OFFICE OF THE CITY CONTROLLER



PUBLIC WORKS & ENGINEERING DEPARTMENT ENGINEERING TESTING SERVICES SPECIAL REVIEW FOLLOW-UP

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Report No. 02-18



Office of the Controller City of Houston Texas

SYLVIA R. GARCIA

December 20, 2002

The Honorable Lee P. Brown, Mayor City of Houston, Texas

SUBJECT:

Public Works & Engineering Department

Engineering Testing Services Special Review Follow-Up (Report No. 02-18)

Dear Mayor Brown:

The City Controller's Office Audit Division has completed a Follow-Up of the Public Works & Engineering Department's Engineering Testing Services Special Review Report (report) that was issued in July 1998. The findings and recommendations that were presented at the time of the report were distributed to the Mayor and City Council Members.

Our review was designed to determine the progress the department has made towards implementation of the recommendations made in the original report. The review consisted primarily of conducting on-site interviews with department personnel and reviewing relevant documentation related to recommendations implemented. The auditors concluded that the Department has made progress in the implementation of recommendations identified in the report or implemented alternative procedures in certain instances.

We appreciate the cooperation extended to our auditors by Department personnel during the course of their work.

Respectfully submitted,

XC:

City Council Members

Stephen Tinnermon, Chief of Staff, Mayor's Office

Albert Haines, Chief Administrative Officer

Jon C. Vanden Bosch, Director, Public Works & Engineering Department

Philip Scheps, Director, Finance and Administration Department

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SCOPE AND PURPOSE

We have completed a follow-up review of the findings and recommendations that were presented in the Public Works & Engineering Department Engineering Testing Services Special Review Report No. 98-27 (report) dated July 6, 1998. Our review was designed to determine the progress the department has made towards implementation of the recommendations made to the department in the original report.

The review consisted principally of conducting on-site interviews with department personnel; reviewing relevant documentation related to recommendations implemented; and creating a compliance matrix categorizing the status of action taken by management. The scope was limited to the recommendations from the report. The review included examining the Public Works & Engineering Department's responses in detail to determine whether management considered the recommendations and strategies for implementation as presented in the report and whether progress was made since its issuance.

