LOADTI6 load time (in hours)					0.0333 HR
NTRUCK6 number of trucks needed					
production rate	W PRODRT6 (	125.0000	/ Divide by		CY/HR
work time per hour	W WKTIME6 (	0.8000	/ Divide by		HR
truck cycle time	W TRKCYC6	0.3950	* Multiply by		HR
truck payload	W TRKPAY6	8.0000)	* Multiply by		CY
	N	1.0000)	U Round Up		TRUCKS
round UP to whole number	N	1.0000			TRUCKS
NTRUCK6 number of trucks needed					8.0000 TRUCKS

A 19001800 11. unclassified excavation	REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
PRODRT6 production rate					
production rate (CY/HR)	N	125.0000			CY/HR
PRODRT6 production rate					125.0000 CY/HR
TIME1 6 total work hours					
excavation quantity	N (	77400.0000	/ Divide by		CY
production rate	W PRODRT6	125.0000)	R Round		CY/HR
(round UP to whole number)	N	1.0000			FACTOR
TIME1 6 total work hours					619.0000 HRS
TLOADF6 truck load factor					
load factor	N	0.6667			FACTOR
TLOADF6 truck load factor					0.6667 FACTOR
TRKCAP6 truck capacity					
truck capacity	N	12.0000			CY
TRKCAP6 truck capacity					12.0000 CY
TRKCYC6 truck cycle time					
truck load time	W LOADTI6	0.0333	+ Add to		HR
haul distance	W HAULD 6 (	8.0000	/ Divide by		MI
travel speed	W TRKSPD6	25.0000)	+ Add to		MPH
dump time	W DUMPTI6	0.0417			HR
TRKCYC6 truck cycle time					0.3950 HR
TRKHRS6 total truck hours					
work time	W TIME1 6	619.0000	* Multiply by		HRS
number of trucks needed	W NTRUCK6	8.0000			TRUCKS
TRKHRS6 total truck hours					4952.0000 HR
TRKPAY6 truck payload - CY per cycle					
truck capacity	W TRKCAP6 (	12.0000	* Multiply by		CY

A 19001800 11. unclassified excavation		REFERENCE	REF VALUE	OPERATOR	LOCAL INPUT	QUANTITY UOM
	truck load factor (80%)	W TLOADF6	0.6667)	R Round		FACTOR
	round number	N	1.0000			CY
TRKPAY6	truck payload - CY per cycle					8.0000 CY
TRKSPD6	truck speed					
	truck speed	N	25.0000			MPH
TRKSPD6	truck speed					25.0000 MPH
WKTIME6	work time per hour					
	time efficiency per hour	N	0.8000			FACTOR
WKTIME6	work time per hour					0.8000 HR
EQ1	BACKHOE CAT 225B 1.25 CY	W TIME1 6	619.0000 HRS *	Multiply by	1.0000	619.0000 HR
'Q3	DUMP TRUCK 12 CY	W TRKHRS6	4952.0000 HR *	Multiply by	1.0000	4952.0000 HR
.31	OILER	A EQ1	619.0000 HR *	Multiply by	1.0000	619.0000 HR
LB2	TRUCK DRIVER	A EQ3	4952.0000 HR *	Multiply by	1.0000	4952.0000 HR
LB3	PEO-backhoe	A EQ1	619.0000 HR *	Multiply by	1.0000	619.0000 HR
LB8	LABORER	W TIME1 6	619.0000 HRS *	Multiply by	1.0000	619.0000 HR

A 19001800 18 adjust sewer house connections

25.0000 EA

Project: Jefferson Parish Stormwater Project

Item	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
0001	Mobilization and Demobilization	1	LS	49,200.00	49,200.00
0002	Clearing and Grubbing	1	LS	3,200.00	3,200.00
0003	Dewatering	1	LS	116,300.00	116,300.00
0004	Piling	3,360	LF	13.30	44,688.00
0005	Reinforced Concrete	1	LS	210,500.00	210,500.00
0006	Pump House	1	LS	81,000.00	81,000.00
0007	Pumps & Appurtenances	1	LS	640,000.00	640,000.00
0008	Waskey Bridge	1	LS	34,000.00	34,000.00
009	Electrical System	1	LS	131,600.00	131,600.00
				TOTAL	$1,310,488.00

Approved By: ______________________________

Raymond G. Clark III
LTC, U.S. Army
Deputy District Engineer

Time: ________________________ Date: ________________________

REASONABLE CONTRACT ESTIMATE DETAIL SUMMARY SHEET

Project: Jefferson Parish Stormwater Project

NO.	BID ITEM DESIGNATION	UNIT	QUANTITY	PLANT	MOB & DEMOB	LABOR	MATERIALS	SUPPLIES	SUBTOTAL	DISTRIBUTED COSTS 27.770%	TOTAL COSTS	UNIT COSTS	ADJUSTED UNIT COSTS	ADJUSTED AMOUNT
1	Mobilization & Demobilization	LS	1	$7,793.00		$30,272.00		$435.00	$38,500	$10,691	$49,191	$49,191.000	$49,191.00	$49,191.00
2	Clearing & Grubbing	LS	1	$690.00		$722.00		$1,088.00	$2,500	$694	$3,194	$3,194.000	$3,194.00	$3,194.00
3	Dewatering	LS	1	$15,752.00		$20,658.00	$52,918.00	$1,672.00	$91,000	$25,271	$116,271	$116,271.000	$116,271.00	$116,271.00
4	Piling	LF	3,360	$1,165.00		$2,387.00	$30,845.00	$603.00	$35,000	$9,720	$44,720	$13.310	$13.31	$44,721.60
5	Reinforced Concrete	LS	1	$8,327.00		$68,358.00	$86,778.00	$1,287.00	$164,750	$45,751	$210,501	$210,501.000	$210,501.00	$210,501.00
6	Pump House	LS	1	$3,802.00		$26,796.00	$27,868.00	$4,956.00	$63,422	$17,612	$81,034	$81,034.000	$81,034.00	$81,034.00
7	Pumps & Appurtenances	LS	1	$1,653.00		$6,850.00	$260,318.00	$231,179.00	$500,000	$138,850	$638,850	$638,850.000	$638,850.00	$638,850.00
8	Waskey Bridge	LS	1	$2,660.00		$6,410.00	$17,091.00	$339.00	$26,500	$7,359	$33,859	$33,859.000	$33,859.00	$33,859.00
9	Electrical System	LS	1	$1,040.00		$20,806.00	$80,898.00	$256.00	$103,000	$28,603	$131,603	$131,603.000	$131,603.00	$131,603.00
	TOTAL													$1,309,224.60

Distributed Costs = 15% O.H., 10% Profit, 1% Bond
1.15 x 1.1 x 1.01 = 1.2777 or 27.77%

PLAN OF OPERATION

This item is for mob. and demob. of all labor and equip. necessary to accomplish the work in this job. Mob. is assumed to be from within 100 miles, as there are ample local contractors capable of performing this work.

Two days will be used for mob. and two days for demob. for most equipment. Trucks will use 1 day each way, and the Crane will use three days each way.

unit of equipment	size	no.	hours	rate	amount
Backhoe	Cat 225	2	64	$21.27	$1,361
Dozer	D-4	1	32	$8.12	$260
Truck (Dump Body)	12 CY	3	48	$25.92	$1,244
Man. Compactor	GVR-151Y	3	96	$.53	$51
Am. Crane	5299A	1	48	$30.85	$1,481
Drill Rig	5955#'	1	16	$5.90	$94
Truck	F800	1	16	$13.67	$219
Vibratory Hammer	V-5B	1	32	$10.95	$350
Pump	8"	1	32	$4.62	$148
Pump	3"	1	32	$.41	$13
Pile Leads	8 x 26	1	32	$2.03	$65
Hammer(diesel)	DE-33	1	32	$7.42	$237
Cherry Picker	18 Ton	1	32	$13.99	$448
Welding Mach.	400A	3	96	$1.08	$104
Flat Bed Truck	F700	1	16	$4.16	$67
Conc. Bucket	2.0 CY	1	32	$.30	$10
Vibrators	3.5"	3	96	$.64	$61
Compressor	185 cfm	1	32	$2.06	$66
				subtotal	$6,279
All other operations @		0%			$0
				subtotal	$6,279
		tools	5% of labor		$1,514
		total equipment cost			$7,793

LABOR

operation	no.	hours	rate	amount
Foreman	1	32	$26.00	$832
PEO Crane	1	48	$19.60	$941
Oiler	1	32	$12.32	$394
Piledrivermen	3	96	$22.20	$2,131
PEO Dozer	1	32	$19.60	$627
PEO Cherry Picker	1	32	$19.60	$627
Ironworkers	3	96	$23.81	$2,286
Ironworker Helpers	3	96	$20.54	$1,972
Carpenters	3	96	$23.81	$2,286
Carpenter Helpers	3	96	$20.54	$1,972
Welders	3	96	$23.81	$2,286
Welder helper	3	96	$20.54	$1,972
Pipe Fitter	2	64	$23.81	$1,524
Pipe Fitter Helper	2	64	$20.54	$1,315
Cement Masons	3	96	$23.27	$2,234
Mason Helpers	3	96	$20.01	$1,921
Electricians	2	64	$24.70	$1,581
Elec. Helper	2	64	$21.50	$1,376
Laborer	3	96	$12.32	$1,183
Truck Driver	4	64	$12.68	$812
total labor costs				$30,272

description	unit	quantity	price	amount
			subtotal	$0
			5% tax	$0
			total material cost	$0

SUPPLIES

description	unit	quantity	price	amount
			subtotal	$0

LUMP SUM SUPPLIES

description	unit	quantity	price	amount
safety and misc	LS	1	$435.00	$435
			total supplies cost	$435

SUMMARY

Equipment	$7,793
Labor	$30,272
Materials	$0
upplies	$435
TOTAL COST	$38,500

Estimator: TDM	Checked: TDM

PLAN OF OPERATION

This item is for incidental Clearing & Grubbing prior to commencement of construction of the lift station.

For this item, only minor clearing is required. A Backhoe, a D-4 dozer, and a dump truck for hauling away debris will be utilized for one work day.

[illegible] equipment	size	[illegible]	[illegible]	[illegible]	
Backhoe	CAT 225	1	8	$37.21	$298
Dozer	D-4H	1	8	$18.59	$149
Truck (Dump Body)	12 CY	1	8	$25.92	$207
				subtotal	$654
		tools		5% of labor	$36
		total equipment cost			$690

LABOR

operation	no.	hours	rate	amount
Foreman	1	8	$26.00	$208
PEO B/H	1	8	$19.60	$157
PEO Dozer	1	8	$19.60	$157
Truck Driver	1	8	$12.68	$101
Laborer	1	8	$12.32	$99
total labor costs				$722

MATERIALS

description	unit	quantity	price	amount
tax @		8%		
total material costs				$0

SUPPLIES

description	unit	quantity	price	amount
safety and misc	ls	1	$588	$588
disposal fee	ls	1	$500	$500
total supply costs				$1,088

TOTAL COST $2,500

Estimator: TDM	Checked: TDM

PLAN OF OPERATION

This item is for Dewatering the area for the pumping station construction.

