

**PUBLIC WORKS DEPARTMENT
WASTE RESOURCES DIVISION
FILTER PRESS CONTRACT
Audit 07-01
September 14, 2007**



City of Chattanooga

Stan Sewell
Director

INTERNAL AUDIT
City Hall
Chattanooga, Tennessee 37402

Ron Littlefield
Mayor

December 21, 2007:

Honorable Ron Littlefield
Mayor, City of Chattanooga
City Hall
Chattanooga, TN 37402

RE: Filter Press Contract, Audit 07-01

Dear Mayor Littlefield:

Attached is the Internal Audit Division's report on the Waste Resources Division of Public Works Filter Press Contract audit.

During this audit, we noted various other issues that were outside the scope of the audit. We have been and will continue to conduct special procedures related to these issues. Primarily, the focus of these special procedures are related to the other projects comprising a forty million five hundred eighty-two thousand eight hundred nine dollar (\$40,582,809.00) State Revolving Loan and the associated consulting contract with CTI/AGM.

We thank the management and staff of the Waste Resources Division for their cooperation and assistance during this audit.

Sincerely,

Stanley L. Sewell, CPA, CGFM
Director of Internal Audit

cc: Dan Johnson, Chief of Staff
Steve Leach, Public Works Administrator
Daisy Madison, Chief Financial Officer
Bill Payne, City Engineer
Jerry Stewart, Waste Resources Director

**PUBLIC WORKS DEPARTMENT
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FILTER PRESS CONTRACT
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Auditor



Director

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INTRODUCTION

The Waste Resources Division of Public Works consists of two sections: the Interceptor Sewer System and the Solids Waste and Sanitation section. The Interceptor Sewer system encompasses about 1,200 miles of sewer lines and includes 60 pumping stations, seven storm stations, about 130 residential grinder stations, seven combined sewer overflow facilities and one (1) major regional wastewater treatment facility, which is located at the Moccasin Bend Plant. The Interceptor Sewer system services the City and a surrounding metropolitan area which covers a total population of about 400,000 customers and about 200 linear miles. To aid in providing better services to the public, on July 17, 2001 the City entered into a seven million eight hundred fifteen thousand six hundred fifty-six dollar (\$7,815,656.00) procurement contract with USFilter for a new filter press system. This included change orders. That contract is known as 28K (EP-4). This system was to increase efficiency in the treatment of sludge being handled by the treatment plant and create a "Class A" product. An associated contract for six million five hundred fifty-three thousand six hundred fifty-three dollars and four cents (6,553,653.04), including change orders, was also entered into for the installation of the new press system. The associated contract is known as 28L. This contract was awarded to Jake Marshall Services. The contracted project manager for this and other improvements at the Moccasin Bend plant was a joint venture between Consolidated Technologies, Inc. and ARCADIS, Geraghty & Miller (CTI/AGM). The naming of the project manager was part of an Engineering Services agreement approved by Council on July 11, 2000 for one million six hundred eighty-eight thousand dollars (\$1,688,000.00). The management of the Filter Press project was added by an amendment dated May 21, 2002. This and other amendments increased the engineering fee to a not to exceed amount of three million six hundred sixty-three thousand five hundred ninety dollars (\$3,663,590.00).

STATEMENT OF OBJECTIVES

The audit was conducted to determine if the City received what was contracted for in 28K (EP-4). The objectives of this audit were to:

1. Determine that the contractor has complied with the terms of the contract;
2. Determine that the payments that have been made have been earned, properly authorized and justified according to the terms of the contract; and
3. Determine that the City's procurement procedures were followed.

STATEMENT OF SCOPE

Internal Audit staff reviewed relevant State Code, City Codes, City Policies, Contract 28K (EP-4), the associated installation contract 28L, other contracts that pertained to the Moccasin Bend improvement project, procurement documents, payments documents, conducted interviews, and made on-site inspections to verify the filter press system contracted for was on site and working. The agreement of the consulting engineer was also reviewed. The audit covered the contract period of July 2001 to July 2003. The scope was expanded to meet the audit objectives.

STATEMENT OF METHODOLOGY

Internal Audit staff reviewed the City's Purchasing Policy, reviewed the City Code as it relates to contracts, and reviewed City accounting records, including digital records, from the BANNER (City Accounting) system, reviewed operator logs, reviewed the contract and all addenda, and made on-site visits to the Moccasin Bend plant to physically view the filter press system and all components in operation. Staff also held interviews with plant operations managers, engineers and operators to gain an understanding of how the system should work, and how it is working.

STATEMENT OF AUDITING STANDARDS

We conducted our audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to afford a reasonable basis for our judgments and conclusions regarding the organization, program, activity, or function under audit. An audit also includes assessments of applicable internal controls and compliance with requirements of laws and regulations when necessary to satisfy the audit objectives. We believe that our audit provides a reasonable basis for our conclusions. In addition, we abide by the standards of professional practice established by the Institute of Internal Auditors.

AUDIT CONCLUSIONS

Based upon the test work performed and the audit findings noted below, we conclude that:

1. The contractor has not complied with the terms of the contract;
2. Payments were being made contrary to the terms of the contract;
3. The bid procedure for contract 28K (EP-4) was followed, per City Code. However, it appears that the process may have been skewed toward the winner, USFilter.

BACKGROUND

Contract 28K (EP-4), Solids Handling System Improvements – Filter Press System Procurement, was specifically approved by the City Council on July 17, 2001, Resolution number 23057. The terms called for a working system within six hundred sixty (660) days from the start of the project, which was September 24, 2001. This would put the completion at July 16, 2003. The project was to be completed in six separate “work elements” that had their own timelines for completion. The terms stated that payments would not be made until each element was completed. The terms also stated that liquidated damages could be charged if the timelines were not met. The terms further stated that the contractor would be liable for the costs associated with the purchase of the equipment and the costs of the installation of the equipment if the system did not meet the guarantees stated in the contract.

