T. Bert Fletcher, CPA
Interim City Auditor

HIGHLIGHTS

Highlights of City Auditor Report #1312, a report to the City Commission and City management

April 19, 2013

Advanced Wastewater Treatment Project

As of this second report, there have been no major worker medical incidents, and the project is currently within the amended budget and on schedule to meet the Total Nitrogen permit reduction requirements.

WHY THIS AUDIT WAS DONE

This is the second of a series of audit reports on the Advanced Wastewater Treatment Project. The project's budget totals $227 million and estimated completion is January 2015. The purpose of this audit is to provide assurances and advisory services related to management activities; report on the project status and accomplishments as of December 31, 2012; and provide an independent assessment of risk management, project controls, project goals, and expected deliverables for financial transactions between January 1, 2011, and December 31, 2012.

WHAT WE RECOMMENDED

Key areas where project management controls should be improved relate to:

- Reviewing, tracking, approving, coding, and recording invoices (this issue was also reported in our first audit).
- Recording of project assets and equipment in a timely manner (this issue was also reported in our first audit). In March 2013, adjustments were made to record $124 million in completed AWT assets in the City's financial report.
- Ensuring results of acceptance and performance testing are collected and maintained.
- Improving system controls over the network housing the TP Smith wastewater treatment SCADA system.
- Ensuring there are processes in place to better monitor and verify the MBE (Minority Business Enterprise) participation in construction projects and track local business participation.
- Ensuring there are project staff with adequate administrative capabilities to assist in overseeing the project's financial activities.

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WHAT WE CONCLUDED

As of December 31, 2012, the AWT Project has expended approximately 85% ($193 million of $227 million) and construction is estimated to be 85% complete.

- The prior legal challenge to the City's 2010 wastewater facility permit modification was resolved and the project is on schedule to meet the Florida Department of Environmental Protection permit requirements. The City submitted its application (with no new modification requests) to renew its wastewater facility permit for the next five years.
- Construction activities have not resulted in any major worker medical incidents (i.e., lost time due to worker accidents) in 1,234 work days.
- The project is 85% completed and project construction is on schedule and anticipated to be completed in January 2015. There was one unplanned operational disruption when one of the two new anaerobic digesters incurred damage during start up.
- Reductions to the Total Nitrogen (TN) reductions are ahead of schedule. Effluent (treated water) at the TP Smith facility met the final TN goal of 3.0 mg/l level in November 2012, far ahead of the 6.5 TN mg/l level required in January 2013.
- The project is currently within the amended budget and management anticipates the project will close within the final budget of $227 million.
- Approximately 85% of the authorized budget (approximately $193 million of $227 million budgeted) have been expended. Overall, our testing of $17 million in expenditures during the audit period were adequately supported, approved, and related to the AWT project.

Our assessment of project controls (shown in Report Table 7 beginning on page 10) indicated that the majority of project controls have been in place to minimize project risks. However, we did identify areas where improvements should be made and provided recommendations to assist management.

Project Progress Audit Report

CITY OF TALLAHASSEE
OFFICE OF THE CITY AUDITOR

T. Bert Fletcher,
Interim City Auditor

Advanced Wastewater Treatment Project – Report 2

Report #1312 ***April 19, 2013***

Summary

This is the second audit of the City's Advanced Wastewater Treatment (AWT) Project during the construction phase. Our objectives are to periodically provide assurances and advisory services related to project management activities; report on the project status and accomplishments; and provide an independent assessment of risk management, project controls, project goals, and expected deliverables.

The first audit report was released on January 6, 2011 (report #1102). For this second report, we reviewed project management activities during the period January 1, 2011, through December 31, 2012, and tested selected financial transactions during the period January 1, 2011, through September 30, 2012.

In summary, as of December 31, 2012:

- The prior legal challenge to the City's 2010 wastewater facility permit modification was resolved and the project is on schedule to complete and meet the Florida Department of Environmental Protection (DEP) Wastewater permit requirements. In June 2012, the City submitted its application to renew its TP Smith wastewater facility permit for the next five years. The renewal application does not include any requests to change the current TN limit requirements or construction dates.
- Project construction is on schedule and anticipated to be completed in January 2015. There was one unplanned operational disruption when one of the two new anaerobic digesters incurred damage during start up. The City's Builder's Risk insurance will cover all repair costs over $500,000. Repairs are in progress and project management does not anticipate this disruption to delay the scheduled completion date or the required TN level reductions.
- Construction activities have not resulted in any major worker medical incidents (i.e., lost time due to worker accidents) in 1,235 construction work days.
- Reductions in Total Nitrogen (TN) levels are ahead of schedule. Effluent (treated water) at the TP Smith facility met the final TN goal of 3.0 mg/l level in November 2012, far ahead of the 6.5 TN mg/l level required in January 2013.
- As of December 31, 2012, the project has expended approximately 85% of the authorized budget (approximately $193 million of $227 million budgeted) and construction is approximately 85% complete. Overall, the $17 million in expenditures tested this period were adequately supported, approved, and related to the AWT project.
- The project is currently within the $227 million budget and project management expects the project will be completed within the overall budget. A separate project for $2.5 million has been created to conduct the finishing site work at TP Smith. It will be managed by the AWT Construction Manager and will include paving, landscape, and security.

Our assessment of project controls indicated the majority of project controls have been in place to minimize project risks. However, we have identified some areas where improvements should be made and provided recommendations to assist management in assuring project activities comply with City policies and procedures and contract requirements and incorporate project management best practices.

Areas where project management controls should be improved relate to:

1) Reviewing, tracking, approving, coding, and recording invoices (this issue was also reported in our first audit).

2) Recording of project assets and equipment in a timely manner (this was also reported in our first audit). In March 2013, adjustments were made to the City's FY 2012 annual financial report to include $124 million in assets completed and in service from the AWT project.

3) Ensuring results of acceptance and performance testing are collected and maintained by the design engineer for the City, as required by contract.

4) Improving the management of and security over the plant's SCADA (supervisory control and data acquisition system) network system.

5) Ensuring there are processes in place to better monitor and verify the MBE (Minority Business Enterprise) participation in construction projects and track local business participation.

6) Ensuring there are project staff with adequate administrative capabilities to assist in overseeing the project's financial activities.

7) Improving the system controls over the network housing the TP Smith wastewater treatment SCADA system.

Details for each of these needed improvements are provided beginning in Table 6 on page 12 through page 15.

In the back of the report, five appendices are provided:

Appendix A – Management's action plan to address report recommendations

Appendix B – Wastewater treatment process

Appendix C – Permit requirements and time schedule for City treatment facility improvements

Appendix D – Description and related amounts and schedules of AWT construction related work

Appendix E – Photos of the TP Smith facility in October 2009 and December 2012.

We would like to acknowledge the full and complete cooperation and support of management and staff from the Underground Utilities and City's engineering firms, Hazen & Sawyer and CH2M Hill, and prime contractor, MWH, Inc., during the audit and development of this audit report.

Scope, Objectives, and Methodology

This is the second audit of the City's AWT project. The Office of the City Auditor is providing periodic reviews of the AWT Project to provide assurance and advisory services related to project management activities to assist Underground Utilities management during the project's construction phase. The first audit covered the period January 1, 2010, through August 31, 2010, and tested selected financial transactions between August 1, 2006, and June 30, 2010.

This second audit covers the period January 1, 2011, through December 31, 2012, and tested selected financial transactions during the period January 1, 2011, through September 30, 2012. The period for the second set of transaction testing was designed to begin when the first audit report was released. This gave project management the opportunity to revise their processes to incorporate the report recommendations.