For this item, the dewatered area is assumed to be a rectangular area, approximately 42' x 38'. The sheet pile wall will be driven first. 8 Deep wells will then be drilled to -50' and header pipes layed out and hooked-up. When the pumps begin running, the hole excavation will begin. As the hole excavation progresses, walers for the sheet pile cofferdam will be installed.

Drive Sheet Pile - 3 days with American 5299A

Drill wells - 2 days with drill truck and crew

Excavate - 1,200 CY's @ 50 CY/Hr = 24 hrs or 3 WD
Am Crane with 3 Dump trucks to haul away material

Set-up pump and fuel tank - run avg. 50% of time for 3 months.

Weld in walers - 2 work days Am Crane with welders

Removal of sheet pile and walers at the completion of construction
Am Crane with welder crew - 2 Work days

Backfilling operation - Cat Backhoe (225) and compactors.
1,000 CY's @ 35 CY/hr = 29 hrs. - USE 4 WD

type of equipment	size	no.	hours	rate	amount
Backhoe	CAT 225	2	64	$37.21	$2,381
Man. Compactor	GVR-151Y	3	96	$1.64	$157
Truck (Dump Body)	12 CY	3	168	$25.92	$4,355
Am Crane	5299A	1	80	$43.72	$3,498
Drill Rig	5955#'	1	16	$30.81	$493
Truck (Drill Rig)	F800	1	16	$13.67	$219
Vibratory Hammer	V-5B	1	24	$26.94	$647
Welding Mach.	400A	1	16	$4.59	$73
Dewatering Pump	8"	1	360	$7.70	$2,772
Sump Pump	3"	1	180	$.69	$124
				subtotal	$14,719
All other operations @		0%			$0

		subtotal	$14,719
tools	5%	of labor	$1,033
total equipment cost			$15,752

LABOR

operation	no.	hours	rate	amount
Foreman	1	128	$26.00	$3,328
PEO B/H	2	64	$19.60	$1,254
PEO Drill	2	32	$19.60	$627
Truck Driver	3	168	$12.68	$2,130
Laborer	3	384	$12.32	$4,731
PEO Crane	1	80	$19.60	$1,568
Oiler	1	80	$12.32	$986
Pile Driverman	2	80	$22.20	$1,776
Welder	2	64	$23.81	$1,524
Helper	2	64	$20.54	$1,315
Pipe Fitter	2	32	$23.81	$762
Helper	2	32	$20.54	$657
		total labor costs		$20,658

description	unit	quantity	price	amount
PZ-27 Sheet Pile	SF	6,400	$6.75	$43,200
w24x62	lb	9,920	$.25	$2,480
Deep Well casing	Ea	8	$100.00	$800
Water Filters	Ea	8	$75.00	$600
Header Pipe	LF	220	$5.00	$1,100
Valves	Ea	2	$159.00	$318
Misc. Conn.	LS	1	$500.00	$500
			subtotal	$48,998
			8% tax	$3,920
			total material cost	$52,918

SUPPLIES

description	unit	quantity	price	amount
Cutting Torch & Gas	LS	1	$500	$500
Safety & Misc.	LS	1	$1,172	$1,172
			subtotal	$1,672

LUMP SUM SUPPLIES

description	unit	quantity	price	amount
safety and misc				
			total supplies cost	$1,672

SUMMARY

Equipment	$15,752
Labor	$20,658
Materials	$52,918
Supplies	$1,672
TOTAL COST	$91,000

Estimator: JAB	Checked: TDM

PLAN OF OPERATION

This item is for driving timber piling for the pump structure. This will be accomplished with an American Crane (5299) working at a production rate of 4 piles per hour.

unit of equipment	size	no.	hours	rate	[illegible]
Crane	Am 5229A	1	16	$43.72	$7[illegible]
Leads	8 x 26	1	16	$5.79	$93
Hammer	DE-33	1	16	$15.82	$253
			subtotal		$1,046
		tools	5% of labor		$119
		total equipment cost			$1,165

LABOR

operation	no.	hours	rate	amount
Foreman	1	16	$26.00	$416
PEO Crane	1	16	$19.60	$314
Pile Drivermen	3	48	$22.20	$1,066
Oiler	1	16	$12.32	$197
Laborer	2	32	$12.32	$394
	total labor costs			$2,387

MATERIALS

description	unit	quantity	price	amount
60' Timber Piles	LF	3,360	$8.50	$28,560
		tax @	8%	$2,285
		total material costs		$30,845

SUPPLIES

description	unit	quantity	price	amount
safety and misc	ls	1	$603	$603
		total supply costs		$603

TOTAL COST	$35,000

Estimator: TDM	Checked: TDM

Reinforced Concrete
a. Reinforcing

shifts/day
hours/shift 8

PLAN OF OPERATION

This subitem is for all equipment, labor, and materials required to place steel reinforcing in the concrete structure and facility A cherry picker assisted by a laborer will shake out the steel along the jobsite (10 % of time).

Two ironworkers, 1 Helper, and 1 welder (10 %) will comprise a rebar placing crew.

Quantity

98,000 Lbs. (Incls. 10 % for laps & splices)*

Production

2500 lbs. / crew / WD

98,000 Lbs / 2500 Lbs / WD = 40 WD

* NOTE: Includes the # 6 bar welded at the top of each sheetpile for cathodic protection.

Equipment

unit of equipment	size	no.	hours	rate	amount
Cherry Picker	18 Ton	1	48	$26.66	$1,280
Welding Machine	400 amp	1	48	$4.59	$220
Flat Bed Truck	F700	1	48	$13.22	$635
			subtotal		$2,135
		tools	3% of labor		$1,436
		total equipment cost			$3,571

Labor

operation	no.	hours	rate	amount
Foreman	1	480	$26.00	$12,480
PEO Cherry Pkr.	1	48	$19.60	$941
Ironworker	2	960	$23.81	$22,858
Ironwkr. Helper	1	480	$20.54	$9,859
Welder (10 %)	1	48	$23.81	$1,143
aborer	1	48	$12.32	$591
total labor costs				$47,872

Materials

description	unit	quantity	price	amount
Reinf. Steel	lb.	98,000	$.21	$20,580
		tax @ 8%		$1,646
		total material costs		$22,226

Supplies

description	unit	quantity	price	amount
safety and misc	ls	1	$331	$331
		total supply costs		$331

Summary	total	$74,000

estimator: TDM checked:

[illegible]
b. Formwork

[illegible]

PLAN OF OPERATION

This subitem is for furnishing and installing all formwork, water-stops, expansion joint material, and chamfer strips required to build the structure. Forms will be steel wall forms with plyform facing.

All forming in this job is unique, so many of the forms will be used once.

A cherry picker will be used 50% of the time to assist in handling forms. Carpenters, helpers, and laborers will erect the formwork.

QUANTITY

Steel Wall Forms:	5,400 SF
Plyform Facing:	5,400 SF
1/2 in. Exp. Jt. Material:	210 SF
3-Bulb Waterstop:	200 LF
Chamfer Strip:	4,400 LF
Form Oil (700 SF / Gal.):	8 Gals.

PRODUCTION

Erect Forms: 5,400 SF @ 1,400 SF/Day = 4 WD
(2 Carps, 2 Helpers, 2 Labs.)

Strip Forms: 5,400 SF @ 2,800 SF / WD = 2 WD
(1 Carp & 2 Labs)

Install Waterstop: 200 LF / 15 LF/Hr = 14 Hrs. USE 2 WD
(1 Carp & 1 Lab)

Expansion Jt. Mat'l: 210 SF / 40 SF/Hr = 6 Hrs. USE 1 WD
(1 Carp & 1 Lab)

Equipment

unit of equipment	size	no.	hours	rate	amount
Cherry Picker	18 Ton	1	52	$26.66	$1,386
				subtotal	$1,386
All other operations @		0%			$0
				subtotal	$1,386
		tools		5% of labor	$382
		total equipment cost			$1,768

Labor

operation	no.	hours	rate	amount
Foreman (50 %)	1	52	$26.00	$1,352
PEO Cherry Picker	1	52	$19.60	$1,019
Carpenter	2	104	$23.81	$2,476
Carpenter Helper	2	64	$20.54	$1,315
Laborer	3	120	$12.32	$1,478
total labor costs				$7,640

description	unit	quantity	price	amount
Steel Forms	LS	1	$2,200.00	$2,200
Form Lumber	BF	200	$.40	$80
Plyform Shts (+10 %)	SF	5,900	$1.65	$9,735
3-Bulb Waterstops	LF	200	$4.75	$950
Form Oil	Gal	8	$5.00	$40
Exp. Jt. Mat'l	SF	210	$4.00	$840
Chamfer Strip	LF	4,400	$.15	$660
			subtotal	$14,505
			8% tax	$1,160
			total material cost	$15,665

Supplies

description	unit	quantity	price	amount
			subtotal	$0

Lump Sum Supplies

description	unit	quantity	price	amount
safety and misc	LS	1	$427.00	$427
			total supplies cost	$427

Summary

Equipment	$1,768
Labor	$7,640
Materials	$15,665
Supplies	$427
TOTAL	$25,500

estimator: TDM checked:

PLAN OF OPERATION

This subitem is for furnishing and placing concrete in the Walls, Slabs, and approach flume. Also included is the waterblasting of the construction joints, and the application of the curing compound.

Ready-mix concrete will be delivered to the jobsite by a supplier. A cherry picker with concrete bucket will assist in concrete placing, vibrators will consolidate and a waterblaster will be used on the construction joints.

QUANTITIES

Concrete: 810 CY (3500 psi)

Const. Jt.: 1200 SF

Curing Cmpd.: 42 Gals. (12,600 SF @ 300 SF / Gal.)

PRODUCTION

Pour Slab	1 WD
Pour Sub Walls	1 WD
Pour Pump Floor	1 WD
Pour Super Walls	1 WD
Pour Flume	3 WD
Pour Approach	1 WD
	8 WD

(2 cem. masons, 2 mas. helpers, & 2 labs.)

Waterblast const. jt.
1200 SF / 75 SF/Hr = 16 Hrs. (2 Labs.)