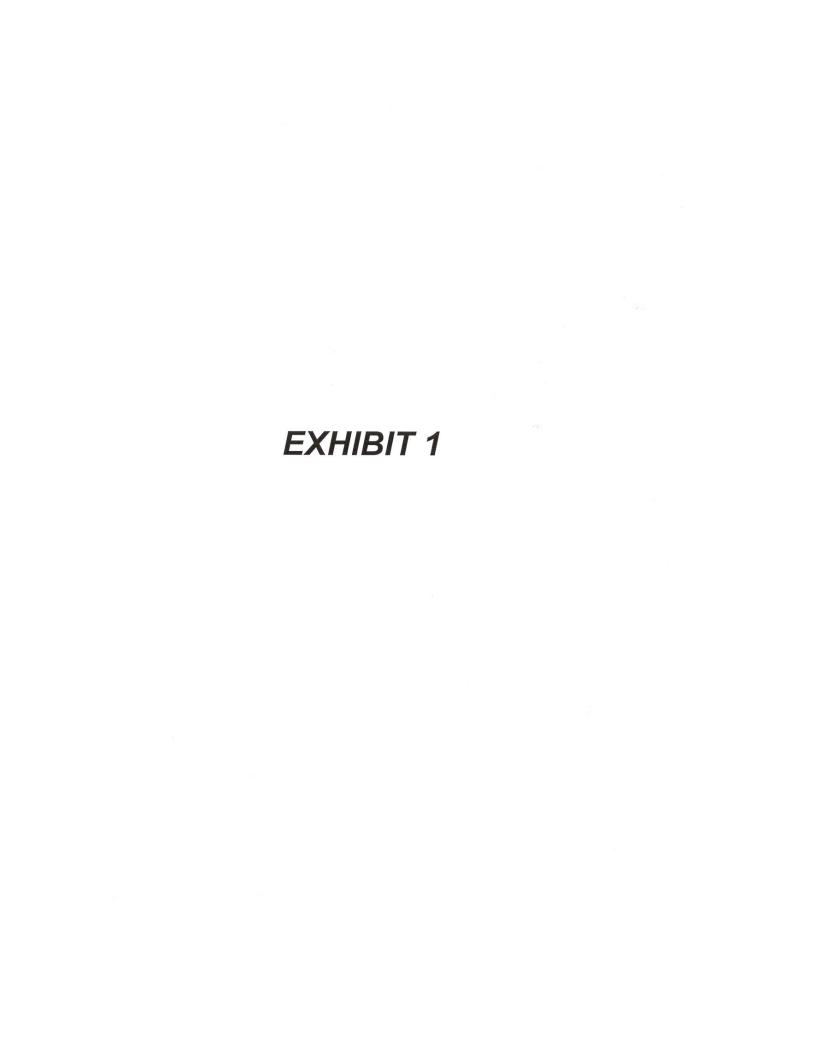
CONCLUSION

Based on the results of our review, we conclude the Public Works & Engineering Department has made progress in implementation of the recommendations detailed in the report or has implemented alternative procedures in certain instances. Management provided explanations for recommendations not implemented.

Carolyn Y. Armstead

Kenneth Teer Audit Manager

Steve Schoonover City Auditor



City of Houston Office of the City Controller Audit Division

AUDIT FINDING	RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
PW&E'S OVERSIGHT OF FAILED T	TESTS PERFORMED BY TESTING CONTRA	ACTORS		
Based on our review of the two samples of Testing Contractors' reports and invoices, related RCAs, ECRs and discussions with GHWP and PW&E personnel, we determined that PW&E's oversight of the services performed by the Testing Contractors was inadequate as it pertained to the review, documentation and approval of failed tests. The GHWP construction files had inadequate documentation to	To reduce the risk to the City of accepting construction work that is not in compliance with the specifications defined in the construction contract, we recommend that PW&E review and revise its process for monitoring and approving the services provided by the Testing Contractors. As part of PW&E's review, consideration should be given to the following:	Implemented	Examined written procedures dated January 2002.	In place.
determine if any corrective action and retesting had been done. In addition to the failed tests, we noted that according to the construction and testing contracts and field personnel we interviewed, the process and responsibility for requesting the on-site testing	1-1 The City's on-site inspector should be responsible for ensuring that adequate testing be performed on the designated construction projects.	Implemented	Examined selected project files and verified the review of testing activities.	1-1 In place, as indicated in the June 16, 2000 memo from the Deputy Director of Construction Division, and as specified by the training text.
services were not clearly defined and understood by the parties involved. On several occasions, the City paid for Testing Contractors to show up at the construction site and the scheduled testing services were not performed.	1-2 The inspector should document all testing activity including the request for service, the type of service performed and the results of the service.	Implemented	Examined selected project files and the daily testing field reports.	1-2 In place, inspectors are documenting the testing activity on a daily report.
For the sample of five construction projects, we requested assistance	1-3 All testing services reports should be submitted to the inspector for review and	Alternative Implemented	Examined selected project files. Verified testing lab reports were signed by the	1-3 In place, inspector, project manager and chief engineer review and approve all testing