Our objectives for this audit were to:

- Report on the project status and accomplishments as of December 31, 2012;
- Determine compliance with City policies and procedures and contract requirements; and
- Provide an independent assessment of risk management, project controls, goals, and expected deliverables.

Our audit scope included selected project management activities during the construction phase, with emphasis on financial oversight, acceptance and performance testing, and the implementation of the plant's enhanced SCADA.

The audit scope did not include an evaluation of the adequacy and quality of the engineering design and/or construction of the AWT facilities (TP Smith Treatment Plant). Since the planning and acquisition phases for prime contractor and engineers had already been completed, we focused our audit procedures on assessing project management controls and controls over the acquisition activities related to the project expenditures during the audit period, including payments to contractors and procurement of labor, materials, and equipment.

To achieve our objectives, we reviewed key documentation, including City Commission agendas

and meeting summaries, project manager periodic status reports and budget reports, court documents, contracts, expenditure related documentation, and system design and security documentation. We observed project management meetings with the major contractors, and conducted interviews with the project manager, project team members, contractors, executive management, and other key City staff with project related responsibilities. We also tested the appropriateness and compliance of sampled project expenditures related to construction services, materials, equipment, labor, and indirect expenses.

We conducted this audit in accordance with the International Standards for the Professional Practice of Internal Auditing and Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Project Phases

All City capital projects follow similar life cycle phases. The phases related to the AWT project include:

Planning Phase – defining business problems; determining resource needs; identifying risks, costs, and benefits associated with each solution; developing a project plan; and obtaining funding.

Acquisition Phase – developing requests for proposals and evaluation criteria; evaluating proposals; selecting vendors; and negotiating contracts.

Construction (or Implementation) Phase – managing contracts and project staff; procuring equipment and materials; documenting project transactions and all changes to building designs; planning, performing, and documenting acceptance testing; preparing technical and user documentation; and putting the system into production (e.g., "commissioning").

Evaluation (or Post-Implementation) Phase – determining whether the completed product meets the planned and designed performance requirements; and measuring and evaluating the project successes and challenges (e.g., lessons learned) for future projects.

Wastewater Treatment

The City wastewater treatment facilities have the capacity to treat an annual average of 26.5 million gallons per day (MGD). Currently, the City treats an average of 17.7 MGD. The City's sanitary sewer collection system is comprised of approximately 675 miles of gravity pipe supported by over 85 pumping stations using 100 miles of force main pipes. These pipes carry sewage (referred to as wastewater) completely separate from the stormwater system. Wastewater is transported from City homes and businesses to be treated at the TP Smith Water Reclamation Facility (TP Smith). Before the AWT project, TP Smith operated three treatment "trains," i.e., separate processes that treat wastewater. Each uses a different aeration process based on the best-practices technology in place at the time of construction (1973, 1983, and 1991).

Wastewater, consisting of approximately 99% liquid and 1% solids, was previously also treated at a second treatment plant, Lake Bradford Road Wastewater Treatment Facility (Lake Bradford). In 2009, Lake Bradford ceased treating wastewater and began use only as a wastewater collection facility. Since fall 2009, all wastewater is sent to and treated at TP Smith through a series of treatment processes.

The chief purpose of the AWT project is to lower the Total Nitrogen (TN) levels to under 3.0 mg per liter of treated liquids and improve the quality levels of the produced biosolids to "Class AA" as specified in the Florida Department of Environmental Protection (DEP) permit and Court Administrative Order. Class AA biosolids are considered by DEP as the highest quality of biosolids and are distributed and marketed like other commercial fertilizers. The design changes to TP Smith involved structural, mechanical, electrical, and control improvements that would upgrade the facility to meet AWT treatment levels and accommodate the plant for future expansion of treatment capacity to 31.0 MGD, when needed.

Construction began in 2009 and is scheduled to be completed in January 2015. As construction phases are completed, the new or enhanced treatment facilities are being put into service.

Ninety-eight percent (98%) of the treated liquid is used at the Southeast Sprayfield, where it is used to water farm plants, feed animals, or sent through the Tram Road Reuse Facility to water the Southwood Golf course and some school fields. The remaining

2% of the treated effluent is reused at the TP Smith Plant.

Solids go through multiple processes to remove the majority of liquids, including settling, aeration (using air bubbles), heat and oxygen removal (using anaerobic digesters), and use of polymers on gravity belts and centrifuges. The treated solids are then dried in a large dryer and are converted into fertilizer (Class AA biosolids) and can be sold. Solids that will not go through the drying process during unplanned equipment outages will be transported to a Class I landfill.

Appendix B provides a simplistic graphic description of how the new and enhanced facilities will process wastewater after the construction is completed.

Wastewater Facility Permit Challenges, Settlement, and Modification

In March 2006, the City's Domestic Wastewater Facility Permit (No. FLA010139) was challenged by the Florida Wildlife Federation, Florida Attorney General, Wakulla County Board of County Commission, and one Wakulla County citizen (collectively referred to as petitioners). The petitioners contested whether there were reasonable assurances that the permit contained conditions that would adequately protect the water quality in Wakulla Springs. Specifically,

- The nitrogen reductions of the effluent treated at TP Smith and Lake Bradford facilities were not low enough.
- There was not a nutrient management plan to lower the nitrogen levels of the treated effluent.

Mediation resulted in a final Settlement Agreement that included key provisions for the City to lower Total Nitrogen (TN) levels by targeted dates, physical improvements to treatment plant facilities and construction timetables, quality levels of produced biosolids, and conduct feasibility studies related to increased reuse of treated effluent. In return, the petitioners agreed not to legally challenge, appeal, or in any other way impede or interfere with the issuance of a final permit regarding the conditions of this agreement.

To ensure compliance with the Settlement Agreement, the City was required to file an amended DEP permit application that included terms set forth in the Settlement Agreement. The City and DEP considered the subsequently approved permit (dated January 28, 2007) the ruling document, thereby closing the Settlement Agreement.

In 2009, City management re-examined the City's wastewater treatment plans and strategies and recommended changes to how the City's treatment facilities would be utilized in the future. To implement those strategies, AWT project management submitted a minor permit modification in March 2010, to revise the DEP permit and request a 12 month extension to complete the construction for each treatment train and the installation of the new dryer. The City did not request an extension for the TN reduction schedule. Prior to submitting the permit modification request (between December 2009 and February 2010), the City's project team notified the petitioners of the requested revisions and construction deadlines and met to address any issues or concerns that they might have.

The permit modification was challenged in spring 2010 and a law suit was filed against the City and DEP seeking a declaration that the settlement agreement is valid, binding, and enforceable on all parties and that the modification should not be allowed without getting approvals from all original petitioners from the 2009 Settlement Agreement.

In fall 2011, an Administrative Law Judge issued his Recommended Order siding with the City and DEP and recommending DEP issue a final order approving the minor permit modifications. DEP issued their final order in the City's favor and the minor permit revisions were issued in November 2011.

In June 2012, the City submitted its application to renew its TP Smith wastewater facility permit for the next five years. The renewal application does not include any requests to change the current TN limit requirements or construction dates. The City anticipates DEP will issue a "Notice of Intent to Issue" the City's permit by the end of April 2013. Interested parties will have 14 days following publication of the DEP notice to request a hearing on the proposed permit. If no one intervenes, DEP will issue the permit as proposed.

Appendix C shows the current DEP permit requirements and time schedule for the City treatment facilities, as well as the City's status.