Apply curing cmpd.
12,600 SF / 800 SF/Hr = 16 Hrs. (1 Lab)

Trowel Flume and Floor
7,250 SF / 400 SF/Hr = 18 Hrs. (1 Mason & 1 Helper)

unit or equipment	size	no.	hours	rate	amount
Cherry Picker	18 T	1	64	$26.66	$1,706
Concrete Bucket	2.0 CY	1	64	$.54	$35
Vibrators	3.5 in.	3	192	$1.12	$215
Compressor	185 cfm	1	64	$6.10	$390
			subtotal		$2,346
		tools	5% of labor		$570
		total equipment cost			$2,916

Labor

operation	no.	hours	rate	amount
Foreman	1	64	$26.00	$1,664
PEO Cherry Picker	1	64	$19.60	$1,254
Cement Mason	2	146	$23.27	$3,397
Mason Helper	2	146	$20.01	$2,921
Laborers	2	176	$12.32	$2,168
	total labor costs			$11,404

Materials

description	unit	quantity	price	amount
Concrete (3500 psi)	CY	810	$55.00	$44,550
Curing Cmpd.	GAL	42	$5.15	$216
	tax @	8%		$3,581
	total material costs			$48,347

Supplies

description	unit	quantity	price	amount
safety and misc	LS	1	$333	$333
	total supply costs			$333

Summary	total	$63,000
estimator: TDM	checked:	

Subject: Reinforced Concrete — quantity [illegible]

d) Finishing — shifts/day [illegible]; hours/shift 8

PLAN OF OPERATION

This subitem is for all equipment, labor, and material required to finish the floodwall as shown on the drawings and specs. Included are patching the concrete and a sack rubbed finish.

One cement mason and one laborer will patch the concrete and two laborers will sack rub the wall.

QUANTITIES

Patching: Assume 30 % Of form area
.3 x 5,400 = 1,620 SF

Sack Rub Finish: 5,400 SF

PRODUCTION

Patching: 1,620 SF / 120 SF/Hr = 13.5 Hrs. USE 16 Hrs.
(1 Cem. Mas. & 1 Lab)

Sack Rub Finish : 5,400 SF / 200 SF/Hr = 27 Hrs.
(2 Labs.)

Eq[illegible]

unit of equipment	size	no.	[illegible]	rate	amount
			subtotal		$0
	tools		5% of labor		$72
	total equipment cost				$72

Labor

operation	no.	hours	rate	amount
Foreman (50 % of Time)	1	8	$26.00	$208
Cement Mason	1	16	$23.27	$372
Laborer	2	70	$12.32	$862
total labor costs				$1,442

Materials

description	unit	quantity	price	amount
Sand Cement Mortar	LS	1	$500.00	$500
tax @		8%		$40
total material costs				$540

Supplies

description	unit	quantity	price	amount
safety and misc	LS	1	$196	$196
total supply costs				$196

Summary		total	$2,250
estimator: TDM	checked:		

REASONABLE CONTRACT ESTIMATE WORKSHEET SUMMARY					Sheet 1 of 1
Subject: Reinforced Concrete					quantity Lump Sum
Subitem	Plant	Labor	Materials	Supplies	Subtotal
a) Reinforcing Steel	$3,571	$47,872	$22,226	$331	$74,000
b) Formwork	$1,768	$7,640	$15,665	$427	$25,500
c) Concrete Placing	$2,916	$11,404	$48,347	$333	$63,000
d) Finishing	$72	$1,442	$540	$196	$2,250
	$8,327	$68,358	$86,778	$1,287	$164,750

Cost / CY = $164,750 / 810 CY = $203.40

unit of equipment	size	no.	hours	rate	amount
			subtotal		$0
		tools	5% of labor		$515
		total equipment cost			$515

LABOR

operation	no.	hours	rate	amount
Foreman (50%)	1	42	$26.00	$1,092
Cement Masons	2	168	$23.27	$3,909
Mason Helpers	2	168	$20.01	$3,362
Steelworkers	2	32	$23.81	$762
Laborers	1	96	$12.32	$1,183
total labor costs				$10,308

MATERIALS

description	unit	quantity	price	amount
Concrete Blocks	ea	2,300	$1.00	$2,300
Bricks	ea	6,000	$.70	$4,200
Mason Sand	CY	22	$18.00	$396
Mortor Mix	Bag	160	$4.80	$768
Grout	CY	31	$50.00	$1,550
		tax @ 8%		$737
		total material costs		$9,951

SUPPLIES

description	unit	quantity	price	amount
safety and misc	LS	1	$556	$556
Steel Re-Bar	lb	2,000	.21	$420
Scaffolding	LS	1	$250	$250
		total supply costs		$1,226

TOTAL COST $22,000

Estimator: TDM	Checked: TDM

[illegible] Pump House
a) block & brick walls

[illegible]	[illegible]
shifts/day	1
hours/shift	8

PLAN OF OPERATION

This item is for furnishing all equipment, labor, and materials for constructing the Pump House structure.

The structure consists of a concrete block wall with a brick veneer face.

PRODUCTION

Place Concrete Blocks 2,300 @ 500/day = 5 days
(2 cement masons, 2 helpers, 1 Lab.)

Place steel rods in Block wall 2,000 lbs @ 1,200 lbs/day = 2 WD
(2 steelworkers, 1 lab.)

Pour Grout 31 CY's USE 1 WD
(1 cement mason, 1 helper)

Place Brick Veneer 6,000 bricks @ 1,200 bricks / day = 5 days
(2 cement masons, 2 helpers, 1 Lab.)

b) Overhead Crane

hours/shift 8

PLAN OF OPERATION

This item is for furnishing all equipment, labor, and materials for installing the Overhead Crane supplied as a complete package. The Crane package will be installed by welders, steelworkers, helpers, laborers, with the assistance of the Cherry Picker. This Crane unit can be installed in three work days.

unit of equipment	size	no.	hours	rate	amount
Cherry Picker	18 Ton	1	24	$26.66	$640
Welding Machine	400 Amp	3	72	$4.59	$330
				subtotal	$970
		tools		5% of labor	$287
		total equipment cost			$1,257

LABOR

operation	no.	hours	rate	amount
Foreman	1	24	$26.00	$624
Steelworkers	2	48	$23.81	$1,143
Welders	3	72	$20.54	$1,479
Welder Helpers	2	48	$23.81	$1,143
Laborers	3	72	$12.32	$887
EO Cherry Picker	1	24	$19.60	$470
	total labor costs			$5,746

MATERIALS

description	unit	quantity	price	amount
Overhead Crane (10 Ton)	Ea	1	$11,900.00	$11,900
		tax @	8%	$952
		total material costs		$12,852

SUPPLIES

description	unit	quantity	price	amount
safety and misc	LS	1	$345	$345
Delivery of Crane	LS	1	800.00	$800
Welding supplies	LS	1	$500	$500
		total supply costs		$1,645

TOTAL COST	$21,500

Estimator: TDM	Checked: TDM

c) Pump House Roof

shifts/day	1
hours/shift	8

PLAN OF OPERATION

This item is for furnishing all equipment, labor, and materials for constructing the Pump House Roof. This roof will be constructed by a crew of carpenters, helpers, and labor support. A cherry picker will be used incidentally for lifting materials up to the roof, and for placing the hatches.

The roof framing can be constructed in 2 WD's, and the remainder of the roof work (sheathing, felt, hatches, roof covering), can be constructed in 5 WD's.

EQUIPMENT

unit of equipment	size	no.	hours	rate	amount
Cherry Picker	18 Ton	1	56	$26.66	$1,493
			subtotal		$1,493
		tools	5% of labor		$537
		total equipment cost			$2,030

LABOR

operation	no.	hours	rate	amount
Foreman	1	56	$26.00	$1,456
Carpenters	2	112	$23.81	$2,667
Carpenter Helpers	3	168	$20.54	$3,451
PEO Cherry Picker	1	56	$19.60	$1,098
Laborers	3	168	$12.32	$2,070
total labor costs				$10,742

MATERIALS

description	unit	quantity	price	amount
Rafters 22'	Ea	40	$19.00	$760
Joists' 28'	Ea	20	$27.00	$540
Top Plates	Ea	20	$32.00	$640
Roof Hatches	Ea	5	$250.00	$1,250
Sheathing .75"	Ea	50	$30.00	$1,500
tax @		8%		$375
total material costs				$5,065

SUPPLIES

description	unit	quantity	price	amount
safety and misc	LS	1	$345	$345
Metal Roof Mat'l	SF	1,600	$.80	$1,280
Fastnrs, nails, blts	LS	1	$310.00	$310
Felt and Misc.	LS	1	$150	$150
total supply costs				$2,085

TOTAL COST $19,922

Estimator: TDM	Checked: TDM

Item: Pumps and Appurtenances	Quantity	
	shifts da.	1
	hours/shift	8

PLAN OF OPERATION

This item is for all equipment and labor required to install the pumps, connecting pipe and flanges, valves, and other incidental fixtures and hook-ups.

This work will be accomplished with a pipe fitter crew, with the assistance of a Cherry Picker. 1 week will be required.

The cost of "hot-tapping" into the existing line will be included in this item.

EQUIPMENT

unit of equipment	size	no.	hours	rate	amount
Cherry Picker	18 Ton	1	40	$26.66	$1,066
Compressor	185 cfm	1	40	$6.10	$244
				subtotal	$1,310
All other operations @		0%			$0
				subtotal	$1,310
		tools		5% of labor	$343
		total equipment cost			$1,653

LABOR

operation	no.	hours	rate	amount
Foreman	1	40	$26.00	$1,040
Pipe Fitter	2	80	$23.81	$1,905
Pipe Fitter Helper	2	80	$20.54	$1,643
PEO Cherry Picker	1	40	$19.60	$784
Laborer	3	120	$12.32	$1,478
total labor costs				$6,850

MATERIALS

description	unit	quantity	price	amount
VTSH 16"	Ea	5	$32,000.00	$160,000
Check Valves	Ea	5	$4,900.00	$24,500
Gate Valves	Ea	5	$3,500.00	$17,500
Air Valves 8"	Ea	5	$2,000.00	$10,000
Misc. Conn. & Flanges	LS	1	$26,035.00	$26,035
Surge Release Valve	Ea	1	$2,500.00	$2,500
Nitrogen Cylinder Set	LS	1	$500.00	$500
			subtotal	$241,035
			8% tax	$19,283
			total material cost	$260,318

SUPPLIES

description	unit	quantity	price	amount
Hot-Tapp	Ea	1	$224,400	$224,400
			subtotal	$224,400

LUMP SUM SUPPLIES

description	unit	quantity	price	amount
safety and misc	LS	1	$6,779.00	$6,779
			total supplies cost	$231,179

SUMMARY

Equipment	$1,653
Labor	$6,850
'aterials	$260,318
ıpplies	$231,179
TOTAL COST	$500,000

Estimator: TDM	Checked: TDM

Project: Jefferson Parish Storm Water Project

Subject: Waskey Bridge

quantity	[illegible]
shifts/day	1
hours/shift	8

PLAN OF OPERATION

This item is for constructing the Waskey Bridge for access to the pumping station.

All sections are standard sizes, and prefabricated for simple field assembly. The American 5299A crane will be used to drive the required piling, and lift the bridge decking into position.

The bridge construction can be completed in 5 days.