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AUDIT FINDING	RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
from PW&E's Quality Control Technical Support Group to determine if the Testing Contractors met the requirements of the construction contract designating such services. PW&E was unable to provide the assistance we requested primarily due to staff turnover within PW&E.	approval. In addition, the construction contractor should be required to sign all testing services reports. 1-4 In the event that there is a failed test, the inspector should recommend the corrective action, if any, that	Implemented	inspector or if no inspector signature, then the reports were signed by the contractor. Examined memo by Dep. Director of the Construction Div. and written procedures dated January 2002. Verified	services. The testing lab companies were directed to distribute testing lab reports to the contractors, per City of Houston Specification, Section 1454-1.05B. Currently the contractor receives a copy of all testing reports but does not sign for the testing unless the inspector is not available.
In addition, we noted that the 22 Testing Contractors submitted their own format and style of their testing services report. The various formats could not be reviewed and compared in an efficient manner.	should be taken by the construction contractor. The recommended corrective action should be approved by an engineer that is responsible for the engineering design of the project to ensure that the construction work performed is safe and meets the City's requirements. In addition, all significant failed tests and the corresponding follow-up action should be reported to PW&E's Quality Control Technical Support Division.		in selected projects files the indication of failed tests with corrective action and approved by the contractor.	1-4 In place as indicated in the June 16, 2000 memo from the Deputy Director of Construction Division and as specified by the training text.
	1-5 To facilitate the City's review of the Testing Contractors' reports, the City should develop and require a standardized format for the reporting. The City should	Not Implemented	Audit Division concurs with PW&E's response.	1-5 It's impractical for all testing labs to change their reporting formats due to costs considerations. However, all reports meet the standard requirements of ASTM.

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AUDIT FINDING	RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
	also require the Testing Contractors to submit their reports in an electronic format to facilitate the distribution of the test results to the PW&E divisions. 1-6 The PW&E Quality Control Technical Support Division should send representatives to the construction sites on a random basis to ensure that quality inspections are being performed in accordance with the City's policies and procedures.	Not Implemented	Through discussions with Sr. Engineer of Environmental Services Branch and Manager of the Geotechnical Services Section, they are short staffed at this time. However, random site inspections will resume when staffing level increases. Audit Division concurs with PW&E's response.	1-6 Random site visits are not currently being done. These visits were discontinued when the construction group was reorganized and the Quality Control Technical Support Division became the Geotechnical Services Section. We plan on hiring a person to re-establish site visits.
	1-7 The City should consider hiring an independent engineering firm to determine if the Testing Contractors met the requirements of the construction contracts and that adequate testing had been performed.	Alternative Implemented	Through discussions with Senior Engineer of Environmental Services Branch and Manager of the Geotechnical Services Section, the City requires the testing labs to have the A2LA accreditation and their technicians to be certified or they are not considered for the projects.	1-7 The City currently requires all labs to have A2LA (American Association for Laboratory Accreditation), to ascertain the lab qualifications. In addition, construction managers are required to oversee the testing activities during the construction period.

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EXHIBIT 1

PUBLIC WORKS & ENGINEERING DEPARTMENT ENGINEERING TESTING SERVICES SPECIAL REVIEW FOLLOW-UP

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AUDIT FINDING	RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
RECORDING AND CONTROLLING	AMOUNTS PAID BY THE CITY TO TESTIN			
During our review of invoices pertaining to the sample of 45 Testing Contracts, we noted the following weaknesses in PW&E's systems of internal control for the recording and controlling of the amounts paid by the City. For 12 of the 45 Testing Contracts sampled, we noted that the City	To improve the systems of internal control for controlling amounts paid by the City to Testing Contractors, we recommend that PW&E review and revise the process for both the determination of the amount of the Testing Contracts and the approval of the Testing Contractors' invoiced amounts.	Implemented	Examined written procedures dated January 2002.	In place, as outlined in the Training Text.
paid an aggregate of \$140,000 in excess of the \$687,000 that the City Council had approved for the 12 testing Contracts. The over expended amounts were charged to other Testing Contracts that were under budget and had been awarded to the same Testing Contractors. In our review of the three sets of files containing Testing Contractor invoices and/or testing services reports that are maintained by PW&E, we noted several instances where the contents of the files were incomplete and inconsistent among the files. The City currently prepares the monthly pay estimate that is used as the basis for payment to the construction contractor. However, the monthly pay estimate	2-1 To reduce the risk of inadequate Testing Contract amounts, PW&E should select a Testing Contractor and determine the amount of the Testing Contract on a formal and competitive basis. Initially, all Testing Contractors that are qualified to perform services for the City should be identified. The qualified Testing Contractors could be grouped by areas of expertise and abilities to do the work. As the need for a Testing Contractor arises, the group that is capable of providing the service would be asked by the City to submit a formal testing plan and a budget outlining the quantity and type of services that are expected to be performed for a specific construction project and their	Implemented	Verified language in Pre-Construction memo in project files. In addition, reviewed sample of testing lab's proposal.	2-1 In place, as outlined in the Training Text. The qualified testing labs are group by areas of expertise. The selected testing laboratory will provide a cost estimate after the project has been advertised.