Construction Project Description

Advanced Wastewater Treatment (AWT) Project

The DEP permit issued in January 2008, and subsequently modified in March 2009 and November 2011, prescribed structural improvements at their wastewater treatment facilities. The permit included specific nitrogen level targets and dates, construction timetables, quality level targets of produced biosolids, and feasibility studies related to increased reuse of treated effluent.

In 2009, City management changed the wastewater treatment plans and strategies on how to best utilize the City's treatment facilities in the future while meeting DEP permit requirements and therefore changed the scope of the AWT project. Changes would be made to upgrade the TP Smith facility to meet AWT treatment levels and accommodate future expansion of treatment capacity to 31.0 MGD. This expansion would allow the City to cease treatment operations at the Lake Bradford facility, limiting it to wastewater collection only.

Also in 2009, City management changed the AWT Project to increase project management over the project with a new project manager and contracted construction management assistance. Funding was increased to $227 million based on the changes to the project scope and the type of construction contract with the prime contractor was changed to a Construction Management at Risk (CMAR) agreement, whereby the prime contractors would perform the work under a cost reimbursable basis with a guaranteed maximum price. The contract was amended to allow for the work to be done on a fixed price basis.

Advantages of a CMAR contract are that the City receives pre-construction services such as schedule, budget, and constructability reviews and it allows the contractor to fast track early components of construction. The fixed price option allows for the defined construction work packages to be done on a fixed price basis if the parties agree.

The AWT Project construction has been broken down into six defined work packages. Each package is bid by the prime contractor and a fixed price is negotiated and approved. Management estimates that changing the project from the CMAR to fixed price option saved the City between $10-15 million in construction costs.

Appendix D provides a summary of the AWT construction work packages. Construction costs are estimated to be 78% of the total project budget of $227 million. Appendix D also provides detailed information about each of the defined construction work packages.

The AWT Project involves an intensive overhaul of the TP Smith facility to implement the most current technology in treating wastewater, Bardenpho treatment methodology. The TP Smith facility has operated at 100% during construction and will continue to do so while the new buildings are constructed, upgrades are made to existing buildings, and new equipment is installed. Examples of project upgrades and renovations include:

- Each of the four treatment "trains" will be renovated to apply the Bardenpho treatment methodology. New anaerobic digestion system will be installed to further thicken biosolids.
- Additional clarifiers will be constructed.
- New chlorine contact chambers were constructed to perform high-level disinfection. The chlorine was replaced with a commercial sodium hypochlorite system. (placed in operations August 2011).
- A deep bed sand filter was constructed to meet the total suspended solids limits. Methanol will be utilized as needed in the filter to reduce total nitrogen (placed in operations August 2011).
- The existing effluent pump station was rehabilitated (placed in operations August 2011).
- Gravity belt thickeners will replace dissolved air flotation structures to thicken biosolids.
- A new dryer was installed to more reliably produce Class AA biosolids. (January 2013)

Project Funding

The project has been funded through rate increases and bond financing. The City implemented sewer rate increases in three phases to support the bond financing for the project. Rate increases were effective April 2008, January 2009 and October 2010. Additional funding for the project was provided by proceeds of bond issuances, not to exceed $170 million, in 2007 and 2010.

Table 1 shows the amounts budgeted to the AWT Project beginning in fiscal year 2007 and projected through 2014.

Table 1
Historical and Planned
Budget for the AWT Project

Fiscal Year	Amount Budgeted during the Fiscal Year	Project Budget Running Total
2007	$ 25,263,917	$ 25,263,917
2008	$ 43,205,000	$ 68,468,917
2009	$ 73,198,000	$141,666,917
2010	$ 29,560,000	$171,226,917
2011	$ 42,047,200	$213,274,117
2012	$ 11,195,000	$224,469,117
2013	$ 1,982,800	$226,451,917
2014	$ 600,000	$227,051,917

Source: Project Documentation and DMA Budget Division

It is prudent for projects to include some contingency funds to provide adequate funding for construction "cost growth" (also called change orders) during the project construction. Change orders can be due to owner's request, unforeseen circumstances, or engineering design errors. An industry standard for cost growth is approximately five percent. Table 2 shows the contingency amounts budgeted for the prime contractor's construction contracts work packages.

As of December 31, 2012, change orders for the prime contractor have been approved totaling approximately $5.6 million (3.3%) of the original construction budgets for the major work phases ($169,249,865). There have also been change orders associated with separate contracts related to improvements to train #3 and to the overall facility such as developing and installing the new SCADA system throughout each work phase. Appendix D shows an overview of all project construction related work, including: construction dates, percent construction completed, construction budget, approved field changes, and amended construction totals.

Table 2
Contingency Amounts Budgeted for Prime Contractor
Construction Contracts During Each Major Work Phase (Note 1)

Work Phase	Work Phase Description	Original Construction Budget	Budgeted Contingency Amount and Percent	Actual Amount of Contingency and Percent Used as of 12/31/12
1	Liquids Upgrades	$65,088,524	$3,254,426 (5.0%)	$3,826,216 (5.9%) (Note 2)
2A	Solids Dewatering	$22,225,211	$666,756 (3.0%)	$674,850 (3.0%)
2B/3A	Solids Digestion / Early Electrical and BNR Upgrades	$32,515,398	$975,462 (3.0%)	$847,391 (2.6%)
2C/3B	Structural / Aeration Train Upgrades and Dryer	$49,420,732	$1,482,622 (3.0%)	$290,067 (0.6%)
Totals		**$169,249,865**	**$6,379,266 (3.8%)**	**$ 5,638,524 (3.3%)**

Note 1: This table does not include preliminary work performed by MWH or change orders processed for other contractors and vendors. See Appendix D for the budgets and change orders for all construction related work.
Note 2: This amount includes over $1.3 million related to mini-piles that had to be drilled due to the unexpected soil conditions to stabilize the required additional stabilization for the construction.

The AWT project is classified in the City as a Fast Track project (based on City Ordinance 09-O-13). As a Fast Track project, the City Manager is authorized to award contracts, purchases, and change orders up to the total project budget, $227 million. The Fast Track Program was designed to boost the local economy by allowing certain projects to move more quickly in procuring goods and services.