[illegible] Bridge

EQUIPMENT

unit of equipment	size	no.	hours	rate	amount
Am Crane	5299A	1	40	$43.72	$1,749
Pile Leads	8 x 26	1	16	$5.79	$93
Hammer	DE-33	1	16	$15.82	$253
Compressor	185 cfm	1	40	$6.10	$244
			subtotal		$2,339
		tools	5% of labor		$321
		total equipment cost			$2,660

LABOR

operation	no.	hours	rate	amount
Foreman	1	40	$26.00	$1,040
PEO Crane	1	40	$19.60	$784
Oiler	1	40	$12.32	$493
Pile Drivermen	2	32	$22.20	$710
Carpenter	2	80	$23.81	$1,905
aborer	3	120	$12.32	$1,478
total labor costs				$6,410

MATERIALS

description	unit	quantity	price	amount
14" sq conc. piles	LF	640	$15.00	$9,600
Bridge Pkg. Complete (Decking, curbs, rails, conn., grout)	Ea	1	$6,225.00	$6,225
tax @		8%		$1,266
total material costs				$17,091

SUPPLIES

description	unit	quantity	price	amount
safety and misc	ls	1	$339	$339
total supply costs				$339

TOTAL COST	$26,500

Estimator: TDM	Checked: TDM

Item: Electrical System

quantity	
shifts/day	
hours/shift	8

PLAN OF OPERATION

This item is for furnishing and installing the necessary wiring, conduits, starters, breakers, and all other associated electrical components for this pumping station.

A crew of electricians and support labor can accomplish this work in 20 work days.

EQUIPMENT

unit of equipment	size	no.	hours	rate	amount
				subtotal	$0
All other operations @	0%				$0

	subtotal	$0
tools	5% of labor	$1,040
total equipment cost		$1,040

LABOR

operation	no.	hours	rate	amount
Electrician	2	320	$24.70	$7,904
Electrician Helper	2	320	$21.50	$6,880
Laborer	2	320	$12.32	$3,942
Foreman (50%)	1	80	$26.00	$2,080
total labor costs				$20,806

Item: Electrical System

MATERIALS

description	unit	quantity	price	amount
4X Enclosure	Ea	6	$600.00	$3,600
1200 A Breaker	Ea	1	$2,300.00	$2,300
40 A Breaker	Ea	1	$800.00	$800
Breaker/starter	Ea	4	$9,000.00	$36,000
Transformer	Ea	2	$12,000.00	$24,000
Lighting panel Cir.	Ea	1	$200.00	$200
300 A M. Cir Prot.	Ea	3	$65.00	$195
Bi-metallic overloads	Ea	3	$45.00	$135
Thermal overloads	Ea	3	$50.00	$150
ETM	EA	1	$150.00	$150
Switches, Relays	LS	1	$1,500.00	$1,500
Receptacles, Lights	LS	1	$300.00	$300
Conduit w/ Wire(3 #8)	LF	240	$8.65	$2,076
Conduit w/Wire(#12)	LF	200	$5.37	$1,074
Cndt w/Wire(3 #3/0)	LF	60	$19.60	$1,176
Grounding	LS	1	$250.00	$250
Misc. wire, conduit and switches	LS	1	$1,000.00	$1,000
			subtotal	$74,906
			8% tax	$5,992
			total material cost	$80,898

SUPPLIES

description	unit	quantity	price	amount
			subtotal	$0

LUMP SUM SUPPLIES

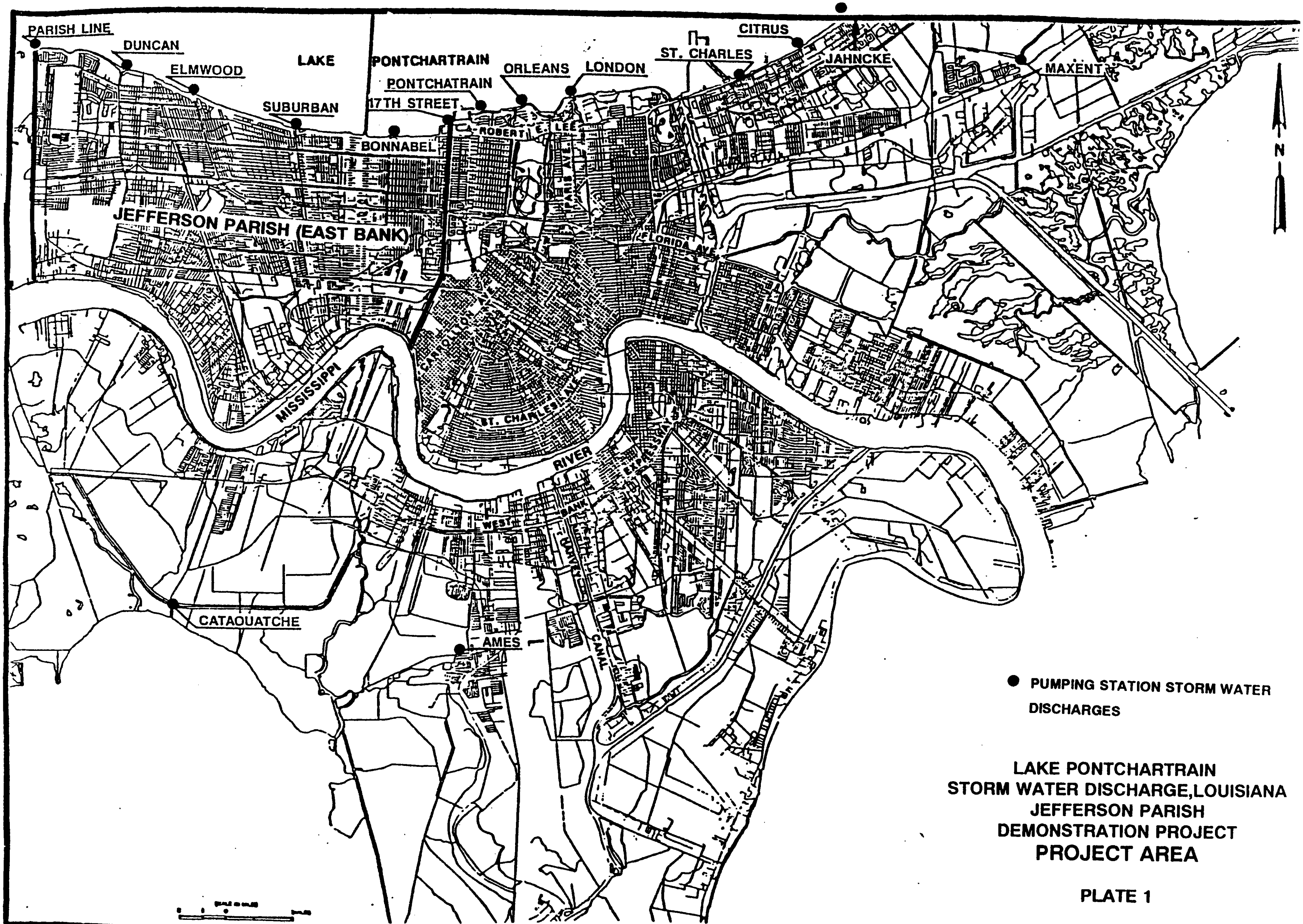
description	unit	quantity	price	amount
safety and misc	LS	1	$256.00	$256
			total supplies cost	$256

SUMMARY

Equipment	$1,040
Labor	$20,806
Materials	$80,898
Supplies	$256
TOTAL COST	$103,000

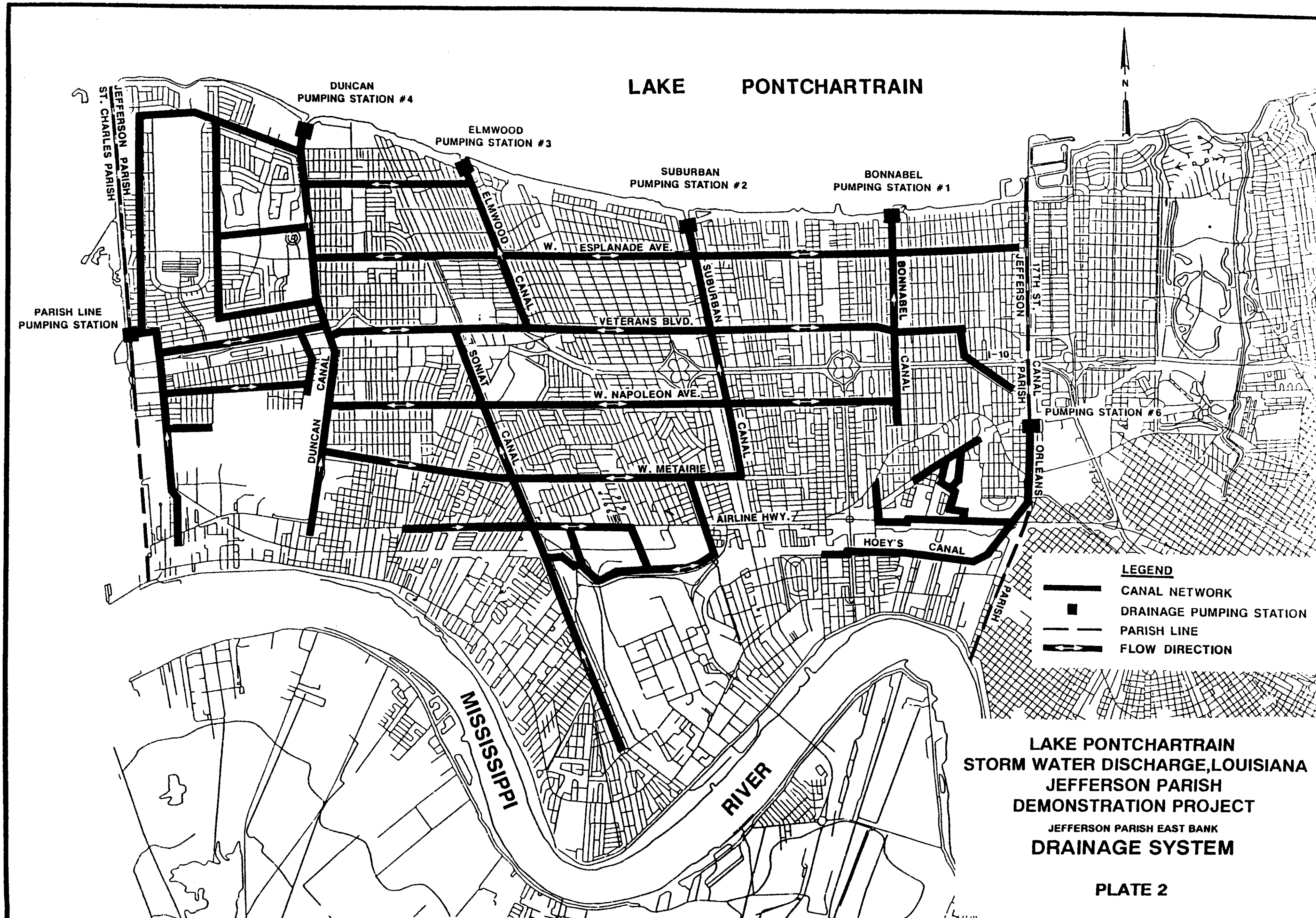
Estimator: TDM	Checked: TDM

PLATES 1-12



LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH
DEMONSTRATION PROJECT
PROJECT AREA

