

Bureau of Environmental Services: Opportunities to Improve Management of Construction and Consultant Contracts

December 1998



Office of the City Auditor
Portland, Oregon



CITY OF
PORTLAND, OREGON

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December 10, 1998

TO: Vera Katz, Mayor
Jim Francesconi, Commissioner
Charlie Hales, Commissioner
Gretchen Miller Kafoury, Commissioner
Erik Sten, Commissioner
Dean Marriott, Director, Bureau of Environmental Services

SUBJECT: Audit of the Bureau of Environmental Services' Construction and Consultant Contracts

Attached is Audit Report #238 on the Bureau of Environmental Services' construction and consultant contracts. The audit was conducted in response to a request for audit which we received from the Bureau.

Commissioner Sten, Dean Marriott, and managers within BES have reviewed drafts of this report, and we believe they are in general agreement with the report's findings and recommendations. The recommendations in this report compliment ongoing efforts by the Bureau to improve its construction management and contract administration procedures.

We ask that the Director of the Bureau of Environmental Services prepare a written status report in six months on the progress made by the Bureau to implement the report's recommendations. Distribution of the status report should include the Audit Services Division and the Commissioner over the Bureau of Environmental Services.

We appreciate the cooperation and assistance we received from BES personnel as we conducted this audit and prepared the report. We also want to recognize the contributions of staff from the national accounting firm of Arthur Andersen, who we hired to assist us in this audit.

Barbara Clark

Barbara Clark, CPA
City Auditor

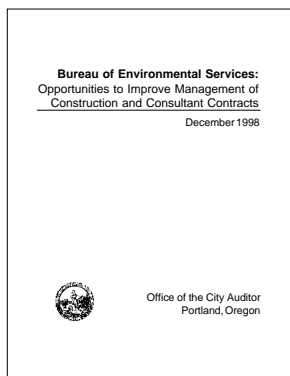
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A Report by the Audit Services Division
Report #238

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Chapter 1 Background

This report presents the results of the Audit Services Division's audit of 12 construction and consultant contracts managed by the Bureau of Environmental Services (BES). The audit was requested by BES and was included in the City Auditor's FY 1996-97 audit schedule. We conducted the audit in accordance with generally accepted government auditing standards and limited our review to those areas specified in the objectives, scope, and methodology section of the report.

BES mission, organization, and budget

BES is responsible for providing sanitary sewer and stormwater management services to City residences and businesses, and to five wholesale customers outside the City. The Bureau has about 136,000 residential and 12,700 commercial accounts. The City's wastewater collection system consists of a network of 2,050 miles of piping, which includes sanitary, storm, and combined sanitary/storm sewer lines. The system also includes 97 pumping stations and two wastewater treatment plants with a combined secondary treatment capacity of 108 million gallons per day. BES also manages the City's solid waste and recycling services.

The Bureau's FY 1998-99 budget is \$157 million, including 440 full-time positions, as shown in Table 1. The Bureau has five primary operating groups, in addition to the Office of Director and administrative support functions.

Table 1 BES Budget and Staffing (FY 1998-99)

Operating Group	Budget (millions)	Budgeted Positions
CIP Management Develops the Bureau's Capital Improvement Program (CIP) and implements capital projects.	\$ 86.5	11
Wastewater Treatment Manages wastewater collection and treatment and provides some project design services.	\$ 32.5	162
Engineering Services Provides project design and construction management services for capital projects.	\$ 9.4	115
System Development Develops facility and watershed plans.	\$ 7.5	37
Industrial / Solid Waste Responsible for source control program, environmental compliance, investigation, and monitoring. Also, manages recycling and solid waste programs.	\$ 4.7	61
Office of Director / Admin. Support Provides policy direction and coordinates work of operating groups. Provides public information / involvement. Provides accounting, budget, and other administrative services.	\$ 16.2	54
TOTAL	\$ 156.8	440

SOURCE: City of Portland FY 1998-99 Adopted Budget.

Growth in construction activity

As a result of federal regulatory requirements driven by federal Clean Water Act amendments, and the continuing need to improve maintenance and reliability of existing facilities, BES has experienced significant increases in capital construction in recent years. As shown in Table 2, BES's capital expenditures have grown dramatically over the past decade, increasing by 343% from \$26.6 million to \$117.8 million (after adjusting for inflation). Capital expenditures represented 42% of all Bureau spending in FY 1988-89, but increased to 66% by FY 1996-97. BES staffing and operating expenditures have also increased, but at a much slower rate -- 60% and 68% respectively, over the same period.

Table 2 BES Expenditures and Staffing (FY 1988-89 through FY 1996-97)

Expenditures (millions/adjusted*)				
Fiscal Year	Operating	Capital**	Total	F.T. Staff
1988-89	\$36.0 (58%)	\$26.6 (42%)	\$62.6	286
1989-90	\$35.9 (57%)	\$27.5 (43%)	\$63.4	300
1990-91	\$49.5 (65%)	\$26.2 (35%)	\$75.7	333
1991-92	\$53.4 (44%)	\$68.3 (56%)	\$121.7	390
1992-93	\$56.9 (41%)	\$82.4 (59%)	\$139.3	400
1993-94	\$57.3 (37%)	\$97.1 (63%)	\$154.4	410
1994-95	\$51.7 (30%)	\$122.8 (70%)	\$174.5	419
1995-96	\$54.7 (35%)	\$100.0 (65%)	\$154.7	450
1996-97	\$60.3 (34%)	\$117.8 (66%)	\$178.1	457
% change, 1989-1997	+68%	+343%	+ 185%	+ 60%

SOURCE: City Auditor's 1996-97 Service Efforts and Accomplishments Report.

* All years adjusted to 1996-97 dollars.

** includes debt service.

Table 3 shows that BES capital improvements are forecasted to cost \$389 million dollars over the next five years, with the combined sewer overflow (CSO) program representing 62% of the total.

Table 3 Forecasted Capital Costs of City Sewer System (FY 1998-99 through FY 2002-03)

BES Program	Cost (millions)	Percent
Combined Sewer Overflow	\$242.6	62%
Maintenance & Reliability	\$69.6	18%
Sewage Treatment Systems	\$44.6	11%
Surface Water Management	\$17.6	5%
Systems Development	\$14.4	4%
TOTAL	\$388.8	100%

SOURCE: Bureau of Environmental Services FY 1999-2003 Proposed Capital Budget.