Project Team

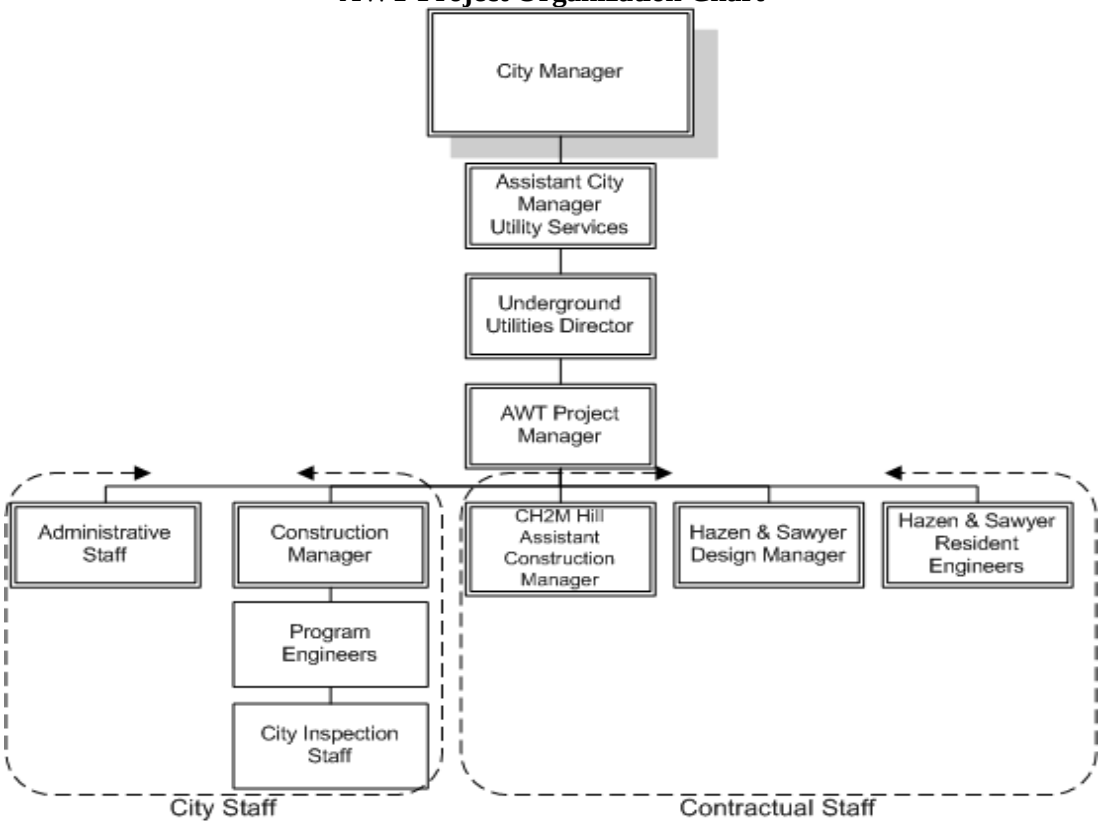
The City's project team consists of both City employees and consulting assistance led by the AWT Project Manager. City employees include Construction Manager, wastewater program engineers and inspectors, and administrative staff. Consulting employees include engineers and construction management professionals. The project team is tasked to monitor and oversee construction activities to ensure design plans are followed and construction quality is maintained.

Executive oversight of the project is the responsibility of the City Manager, Assistant City Manager, and Underground Utilities General

Manager. The AWT Project Manager submits monthly project reports to the Executive Management Team to communicate the project status, successes, and challenges. Figure 1 provides the organization chart for the AWT Project team and executive management oversight.

Since 2010, the Project Manager has continued to provide oversight of the Construction Manager and communicate with executive management. The Construction Manager performs the day-to-day management of the project, including review and approval of invoices, and management of the project team.

Figure 1
AWT Project Organization Chart



Source: Project Documentation

Project Status and Accomplishments to Date

Table 3 provides the total project expenditures as of December 31, 2012. As of December 31, 2012, approximately 85% ($193 million) of the original budgeted $227 million has been expended on the AWT Project. The majority (96%) of expenditures were recorded as construction, engineering, unclassified contractual services, and unclassified professional fees.

Additionally, Table 4 shows the amounts expended on the AWT Project by vendor. The largest amount has been expended for the prime contractor for the AWT Project, MWH Constructors, Inc. (70%). Ten (10%) percent has been expended for the prime engineering firm, Hazen & Sawyer and 3% to Andritz Separation Inc., for the extensive dryer equipment.

Table 3
Project Expenditures by Account as of December 31, 2012

Account Description	Amount	Percent of Total
Construction services	$ 113,681,086	58.9%
Contract engineering services	$ 27,936,840	14.5%
Unclassified contractual services	$ 22,560,157	11.7%
Unclassified professional fees	$ 20,731,239	10.7%
Salaries, wages, overtime and other salary items	$ 2,417,038	1.3%
Direct overhead	$ 1,680,603	0.9%
Unclassified supplies	$ 1,239,111	0.6%
Property insurance premiums	$ 1,147,670	0.6%
Miscellaneous equipment, services, and supplies	$ 1,184,950	0.6%
Office related expenses	$ 342,847	0.2%
Totals	**$ 192,921,541**	**100%**
Percent of Total Project budget of $227,051,917	**85%**	

96%

Source: City Financial System

Table 4
Project Expenditures by Vendor as of December 31, 2012

Vendor Name	Amount	Percent of Total
MWH Constructors, Inc.	$ 143,574,129	74.4%
Hazen & Sawyer, P.C.	$ 19,790,316	10.3%
Andritz Separation, Inc.	$ 5,986,193	3.1%
CH2M Hill, Inc.	$ 4,455,054	2.3%
Commerce Controls, Inc.	$ 4,346,263	2.3%
Carollo Engineers, P.C.	$ 3,382,155	1.8%
City employees (Salaries, temp wages, overtime)	$ 2,415,418	1.3%
City overhead costs	$ 1,680,603	0.9%
Sandco, Inc.	$ 1,085,764	0.6%
Other miscellaneous vendors	$ 6,205,646	3.2%
Totals	**$ 192,921,541**	**100%**

Source: City Financial System

To manage the various construction components, management has broken the major AWT construction components into six major construction work packages. Additionally, work is segregated into preliminary work needed to prepare for construction, and improvements to update treatment train #3, and the design and implementation of the new facility-wide SCADA system and network. Appendix D provides a brief description of each work package and segregated work, budgeted cost for each, start and target completion dates, and percentage completion. As of December 31, 2012, the project is still in the construction phase for two of the six defined work packages (2C/3B, including the Solids Dryer and conversion of the existing treatment trains), and the facility-wide SCADA system.

As of December 31, 2012, the AWT Project has expended approximately 85% of the authorized budget (approximately $193 million of $227 million budgeted) and project management estimates that construction is also approximately 85% complete.

Project Goals

Management developed six project goals at the beginning of the project. As of December 31, 2012,

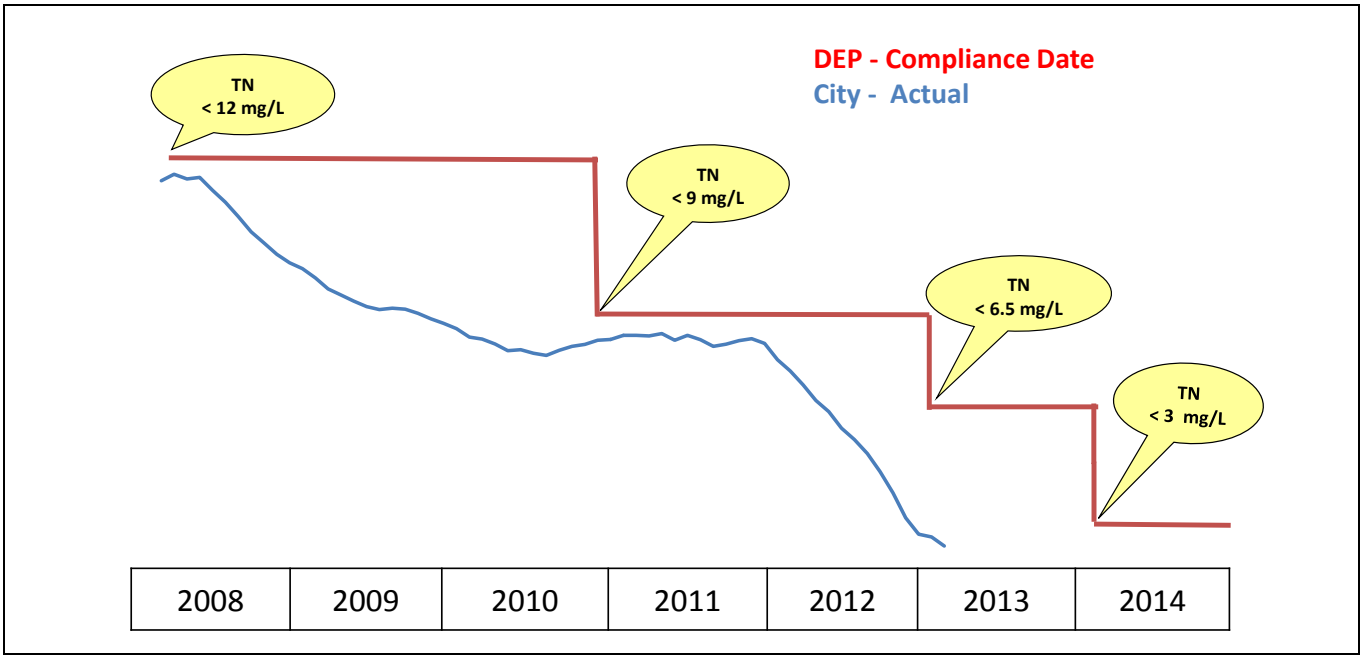
Table 5 shows the status of the project goals. Management will continue to evaluate the project based on these performance goals throughout the project.