PLATE 1



LAKE PONTCHARTRAIN
STORM WATER DISCHARGE, LOUISIANA
JEFFERSON PARISH
DEMONSTRATION PROJECT

JEFFERSON PARISH EAST BANK
DRAINAGE SYSTEM

PLATE 2

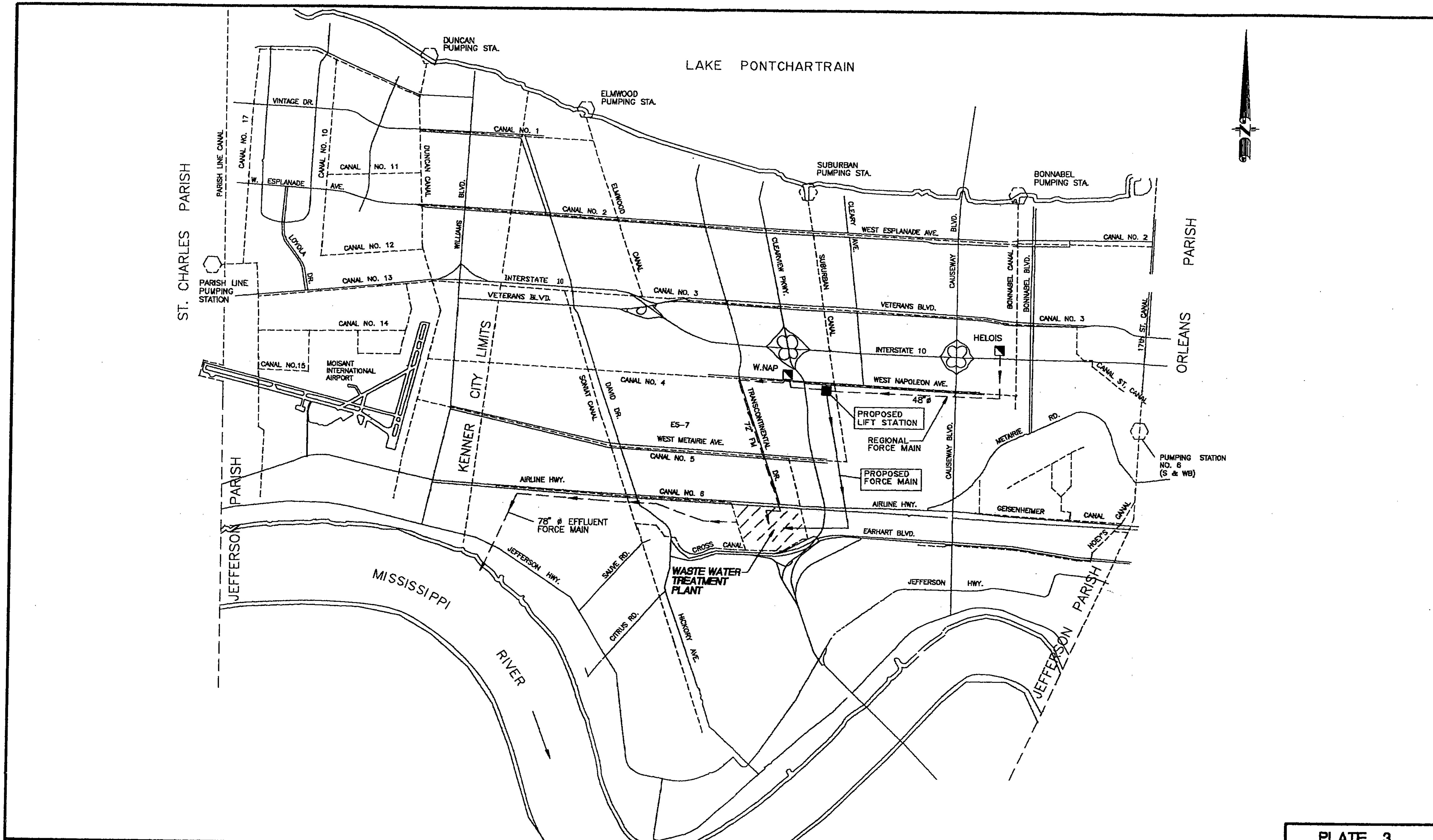


PLATE 3

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JEFFERSON PARISH STORMWATER DISCHARGE DEMONSTRATION PROJECT

MAJOR DRAINAGE NETWORK

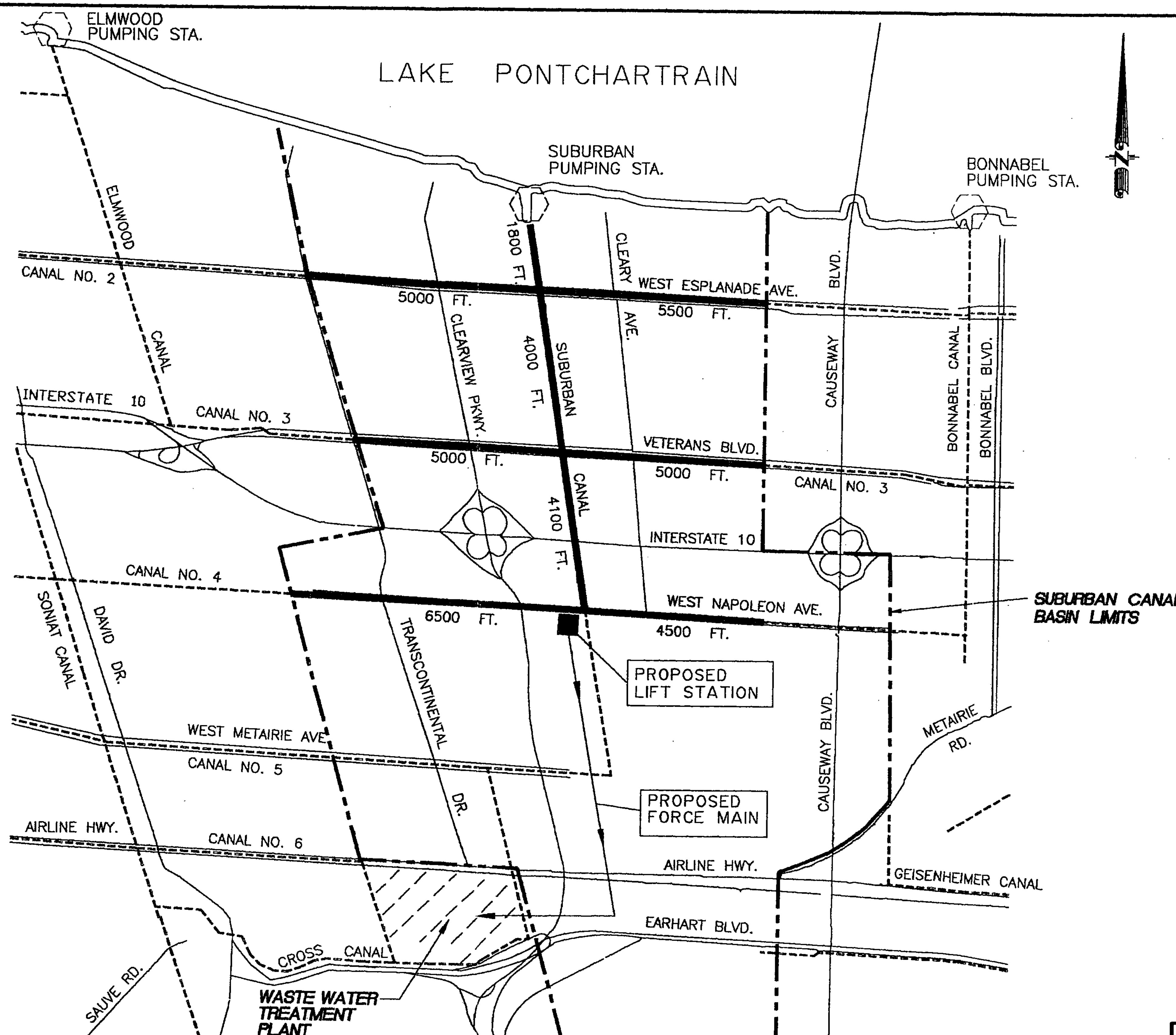

PLATE 4

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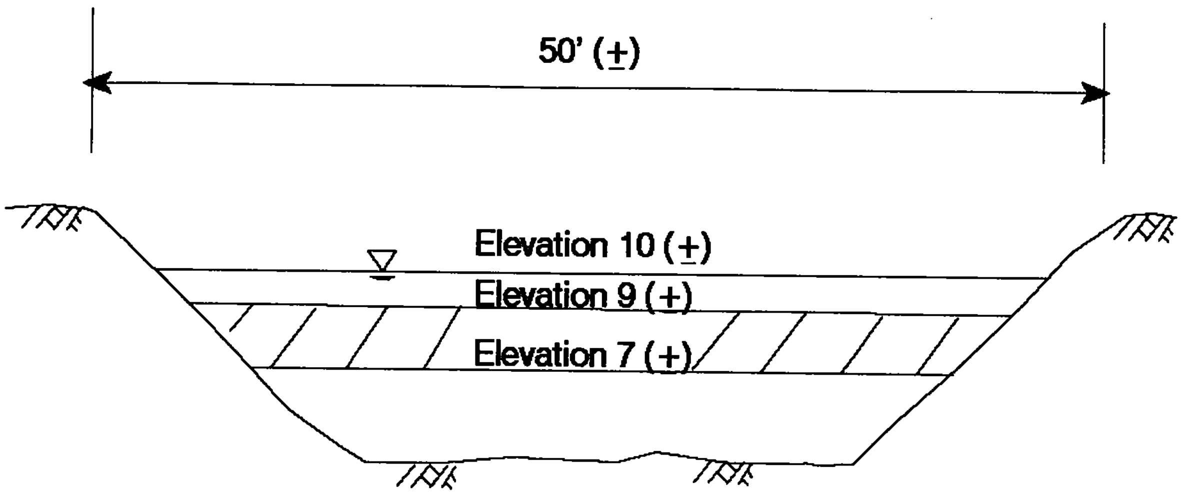
JEFFERSON PARISH STORMWATER DISCHARGE DEMONSTRATION PROJECT