Construction project management

The primary phases of a construction project, after the project has been budgeted and scheduled, are: (1) design and (2) construction. Each project is assigned an overall project manager, who often has primary responsibility for the design phase. For most projects, Design Services staff within BES's Engineering Services Group or Wastewater Engineering Division are assigned to oversee design. Once a project is designed, staff from Construction Services within the Engineering Services Group manage the construction process.

Not all projects are managed by Engineering Services, however. Systems development projects may have managers assigned from the Systems Development Group, and wastewater treatment projects typically have a design manager assigned from Wastewater Engineering within the Wastewater Management Group.

There are two primary types of contracts used by BES to accomplish capital construction: (1) consultant contracts, called “professional, technical, and expert services” (PTE) contracts and (2) construction contracts.

PTE Contracts

BES uses PTE contracts to obtain a variety of professional services, including program management, public involvement, and design engineering. Design consultants are selected primarily based on the quality of their proposal and the expertise of the firm’s staff, and compensation is typically negotiated after the consultant is selected.

Common methods for paying design consultants are “cost plus fixed fee” and “time and materials with a guaranteed maximum”. BES often uses the time and materials payment method, but sometimes pays consultants on a lump sum (a.k.a. fixed price) basis. In both the time and materials and lump sum methods, compensation is calculated by multiplying direct salary costs by an agreed-upon multiplier, which includes overhead and profit. The consultants are also allowed a markup on subconsultant billings and other direct non-salary costs.

In cost plus fixed fee contracts, the consultant is reimbursed for actual costs incurred (i.e., salaries, overhead, and direct non-salary expenses) and is paid a separate, fixed dollar amount for profit.

Construction Contracts

Construction work is accomplished by contract with private-sector companies. Construction contracts are typically bid either on a lump sum or on a unit price basis. In a lump sum contract, construction companies compete for work by submitting a total dollar bid, and the company submitting the lowest acceptable bid is awarded the contract. The Bureau pays the agreed upon lump sum amount in stages, based on the percentage of work completed, as verified by Bureau inspectors. Changes to a contract's lump sum amount can occur as a result of a change in the scope of work, but additional work and compensation must be authorized by an approved change order.

In a unit price contract, companies submit a bid which includes a price for each unit of work. The unit prices are then multiplied by the assumed quantities to arrive at the total bid for the work (e.g., \$1,000 per mile for 30 miles of pipeline = a total bid of \$30,000). BES evaluates the total bid amounts, as well as the reasonableness of each unit price, and selects the lowest acceptable bid. The total amount paid to the contractor varies depending on the actual quantities installed by the contractor, as verified by BES inspectors.

Audit objectives, scope and methodology

The objective of our audit was to evaluate the Bureau of Environmental Services' contract administration policies and procedures for PTE and construction contracts. We focused on contract compensation provisions and on the controls over payments to contractors.

We hired the national public accounting firm of Arthur Andersen to provide us with construction audit training, and to assist us in conducting audits of selected contracts. We worked closely with Arthur Andersen to define the audit objectives, develop audit plans and tasks, and conduct audit work.

From a list of Bureau contracts, we selected a sample of 12 contracts – seven construction and five PTE (see Table 4 for a listing of the 12 contracts). The selected contracts totaled \$81 million (20%) of the \$408 million in contracts entered into by BES between January 1995 and December 1997. The criteria used to select the sample included:

- large dollar amount of the contract
- high number and/or dollar value of change orders
- delays in completing a project
- a cross-section of Bureau programs
- variation in contractors and contract managers

Table 4 List of the 12 Contracts Selected for Audit

	Contract Type	Contract Number	Contract Amount *	Description of Work
1.	PTE	28188	\$5,417,807	Design for headworks replacement
2.	PTE	29404	\$17,805,325	Program management for the CSO program; also construction management for the Columbia Slough project
3.	PTE	29725	\$1,945,294	Design of the new force main system for the Inverness pump station
4.	PTE	29874	\$10,000,000	Inspection services for mid-county sewerage
5.	PTE	30075	\$6,276,151	Engineering and design for the Columbia Slough consolidation conduit
6.	Construction	29326	\$23,275,201	Construction of the headworks replacement
7.	Construction	29391	\$4,338,488	Installation of a separate storm sewer for the CSO program
8.	Construction	30280	\$9,057,269	Construction of the Water Pollution Control Laboratory
9.	Construction	30789	\$3,019,692	Construction of the Inverness force main, section B
10.	Construction	30898	\$2,095,298	Construction of wetland and stream enhancement
11.	Construction	31002	\$2,477,479	Wheeler Basin Phase 2, unit 3, sewer reconstruction
12.	Construction	31108	\$3,739,604	Installation of sewer mains and laterals

* Includes contract amendments and extensions.

For each contract audited, we interviewed Bureau contract and project managers, reviewed project files, and tested invoices, payments, and supporting documentation as deemed appropriate. Precise tests on individual contracts varied depending on the type of the contract and the compensation terms.

Because our focus was on the Bureau's overall contracting policies and procedures, and because of time constraints due to the number of contracts audited, we did not review the financial records of contractors or subcontractors. In addition, there were a number of issues which surfaced during the audit which we were unable to examine in detail. We have listed several issues, beginning on page 21, which we believe should be considered for future audit or study.

In addition to conducting audits of specific contracts, we obtained background information on the Bureau's capital improvement program and contracting procedures. We interviewed BES staff responsible for the Bureau's CIP and for management of capital projects, and reviewed Bureau adopted budgets and five-year capital budgets. We reviewed audits and studies previously performed for the Bureau of Environmental Services, including a KPMG Peat Marwick study of BES's PTE contracting practices issued in June 1997. We also reviewed audits of capital programs and construction projects from other jurisdictions.

In order to obtain information on cost control practices of other agencies, we interviewed representatives from five other agencies -- King County, Washington; the Water Quality Division of Sacramento County, California; the

Oregon Department of Transportation; the Unified Sewerage Agency of Washington County, Oregon; and Tri-Met in Portland, Oregon.

Chapter 2 Audit Results

Summary The Bureau of Environmental Services has made a concerted effort in recent years to improve its management of capital projects and related contracts. For example, the Bureau was reorganized in August 1996, in order to achieve a more consistent approach to managing capital projects. In 1997, BES hired KPMG Peat Marwick to study its PTE contracting procedures, and the Bureau is currently developing new procedures based on the study's results.

Our audit of 12 contracts revealed a number of problems, primarily in consultant contracts, which the Bureau needs to address. Specifically, the Bureau needs clearer guidelines for negotiating consultant compensation and better methods for reviewing and paying invoices. Several problems we found in our audit were also identified in the prior KPMG study, reinforcing the need to take appropriate corrective action in these areas.