We were able to determine that as of December 31, 2012, the City has successfully achieved four key measures, including:

- √ There have been no major medical accidents or lost time due to accidents in over three years (1,235 days) of construction.
- √ The City is ahead of schedule for meeting the total nitrogen levels mandated by the DEP. The red line in Figure 2 shows the DEP compliance TN levels and dates and the blue line shows the City's TN levels.
- √ The project is within the $227 million budget and is projected to be completed within budget. A separate project for $2.5 million has been created to conduct the finishing site work at TP Smith. It will be managed by the AWT Construction Manager and will include paving, landscape, and security.
- √ The project has not incurred any permit violations.

One project goal, completing the project with no unplanned operational disruptions, will not be met; and there was not adequate documentation to verify whether local labor and MBE participation was maximized.

Figure 2
Total Nitrogen Reductions and Target Dates



Source: Project Management TN Level reports

Table 5
Project Goals and Status
as of December 31, 2012

Project Goal Description	Project Goal Met?
1. To complete the project in a safe manner, and not have any major medical accidents or lost time due to accidents.	**Yes** (to date). There have been a few minor accidents, but no major medical accidents resulting in lost work time in 1,235 construction days.
2. Achieve Facility Permit schedule milestones to reach Total Nitrogen targets: TN level — Month/Year TN @ 12 mg/l - July 2008 TN @ 9 mg/l - July 2011 TN @ 6.5 mg/l - Jan 2013 TN @ 3 mg/l - Jan 2014	**Yes.** Achieved June 2008 **Yes.** Achieved August 2009 **Yes.** Achieved October 2011 **Yes.** Achieved November 2012 and as of February 28, 2013, it has remained below the 3 mg/l
3. Complete the project with • no permit violations • no unplanned operational disruptions.	**Yes** (to date). **No.** There has been one major disruption when Digester 2 incurred damages during testing. Despite the damage, the overall project construction completion date and TN targets are expected to be met.
4. Complete the project within budget	**Yes** (to date). The project is currently within budget and project manager projected that the project will be completed within budget. A separate project for $2.5 million has been created to conduct the finishing site work at TP Smith. It will be managed by the AWT Construction Manager and will include paving, landscape, and security.
5.a. Maximize local labor 5.b. Maximize MBE participation	**Cannot Determine.** This data has not been updated as of December 31, 2012. **Cannot Verify.** As of November 2012, prime contractor reported that $3.6 million had been sub-subcontracted with MBE vendors exceeding the $3.3 million goal. (Sub-subcontracts to MBEs were awarded through the prime contractor's subcontractors. *There was not adequate documentation available to verify these amounts.*)
6. Upon completion, the treatment plants will meet Operational and Maintenance reliability and be sustainable.	**In process and on target.**

Note: (1) As of December 31, 2012.
Source: Project Manager and project documentation

Damage to one of the two new anaerobic digesters during start up resulted in an unplanned operational disruption. Despite the damage, the overall project completion date is not expected to be delayed and the TN level achievement dates have not been negatively impacted.

In March 2012, damage to Digester 2 occurred during startup testing when rapid rising of foam and gas pressure resulted in major tilting and damage to the cover. The damaged digester has been placed out of service and the second digester is operating in limited capacity because its cover also tilted during startup, although no damage apparently resulted. Repair of the damaged cover is underway, and the City will file a claim under its Builders Risk Insurance policy. With repair of the damaged cover expected to be complete by June 2013, the City will re-commence startup and place the digester back into service.

Project management commissioned an outside engineering firm with expertise in digester construction and operation to investigate the incident that resulted in the cover damage. The report findings which indicated several factors contributed to the damage has been provided to the insurance company. The report also included recommendations for proper installation and startup to preclude a recurrence of the incident.

Project management worked with the prime contractor to support the cover and develop a plan to inspect and repair the digester. The existing Digester 3 was placed back into operation and the new

Digester 1 was placed into partial operation pending any needed repairs, based on repairs to Digester 2. Project management is proceeding to repair the digesters and estimate repairs will be completed by the end of June 2013. It is anticipated that the repair costs could be between $750,000 and $1 million. The City will be responsible for $500,000.

The insurance company has yet to decide whether they will seek subrogation through legal proceedings.

There was not adequate documentation available to determine whether the project has continued to maximize local labor and MBE participation.

In August 2010, project management reported the prime contractor subcontracted $13 million with local businesses. Neither the prime contractor nor the City has tracked this information since that time. Therefore, due to the lack of documentation, we were unable to determine the amount that has actually been subcontracted with local businesses.

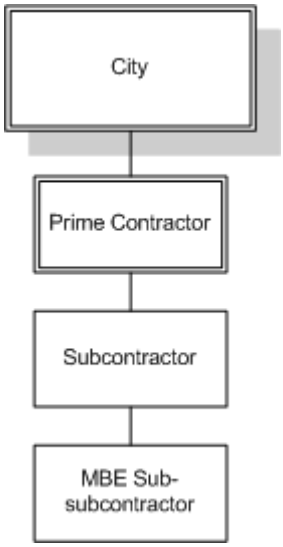
Regarding MBE participation, the City's contract requires the prime contractor, as part of its Project Monthly Report, to describe and quantify MBE utilization and compliance with its project MBE goals. During the prime contractor's subcontracting process, they designed the bidding process to reward subcontractors with bid packages that met the City's and prime contractor's 10.5% MBE Plan goal.

To provide evidence of the actual amount paid to MBEs during construction, subcontractors are required to submit certified MBE subcontractor Monthly Reports listing the amount paid to each MBE sub-subcontractor. The prime contractor is to provide a summarized report to the City during the monthly briefings.

The prime contractor indicated they have been collecting the reports, however, they have not provided the summarized information to the City unless it was requested. AWT project management indicated that they have observed MBE subcontractors performing work on the AWT site, but neither the City MBE Office nor the AWT project management have requested from the prime contractor the amounts paid by the subcontractors to MBE sub-subcontractors during the last two years.

Because the work to the MBE subcontractors is not contracted directly from the City or from the City's prime contractor, the City does not have the authority contractually to review their records, and therefore cannot verify the amounts reported as paid to MBE subcontractors. Figure 2 shows the layers of subcontracting.