SUBURBAN CANAL STORAGE BASIN



SECTION
NTS

PLATE 5

JEFFERSON PARISH STORMWATER DISCHARGE DEMONSTRATION PROJECT

Suburban Basin Drainage Canal - Cross-Section

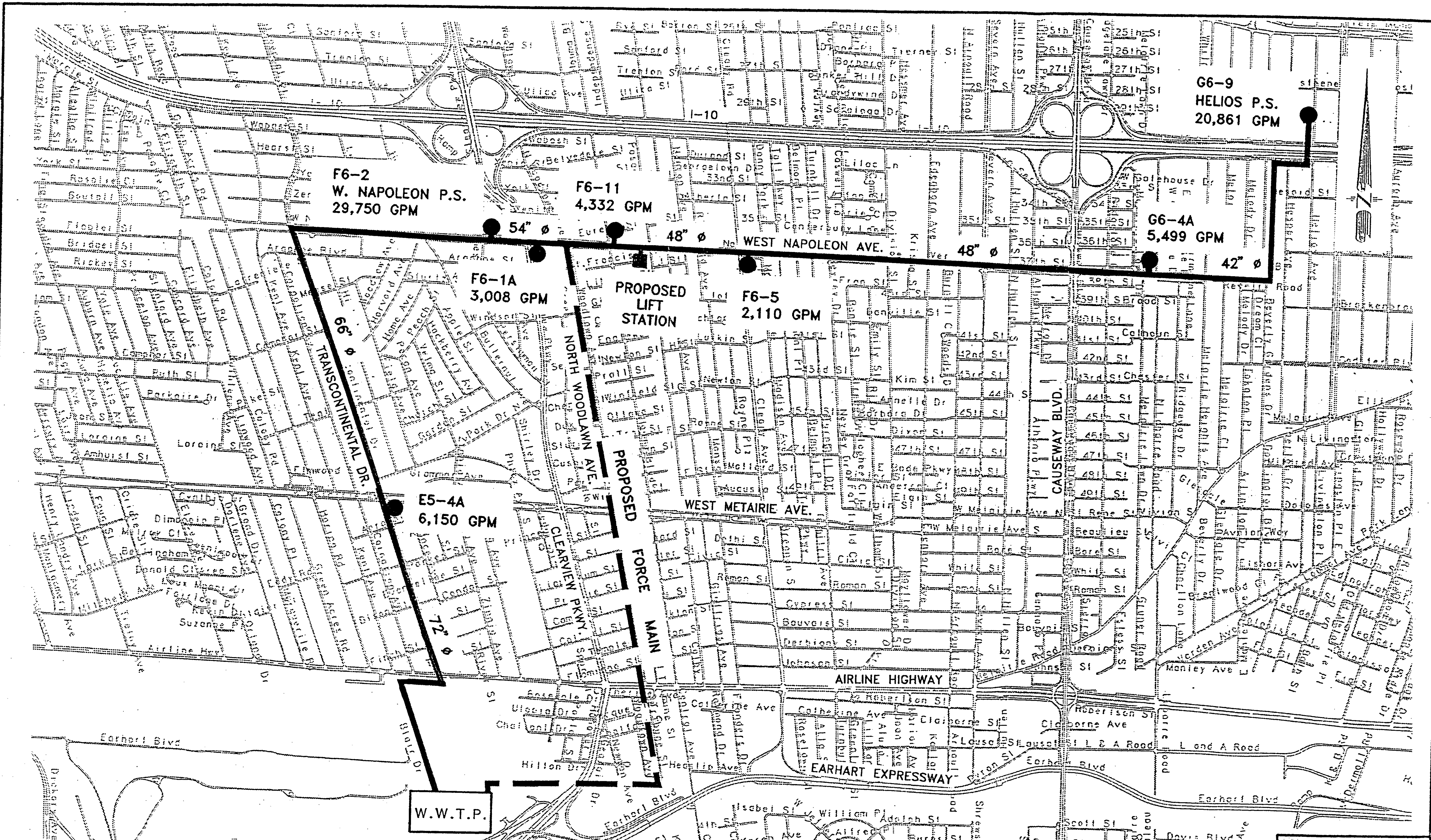


PLATE 6

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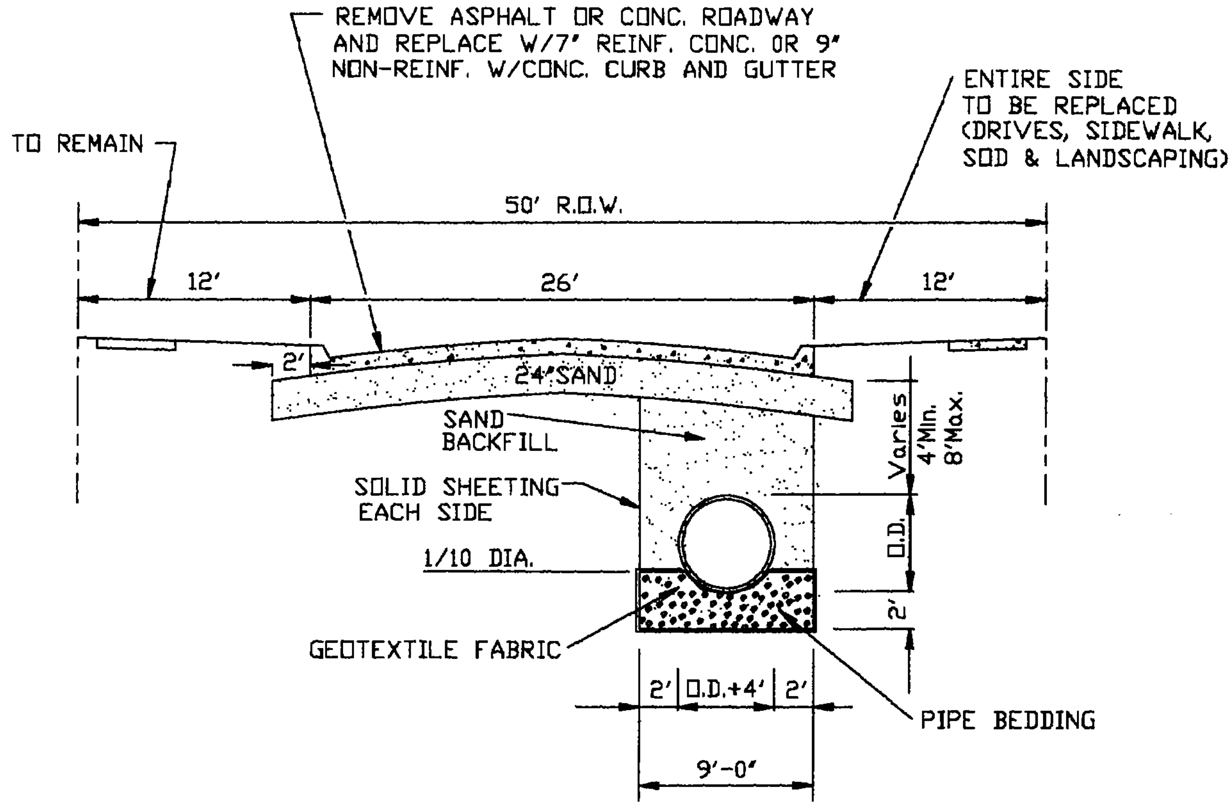
JEFFERSON PARISH STORMWATER DISCHARGE DEMONSTRATION PROJECT