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PUBLIC WORKS & ENGINEERING DEPARTMENT ENGINEERING TESTING SERVICES SPECIAL REVIEW FOLLOW-UP

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AUDIT FINDING	RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
documentation does not indicate that the construction work was adequately tested nor that test results were acceptable to the City. The selection of the Testing	current availability of professional staff to perform the required services. 2-2 Since professional services cannot be selected by the	Alternative Implemented	Examined written procedures dated January 2002.	2-2 Selection of testing laboratories is based on qualifications as
Contractors may be performed by the same personnel within the PW&E Quality Control Technical Support Division who process and approve the Testing Contractors' invoices for payment. In addition, the Testing Contracts did not contain any provision pertaining to change orders for modifying the scope and/or amount of the Testing Contract.	City through the lowest bid process, a selection committee comprised of representatives from the PW&E Quality Control Technical Support Division, design and construction groups associated with the construction project should select the Testing Contractor. The committee would recommend that the Testing Contractor who submitted the best testing plan and budget, be awarded the Testing Contract by City Council.			policy indicates.
	2-3 In addition, when a change order is prepared for a construction contract, the committee should also consider the impact, if any, on the amount of the Testing Contract and make a recommendation that the necessary change order be approved. However, to ensure that change orders can be processed for Testing Contracts, the City should review and revise the	Implemented	Verified contract language in selected Materials Engineer Laboratory Contract.	2-3 The new lab contract allows additional funding by supplemental agreement.

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AUDIT FINDING	RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
	standard Testing Contract form.			
	2-4 Finally, the systems of internal control for the selection of a Testing Contractor would be further enhanced if the PW&E personnel who are involved in the Testing Contractor selection process, be segregated from the Testing Contractor invoice payment process.	Implemented	Examined written procedures dated January 2002.	2-4 In place, as outlined in the training text. Personnel who are involved in the selection process are not involved in the invoice payment process.
	2-5 To improve the systems of internal control for the payment process, the Testing Contractor should send their invoice and testing services reports to the inspector who was overseeing the construction project to verify that the testing services were performed. The invoices should then be reviewed and approved by a designated engineer for the project. Finally, the invoices should be forwarded to PW&E's division management for their review and approval for payment.	Alternative Implemented	Examined the Invoice Tracking Log.	2-5 We currently use a procedure very similar to the one recommended, except the invoice is routed from PW&E Geotechnical Services Section, in order to pay the testing contractors in a timely manner. This also allows the Geotechnical Services Section to log in the invoice and keep track of it all throughout the payment process.

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AUDIT FINDING	RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
	2-6 In addition, the pay estimate for the work performed by the Construction Contractor should not be approved until the City Engineer is satisfied that the required engineering testing has been satisfactorily completed and the results of the tests have been accepted by the City.	Implemented	Examined selected project files and related invoices. Additionally, verified in written procedures the Project Manager is responsible for obtaining approval from the Chief Engineer before payment is made.	2-6 In place. The invoices are routed to and reviewed by the Project Manager and Field Inspector before forwarding to accounting for payment.
	2-7 Finally, once the Testing Contractor has been paid, PW&E should consider maintaining only one set of files for all the Testing Contractors' reports and related invoices. In the event that PW&E needs additional copies of the testing services reports and related invoices, consideration should be given to alternate methods of data storage such as electronic imaging of the documents	Implemented	Examined selected project files. All reports, invoices and contract are included in the files.	