In this chapter, we discuss actions taken by BES to improve its capital project management, the control weaknesses we identified, and some methods used by other agencies to manage consultant contracts. A list of specific findings for each of the 12 contracts we audited is provided in Appendix A, and our recommendations for improved management are presented in Chapter 3.

BES actions to improve capital project management

BES has recognized the need to improve its management of construction projects and related contracts, and has taken a number of actions. In August 1996, the Bureau underwent a major reorganization in order to achieve a more consistent approach to managing capital projects and to place a greater focus on long term facility planning. Prior to the reorganization, each program within BES (e.g., wastewater treatment, stormwater, and CSO) was responsible for planning, funding, and managing its own construction projects.

The reorganization established a Systems Development Group responsible for identifying Bureau-wide capital needs and preparing a facilities plan. The Bureau also formed a new CIP Management Group responsible for developing capital budgets, scheduling projects, and providing project oversight.

In 1997, BES hired KPMG Peat Marwick to study the Bureau's PTE contracting procedures. The study identified various ways that BES could strengthen its PTE contracting procedures, including: clearer definition of scope of work, increased competition among prospective contractors, clear pricing structures, standardized contracts, frequent and formal progress reports, uniform documentation and filing practices, and linking contractor payments to work progress and quality. The Bureau is currently developing new PTE contracting guidelines in response to the study. In addition, BES has:

- adopted new change order procedures for construction contracts;
- instituted project management training;

- created a position for reviewing PTE contracts; and,
- developed criteria for obtaining personal services and established a requirement that professional service budget requests be justified.

Control weaknesses found

Our audit of 12 PTE and construction contracts disclosed a number of control weaknesses, primarily in PTE contracts. We found recurring problems with compensation terms in consultant/PTE contracts and with the monitoring of billings and progress payments for both PTE and construction contracts. Better controls are needed to provide greater assurance that the City receives full value for its contract expenditures.

Inadequate Compensation Terms in Consultant Contracts

Three of the PTE contracts we audited (#28188, #29725, and #30075) were for design engineering services. The compensation terms in these contracts did not explicitly define rates for labor, overhead, and profit, and in some cases appeared more generous to the consultant than required. As a result, we believe the Bureau did not adequately control the costs of these contracts and may have paid the consultants more than necessary.

Contracts #29725 and #30075 included direct labor rate multipliers of 3.2 and 3.05, respectively. The contract terms did not define what portions of the multiplier were for labor, overhead, and profit. As a result, it is possible BES paid consultants twice for the same expenses because the contracts did not delineate what expenses were included in the multiplier and what would be billed directly.

The compensation terms in PTE contract #28188 were generous in several respects. First, the consultant was permitted to increase labor rates by 6% per year. This appears high when compared to the change in the consumer price index, which increased only 3% per year, on average, during the contract period. Second, the consultant received a 10% markup on subconsultant fees, even though the contract's scope of work stated the prime consultant was responsible for managing and coordinating the work of subconsultants. In addition, four of five agencies we contacted during this audit do not allow markups on subconsultant fees. Third, the consultant actually included a 12.7% markup on subconsultant fees and other non-salary costs, contrary to the contract's provision of a 10% markup on these items.

Finally, BES paid the consultant on contract #28188 nearly \$1 million dollars for change and task order work on a lump sum basis, rather than on a time and materials basis as required by the contract. While the scope of our review did not include an audit of the consultant's financial records, it is possible the Bureau may have incurred more costs than necessary by not following the terms of the contract.

Moreover, we question whether lump sum was the most cost effective payment method for the extra work, or for contract #28188 in general. It is uncommon for governments to use lump sum for design engineering contracts. None of the five agencies we contacted use lump sum for design contracts. A government agency can lose control over costs under lump sum because it does not know what resources have been spent by the consultant. This is espe-

cially true when the project entails new and unfamiliar work, and/or is large and complex, which was the case with contract #28188 – Headworks Replacement. Furthermore, under lump sum contracts, there may be a built-in incentive on the part of the consultant to cut corners. If the consultant spends less than the contracted amount, the government agency would not benefit from the reduced costs.

For the reasons discussed above, we believe the Bureau may have paid more than necessary for contract #28188. According to consultants who assisted us on the audit, design services for wastewater treatment projects such as this should generally not exceed 15% of construction costs. The state of Washington has adopted guidelines for architectural and engineering contracts which set a standard of about 9% for design services costs on wastewater treatment projects. The cost of this design contract was \$5.4 million, or 23% of the \$23.3 million in construction costs. If the cost of design services had been held to 15% of construction, it would have cost about \$3.5 million, or \$1.9 million less than the \$5.4 million paid by the Bureau.

The Bureau's project manager stated that the design cost increased primarily due to an unusual amount of citizen participation during the design phase, plus modifications that were made to the original scope of the project. However, even if all the contract amendments, totaling \$876,656, were subtracted from the total contract amount, the design cost would still represent 19.5% of construction costs.

Insufficient Monitoring of Billings and Progress Payments

We found problems with billings and payments to consultants and construction contractors which were not identified or resolved by BES in the course of administering the contracts. For example, we found inconsistent charges in some of the contractor billings. In construction contract #30280, BES was charged \$35 an hour for a “Ford F700 Dump Truck” in one change order but was charged \$75.50 an hour for what appeared to be the same piece of equipment in subsequent change orders. BES was also billed \$60.69 per hour for a “580 Rubber Tire Backhoe” in three change orders under contract #30280; however, the “Blue Book” hourly rental rate for this piece of equipment ranges from \$19.76 to \$27.04 per hour.

PTE contract #29404 and construction contract #30280 lacked adequate documentation to support contractor invoices. For example, billings on contract #30280 lacked hourly rates and hours worked by each of the contractor’s employees. Consequently, BES had no way to determine if amounts billed matched the hours worked by specific employees of the contractor. Contract #30280’s billings also lacked sufficient description of equipment to evaluate the reasonableness of equipment rental charges.

The billings in PTE contract #29725 did not always adhere to the contract’s compensation schedule. For example, the contract allowed the consultant’s clerical staff to be billed at \$45.00 per hour, but actual invoices for clerical time ranged from \$25.60 to \$77.25 per hour.

In PTE contracts #29725 and #30075, some billings and payments to the consultants were not tied to the contract

budget or to the amount of work completed by the contractor. As a result, spending exceeded several contract task budgets, and there were insufficient funds to complete other tasks. In contract #30075, tasks that were not completed due to a shortage of funds were rolled into a subsequent contract.