On October 23, 2001, a supplement to contract 28K (EP-4) was executed by the Administrator of Public Works. Per the Administrator, the supplement was executed at the recommendation of the City’s consultant engineering firm (CTI/AGM), who stated that the supplement was merely to clarify some ambiguous terms. This supplement appears to change the terms of the contract such that the timeline for the completion of the system was changed from the 660 days post “Notice to Proceed” date or July 16, 2003, to a time that “...will be mutually agreed upon based on the actual date on which shop testing and ownership transfer of such first filter press are completed.” There is no mention of a specific date for the first press to be delivered. Also, the liability of the contractor may have been limited to only what had been paid to them for the cost of the equipment. If the supplement is construed in that manner and found to be enforceable, this would result in the elimination of over six million, five hundred thousand dollars (\$6,500,000.00) of liability for USFilter. This supplement was not approved by the Council, nor were there any discussions about the supplement in any Council or Committee minutes.

Contract 28K(EP-4), as approved by Council, placed the overall supervision of the project on the Administrator of Public Works, and the general supervision on the City Engineer including an option to hire a project engineer. The Project Engineer, as representative or agent for the City, would be responsible for the day to day detailed supervision of the work, verification that the contractor payment requests met the contract guidelines and recommended payment amounts. Upon receipt and recommendation from the Project Engineer, the Waste Resources Director of the Moccasin Bend plant was the party who approved and forwarded payment requests and other documents.

The contractor (USFilter) guaranteed that their product would qualify as a “class A sludge” at the end of the filtering process. It was also guaranteed that the finished product would meet certain criteria related to dryness and levels of lime and ferric acid contents. Included in the contract was a provision that the installation of the system was to be done by a third party, in this case Jake Marshall Services, but under the direction of USFilter. USFilter was to provide the design documents and plans for the installation as part of the work elements of the 28K (EP-4) contract. The installation was also to be supervised by CTI/AGM.

The City Council on July 11, 2000 adopted Resolution # 22589, authorizing the execution of an agreement for Engineering Services with Consolidated Technologies Inc, and ARCADIS Geraghty & Miller (CTI/AGM), a joint venture, relative to the design and bidding for the Oxygen System Upgrade and Sludge Handling Improvements. The City Council adopted Resolution # 23409 on May 21, 2002, to amend Resolution # 22589, and add “Bidding and Construction Phase” services for contract 28K (EP-4). It also added “Construction Phase” services for contract 28L, which is the installation contract for the Filter Press system.

CTI/AGM was the project engineer for the City. CTI/AGM was to be responsible for the day to day activity of the Upgrade and Improvement project. This included the certification and recommendation for approval of all payment requests made by the contractor(s) upon completion of the work elements listed in the terms of the contract(s). CTI/AGM was also to insure that the contractor(s) met the deadlines listed in the contract(s).

The financing for this project was from a State Revolving Loan (SRL), which was entered into by the Council per resolution # 23944, dated October 21, 2003. The SRL was allowed to be backdated to cover expenditures from the beginning of the project, per state officials. This loan, or line of credit was for a total of forty million five hundred eighty-two thousand eight hundred nine dollars (\$40,582,809.00), accessible through draw downs. The City has drawn down the full amount of the loan. The total amount drawn down by the City includes the “escrowed amount” of one million fifty-five thousand four hundred ninety-two dollars and twenty five cents (\$1,055,492.25) due USFilter upon final acceptance of the Filter Press system by the City. The interest rate is stated as two point nine eight percent (2.98%) per annum. The SRL covered multiple projects at the Moccasin Bend plant, including the engineering consulting contracts for those various projects.

COPY OF CONTRACT

City Code Section 2-548(b) requires “The original of all contracts shall be delivered to and kept by the City Finance Officer.” The Filter Press equipment contract, 28K (EP-4), the supplement to this contract, and the associated installation contract, 28L, could not be located in the Finance office. A search by the Audit staff, and subsequently by the Finance staff, failed to uncover the originals of these documents. Copies of the contracts and the supplement were ultimately provided by the Waste Resources Director to Internal Audit via the Budget Office. However, the copy of 28K (EP-4) provided to the audit staff did not have the signed “Notice to Proceed”, which is the document that set the timelines for the contract.

RECOMMENDATION 1

Administration should forward the originals of any contract upon execution to the Finance Office. The City Finance Officer should keep all documents per the MTAS Document Retention Resolution # 23576, adopted by the City Council on October 29, 2002, which gives guidance on timeliness of record keeping. They should also follow City Code section 2-548, which requires the City Finance Officer to take possession of and keep the originals of all contracts entered into by the City. Contracts in effect should be kept available until at least seven years post completion of the contract.

AUDITEE RESPONSE

Concur; our current procedure is to forward originals of all contracts to City Finance Office.

AUDITEE RESPONSE (FINANCE OFFICER)

We concur. All departments have been reminded of the requirement to file an original copy of all contracts with this office.

FINANCING NOT INCLUDED IN THE SINGLE AUDIT SECTION

The State Revolving Loan funds that were drawn down to finance the Filter Press Procurement and Installation contracts were Environmental Protection Agency (EPA) monies passed through the State. This loan qualifies as a Federal Program, per Government Auditing Standards.

The expenditures of over forty million dollars would have subjected this loan to the “Single Audit” or Yellow Book requirements of Generally Accepted Governmental Auditing Standards. The total drawdown’s are as follows: \$13,848,340 for FY03; \$18,031,520 for FY04; \$5,561,874 for FY05; and \$3,141,075 for FY06. These amounts, when compared to all other federal funds expended during the periods, would have qualified as a “major program” for each year received. These amounts are reflected in the Combined Annual Financial Report (CAFR) as long term debt, but they should have been shown in the single audit section also.