MAJOR SEWERAGE NETWORK



TYPICAL SECTION

INSTALLATION OF FORCE MAIN

PLATE 7

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JEFFERSON PARISH STORMWATER
DISCHARGE DEMONSTRATION PROJECT

TYPICAL SECTION
FORCE MAIN

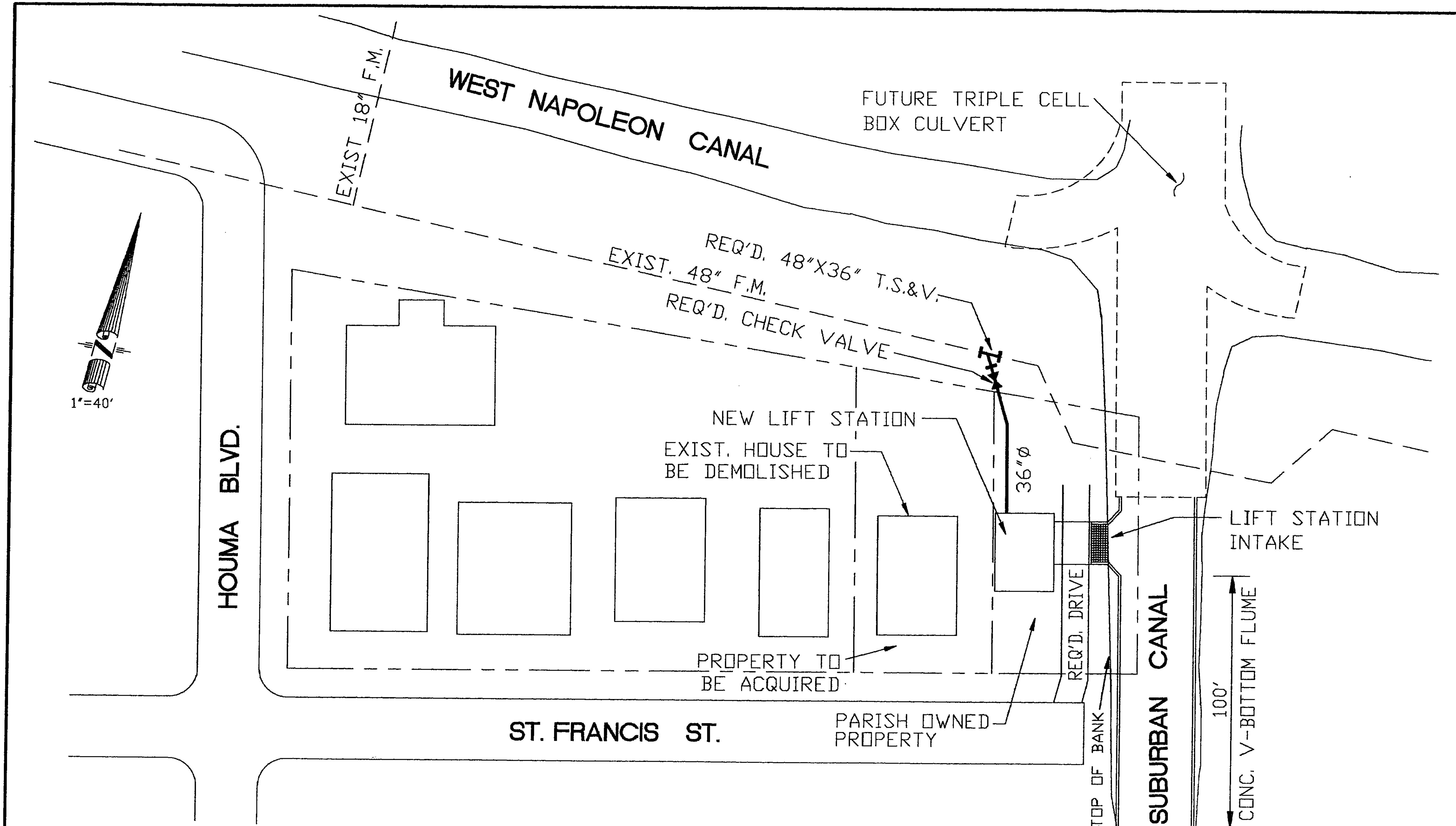

PLATE 8

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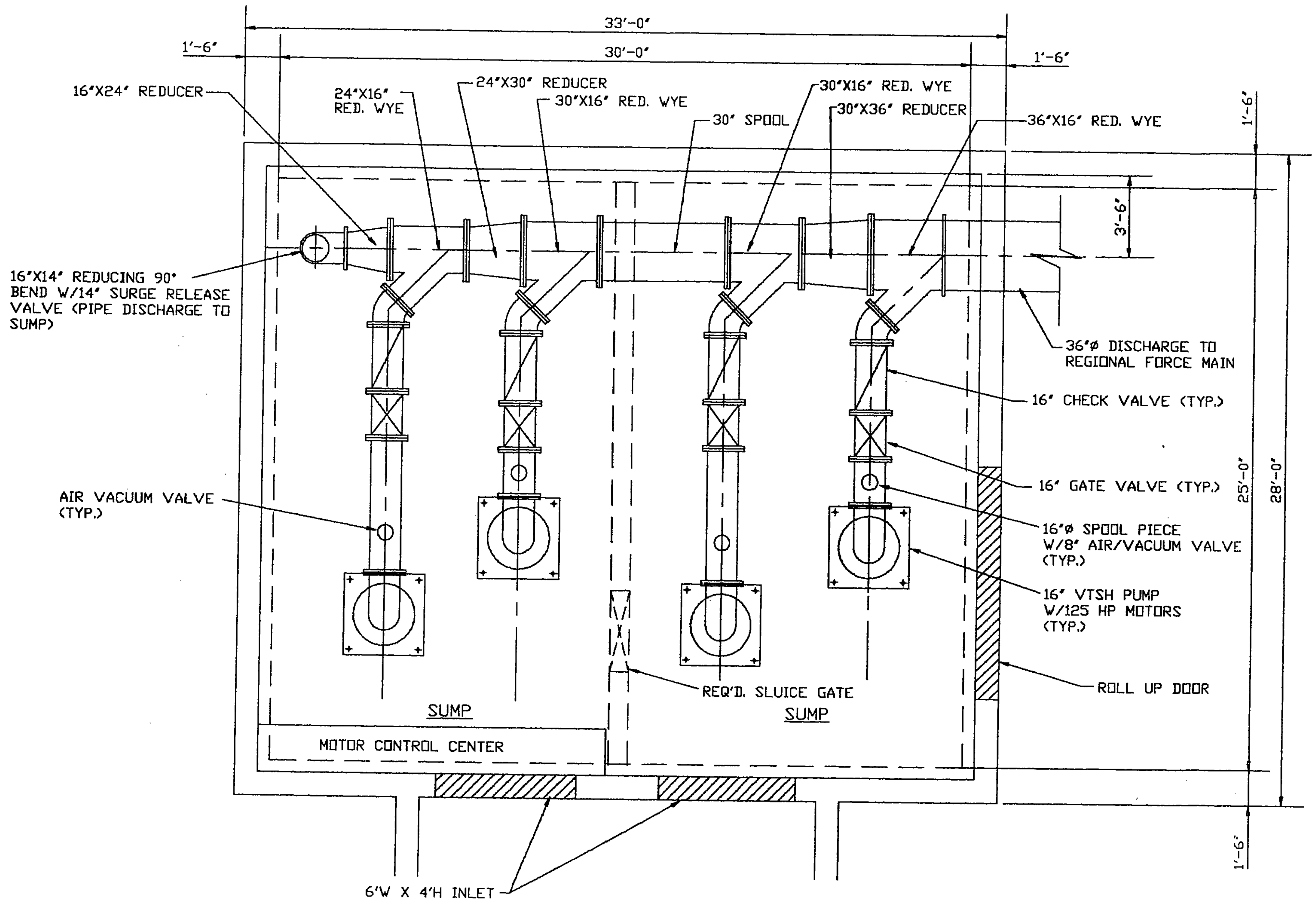
JEFFERSON PARISH STORMWATER
DISCHARGE DEMONSTRATION PROJECT

PRELIMINARY SITE LAYOUT



PLAN VIEW
SCALE: 3/16"=1'-0"