Because of multiple problems with PTE contact #29725, including lack of compliance with compensation terms and overspending on individual work tasks, we believe an audit of the consultant's financial records is needed to determine if BES was overcharged for services rendered.

**Need for more
guidance and
controls over PTE
contracts**

While we found few problems with some of the contracts we audited, and management appeared strong in many instances, we believe enough problems were identified in our sample to suggest a need for stronger contracting policies and procedures. We believe the Bureau has given too much authority to individual contract managers to negotiate and execute the terms of consultant / PTE contracts with too little guidance. In order to better control the cost and timeliness of consultant work, we believe the Bureau needs to provide increased guidance and oversight of contract management staff.

To assist the Bureau in identifying controls which could be adopted to strengthen its PTE contracting procedures, we contacted five other agencies that hire design consultants and asked them about their contracting procedures. The results of our survey are summarized in Table 5.

Three of the agencies we contacted use “cost plus fixed fee” as the method for compensating consultants. One agency uses “time and materials with a guaranteed maximum” as its primary payment structure. In addition, one agency uses both “cost plus fixed fee” and “time and materials with a guaranteed maximum”. None of the agencies use lump sum for consultant contracts.

Some of the agencies have established standards and/or ranges for overhead, profit, and other charges of consultants. For example, Sacramento County’s Water Quality Division has a guideline of 150% - 185% of direct labor costs for overhead. Auditors at Tri-Met are recommending a maximum overhead rate of 150%. The Oregon Department of Transportation (ODOT) requires that consultant overhead expenses be limited to those listed in the Federal Acquisition Regulation (FAR), which is generally more restrictive and results in a lower overhead rate. King County uses FAR as a guideline in evaluating consultant overhead.

ODOT has set a standard of 10.5% of direct labor and overhead for profit; the Unified Sewerage Agency has no guidelines for profit; and the other three agencies have profit rates that range as high as 15%. Four of the five agencies we contacted do not allow markups on subconsultants and other non-salary costs. Tri-Met discourages markups and does not allow markups higher than 2%.

**Table 5 Design Consultant Contract Practices
Survey of Five Other Government Agencies**

	King County, Washington	Water Quality Div. Sacramento County, CA	Unified Sewerage Agency	Tri-Met, Portland Metro Area	Oregon Dept. of Transportation
Payment Structure:	cost + fixed fee	cost + fixed fee	time & materials with guaranteed maximum	cost + fixed fee	cost + fixed fee, time & materials with guaranteed maximum
Written Guidelines?	Yes	Yes	No	under development	Yes
Dedicated Audit Function?	Yes*	No	No	Yes	Yes
Overhead Rates:	129% - 140% lg. firms, 200% max. sm. firms, use FAR as guideline**	150% - 185% guideline	no guidelines	auditors recommended 150% max.	124% - 238%, 161% average, must comply with FAR**
Profit Rates:	10% - 15%	up to 15%	no guidelines	8% - 15%	standard is 10.5%
Markups:	don't allow	don't allow	don't allow	discourage, 2% maximum	don't allow
Other Controls:	reviews conducted at both the dept. and finance levels compare fees to recent contracts & other agencies finance office reviews change orders on all contracts over \$10 million	require consultants to submit detailed scope of work and level of effort detailed requirements for what must be included in invoices county staff play active role in design chief finance officer reviews payments	large projects broken into tasks on smaller pipeline projects, solicit price quotes from top three firms and select lowest quote	audit & adjust firm's proposed overhead rate	auditor reviews labor, overhead, profit and other consultant rates auditor develops acceptable overhead range by analyzing other consultant rates auditor assesses labor rates by comparing to database of acceptable labor rates

SOURCE: Audit Services Division survey of other agencies.

* King County has two price analysts within the Department of Finance who perform cost analysis of design consultant proposals.

** The Federal Acquisition Regulation (FAR) places limits on what is allowed in overhead.

Two agencies, Tri-Met and ODOT, have dedicated internal audit functions that examine consultant cost proposals, while King County has two price analysts who review cost proposals. Auditors/analysts in these agencies review cost schedules of the selected consultant and assess the reasonableness of overhead and profit rates. The auditors also maintain a database of recent contracts -- both within their jurisdiction and from other jurisdictions -- to help them evaluate the reasonableness of labor, overhead, and profit rates proposed by consultants.

The representative we interviewed from Sacramento County's Water Quality Division noted the Division requires consultants to submit detailed descriptions of scope of work and level of effort in their project proposal. The Division also has specific requirements for what consultants must include in their invoices. The Division's staff play an active role in the consultant's design development and utilize detailed invoices and scope of work language to carefully track work progress and billings.

The Unified Sewerage Agency is the only agency we contacted which incorporates price competition into its consultant selection process. On smaller pipeline projects, the Agency generates a list of qualified firms and then establishes master agreements with these firms. Price quotes are then solicited from the top three firms competing for each contract. The firm with the lowest quote is awarded the design contract and the master agreement with that firm is amended to reflect the contract award. Sacramento County's Water Quality Division also generates a list of qualified firms which compete for specific design contracts; however, the basis for selection is limited to the quality of the proposals and does not include price.

Issues needing further study

There were some issues which surfaced during our audit which we did not have time to study in detail, but may warrant further study.

Inadequate Project Designs

We were told by BES managers for construction contracts #30789, #30898, and #31002 that inadequate designs resulted in change orders, delays, and increased costs. The managers of contract #31002 told us the design consultant failed to include an entire City block in the design, necessitating a new set of plans. Exacerbating the problem was the fact that no constructability review, or walk-through, was performed by BES staff or the design consultant prior to construction. Construction delays occurred when the contractor encountered low utility lines and historic trees not identified in the project plans. The contractor was compensated for standby time while residents arranged for an arborist to trim the trees, and the utility lines had to be temporarily moved before construction could begin.

The design for construction contract #30789 did not account for an alignment conflict with a section of the Heron Lakes Golf Course or existing water lines. These conflicts resulted in change orders that increased compensation to the contractor in the amount of \$60,000 and \$8,500, respectively. Again, it did not appear a constructability review was performed prior to construction.

Finally, the design for construction contract #29391 was originally done using standards applicable to a new development. Because the project involved installation of storm drains in an area of existing development, the project had to be redesigned and construction was delayed.

Despite the problems experienced with these faulty designs, the Bureau took no remedial actions against the consultants. We believe the Bureau needs to study and evaluate its policies and controls for ensuring the quality of design work performed by consultants.