RECOMMENDATION 2

The Finance Department should insure that all Federal monies expended during the year are included in the Schedule of Federal Awards reported to the external auditors.

AUDITEE RESPONSE (Finance)

We concur. All future revolving loan funds/grants will be subjected to the single audit requirements.

CONTRACTOR HAS FAILED TO PROVIDE A WORKING SYSTEM

The contractor, USFilter/JWI, Inc. (USFilter) was to provide a “fully functional sludge and dewatering system capable of dewatering forty-three tons (dry wastewater solids weight) per day (based on a 24-hour-per-day operation) of waste activated sludge (WAS).” USFilter has not been able to meet the terms of this contract, even though they have had over five years to comply. On site observations, and interviews with staff, management and the consultant have shown and verified that the Filter Press system does not and has not worked and is presently “mothballed.” The contractor has acknowledged that the primary equipment they supplied, the filter plates, are defective by design.

The City has made direct expenditures of fourteen million three hundred sixty-nine thousand three hundred nine dollars and four cents (\$14,369,309.04) for equipment and installation of a system that does not work now and has never worked as guaranteed. The City has also paid interest on the State Revolving loan at two point nine eight percent (2.98%) annually for three years, which it should not have had to do if the contractor had been paid per the terms of the contract. The City also has incurred hundreds of thousands of dollars of additional overhead costs, and amounts paid to CTI/AGM, which were over four hundred forty thousand dollars (\$440,000.00). The City might incur substantial additional costs if litigation is necessary to enforce the remedies afforded it per the terms of the contract.

Lastly, the City may have avoided these expenditures or it might have a working system now if payments had been made properly, per the terms of the contract. CTI/AGM should not have recommended and management should not have processed payments prior to the completion of the work elements. Management should have also assessed liquidated damages of two hundred fifty dollars per day (\$250.00) for each day the contractor failed to comply with the terms of the contract, as provided for in the contract. Also, this would have flagged problems with the contractor prior to the first payment. This would have given the City an opportunity to reevaluate the contractor or given the contractor (USFilter) incentive to devote appropriate resources and provide a working system.

RECOMMENDATION 3

The City should seek legal counsel regarding the remedies afforded it under the terms of the contract and demand repayment of, at a minimum, all monies paid to the supplier, along with the cost of installation, interest paid on the loan that financed the project, liquidated damages for failure to meet the timelines set forth in the contract, and request the removal of the equipment from the City’s facility. It appears, per the terms of the contract, the City could request remedies totaling \$27,856,291.75. (Payments to USFilter and Jake Marshall, Daily Liquidated Damages and Damages per Life Cycle Formula). Should the City consider allowing the contractor additional time to provide a functioning system, we recommend the City require the contractor place an amount equal to the City’s direct damages into escrow. To date, this amounts to at least the following:

Contract Cost:	\$	7,815,656.00
Installation:		6,553,653.04
Interest (2.98%) *		1,289,405.95
Liquidated Damage		
\$250.00 x 1222**		305,500.00
CTI fees		440,057.97

		\$ 16,404,272.96

* Pro-rated charges based on project balances/total loan balances as of 09/19/2007
 ** 12/06/2003 to 04/11/2007 (Date equipment removal was requested)

The City should also seek legal counsel regarding whether any claims should be assessed against the Project Engineer.

These amounts do not include the City’s “out of pocket” expenditures incurred for over three years while trying to get these presses working after the contract deadline.

If the supplement explained later is found to be enforceable and construed against the City, many of the damages mentioned above may not be recoverable by the City.

AUDITEE RESPONSE

Concur.

PAYMENTS MADE CONTRARY TO CONTRACT TERMS

The review of the payment request documents submitted for contract 28K (EP-4) revealed that the payments were in violation of the contract terms. Payment requests were submitted by the contractor (USFilter). The documents were then certified and recommended for acceptance by the Project Engineer (CTI/AGM) and forwarded for processing by City management. All of the requests were made and payments processed prior to completion of the work elements. In a meeting with Internal Audit on March 13, 2007, Jerry Stewart, Waste Resources Director, stated that he was aware payments were made prior to completion of the work elements, contrary to the terms of the contract. These actions have caused the City to expend millions of dollars prematurely.

The time and method of payments payable on Contract 28K (EP-4) are addressed in several sections of the contract, general provisions, and specifications. The Summary of Work section #01010, paragraph (H), of the contract specifications states that “No payment for the process design documents will be made until the complete design package is accepted by the engineer.” The Process Design Package, element #1, was completed on May 15, 2002. The payment records reveal that six hundred ninety-nine thousand, three hundred twenty-five dollars and fifty-nine cents (\$699,325.59) was paid for this element prior to its completion. There is very clear language in the general provisions that says “Upon successful completion of a payment work element, the contractor may submit to the engineer ... a progress payment request for the amount of work accomplished and/or products furnished.”

Element #2, Shop Drawings and Engineering Data, was supposed to be completed by August 13, 2002, at which time payment would be made. The payment records show that seven hundred eighty-one thousand, five hundred sixty-five dollars and sixty cents (\$781,565.60) was paid prior to the completion of this element.

Part 1.8, paragraph (A) of Section # 01010 of the specifications defines what the “payment work elements” are, and Section # 01026, Application for Payment, Part 1, paragraph 1.1.A details what amounts are to be paid for the completion of each element. There are no provisions for making a payment prior to the successful completion of the work element. Section # 5.5.3 of the general provisions says that part of the duties of the Project Engineer are to determine that the payment amounts submitted are correct, and in conformance with the terms of the contract.