PLATE 9

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JEFFERSON PARISH STORMWATER DISCHARGE DEMONSTRATION PROJECT

PRELIMINARY LIFT STATION LAYOUT

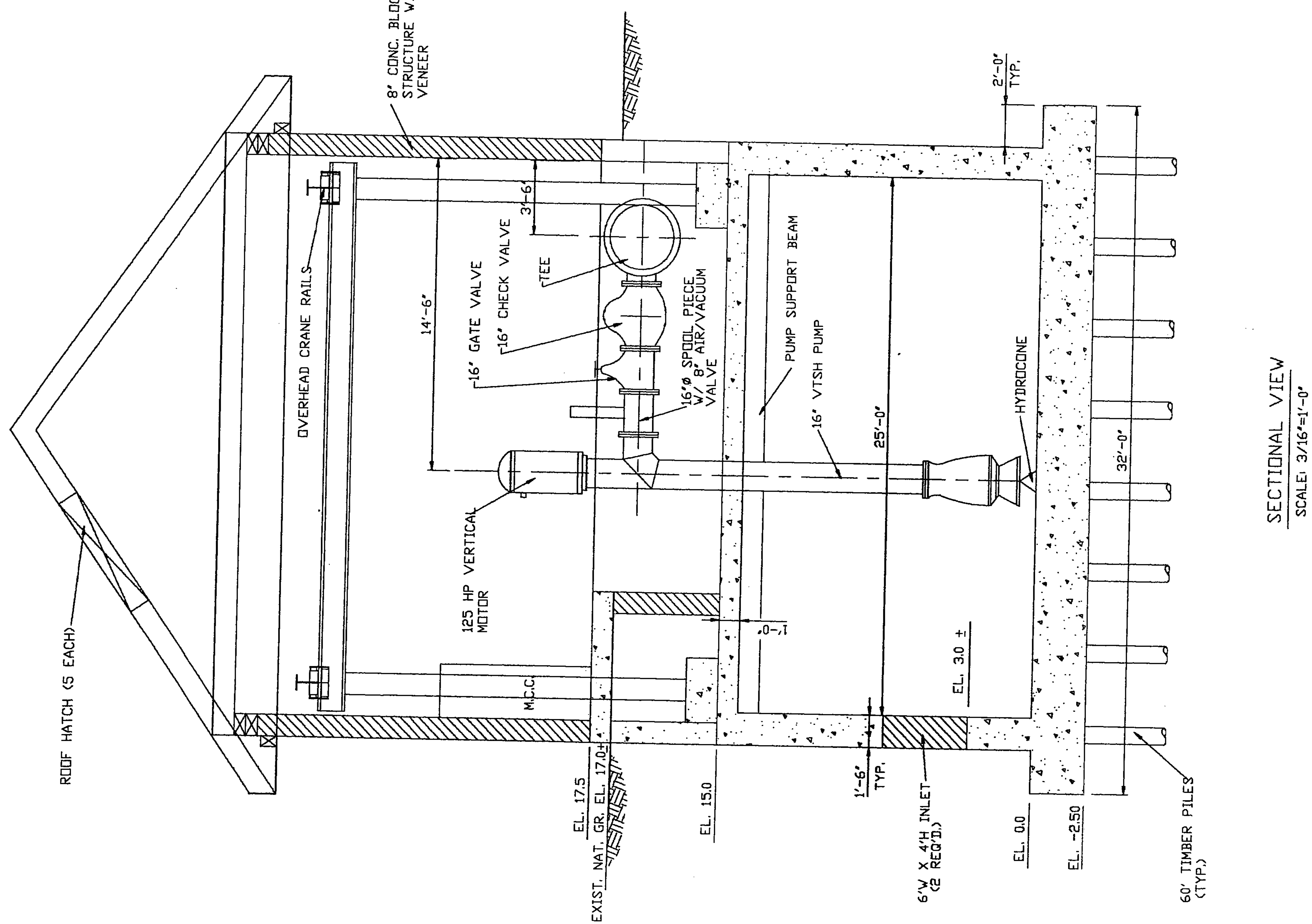

PLATE 10

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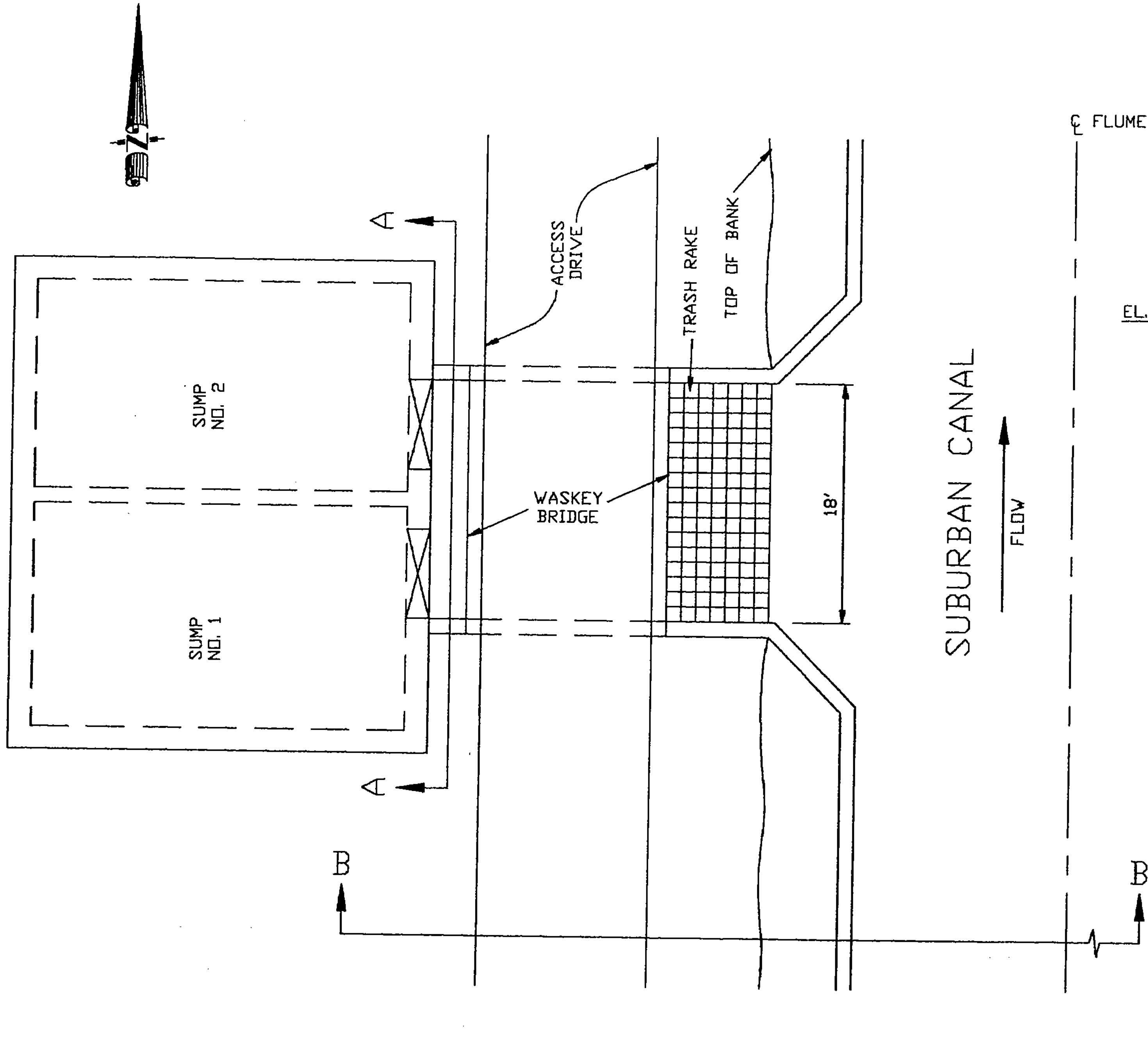
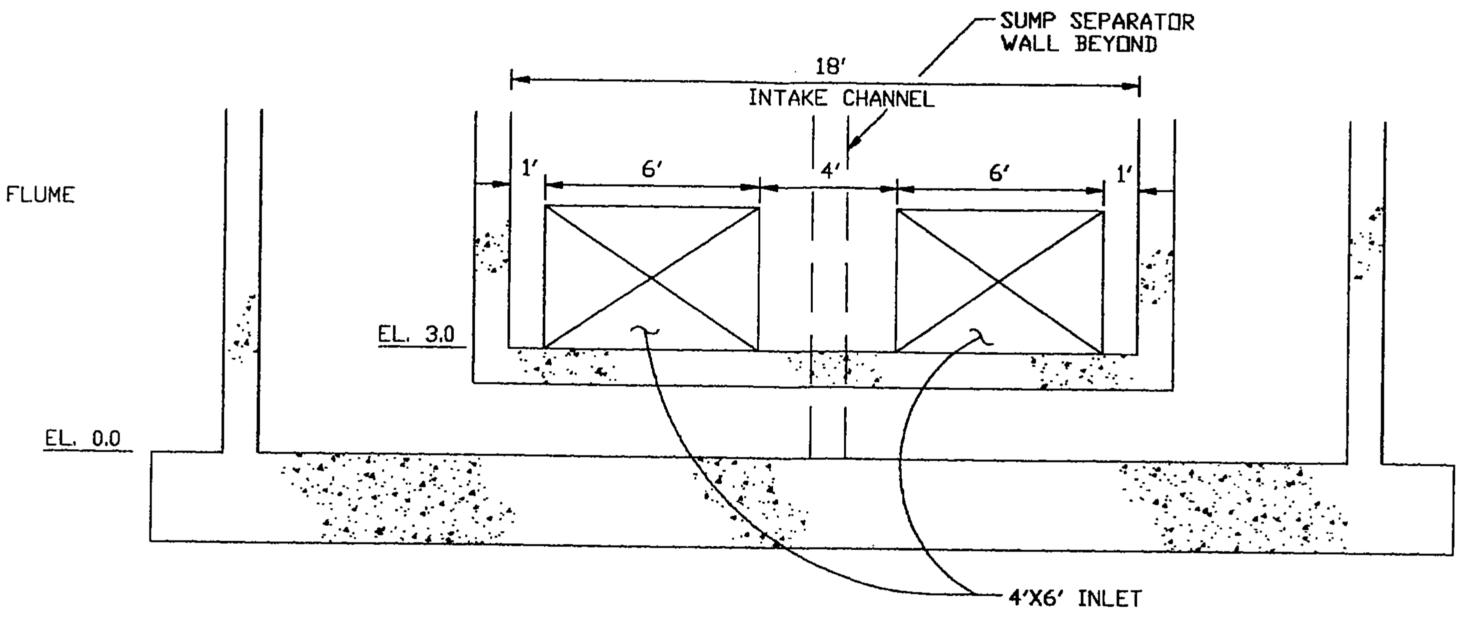
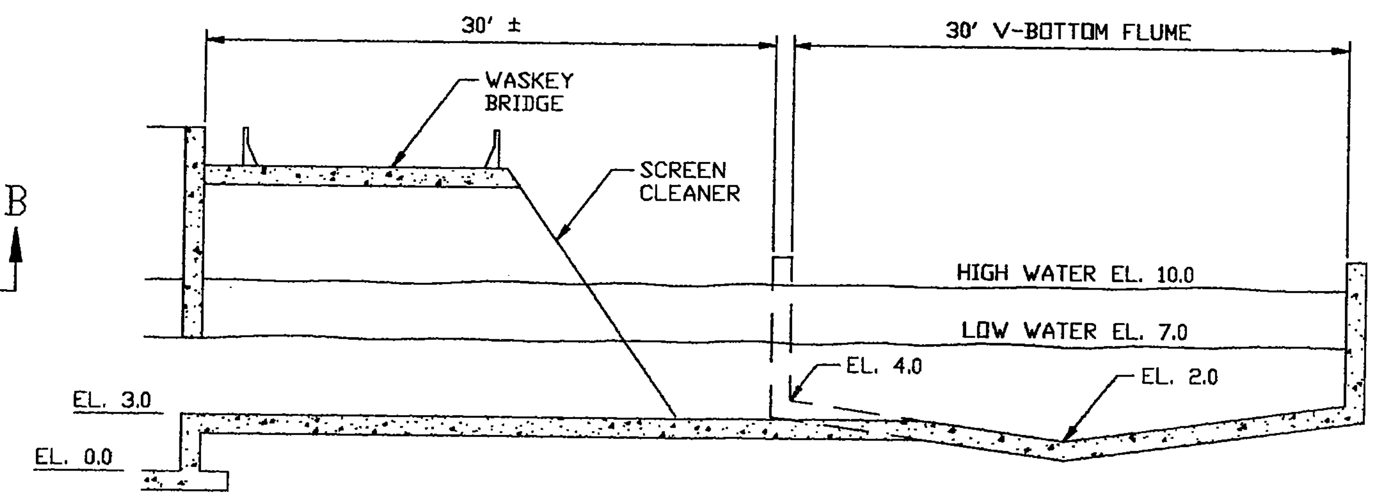
PRELIMINARY LIFT STATION LAYOUT



PLAN VIEW
SCALE: 1"=10'



SECTION A-A
SCALE: 3/16" = 1'-0"



VIEW B-B
SCALE: 1"=10'

PLATE 11

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JEFFERSON PARISH STORMWATER DISCHARGE DEMONSTRATION PROJECT

INTAKE LAYOUT AND SECTIONS

SCHEMATIC OF WASTEWATER FLOW
EAST BANK WASTEWATER TREATMENT PLANT

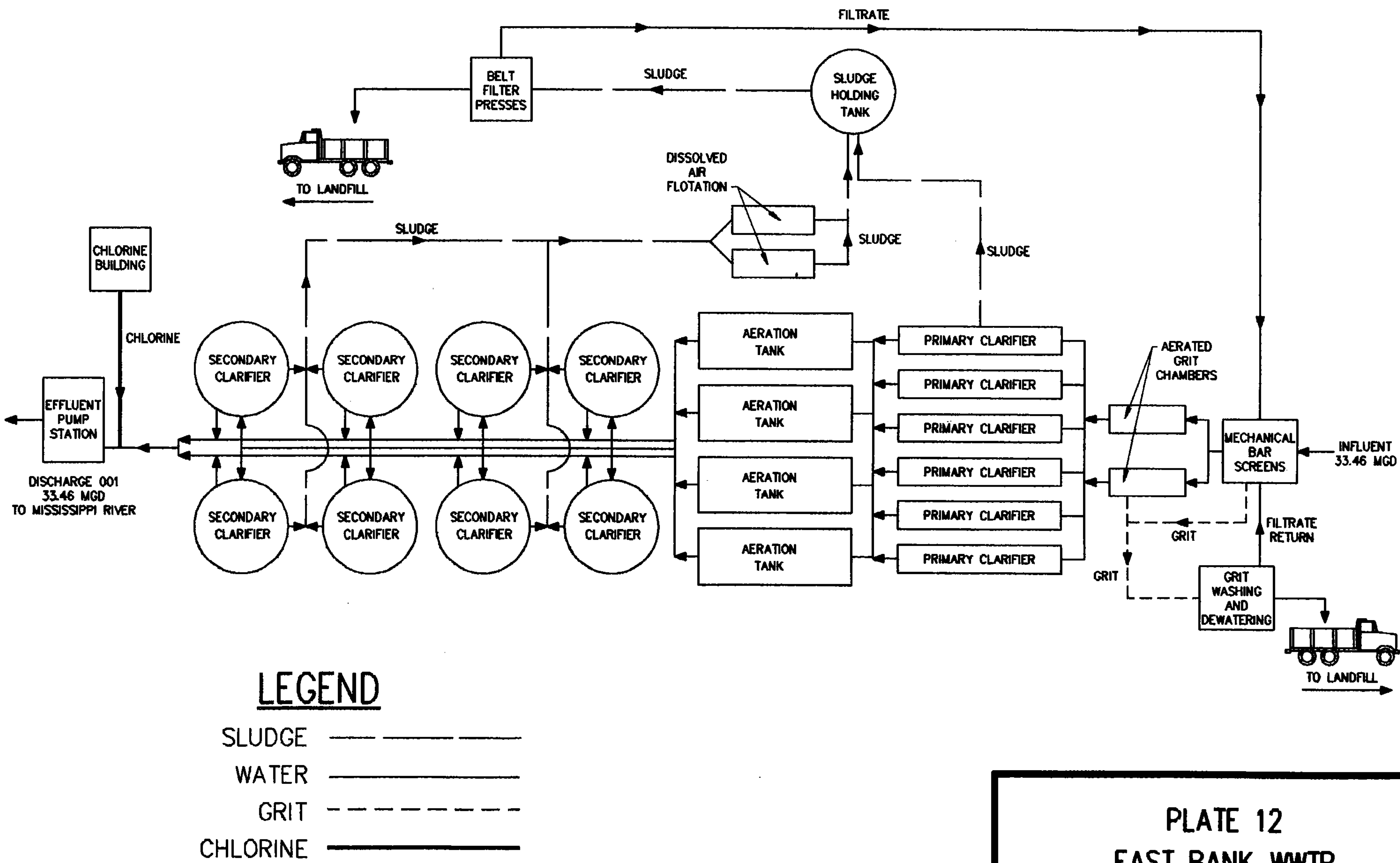

PLATE 12
EAST BANK WWTP
SCHEMATIC OF WASTEWATER FLOW