As-Built Drawings Not Current

City as-built drawings, which show the location of utility lines, are not all up-to-date. If as-builts are outdated, City bureaus and contractors can make mistakes during design and construction which can result in delays and increased costs. BES, the Bureau of Water, and the Office of Transportation each have their own processes for creating, updating, and maintaining as-built drawings. This lack of centralization makes it difficult for project designers to obtain all relevant information needed to accurately design a project. The problem is compounded when bureaus have backlogs for updating their as-builts. As of October, 1998, BES had a backlog of 8 to 12 months. Transportation's backlog had been reduced to one to two months. The Bureau of Water did not have a backlog because its staff use the marked ("red line") field drawings as their as-built drawings. The City is currently working to develop a city-wide Geographic Information System (GIS) that could eventually resolve the decentralization issue. However, until the GIS becomes operational, it is important that each bureau devote the resources needed to keep as-built drawings current.

Costly Semi-Monthly Billing Process

We were told by Bureau staff that the City requirement that construction contractors submit billings twice a month,

instead of once a month, creates an added administrative expense for both the contractor and BES. The requirement was initiated by Council as part of the City's Fair Contracting and Employment Initiative. It was suggested by BES personnel that this more frequent billing cycle be made optional instead of a requirement.

Chapter 3 Recommendations

We support the ongoing efforts of the Bureau of Environmental Services to strengthen its capital program and improve contract administration. We urge BES to continue implementation of KPMG's recommendations for strengthening the Bureau's PTE contracting procedures. We believe the Bureau will reduce costs and achieve more timely completion of contracted work by adopting stronger PTE contracting guidelines and by increasing oversight of contract negotiations and payments to consultants. Actions which we believe the Bureau should take to address the findings in this audit include:

1. *Adopt clear guidelines for negotiating and administering design consultant contracts.*

Contract negotiation is the process by which the clearest mutual understanding of the project scope and compensation is achieved by both the Bureau and the consultant, prior to the start of work. To help Bureau personnel achieve equitable agreements that can be effectively administered, we recommend that BES develop guidelines which set forth the Bureau's negotiation philosophy and include, at a minimum:

- A requirement that contract proposals contain a detailed description of the scope of work

and level of effort by the consultant's staff and subconsultants. Work tasks should be detailed and include measurable outcomes.

- Guidelines for selecting the optimum compensation method (e.g., cost plus fixed fee, time and materials with a guaranteed maximum) for each project.
- Standards of reasonableness for labor, overhead, and profit rates, and for markups of subconsultant fees and other direct non-salary costs. We encourage the Bureau to consider disallowing markups.
- Assignment of responsibility for fee negotiation. Auditors at Tri-Met have recommended that negotiation on large design contracts be a team responsibility, with the team consisting of the contracting officer, the project manager, and an internal auditor.
- Comprehensive pre-award cost and overhead rate analysis on large projects.
- Roles and responsibilities of BES staff for coordinating and monitoring the work of consultants, and for reviewing and approving billings.
- Minimum information requirements for consultant invoices. The requirements should be incorporated into each contract and stipulate that payments will not be made unless invoices contain the required information. At a

minimum, invoices should reference the contract scope of work and individual work tasks, the current billing amount, amount billed to date, percent of amount billed to total task budget, and percent of task completed. Invoices should also include the names of consultant staff and their billing rates, hours worked by task, and supporting timesheets.

When there is a clearly defined scope of work and corresponding level of detail in invoices, Bureau personnel will be better able to evaluate billings submitted by consultants. In addition, the Bureau will be better able to track the work of consultants and ensure that contract expenditures are commensurate with work progress.

BES management believes more guidance on PTE contracts is also needed on a City-wide level. We agree that increased guidance and oversight by the Office of Purchases and Stores and/or the Office of Finance and Administration may be needed and should be explored. We recommend that BES coordinate with these offices as it continues to improve its PTE contracting procedures.

2. Increase oversight of contract negotiations and contractor billings and payments.

Given the magnitude of its planned capital program over the next two decades, we believe BES needs to provide more technical assistance and greater oversight of contracts. Three of the five agencies we contacted

have created auditor positions to provide technical analysis and review of consultant proposals. We believe BES would benefit from adding an auditor, or technical support staff, to review contract proposals and provide periodic testing of contract billings. We believe the additional staff would generate far more in savings through reduced contract costs than the position itself would cost. In creating the position of auditor, or technical support staff, we believe the Bureau should ensure a reasonable degree of independence from BES contract managers.

3. *Audit the contractor's records on PTE contracts #29725 and #28188 to determine possible overcharges.*

We found a variety of problems with PTE contract #29725, including lack of compliance with compensation terms and overspending on individual work tasks. In order to determine the extent of possible overcharges by the consultant, we recommend that BES conduct an audit of the consultant's financial records. In addition, to determine whether or not BES paid more than necessary for change order and task order work on contract #28188, we recommend that BES audit the consultant's financial records on this contract as well. The Bureau paid nearly \$1 million dollars for change order and task order work on a lump sum basis, even though the contract specified that such work be compensated on a time and materials basis.

Appendix A

Results of 12 Contract Audits

PTE Contract #28188

Description:	Design for the Headworks Replacement Project
Program:	Sewage Treatment
Payment Structure:	Lump Sum
Orig. Contract Amt:	\$ 4,541,151
Amendments (no.):	\$ 876,656 (5)
Total Contract Amt:	\$ 5,417,807

Findings:

- 1 - The cost of this contract appears high. The \$5.4 million cost of design was 23% of the \$23.3 million cost of construction. Consultants who assisted us on this audit indicated design on wastewater treatment plant construction should generally not exceed 15%. The State of Washington's "Architect/Engineer Fee Guidelines" establish a standard of approximately 9% for design costs on projects similar in size and nature to the Headworks Replacement project.
- 2 - The pricing terms of the contract were generous in several respects. A profit margin of 12.7% was applied to all costs, including the cost of subconsultants and expenses, contrary to the terms of the contract. There was also a 6% annual escalation of labor rates, which appears high compared to the change in the consumer price index, which increased an average of 3% per year during the contract period. In addition, there was a 10% markup on subconsultants and non-salary expenses, even though the contract's scope of work specified that the prime contractor was to manage and coordinate the activities of consultants.
- 3 - BES paid the consultant over \$960,000 for work performed under change order and task order. Payments were made on a lump sum basis even though the contract specified that such work be paid on a time and materials basis.
- 4 - The contract price was based on time and materials, but the contract was managed, and payments were made, on a lump sum basis. The consultant was not required to document employee salaries, labor hours, or out-of-pocket expenses.