The Project Engineer (CTI/AGM), when asked by the Chief of Staff on May 2, 2007 stated, "...no payments were made prior to completion of the work elements." The payment records refute this statement. The Waste Resources Director, although present when the statement was made, said nothing to contradict the statement. As mentioned above, he knew the payments were made prematurely.

Payments totaling five hundred ninety-five thousand dollars (\$595,000.00) were made for portions of the Start-Up element, which was the last element, having a value of 20% of the total price of the contract or one million, five hundred sixty-three thousand, one hundred thirty-one dollars (\$1,563,131.00). Contract 28K (EP-4) specifically stated that no payment would be made for this element until the system had successfully passed the required performance tests. There have been no successful tests performed. The Project Engineer (CTI/AGM) and the management stated these payments were to help with the contractor's "cash flow." As noted in our finding "Questionable Bidding Process", one of the factors cited in choosing USFilter over the alternative bidder was that the other company may not have been financially secure.

RECOMMENDATION 4

In the future, management should make no deviations to the terms of a contract specifically approved by the City Council without subsequent approval from the Council. No payments should be made on a contract contrary to the terms of the contract. No payments should be made before the stated products and/or services have been provided and/or rendered. Administration should take appropriate disciplinary action. Furthermore, Administration should seek legal advice regarding legal actions available to recoup any losses from CTI/AGM.

AUDITEE RESPONSE

Concur. In the course of dealing with consultants, the staff has developed a reliance on consulting engineers to advise us on the best course of action. The staff of Public Works will be cautioned against this type of over reliance in their dealings with consultants.

It should be noted that Section 8 of the Contract documents allows for partial payment as work progresses. Similarly, Section 01026 Part 1.1.B could be interpreted to allow partial payment on Items 2, 3, and 4 under Part 1.1.A, Completion milestones.

The statement, "These actions have caused the City to expend millions of dollars prematurely", appears to be conjecture. In our opinion, USFilter was paid for work performed and not paid for more than that.

AUDITOR COMMENT

The contract sections referenced in the auditee response provide that estimates can be made “in accordance with the provisions of the contract” and as “allowed by the project schedule,” respectively. Those provisions do not allow payments to be made prior to the completion of the elements. Jerry Stewart, Waste Resources Director, stated to Internal Audit that he knew payments were being made prior to the completion of the work elements and in violation of the contract terms. Our statement that millions of dollars have been paid prematurely is based on documented evidence and is not conjecture.

EQUIPMENT OPERATING AND MAINTENANCE MANUALS

The items in the second work element of contract 28K (EP-4), Shop Drawings and Engineering Data, specifically include a complete set of operating and maintenance manuals that are to be provided to the owner (City). During interviews held in February 2007 with the employees at Moccasin Bend, and in notes and memos between the City and USFilter, the subject manuals have not been provided.

The Project Engineer and management both approved payments for this work element, knowing it was not complete. The total amount of seven hundred eighty-one thousand, five hundred sixty-five dollars and sixty cents (\$781,565.60) for this element was completely paid as of May 15, 2002. The contractor’s incentive to provide the manuals was diminished after receiving payment.

RECOMMENDATION 5

In the future, management should make certain that all items required to be delivered under a contract are provided prior to approving payments for those items. Administration should take appropriate disciplinary action. Furthermore, Administration should seek legal advice regarding all legal actions available to recoup any losses from CTI/AGM.

AUDITEE RESPONSE

Concur.

TIMELINE NOT MET

The 28K (EP-4) contract timeline has not been met, per the original terms of the contract approved by the City Council. As stated in the original language of the contract documents, time was of the essence with this project.

In the “Request for Proposals” to potential bidders, and also in the other contract documents, it is emphasized that time is of the essence for this project, and a specific timeline is spelled out for the completion of the contract, along with the corresponding penalties for not meeting the deadlines. During the initial phase, the Project Engineer (CTI/AGM) informed the contractor that they had not met the original timelines and liquidated damages could be assessed. The letter also provided USFilter with revised timeline milestones.

The contract called for Initial Equipment Check-out and Start-up 660 days after the contractor received a notice to proceed to do the work. This original date was September 24, 2001, which would require the system be Checked-out and Started-up by July 16, 2003. The contractor failed to meet the very first deadline by 144 days. This pushed back all the other deadlines by the same number of those missed days. This would put the Start-up date at December 6, 2003. As of November 2006, the presses still had not passed the required tests for acceptance of completion, and per the plant operations manager, the system has been “mothballed.”

Contract payments of six million seven hundred sixty thousand one hundred sixty-three dollars and seventy-five cents (\$6,760,163.75) or eighty-six and one half percent (86.5%) of the total value of the contract, have been made to the contractor even though they were not meeting deadlines. The contractor’s incentive to comply with the timelines was diminished as they already received a very large portion of their fee.

We would anticipate that USFilter would argue that the contract supplement discussed hereinafter is enforceable against the City, and, as such, the timeline issue for work elements #3 through #6 (Shop Test and Owner Transfer, Delivery of the Equipment and the Start-up elements) would be moot, and there would be no timeline for these, as the supplement could have (as USFilter might argue) eliminated elements #3 through #6. However, other sections of the contract continue to reference the elements as if they are still a part of the schedule. Furthermore, the City and the contractor both continued to utilize the schedule for billing and correspondence. Also, the supplement did not change the language relating to payments being made prior to completion of the work elements.

RECOMMENDATION 6

Management should not make any payments on a contract contrary to the terms of the contract. No payments should be made before the stated products or services have been provided. Management should assess liquidated damages whenever available. This will serve as an incentive to contractors, as well as offset costs of the City that are incurred due to the delays. The City should pursue any and all remedies available to it from all parties for the failure of the contractor to meet the required deadlines of the contract. Administration should take appropriate disciplinary action.

AUDITEE RESPONSE

Concur.