Figure 2
Layers of Subcontracting in AWT Project



During the past two years of the project, MBE participation has not been monitored by the MBE Office or AWT project management. Local participation has also not been tracked. We recommend the MBE Office work with project management to ensure processes are in place to better monitor and verify the MBE participation in construction projects. We also recommend that if a project identifies maximizing local labor as a project goal, then processes should be put in place to track contracts and spending to allow the goal to be measured.

Project Management Controls and Compliance with Policies and Procedures

The most important factor influencing the outcome of a major construction project is how the project is managed. The City has two prevalent policies and procedures related to construction project management, Administrative Policy and Procedure #630, "Internal Control Guidelines" and City Commission Policy #218, "Capital Projects." These policies provide guidance to managers regarding basic controls and procedures that should be incorporated into project management processes.

Table 6 provides a listing of those relevant policies, controls, project management practices, and a description of how management has incorporated the control into the project processes.

In the following table, a "√" indicates the control was in place and the activity was completed. A "♦" indicates the control appears to be in place; but improvements could still be implemented and a "○"indicates the control is not in place. We have provided recommendations to management where improvements should be implemented.

Table 6
Policies, Procedures, Controls, and Practices
for Managing Major Construction Projects

Relevant Procedures & Controls	Status/Comments/Recommendations
Administrative Policies & Procedures (APP) #630, "Internal Control Guidelines," APP #662, "Property Control," City Commission Policy #218, "Capital Projects," and Project Management Best Practices	
There is direct activity management – including clear communication regarding team members' roles and responsibilities, staff accountability, approving work at critical points.	√ The AWT Project Manager is experienced in leading complex City construction projects. There are defined roles for project team members. The team has decreased in size as the major phases have been completed and the remaining phases are less extensive. The project team meets weekly to discuss operational issues and upcoming plans and assignments. Additionally, key project team members (including both City staff and consultants) meet weekly with the prime contractor to discuss progress, issues, and upcoming inspections, plans, and assignments.
Management compares actual performance (i.e., expenditures, funding) to budgets and forecasts, and tracks major initiatives to measure the extent to which targets are being reached.	√ The AWT Project Manager has been responsible for approving all project encumbrances and expenditures. During this phase of the project, the Construction Manager has performed more day-to-day management of the project, including monitoring expenditures, budget, and schedule.
Transactions and events relating to processing deliverables and contract payments are properly executed, classified, and recorded in a timely manner.	♦ Project management has implemented a process to review, approve, and record expenditure transactions. Our testing of a sample of 58 expenditures charged to the AWT Project occurring between January 1, 2011, and September 30, 2012, totaling $17 million, showed that overall, the amounts paid were supported, approved, and related to the AWT project. The sample represented 25% ($17,109,134 of $87,181,332) of the total dollars expended during the period January 2011 through September 2012. While overall, the amounts were supported, we did note the following areas where compliance with policies and procedures could be improved to further support and record transactions: 1) Invoices should be timely paid (10 days for construction invoices according to contracts and 45 days for others) and should be date stamped when received to measure and ensure the timeliness of payments. We noted 13 (22%) late payments. Management reported that the City and the prime contractor agreed to perform invoice reviews prior to payment instead of afterward (the contract specifies payment first with reviews afterward) which was the reason for five of the 13 late payments identified during testing. 2) Transactions should be reviewed to ensure they are recorded to the correct department or cost account so the project budgets to actual cost comparisons are meaningful. Examples included construction

	expenditures being recorded to construction services and unclassified professional fees. We noted nine (15%) instances where the accounts or departments were not coded correctly. 3) Expenditure documentation should support the expenditure was for an AWT Project purpose. We noted in seven (12%) invoices for time and material contracts that amounts paid were not fully supported. Examples included consultant salaries, travel expenses, and markups. We also noted one non-project related employee salaries being charged to the project. The amounts in question were not significant to the overall project expenditures. We recommend that management review all transactions to ensure invoices are accurate, properly coded and recorded, and comply with its corresponding contract or purchase order.
On-going monitoring should be performed to ensure that employees, in carrying out their regular activities, obtain evidence as to whether the system of internal control is continuing to function. Department Director, or designee, shall encompass facilitation and oversight of project completion and management, execution and monitoring of project appropriation, opening, encumbrance, expenditure, transfers, supplemental appropriations, purchases, contracts, change orders, balance activities and project closing to effectively complete projects in the timeliest manner.	♦ Currently, the construction manager is responsible for providing oversight of the project team's activities, reviewing invoices, and monitoring the budget. We noted during our review that more skilled and experienced administrative staff on the project team would have mitigated the above issues related to timely payment of invoices, coding of expenditures, and review of expenditure details. We recommend management assess the administrative needs and ensure project staff has adequate administrative capabilities to assist in overseeing the project's financial activities.
Key duties and responsibilities in authorizing, processing, recording, and reviewing transactions and events should be segregated among individuals to reduce the risk of error or inappropriate actions. No one individual should control all key aspects of a transaction or event.	√ There is evidence of an adequate segregation of duties among staff in the authorizing, processing, recording, and reviewing transactions and events.
Equipment, inventories, securities, cash, and other assets should be secured physically (by location, tagging, restricted access), and periodically counted and compared with amounts shown on control records.	√ There is evidence of a process of identifying quality and quantity of equipment and materials delivered for the project construction.
Reviews should be made of actual performance versus budgets, forecasts, and prior periods. Major initiatives are tracked to measure the extent to which targets are being reached.	√ To date, there is evidence that the overall project schedule and budget have been closely monitored. Project management is anticipating a need to increase the approved $227 million budget by approximately $2 million. √ The total nitrogen reduction requirements are scheduled to be accomplished by the targeted completion dates. √ The project's overall anticipated completion date was revised through a DEP permit revision. The project, originally planned for completion in January 2014 is now expected to be completed in January 2015.
Department directors are responsible for ensuring that all aspects of their projects comply with City policies and legal requirements, and that funds are expended for that which the project was intended.	√ To date, the AWT Project and TP Smith managers have complied with DEP reporting requirements.

Department directors will be responsible for prohibiting deficits in their respective projects' total budget. Action should also be taken by department directors to avoid deficits in sub-projects and to correct them in a timely manner if they occur.	√ To date, the Project Manager has not incurred deficits in the project.
Department directors will be responsible for maintaining project completion dates on a current basis. This provides for a monthly review and update of project reports to ensure that no project is beyond its completion date as reflected in the PeopleSoft Financial System.	√ The AWT Project manager reports monthly to executive management; and the PS financial system has been updated to reflect the changes in schedule. The current anticipated project end date in the financial system of September 2015 provides time for the project to be closed out after construction is completed in January 2015. √ To date, the project completion schedule has been amended through two approved permit revisions submitted to DEP.
Department directors will be responsible for ensuring the use of change order forms or contract amendment documents to fund change orders to contracts. The use of purchase orders as a device for contract change orders is prohibited.	√ The AWT Project Manager, construction manager, and administrative staff closely manage and track field change orders. Executive management has delegated authority to the project manager to approve change orders for minor extra work in $250,000 increments to cover minor issues that may come up during construction. The project manager communicates the changes to executive management for review before an additional $250,000 is authorized.
When the Commission approves a contingency for a project, the City Manager may authorize non-scope change orders up to the amount of the contingency. Any proposed non-scope change orders exceeding this amount shall trigger the need for Commission approval. The AWT Project is classified as a "Fast Track" project. City Ordinance 09-O-13, "Fast Track" provides authorization to the City Manager to award contracts, purchases, and change orders up to the total project budget, $227 million.	√ Each negotiated work package contract identifies a set amount for anticipated change orders (field changes). The project defines field changes as additional costs incurred as a result of changes in scope, design error or omission, or unforeseen conditions. The City Manager has delegated authorization to the Director of Management and Administration to approve change orders for this project. The project manager is to communicate the requested changes for every $250,000 of changes. We reviewed a sample of field changes during our transaction testing and confirmed that the changes were properly authorized, approved and documented. See Appendix D for the approved change order amounts by work phase as of December 31, 2012.
Internal Control requires the design and use of adequate documents and records to help ensure the proper recording, design, and use of transactions and events. This includes documenting results of acceptance and performance testing of equipment and constructed facilities.	√ A separate document storage system is being utilized to store current and historical design documents. Controls over project design documents are the responsibility of the Design Manager (Hazen & Sawyer) and Prime Contractor (MWH). o To date, documentation of equipment and facility acceptance and performance testing has not been consistently collected and maintained. By contract, this is the responsibility of the Design Manager (Hazen & Sawyer). Audit Comment: Without adequate documentation of the results of the acceptance and performance testing, City management may not be able to adequately support related warranty or performance issues. We recommend the project manager work with the design engineer to ensure the test results for all acceptance and performance testing are collected and maintained as required.