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AUDIT FINDING		RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
TESTING AND CONTRUCTION CO	NTRAC	T CLOSE-OUT PROCESS			
Based on an analysis of a listing of all Testing Contracts and construction contracts as of April 1998, we noted that 88 Testing Contracts within FMS had an active status although the corresponding 99 construction contracts had been closed in FMS. Additionally, we noted that 62 of the 88 Testing Contracts had unexpended budgets. Additionally, we noted that of the 72 substantially completed GHWP construction contracts as of April 1998, six did not have a corresponding Testing Contract within the City's FMS. In addition, we noted that 32 of the 66 Testing Contracts pertaining to the substantially completed projects were less that 50% expended.	3	PW&E should review the list of open Testing Contracts and their process for closing active Testing Contracts. PW&E should make the necessary revisions to ensure that the Testing Contracts are closed in accordance with their policies and procedures on a timely basis.	Implemented	Examined the Closed Construction Log and verified closed amount on log to the AMS system.	In place, testing contracts are being closed with (or before) the construction contracts.

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AUDIT FINDING		RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
SCOPE OF SERVICES PERFORME	D WER	E NOT INCLUDED IN A TESTING C	ONTRACT		
In our investigation of certain books and records maintained by the PW&E's Quality Control Technical Support Group, we noted that the City executed a Testing Contract with Hercules Engineering and Testing Services, Inc. (Hercules), contract number 36707 in the amount of \$240,000, to provide testing services pertaining to the Houston Police Headquarters Renovations at 1200 Travis, GFS No. G-0072-03-3. According to the invoices and supporting documentation related to construction contract 36707, the City has paid approximately \$198,000 relating to certain management studies and emergency clean-up work pertaining to asbestos abatement. Neither the asbestos abatement nor the property management services were included in the scope of services in contract number 36707. The contract specifically describes the work to be performed to be "All subsurface investigations, material control and inspections, mix designs, sampling and testing"	4	To reduce the risk of contractors performing services that are not within the scope of their agreement with the City, PW&E should review and revise its policies and procedures to ensure that the each work order is within the scope of the City's approved contract. Such review and revisions would include training the City's personnel to ensure that no additional work outside the scope of the original contract is performed unless authorized in either a change order or a new contract.	Implemented	Examined established specification for laboratory services and selected project files for indication of worked performed. No exceptions noted.	In place, testing laboratory services are defined in Specification, Section 01454. Testing labs are not required to provide services outside the scope of services defined in their contract.

AUDIT FINDING		RECOMMENDATION	ACTION STATUS	WORK PERFORMED	MANAGEMENT RESPONSES
ACCOUNTING DISTRIBUTION OF 	TESTIN	G CONTRACTOR INVOICES			
Based on certain records and correspondence obtained from PW&E's Quality Control Technical Support Group, we noted that as of February 16, 1998, approximately 70 Testing Contractors' invoices totaling \$240,000 could not be processed for payment because over 30 of the related Testing Contracts had no remaining budget. We understand that in prior periods an assistant director of a PW&E division would authorize payment of these invoices using alternate Testing Contracts which were under budget.	5	Contractors' invoices totaling approximately \$240,000 should be processed for payment as soon a possible. To ensure that the correct additional amounts of funding are being requested from City Council by PW&E, an analysis of all related Testing Contracts should be performed. As part of the additional funding request, consideration should be given to including an amount for certain late payment interest penalties.	Implemented	Examined the Invoice Tracking Log. Invoices indicated on the log were current.	5-1 Completed and paid through Geotechnical Services Section (formerly Quality Control). There are no past due invoices at the present time.
		5-2 The City should determine the scope and extent of the analysis of the payments made by the City to the Testing Contractors in the past years to ascertain whether the payments were charged to the proper Testing Contract accounts in FMS and the appropriate funding source. The City could	Not Implemented	Through discussions with the Senior Engineer of the Environmental Services Branch, it was indicated payment to the improper funding source does not exist with the current procedures that are in place. Examined Invoice Tracking Log. Audit Division concurs with PW&E's response.	5-2 Forming a special project team is not deemed necessary at this time. The funding source is defined by the Design Section at the time of preparation of RCAs for the construction contract awards. All invoices are paid through the Accounting Section of Resource Management and charged to the established funding source.

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	accomplish this task by forming a special project team. A listing should be developed by the project team of all invoices that need to be transferred to a different funding source than originally charged.			