PERFORMANCE TESTS NOT DONE TIMELY

Contract 28K (EP-4) calls for the contractor to complete successful performance tests before any monies are paid for the final work element. There are very specific timelines for these tests. According to the original terms of the contract, the performance testing period should have begun on December 6, 2003. The contractor, in the event the system failed to demonstrate its ability to meet the specified guarantees and warranties during the first two 48 hour performance test periods within the thirty days allowed, could modify the system, completely at his own expense, and the test be repeated. This could be repeated a maximum of six times within the first 12 months following the initial performance test. The testing period should have been completed by November 2004.

The first test was not even attempted until November 14, 2005, with a second test attempted on February 21-23, 2006 and a final test was attempted on November 7, 2006. None of these tests were successful. The contractor has stated that they cannot get the system to work as designed, and it would take an additional year to a year and a half to develop something that might work.

RECOMMENDATION 7

The Public Works Department should not fund a contractor's Research and Development costs. Management should exercise the remedy options afforded under the terms of the contract. Administration should take appropriate disciplinary action.

AUDITEE RESPONSE

Concur in part. As I understand, the contractor demonstrated a reduced scale apparatus and demonstrated that the technology would successfully produce the required product. For reasons not apparent to me looking from this vantage point in time, the completion of the project was delayed some two years and therefore full-scale testing could not be attempted until November 2005. If the parties involved relied on the fact that the supplement to contract was valid, the system testing could have been legitimately postponed due to construction delays. Be that as be, may, testing an incomplete system would not have produced the desired results no matter if the supplement was legally binding or not.

It is conjecture that this was USFilter's research and development project. This project was envisioned to be a successful process for producing Class A biosolids. Other than the City providing start up support that is normally supplied to contractors, there has been no funding associated with any research and development for USFilter. The City did make a concerted effort to make the project perform as specified.

AUDITOR CLARIFICATION

It was our intent that this finding and recommendation be construed in conjunction with previously detailed findings related to premature payments, delays, and the failure to enforce liquidated damages.

AUDITOR COMMENT

We are unclear about the relevance of pre-contract demonstrations of models/prototypes. However, we did note that in discussions with plant operators who were present during the pre-contract demonstrations of a "reduced scale apparatus," that the test model did not function as it was supposed to. When the problems were questioned by them, they were told the full scale model would work, with no additional explanation.

Contract 28K (EP-4) was an equipment procurement contract. The equipment being procured had never been produced or sold by the contractor. With an equipment procurement contract, we would expect that the contractor would simply provide the equipment and demonstrate that it functions as promised. However, it appears the contractor had problems with their equipment and the City continued to provide materials and chemicals, as well as personnel, while the contractor conducted what amounted to research and development. In fact, Jerry Stewart, Waste Resources Director, stated to Internal Audit that at one point (after much frustration with the contractors failed attempts), he and his staff devoted a great deal of man hours to making the system work, in the absence of the Contractor.

Furthermore, as indicated previously, payments were made to the contractor before required milestones were met and the City did not enforce liquidated damages that were available. Our finding does not state we believe (conjecture) the project was initiated as a City supported R & D project for the contractor. We believe, however, it became such.

The response raises the issue of whether the parties were relying on the supplement for the purpose of delaying implementation/testing. Correspondence between the parties throughout the project continued to reference the timeline as if the supplement did not have any effect. Furthermore, the supplement (if enforceable) has no effect on the first two elements. However, the point of the finding is that the City incurred expenditures while the contractor attempted to make their product function.

CONTRACT SUPERVISION BY-PASSED THE CITY ENGINEER

The general supervision of contract 28K (EP-4) was handled by the Waste Resources Director, not the City Engineer, as required by the terms of the contract. Section 5.4 of the general provisions of the contract says “If the City has retained a consulting engineer, the authority of the City Engineer should be as specified herein. The general supervision of the performance and execution of the work under these contract documents is vested in the City Engineer.”

The Engineering Services agreement with CTI/AGM included services for the Filter Press project. Section 5.4 added “...the detailed supervision of the performance and execution of the work is vested in the Project Engineer as set forth below.” Section 5.4 also went on and added that “supervise” or “supervision” shall mean “administer the Contract” or “perform Contract administration duties.” Section 5.5 of the general provisions says “The Project Engineer is designated by the City to perform certain duties of the City, specified herein, as a duly authorized representative or agent of the City.”

It appears the Project Engineer (CTI/AGM) did not apprise the City Engineer in many matters relating to the contract, he went straight to the Waste Resources Director. The City Engineer does not appear to have delegated any authority to the Waste Resources Director, nor does the contract appear to allow such delegation. Furthermore, the Project Engineer (CTI/AGM) developed the contract documents. Therefore, it would appear there is no excuse for their reporting to the Waste Resources Director as the general supervisor in lieu of the City Engineer.

The City Engineer, at the time of the audit, stated that he had no real knowledge of the contract. He added “...that was a long time ago and I really don’t remember if I was told about this or not.” He did, however, add that something could have been said to him in passing. He did sign a document related to the filter press contract, but he just could not recall being involved in the project as he should have been.

RECOMMENDATION 8

Management should insure that all of the terms of a contract be followed, including involving the City personnel required to be involved per the terms of the contract. If the City Engineer is the named City representative in a contract, then the City Engineer should be the party who has final approval over the fulfillment of the contract. The City Engineer should be kept involved in all projects for which supervisory authority has been bestowed. With regard to the contract at issue, at a minimum, the City Engineer should have been notified of delays, liquidated damages available and been provided with the payment requests submitted for review and approval. Administration should take appropriate disciplinary action. We further recommend Administration seek legal counsel with regard to the possibility of recouping losses from the Project Engineer.

AUDITEE RESPONSE

Concur in part.