Assets purchased (includes constructed) in capital projects will be capitalized with an "in-service date." Accounting Services will not make the assumption that an asset was placed into service without specific information from the department.	♦ **In process. This was an issue in the prior audit report.** Recording of assets purchased and constructed is the responsibility of the City staff. To date, the City has not developed a process for identifying and recording the constructed assets in the financial records. The AWT project is a large, complex project in which portions of the project have been completed and put in service at various dates beginning in April 2011. As of September 30, 2012, we estimated that $124 million in assets were completed and in operation and should be recorded in the City's financial records. In March 2013, the City recognized the AWT assets had not been recorded and adjusted the City's FY 2012 annual financial report to include the $124 million in assets completed and in service. If they had not been recognized, the impacts for fiscal year 2012 would have been understated depreciation costs and program costs not being matched with program revenues. DMA Accounting Services staff is working with TP Smith staff to develop a process to record the assets in the City's asset management system and in the plant's asset maintenance system to assist them in planning and tracking maintenance activities. Audit Comment: Constructed assets that are completed and put into operation should be recorded as such in the City's asset system. We recommend that project staff work with DMA staff to implement an effective process to record constructed assets properly and timely in the City's financial system and plant's asset maintenance system. We also recommend the information be reconciled to ensure its completeness and accuracy.
Performance indicators that relate different sets of operating or financial data to one another should be periodically analyzed.	√ Performance criteria to measure the success of the project were developed. See Table 5 on page 10 for each measure and status as of December 31, 2012.
Department directors or their designees to serve as managers of their respective capital projects. This responsibility shall encompass facilitation and oversight of project completion and management, execution and monitoring of project appropriation, opening, encumbrance, expenditure, transfers, supplemental appropriations, purchases, contracts, change orders, balance activities and project closing to effectively complete projects in the timeliest manner.	√ The designated project manager since October 2009 is the Electric Power Production Manager. The project manager is currently providing oversight and monitoring over all construction and contract activities, communicating with executive management, and negotiating contracts for additional construction work packages. The Construction Manager has been delegated the responsibility to provide on-site day-to-day project management. Examples of daily project management activities include assessing and managing project risks, monitoring contract deliverables (timing, cost, and quality), monitoring the project budget, and managing and monitoring field changes.

Table Legend:
√ Control appears to be in place.
o Control is not in place.
♦ Control appears to be in place; but improvements could still be implemented.

We identified additional issues related to the development and implementation of the enhanced SCADA (supervisory control and data acquisition) system at the TP Smith plant. The TP Smith SCADA system is a central system that monitors data from various sensors located at strategic valve locations and equipment. One of the key processes of a SCADA is the ability to monitor an entire system in real time. Data collected is recorded and stored for historical and compliance reporting.

A sewer treatment plant can be considered a key resource in the President's National Strategy for Homeland Security related to Critical Infrastructure.

Critical infrastructure are system and assets, whether physical or virtual, vital to the United States that their incapacity or destruction would have a debilitating impact on national or economic security, public health or safety, or any combination. Key resources are publicly or privately controlled resources essential to minimal operations of the economy or government, including individual targets whose destruction would not endanger vital systems but could create a local disaster or profoundly damage the nation's morale or confidence. For purposes of this report, we consider critical infrastructure to include key resources, as water systems include drinking water and treated wastewater.

During the prior project progress audit, the design plan did not include a secure off-site backup for SCADA data collected at the TP Smith Plant. Such a plan was developed and backups of the SCADA data are periodically made and stored in an off-site location.

During the past two years, a new network and SCADA system has been implemented and is operating in approximately 85% of the constructed facilities and operations. The remaining 15% of the SCADA system will be implemented over the next two years as the remaining facilities are completed and placed into operation. As the project is completed, contractor staff will begin to turn over much of the SCADA system to City staff for continued development, refinement, and maintenance.

We identified some management and security weaknesses related to the network and SCADA systems. Since information related to the security of such facilities and entities is exempted from disclosure under the Freedom of Information Act and should be adequately protected, we will not include identified security and management issues in this report.

In order to assist management in addressing the identified weaknesses, we have provided detailed information to City management for their attention and resolution. Management developed a separate action plan to address each of the identified network issues. Our intent is to conduct one or more additional follow-up audits to verify and report to management on the actions taken. We recommend that management also report periodically on the status of the action plan to the ISS Steering Committee (the City's Information Technology Governance Committee) for use in the Committee's citywide assessment of information technology risks.

Conclusion

Our assessment of project controls (shown in Table 6) indicated that the majority of project controls have been in place to minimize project risks. However, we have identified areas where improvements should be made and provided recommendations to assist management in assuring that the project activities complied with City policies and procedures and contract requirements and incorporated project management best practices.

Our report described the Advanced Wastewater Treatment (AWT) project phases, strategies, and activities; communicated the project's status and accomplishments as of December 31, 2012; evaluated the status of the project's goals and expected deliverables; and assessed the project controls observed and evaluated during the period January 1, 2010, through December 31, 2012.

As of December 31, 2012, the AWT Project:

- Has consistently met the DEP permit requirements for TN levels.
- Is on schedule for completion in January 2015.
- Expended approximately 85% (approximately $193 million of $227 million) and construction is approximately 85% complete. Overall, the $17 million in expenditures tested this period were adequately supported, approved, and related to the AWT project.
- Is currently within the $227 million budget and project management expects the project will be completed within the overall budget. A separate project for $2.5 million has been created that the current AWT construction manager will manage to finish site work at TP Smith. It will include paving, landscaping, and security and other needs.
- Has not encountered any major worker medical incidents (i.e., lost time due to worker accidents) in 1,235 construction work days.

The prior legal challenge to the City's 2010 wastewater facility permit modification was resolved and the project is on schedule to complete and meet the permit requirements. In June 2012, the City submitted its application to renew its TP Smith wastewater facility permit for the next five years. The renewal application does not include any requests to change the current TN limit requirements

or construction dates. The City anticipates DEP will issue a "Notice of Intent to Issue" the City's permit by the end of April 2013. Interested parties will have 14 days following publication of the DEP notice to request a hearing on the proposed permit. If no one intervenes, DEP will issue the permit as proposed.