PTE Contract #29404

Description:	Initially: Provide Program Management for the Combined Sewer Overflow Program
	Added: Construction Management for the Columbia Slough Conduit
Program:	Combined Sewer Overflow
Payment Structure:	Time and Materials with a Guaranteed Maximum
Orig. Contract Amt:	\$ 10,000,000 (5-year contract with annual spending authorizations)
Amendments (no.):	\$ 880,325 (6)
Columbia Slough Project Management:	\$ 6,925,000
Total Contract Amt:	\$ 17,805,325

Findings:

- 1 - Pricing elements such as overhead and profit percentages were not separately defined in the contract or in the consultant's invoices. In addition to a direct labor multiplier of 3.2* -- which included salary-related expenses, overhead, and profit -- the consultant was also reimbursed for out-of-pocket expenses such as travel, copies, telephone, City insurance, and technical support. While these expenses were adequately supported, some of the charges may have duplicated expenses already covered by the direct labor multiplier.
- 2 - Although the Bureau approved consultant time sheets, it did not keep copies of the time sheets for later comparison to the consultant's monthly invoices.

*The direct labor multiplier was 2.6 when consultant staff worked in BES offices and 3.2 when consultant staff worked in their own offices.

PTE Contract #29725

Description:	Design of New Force Main System for the Inverness Pump Station
Program:	Sewage Treatment
Payment Structure:	Time and Materials with a Guaranteed Maximum
Orig. Contract Amt:	\$ 1,227,335
Amendments (no.):	\$ 717,959 (7)
Total Contract Amt:	\$ 1,945,294

Findings:

- 1 - Pricing elements such as overhead and profit rates were not defined in the contract or in the consultant's invoices. In addition to a direct labor multiplier of 3.2 -- which included overhead and profit -- the consultant was reimbursed for out-of-pocket expenses which may have duplicated charges included in the labor multiplier.
- 2 - Payments to the consultant were not tied to completion of work or to a contract budget. Funds were moved among work tasks, resulting in overspending on some tasks and insufficient funds to complete other tasks.
- 3 - Consultant change orders, billings, and payments to the consultant did not match the compensation schedule contained in the contract.
- 4 - Some documentation to support change orders was not available. The consultant also did not submit all required progress reports.
- 5 - There was substantial redesign on the project.

PTE Contract #29874

Description: Inspection Services for Mid-County Sewering Construction
Program: Mid-County Sewer Project
Payment Structure: Hourly Labor Rates
Orig. Contract Amt: \$ 3,500,000
Amendments (no.): \$ 700,000 (1)
Extensions (no.): \$ 5,800,000 (2)
Total Contract Amt: \$ 10,000,000

Findings:

- 1 - Some time sheets and inspector's daily reports, which were used to support contractor billings, lacked authorizing signatures of City supervisory personnel.
- 2 - Some accounting records and contract files were incomplete and not well organized.

PTE Contract #30075

Description:	Engineering and Design Services for the Columbia Slough Consolidation Conduit
Program:	Combined Sewer Overflow
Payment Structure:	Time and Materials with a Guaranteed Maximum
Orig. Contract Amt:	\$ 4,971,581
Amendments (no.):	\$ 1,304,570 (3)
Total Contract Amt:	\$ 6,276,151

Findings:

- 1 - Pricing elements such as overhead and profit rates were not defined in the contract or in the consultant's invoices. In addition to a direct labor multiplier of 3.05 -- which included overhead and profit -- the consultant was reimbursed for additional expenses such as copies, computer time, and office supplies, and 110% of all subconsultant billings. It is difficult to know if these reimbursements duplicated charges already included in the labor multiplier.
- 2 - Consultant invoices and related payments were not tied to the amount of work completed, either on a percentage basis or by task. As a result, payments to the consultant exceeded the contract budget, necessitating amendments. Not all of the design tasks could be completed, and remaining design work was rolled into a subsequent contract.

Construction Contract #29326

Description: Construction for the Headworks Replacement Project
Program: Sewage Treatment
Payment Structure: Lump Sum
Orig. Contract Amt: \$ 20,853,700
Amendments (no.): \$ 2,421,501 (110)
Total Contract Amt: \$ 23,275,201

Findings:

- 1 - Construction was delayed more than 300 calendar days due to inclement weather, design changes, and contractor performance issues. While the contract allows for liquidated damages, BES is not pursuing liquidated damages in lieu of negotiating with the contractor to drop claims against the City for delays.
- 2 - According to the Bureau's construction manager, documentation of electrical and instrumentation did not meet contract specifications. There may have been a lack of oversight of the subcontractor's work by the prime contractor and by BES staff.

Construction Contract #29391

Description:	Installation of a Separate Storm Sewer for the Combined Sewer Overflow Program
Program:	Combined Sewer Overflow
Payment Structure:	Unit Price
Orig. Contract Amt:	\$ 3,872,217
Amendments (no.):	\$ 466,271 (16)
Total Contract Amt:	\$ 4,338,488

Findings:

- 1 - The original plan was based on storm drain design standards intended for new developments and average soil conditions, rather than modifications to a fully developed area with unstable soils. This necessitated redesign of the project and increased costs.

Construction Contract #30280

Description: Construction of the Water Pollution Control Laboratory
Program: Systems Development
Payment Structure: Lump Sum
Orig. Contract Amt: \$ 8,123,000
Amendments (no.): \$ 934,269 (18)
Total Contract Amt: \$ 9,057,269

Findings:

- 1 - Contractor billings for labor, materials, and equipment lacked adequate supporting documentation. For example, the hourly rates of the contractor's employees and the hours worked by each employee were not provided.
- 2 - BES project files were missing change order records for 4 of 18 change orders.
- 3 - Markups on some change orders appeared high, especially in comparison to the allowance in the City Standard Specifications for force work account.
- 4 - Equipment rental rates were inconsistent and did not provide enough documentation to verify the reasonableness of charges against the industry standard, *Rental Rate Blue Book for Construction Equipment*.

Construction Contract #30789

Description:	Construction of the Inverness Force Main, Section B
Program:	Sewage Treatment
Payment Structure:	Unit Price
Orig. Contract Amt:	\$ 2,479,379
Amendments (no.):	\$ 540,313 (23)
Total Contract Amt:	\$ 3,019,692

Findings:

- 1 - Design problems, especially with alignment, resulted in several change orders during construction. The design consultant used specifications different than those approved by the City. As a result, there were ambiguities in the measurement of materials installed and the verification of payables was very difficult.
- 2 - There was a lack of documentation for change orders, inspections, and quantity verifications. There was no documentation to show a design constructability check (i.e., book check) had been performed before letting the construction contract.