As a matter of background to this project, during the period of the upgrade of the Solids Handling Facilities at Moccasin Bend Waste Water Treatment Plant (MBWWTP), there was a change in how the Department of Public Works handled projects. A memorandum of understanding (MOU) between the Waste Resources Division (WRD) and the Office of the City Engineer (ENG) was developed and implemented in February 2002 (See attachment 1). This MOU outlined the responsibilities of WRD and ENG with regards to the management of capital projects for the Interceptor Sewer System (ISS). Prior to this time, WRD managed in part most of its capital projects with the advice and counsel of the City Engineer and Administrator of Public Works. At the time of the MOU, the equipment procurement contracts had been initiated and it was decided that WRD would manage those contracts and ENG would manage the construction contracts. This is the procedure that was followed with Contract 28EP-4 and Contract 28L. These are the contracts associated with the Filter Press system at MBWWTP and the subject of this internal audit.

Looking at this situation from the vantage point of time, it is not apparent whether the City Engineer formally delegated his authority to the Waste Resources Director; acquiesced in his authority or actively participated in decisions. At best we can only surmise that the City Engineer allowed the Project Engineer (CTI/AGM) to control the construction tempo of the project. The current lines of authority in Public Works allows the City Engineer to manage projects on a first-hand basis and he or his delegated staff continually monitoring contracts.

AUDITOR COMMENT

The contract approved by the City Council provided the City Engineer should have general supervision. However, we do not see where the referenced MOU is relevant. It was executed after the filter press contract 28K(EP-4) was procured. However, were it considered applicable to the Filter Press contract; it appears to mandate extensive involvement of the City Engineer. Furthermore, agreements between the WRD and the City Engineer lack the necessary authority to override Council actions. The Filter Press contract was drafted by the Project Engineer working at the direction of the WRD. If the intent was, as stated in the auditee response, that “WRD managed in part most of its capital projects...,” we cannot understand why the contract indicated that the City Engineer would have general supervision.

ENGINEERING SERVICES AGREEMENT BY-PASSED PURCHASING

The procurement of Engineering Services with CTI/AGM should have gone through the Purchasing Department, but was handled through Public Works directly. Per TCA section 12-4-106(a)(2)(A) & (B), all contracts for engineering services at the local level are to be handled through the procurement committee or the Purchasing Department. This appears to circumvent the proper chain of review and could lead to unqualified providers or appearance of favoritism.

RECOMMENDATION 9

In the future, management should insure that all engineering contracts go through the Purchasing Department, as required by statute, to help insure there are no improprieties or appearances thereof in the awarding of such contracts.

AUDITEE RESPONSE

Concur. Attachment 2 is correspondence between Mr. Bill Payne, City Engineer and Mr. Gene Settles, Purchasing Director of the City of Chattanooga in September-November 2007. The staffs are currently working on a Procurement Manual Document that clearly addresses the relationship between Public Works and Purchasing with regard to procurement of professional and construction services. At this juncture, the staffs have not completed this manual and Public Works personnel have been instructed to continue with procurement of these services within the Department of Public Works. Pursuant to the publishing of the manual, the Purchasing Director will take on this responsibility.

AUDITOR COMMENT

Our finding relates to a matter of State Law. While the update of a procurement manual is admirable, it is not relevant. The City's Purchasing Director does not have the authority to override State Law.

GAS SCRUBBER DOES NOT PERFORM PROPERLY

Per contract 28K2 (an addition to the scope of this audit) there was to be installed a system, including a gas scrubber, to clean methane gas to run boilers which are used in the sludge handling process at Moccasin Bend. The gas scrubber has not performed as it should since it passed initial testing on February 17, 2005, after the installation was completed. This issue was added to our audit as the system was designed by, and the project managed by CTI/AGM. Furthermore, the scrubber was provided by USFilter.

During audit field work, documents were inspected that indicated the scrubber worked properly upon initial start-up and performance testing. These documents were signed by the Project Engineer (CTI/AGM) who attested that the scrubber worked properly after the installation. A more complete performance test, after the digesters were full, was to be performed at the plant around late December 2005/early January 2006. The tests could not be completed due to problems with the system, and they have never been performed, as the scrubber is not functioning properly, per management.

The City has had to purchase natural gas to run the boilers that should be running on the processed gas created by the digesters. This has caused excess expenditures of approximately \$50,000.00 per month for the natural gas.

The scrubber was part of a major renovation project on the “digester building.” The digester portion of contract 28K2 was five million six hundred fifty-one thousand six hundred eighty-six dollars (\$5,651,686.00). A substantial portion of this amount was related to the system including the scrubber. This does not include CTI/AGM’s consulting fees.

Either the scrubber system was designed incorrectly by CTI/AGM, or the installed scrubber from USFilter does not work as it should. There has been no effort by management to recoup any costs from either the vendor who provided the scrubber, (USFilter), from the installer, (Max Foote), or from the system designer (CTI/AGM). Although the system was completely installed and found to be unusable at the end of 2005, management had neither made demands of the vendors nor had they tried to find any possible solutions until mid 2007, when Internal Audit started its inquiries.

RECOMMENDATION 10

Management should take immediate action to determine what is wrong with the system, and get it fixed. Management should also seek reimbursement from the responsible vendor for the excess costs incurred for the natural gas it has had to purchase. Administration should take appropriate disciplinary action due to the unwarranted expenditures incurred by the City, and due to the negligence of management in ignoring the problem for over a year. Furthermore, Administration should look into any and all remedies available from the Project Engineers (CTI/AGM) who were hired to design the system and certified it was working properly.

AUDITEE RESPONSE

In my opinion, a discussion related to the gas scrubber nor performing properly does not need to be a part of the review of the Filter Press contract. This system was installed as a part of Contract 28K2 related to the anaerobic digester contract. It was to clean the methane gas generated by the digestion process to heat the digesters and any excess gas was to supplement the natural gas used at the Filter Press hot water boilers. While the gas scrubber system is a USFilter process, a review of that particular contract within the context of the Filter Press contract review is confusing and would be better evaluated in a separate document.