Construction Contract #30898

Description: Construction of Wetland and Stream Enhancement
Program: Surface Water
Payment Structure: Lump Sum
Orig. Contract Amt: \$ 1,896,678
Amendments (no.): \$ 198,620 (9)
Total Contract Amt: \$ 2,095,298

Findings:

- 1 - Project managers had difficulty meshing environmental objectives and traditional engineering on this project. Bureau managers said they will be performing more projects of this nature, and this was a learning experience for the Bureau.
- 2 - Contract specifications were not explicit as to how environmental work was to be performed. Construction was halted due to violations of environmental regulations. Because the environmental work of subcontractors was sub-standard, BES utilized additional consultants to monitor the work of the subcontractors.
- 3 - We were told by BES managers that construction problems resulted from inadequate designs.
- 4 - There were only two bidders for the construction contract, and the original bid was protested and then rebid.

Construction Contract #31002

Description: Wheeler Basin Phase 2, Unit 3 Sewer Reconstruction
Program: Maintenance and Reliability
Payment Structure: Unit Price
Orig. Contract Amt: \$ 2,406,541
Amendments (no.): \$ 70,938 (3)
Total Contract Amt: \$ 2,477,479

Findings:

- 1 - Completion of project design was delayed, resulting in problems during construction. The design consultant was not penalized for late and faulty designs.
- 2 - BES did not perform a design constructability check and problems with the project's design were not detected until after construction began.
- 3 - There was a high turnover of inspectors which contributed to on-site problems during construction.

Construction Contract #31108

Description: Installation of Sewer Mains and Laterals
Program: Mid-County Sewering
Payment Structure: Unit Price
Orig. Contract Amt: \$ 3,694,740
Amendments (no.): \$ 44,864 (3)
Total Contract Amt: \$ 3,739,604

Findings:

None

Responses to the Audit



CITY OF
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December 4, 1998

Auditor Barbara Clark
Portland City Hall
1221 SW 4th Ave.
Portland, OR 97204

Dear Barbara,

I want to compliment you and your staff on a very helpful and informative audit of construction management in the Bureau of Environmental Services. Your staff has been great to work with from the very first day we talked about the scope and subject matter up until the final draft.

I am happy to say that since some of the construction projects discussed in the audit were completed a few years ago, BES has already taken some corrective actions. These changes have allowed the bureau to build 394 miles of sewer for the Mid County project 5 years ahead of schedule and 16% below cost estimates. Presumably, some of these changes have also helped the bureau earn praise from Moody's and Standard & Poor's for the solid management of its capital program. As is probably the case in any capital program of the size and scope of the bureau's, your audit points out that there are many things we can still do to improve how we administer our construction contracts. After working with the bureau for two years, I am proud of the work that has been done to contain costs and control rate increases; and I really appreciate the analysis and thinking that this audit brings to the table. It really helps.

While I am not in complete agreement with every one of the report's points, I like the approach you have taken to this type of performance audit, and I hope that the Auditor's office will expand the scope of its work to include other City bureaus engaged in significant construction activities. I also think you are right to point out that guidance from the Office of Finance and Administration and the Bureau of Purchasing can help solidify construction management in BES and for the City as a whole.

We will get to work on making changes for the better; and let me take this opportunity to thank you for all of the good work you have done for the City as its Auditor.

Warm regards,



Erik Sten



CITY OF PORTLAND ENVIRONMENTAL SERVICES



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Dean Marriott, Director

December 3, 1998

Barbara Clark, City Auditor
1120 SW Fifth Avenue
Portland, Oregon 97204

Subject: Performance Audit of 12 Contracts Managed by the Bureau of
Environmental Services

Dear Barbara:

Bureau staff have reviewed the performance audit regarding 12 professional service and construction contracts managed by Environmental Services over the past 6 years. I appreciate the customer service orientation of your staff during the course of the audit. When we asked your office to perform a performance audit of BES contracting activity, we were seeking professional insight in how to improve contract management within the Bureau. Your employees provided valuable assistance and were as interested in helping us find solutions as they were in identifying problems. We believe the recommendations made in your report will be useful in our continuing efforts to improve contract management.

The response that follows deals first with general subject areas covered in the audit and then deals with more specific details regarding some of the findings.

Bureau efforts to improve contract management

We believe the audit does a very good job in identifying contract management issues and problems. We feel, however, that some readers may not understand that many of the issues identified in the audit report occurred some time ago, and that the Bureau has since taken specific actions to address them. Two thirds of the contracts were executed prior to 1995. The oldest contract reviewed (#28188, design for headworks replacement, August 1992) had the most critical remarks. The most recent contract (#31108, installation of sewer mains and laterals, April 1997) had no issues identified.

This point is made simply to emphasize the fact that Bureau managers and staff have been continuously reviewing contract management activities and have already taken several steps to improve internal processes and practices. Examples (which were mentioned in the audit report) include internal development of construction contract

change order procedures and our request in 1997 for the City's outside auditor, KPMG Inc, to review PTE contracting procedures. Most of the contracts included in the audit were initiated before these efforts occurred. Without specific mention of the chronology of contract initiation and management improvements, the reader could come away with the impression that many of the problems and issues identified in the report still exist.

Comparison of BES contract management to similar activities in other agencies

The audit report cites contract management policies and procedures in 5 other agencies, suggesting areas where BES would benefit from establishing more formal and stringent contract management guidelines. Two of the five agencies used in the comparison (Tri-Met and ODOT) have substantially more involvement with Federal funding than BES, which often dictates use of more stringent and elaborate contracting guidelines and procedures.

In the past, BES has managed large Federal grant supported capital projects, and has received positive financial audit reviews from Federal agencies and audit contractors. However, the Bureau does not believe that adopting federal contract management guidelines and procedures for all contracting activity would necessarily be the best means of achieving optimal contract management processes. There are cases where imposing federal requirements would be overly complex and restrictive.

Two of the agencies in the comparison are units of a general-purpose government (King County, Washington and Sacramento County, California). These agencies appear to have more developed guidelines for contracting activity than BES or the other single purpose government agency included in the survey, the Unified Sewerage Agency of Washington County, Oregon. An issue raised by BES during conversations with Audit Division staff is whether the City of Portland should offer more centralized guidance regarding contract management, in lieu of relying on individual bureaus to develop their own processes.

The audit report states, "increased guidance and oversight by the Office of Purchases and Stores and/or the Office of Finance and Administration may be needed and should be explored." BES would support this effort and believes it would assist our managers and staff in improving contract management within BES and potentially within other bureaus as well.

Growth in construction activity

The report notes that "BES capital construction expenditures have grown dramatically over the past decade, increasing by 343% from \$26.6 million to \$117.8 million (after adjusting for inflation)." Most of this capital activity has been the result of Federal or State mandates, including EQC orders to construct sewers in mid Multnomah County and to reduce or eliminate combined sewer overflows, and the more recent requirements to

improve water quality within the Columbia Slough, Johnson Creek, and other watersheds in Portland.

Managing the rapid expansion of capital activity has been challenging, not only because of the size and complexity of new capital projects, but also because of the greater number of non-traditional capital projects, such as streambank restorations and projects that depend on substantial public involvement, as in the case of the downspout disconnection program.

The Bureau has responded to these challenges by providing more training to employees in project management techniques, by requesting outside review of BES contract management processes (including this review and a review by KPMG Inc.), and by increasing communications with residents and businesses in areas affected by capital construction. The Bureau also regularly consults with outside experts and construction firms to identify ways to accomplish capital construction more effectively and at lower cost.

The Bureau believes that some of the critical remarks in the audit report reflect the difficulties that would normally be expected with a rapidly expanding and varied capital program. In some cases, the reader might conclude any problems with design engineering or construction services indicate poor project management or non-performance by a consultant or contractor. This is not the case. For example, contract #30898 was cited for having an inadequate design. The work in contract #30898 included placement of logs and boulders in Johnson Creek, to reduce flow velocities and create water quality and habitat improvements. At the time, this type of work was relatively new to the Bureau and was difficult to specifically describe within design documents. Ultimately, it had to be directed on-site. It also required unconventional construction techniques on the part of the contractor, to mitigate damage to riparian areas.

There were disagreements between the project manager and the contractor in this project, and not all aspects of the work proceeded as originally planned. However, in spite of these problems, the project came in on schedule and under budget.

It is typical to find some level of errors and omissions in design documents. These are normally pointed out and corrected during the design process. It's also typical to discover problems in the field that could not have been anticipated. Examples include underground obstructions such as boulders or abandoned trolley lines, or unrecorded utility facilities.

These comments are not intended to discount the preventable design and construction related problems identified in the report. For example, several of the problems cited in association with design of the headworks and construction of the Inverness pressure line could have been avoided and, as is described below, the Bureau will take other steps to ensure consultants were not overpaid for overhead services. The Bureau believes, however, that many of the design errors and unanticipated costs described elsewhere in the report were not atypical of what can be expected within a large and complex capital

program and in many cases were not material in their impact to project schedules or costs. Our concern is that some readers of the report may not understand the context of comments and findings made in the report in this regard, and may conclude that contract management problems within the Bureau are severe and widespread. We would strongly disagree with this conclusion.

Follow-up audit activities

The audit report cites two instances where the Bureau may have been over-charged for overhead services, and recommends follow-up audits of contractor files to determine whether excessive charges occurred. The Bureau will acquire assistance of outside auditors to perform these audits. As mentioned in the audit report, the Bureau is also pursuing creation of a new position to perform contract administration activities, including oversight of contract development and negotiation. This position will be assigned responsibilities to ensure all contract management improvements identified by BES and highlighted in the audit report are fully implemented and communicated to all Bureau staff.

The Bureau would like to invite Audit Division staff to return within 6 months to review the effectiveness of the Bureau's response to recommendations from the audit, and to make any follow-up comments they feel would be appropriate.

Comments on specific PTE and construction contracts

PTE Contract #30075

Finding: (2) Consultant invoices and related payments were not tied to the amount of work completed, either on a percentage basis or by task. As a result, payments to the consultant exceeded the contract budget, necessitating amendments. Not all of the design tasks could be completed, and remaining design work was rolled into a subsequent contract.

Response: Payments to the consultant exceeded the original contract budget because, after the design work was approximately 60% complete, the Bureau directed the consultant to break the work into six separate construction packages, to better control fiscal year cash flow and provide bidding opportunities for local construction contractors. (The original contract for design work on the Consolidation Conduit assumed one construction contract.)

In addition, the consultant was asked to revise the format and rewrite much of the original geo-technical report. This was done to lessen risk to potential construction contractor(s), which Bureau staff believed would lower potential bid prices when the project was advertised for bids.

Bid prices for construction did come in lower than the engineer's estimate: the low bidder on Segment 1 was \$1 million below the engineers estimate and the Segment 2 contractor's bid was \$3 million under the engineers estimate. Bureau staff believe changes to the design work discussed above were as least partially responsible for lowering construction costs.

Construction Contract #29326

Finding: (1) Construction was delayed more than 300 calendar days due to inclement weather, design changes, and contractor performance issues. While the contract allows for liquidated damages, BES is not pursuing liquidated damages in lieu of negotiating with the contractor to drop claims against the City for delays.

Response: Change order costs on this project (the Headworks facility at the Columbia Boulevard Treatment Plant) to resolve design changes, conflicts, errors, and changed conditions amounted to less than 5% of the original contract amount. This is well under industry standards for a project of this complexity at an existing, operating treatment plant. The remaining 3% of construction costs were related to additions made by BES to incorporate the Inverness Force Main into the Headworks facility and to accommodate future CSO projects that will tie-in to the Headworks facility.

Delays to project completion resulted mainly from resolving electrical and instrumentation & control problems, which were a reflection of the complexity of the facility. There were legitimate costs related to completion delays, which were resolved with the contractor. The performance audit is not correct regarding liquidated damages: There was no agreement to not pursue liquidated damages in return for "dropping" claims. Delays caused by bad weather did result in an extension of contract time but at no additional cost to BES.

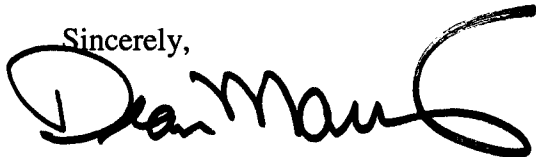
Construction Contract #29391

Finding: (1) The original plan was based on storm drain design standards intended for new developments and average soil conditions, rather than modifications to a fully developed area with unstable soils. This necessitated redesign of the project and increased costs.

Response: The design revisions discussed in the performance audit were made as part of the normal design review process prior to bidding the project. As noted earlier in this letter, it is typical to find some level of errors and omissions in design documents and these are normally pointed out and corrected during the design process. The design revisions related to contract #29391 did not increase the construction contract cost.

I want to thank you again for the assistance of your staff in the performance audit. If you have any questions regarding this letter, please don't hesitate to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Dean Marriott". The signature is fluid and cursive, with a large initial "D" and a long, sweeping tail that loops back.

Dean C. Marriott

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