For clarity, it should be noted that the equipment was installed and tested about 12 to 18 months before methane gas was available from the anaerobic digesters because of the extended start-up time required for the biological process. There were issues associated with the start-up on the methane gas that ISS is continuing to try to resolve.

AUDITOR COMMENT

During our audit, we became aware of problems with the system procured under contract 28K2. In particular, management indicated that problems were related to a gas scrubber that was provided by USFilter (the same company that provided defective equipment under the audited contract). We further noted that the Project Engineer for 28K2 was CTC/AGM (the same Project Engineer that appears to have been negligent with regard to the audited contract). Therefore, we expanded the scope of our audit because we felt the information was relevant to the issues identified with contract 28K (EP-4).

QUESTIONABLE BIDDING PROCESS

In our opinion, the procurement process for contract 28K (EP-4) met all State and City Code requirements, other than as noted elsewhere in this report. However, the bidding process for contract 28K (EP-4) appears to be skewed toward the recipient of this contract. The City consultant (CTI/AGM) appeared to be pushing the City to go with USFilter for this project, even though there was another company that bid lower. Dry-Vac's original evaluated bid was eight million dollars (\$8,000,000.00) vs. USFilter's original evaluated bid of eleven million nine hundred fifty-six thousand five hundred thirty-four dollars (\$11,956,534.00). The bids on contract 28K (EP-4) had to be re-bid, due to both coming in over budget.

We noted that an Office of Performance Review (OPR) report, dated November 22, 2002, stated the consultant (CTI/AGM) who had been given the task of reviewing the bids, had almost “completely eliminated the other company from consideration, changed the rules in mid-stream,” and suggested awarding the contract to USFilter because the City “really wanted eight presses, not six”. We (Internal Audit) do not assert that Dry-Vac was the best bidder. It is our opinion that the decision making process does have the appearance of being biased and could have been better managed. A detailed analysis of all relevant facts and documents would comprise a report in itself. We have provided some relevant information below that tends to support the referenced OPR report.

As part of the re-bid, the number of presses required was reduced from eight to six, along with other financial cuts. The re-bid showed that Dry-Vac had a lower bid by two million one hundred eighty-eight thousand four hundred eighty-one dollars (\$2,188,481.00), based on evaluated numbers. Per the letter to the City dated May 29, 2001, recommending USFilter be awarded the contract, the consultant (CTI/AGM) used Dry-Vac’s performance guarantees from the first bid to lower the advantage amount to eight hundred forty-three thousand four hundred twenty-two dollars (\$843,422.00). At best, this created the appearance of bias in the evaluation.

The CTI/AGM representative stated that the City operations staff was uncomfortable with a six filter press system, and therefore believes the City will exercise the option to add two more presses. Using the costs for additional presses included in the re-bid, the bid for Dry-Vac was slightly greater than USFilter’s. As mentioned above, Dry-Vac had an advantage of almost \$4,000,000.00 in the original bid. A re-bid was deemed necessary because the City could not afford eight presses.

CTI/AGM ignored Dry-Vac’s new test results and guarantees, because the tests were done at Dry-Vac’s home plant, and the consultant felt the guarantees were unrealistic. In their letter to the City dated May 29, 2001, CTI/AGM also noted that Dry-Vac was “a small, privately held company” and “...most likely could not absorb a potential penalty of one million three hundred thousand dollars (\$1,300,000.00).” Oddly, when liquidated damages were applicable for USFilter, the Project Engineer did not recommend and the management did not enforce such remedies. Furthermore, although the Project Engineer expressed concerns about Dry-Vac’s ability to meet guarantees, USFilter ultimately failed to meet any guarantees.

Dry-Vac invented the technology for this process. It appears that USFilter had limited, if any, experience with this technology. This technology had never been utilized on a scale (two meter plates) required by contract 28K (EP-4).

RECOMMENDATION 11

Management should follow the Purchasing Department's bid process at all times, and every effort should be taken to insure that the City gets the best and lowest bid for goods from the most qualified provider. RFP's should clearly define evaluation criteria and such criteria should be utilized in making recommendations to the City Council. Bids/Proposal evaluations should be handled internally utilizing operations staff's knowledge/experience, purchasing staff's knowledge/experience and where applicable, the knowledge and experience of the City Engineer. To minimize bias (or the appearance of bias), bid evaluations should not be contracted to outside parties.

AUDITEE RESPONSE

Concur. See attachment 3 for an explanation of the process.

CONSULTANT HAS FAILED TO PROVIDE ADEQUATE OVERSIGHT

It appears the City's consultant engineer (CTI/AGM) has been lax in looking out for the best interests of the City. In the agreement for Engineering Services, CTI/AGM was to act as the City's representative in various projects related to improvements to sludge handling at Moccasin Bend. However, as stated in this report, the terms of contract 28K (EP-4) were ignored and the gas scrubber as required in contract 28K2, does not work.

It appears CTI/AGM's failure to exercise due diligence as a Project Engineer has cost the City approximately fifty thousand dollars (\$50,000.00) per month in natural gas, in addition to a minimum of six million five hundred thousand dollars (\$6,500,000.00) for the installation of a failed filter press, and over one million dollars (\$1,000,000.00) in interest expenses, several hundred thousands of dollars in liquidated damages and CTI/AGM's fees (over \$440,000.00 related to contract 28K (EP-4) alone).

RECOMMENDATION 12

The City should seek legal counsel regarding any recourse it has to recoup losses from CTI/AGM.

AUDITEE RESPONSE

Concur in part. Again, the intention of all parties was to deliver a working project to the City of Chattanooga. To blame the failure of the entire system on the consulting engineer might be too broad a net to cast. As it relates to failures on the construction of the operating system and the recommendation for payments to the equipment manufacture and subcontractors, in my opinion CTI/AGM might have liability. With regard to the engineering of the filtering plates, I will reserve judgment. Again, my belief based on what I have learned is that these subsystems failed the technology.

CONTRACT WAS CHANGED WITHOUT COUNCIL APPROVAL

A supplement to contract 28K (EP-4), dated October 23, 2001 was not approved by Council, nor has there been any mention of it in any Council or committee minutes. Minutes from 2001 to the present were reviewed and there was no mention of the supplement. Per CTI/AGM, the supplement was drafted by USFilter and CTI/AGM recommended the City execute it as it merely “clarified” terms. In fact, if the supplement is deemed to be valid, then the terms of the contract as approved by the Council appears to have been greatly altered. The deadline for getting the system up and running would have been changed from six hundred sixty (660) days from the start of the contract, or July 16, 2003, to a time that “will be mutually agreed upon based on the actual date on which shop testing and ownership transfer of such first filter press are completed.” This would leave an “open-ended” completion date. The provisions prohibiting payments prior to the completion of each work element do not appear to be directly effected. However, the referenced schedule of elements was altered. We are unsure of the ultimate effects of this change. Also, the supplement purports to reduce the liability of the contractor (at least) in half, which could leave the City with a substantial exposure for loss of funds and no avenues for recovery.

City Code Section 2-551 states “whenever any...contract calls for the expenditure of more than ten thousand dollars...the award of a contract shall be subject to the approval of the city council, and shall not be binding on or create any liability against the city until approved by the city council....” Because the supplement was not approved by the City Council, it appears that it is not otherwise enforceable.

RECOMMENDATION 13

Management should recognize that changes to a contract which were not approved by the City Council are not binding and enforceable. The City should seek legal advice, as necessary, regarding the effect on payment requirements as a result of any possibility of the elimination of many elements deleted from the “Work Element” schedule (where other contract sections reference them as if they were still present). Also, the City should seek legal advice regarding the liability of CTI/AGM with regard to its apparent failure to properly monitor and oversee any requested changes in the obligations and responsibilities of the City under the contract. Further, the City should seek legal advice regarding the possible assertion by USFilter that the contract supplement is legally binding and otherwise enforceable.

AUDITEE RESPONSE

Concur.

CONTRACT SUPPLEMENT

Regarding the above referenced supplement, the Project Engineer for the Filter Press (Paul Cate of CTI/AGM) has stated that he had no recollection of the supplement prior to seeing it attached to the signed contract that was returned from USFilter. He also has stated he did not know the supplement was changing any contract terms; he thought it was only clarifying some ambiguous terms. Mr. Cate has also stated that he and Jerry Stewart went to the Administrator of Public Works to discuss the supplement and get it signed. Bill McDonald, Administrator of Public Works at the time, stated that he signed the supplement because Paul Cate advised him it merely clarified terms and did not alter the terms. It is important to note that in addition to serving as Project Engineer, CTI/AGM was contracted to administer the procurement (RFP/Contract) phase of the filter press project. In fact, the project engineer drafted the contract documents.

Mr. Cate has stated that he does not recall any conversations about the supplement, prior to seeing it attached to the signed contracts that came back from USFilter. This was months after the original contract was approved by the City Council. However, we are confused in that Mr. Cate has made statements that appear to indicate he felt the supplement was a part of the original contract.

Hal North, Special Counsel for the City, asked Mr. Cate if he understood that this supplement was a modification of US Filter’s liability. Mr. Cate stated he did not realize that the supplement was modifying the terms of the contract, nor does he believe it was supposed to modify anything, just clarify some terms. Mr. North asked Mr. Cate if the City had asked for anything (consideration) in return for adopting the supplement. Mr. Cate stated “no.”

The Project Engineer's statements at times appear to be inconsistent, and, perhaps, unrealistic, in that he did not see the supplement until months after the original contract was approved by the City Council. Further, he appears to state that any discussions of a supplement to the original contract, prior to approval by the City Council, were not intended to alter the terms of the contract, but merely to clarify terms. It appears clear to us that the actual written supplement was not developed (or provided to the City) until after the original contract was approved. It further appears that any discussions prior to Council approval were merely about clarifying terms, not changing them. Therefore, it appears that the supplement prepared by USFilter was not, in fact, nor was it intended to be, a part of the original contract which was approved by the City Council.

We noted that item number 7 of the instructions for bidders (a document incorporated as part of the contract) addresses any "clarifications" with the terms of the contract. It says that "If a Bidder is in doubt as to the meaning of any of the Contract Documents, or if he finds discrepancies or ambiguities in, or omissions from any of the Contract Documents, he shall immediately submit a written request at least five (5) calendar days in advance of the Bid opening to the Engineer for interpretation or clarification. Said request by the Bidder and reply by the Engineer in the form of an addendum shall be in conformance with the provisions of these Contract Documents. All addenda shall become a part of these Contract Documents and shall be attached to the front cover of this bound volume submitted by the Bidder as his Bid." It further states "The issuance of a written addendum by the Engineer shall be the *only* method whereby an interpretation or clarification will be made." [Emphasis added] Considering the Engineer (CTI/AGM) drafted the referenced contract documents, it appears their recommendation that the City execute the supplement further demonstrates negligence on their part. However, we further believe that this section of the contract indicates that the supplement is not valid.

RECOMMENDATION 14

Management should request a detailed written explanation from the Project Engineer (CTI/AGM) regarding the supplement. The City should seek legal advice regarding the liability of the Project Engineer concerning the creation and recommendation of the supplement.

AUDITEE RESPONSE

Concur.