Management is proceeding to make repairs to Digester 2 after damages occurred during start up and testing in early 2012, and anticipate completion in late summer 2013. The cost of repairs are estimated to be $750,000; $500,000 to be covered by the City and the remaining to be covered by insurance. The City's Builders Risk insurance provider has yet to decide whether they will seek subrogation through legal proceedings.

We have provided recommendations to management to address identified issues related to the need to ensure:

- Expenditures are fully supported; and invoices are accurate, properly coded and recorded, and comply with its corresponding contract or purchase order.
- Constructed assets put into operation are timely capitalized in the City's asset management system. In March 2013, adjustments were made to the City's FY 2012 annual financial report to include $124 million in assets completed and in service from the AWT project.
- Documentation of acceptance and performance test results are collected and retained as required.
- Project staff has adequate administrative capabilities to assist in overseeing the project's financial activities.
- MBE Office works with project management to ensure there are processes in place to better monitor and verify the MBE participation and local participation in construction projects.
- If a project identifies maximizing local labor as a project goal, then processes should be put in place to track contracts and spending to allow the goal to be measured.
- Controls are implemented over the SCADA network and system to adequately manage and protect the key resources in the TP Smith wastewater treatment plant. (A separate action plan has been prepared by management to address our recommendations.)

Management's action plan steps to address the issues identified in this report are provided in Appendix A.

We would like to acknowledge the full and complete cooperation and support of management and staff from the Underground Utilities and City's engineering firms, Hazen & Sawyer and CH2M Hill, and prime contractor, MWH, Inc., during the audit and development of this audit report.

Appointed Official's Response

City Manager Response:

The Advanced Wastewater Treatment (AWT) Project is the largest capital undertaking by the City of Tallahassee. Due to its massive scope and complexity, the City Manager requested that the City Auditor assist and consult with the team as appropriate to result in successful completion of the project, as measured by the project goals. As noted in Table 5 of the Audit Report, the project goals of particular importance have been successfully met by the project team. We thank the City Auditor for their assistance and support throughout the project and believe that their involvement has contributed to its overall success at this point. We are particularly proud of the Total Nitrogen reduction milestones achieved far ahead of schedule, as one of the primary purposes of the project is to significantly reduce the City's contribution of nutrients to the area's water resources, specifically the Florida Aquifer and the Wakulla Springs /River. Additionally, the major challenge of continuing wastewater plant operations in the midst of intensive construction activities was met with no permit violations, and, not to be understated, the difficult construction of the project has been substantially completed with no lost-time accidents to date. Lastly, we are again pleased that the project remains on schedule and within budget.

The audit identified some management and administrative issues, but none that have resulted in material impacts, and City staff has developed Action Plans that have already addressed the administrative staffing issue and will be addressing the others in a timely manner. Again we appreciate the Auditor's teamwork and contributions to the success of the project, and we are committed to addressing their recommendations for improvements and look forward to their follow up.

Copies of this audit report (#1312) or the first AWT Project Progress Audit (#1102) may be obtained from the City Auditor's website (http://talgov.com/auditing/index.cfm) or via request by telephone (850 / 891-8397), by FAX (850 / 891-0912), by mail or in person (Office of the City Auditor, 300 S. Adams Street, Mail Box A-22, Tallahassee, FL 32301-1731), or by e-mail (auditors@talgov.com).

Audit follow-up conducted by:
Beth Breier, CPA, CISA, Audit Manager
T. Bert Fletcher, CPA, Interim City Auditor

Appendix A – Management's Action Plan

Action Steps	Responsible Employee	Target Date
A. Objective: ***To ensure transactions and events relating to processing deliverables and contract payments are properly executed, classified, and recorded in a timely manner.***		
1) Project management will coordinate with Underground Utilities Administrative staff to implement processes to ensure that project expenditures are reviewed for accuracy, compliance, timeliness, proper coding, and are accurately recorded (correct account and department).	Jim Oskowis and Gordon Klein, Underground Utilities	May 10, 2013
2) Project management will assess the administrative needs of the AWT project financial activities and staff capabilities. *[Subsequent to audit fieldwork, the AWT administrative staff position was moved back to the Underground Utilities Administrative Division to provide the needed administrative supervisory oversight of the processing of financial transactions.]*	Jim Oskowis and Gordon Klein, Underground Utilities	Completed
B. Objective: ***To ensure project capital assets are properly recorded in the City's records.***		
1) Project staff will continue working with Accounting Services and Treatment Plant staff to implement a process to record constructed assets properly and timely in the City's financial system and plant's asset maintenance system. All assets currently in service will be recorded by August 31, 2013. Future assets will be recorded within 60 days upon being placed in service.	Jim Oskowis, Underground Utilities Rick Feldman, Accounting Services Nico Lauw, Underground Utilities	Aug. 31, 2013 (for assets placed in service
2) Project staff should periodically reconcile the asset information recorded in the City's financial system and in the plant's asset maintenance system to ensure each is complete and accurate	Jim Oskowis, Underground Utilities Rick Feldman, Accounting Services Nico Lauw, Underground Utilities	Ongoing
C. Objective: ***To ensure test results and documentation is collected and retained.***		
1) Construction Manager will work with the Design Engineer, per the contract with Hazen and Sawyer, to collect, organize, and maintain all acceptance and performance test results for the City's records. All testing completed to date will be provided by Hazen and Sawyer by June 28, 2013. All future testing will be provided within 45 days upon completion.	Jim Oskowis, Underground Utilities	June 28, 2013 (for completed testing)
D. Objective: ***To measure MBE and local participation in projects.***		
1) The City will request that MWHC provide the monthly reports for MBE participation and the post-completion MBE affidavits for each Task Order.	Jim Oskowis, Underground Utilities	May 24, 2013
2) On the basis of the reports, the City MBE Office and Underground Utilities will follow up and coordinate efforts to conduct a cross sampling of MBE companies for documentation or confirmation that they were paid the reported amounts. Since the current Work Packages 2C and 3B do not include MBE goals on the basis of specialty construction, there is no need for future tracking and measurement of MBE work.	Jim Oskowis, Underground Utilities, and Ben Harris, MBE Office	June 28, 2013

3) AWT Project Management Team staff will coordinate with MWHC to implement processes to track local contracts and spending to allow the local participation goal to be measured.	Jim Oskowis, Underground Utilities	May 24, 2013
E. Objective: ***To ensure SCADA network and system is adequately managed and protected.***		
1) Management has developed action plan steps to address the recommendations related to the SCADA network and system and periodically report the status of the action plan steps to the ISS Steering Committee for use in their assessment of IT risks. *[These are being tracked outside of the report due to the sensitivity and confidentiality required to key infrastructural resources.]*	Jonathan Kilpatrick, Underground Utilities	Various dates

APPENDIX B – Wastewater Treatment Process After the AWT Project is Completed

The specific wastewater treatment improvements include new headworks, grit removal, screening, primary clarifiers, pumping station, upgraded aeration systems to provide nitrification/denitrification, secondary clarifier, deep-bed filters, methanol and alum addition, high-level hypochlorite disinfection, storage ponds, and dual power feed and electrical load centers. The improvements will also include upgrades to the wastewater solids treatment facilities, including Fats, Oil, and Grease (FOG) receiving/pretreatment, gravity thickener, two gravity belt thickeners, waste activated sludge storage, two new anaerobic digesters, upgrades to two existing digesters, three centrifuges, and thermal dryer, which will produce Class AA biosolids for marketing and distribution as fertilizer or soil amendment.

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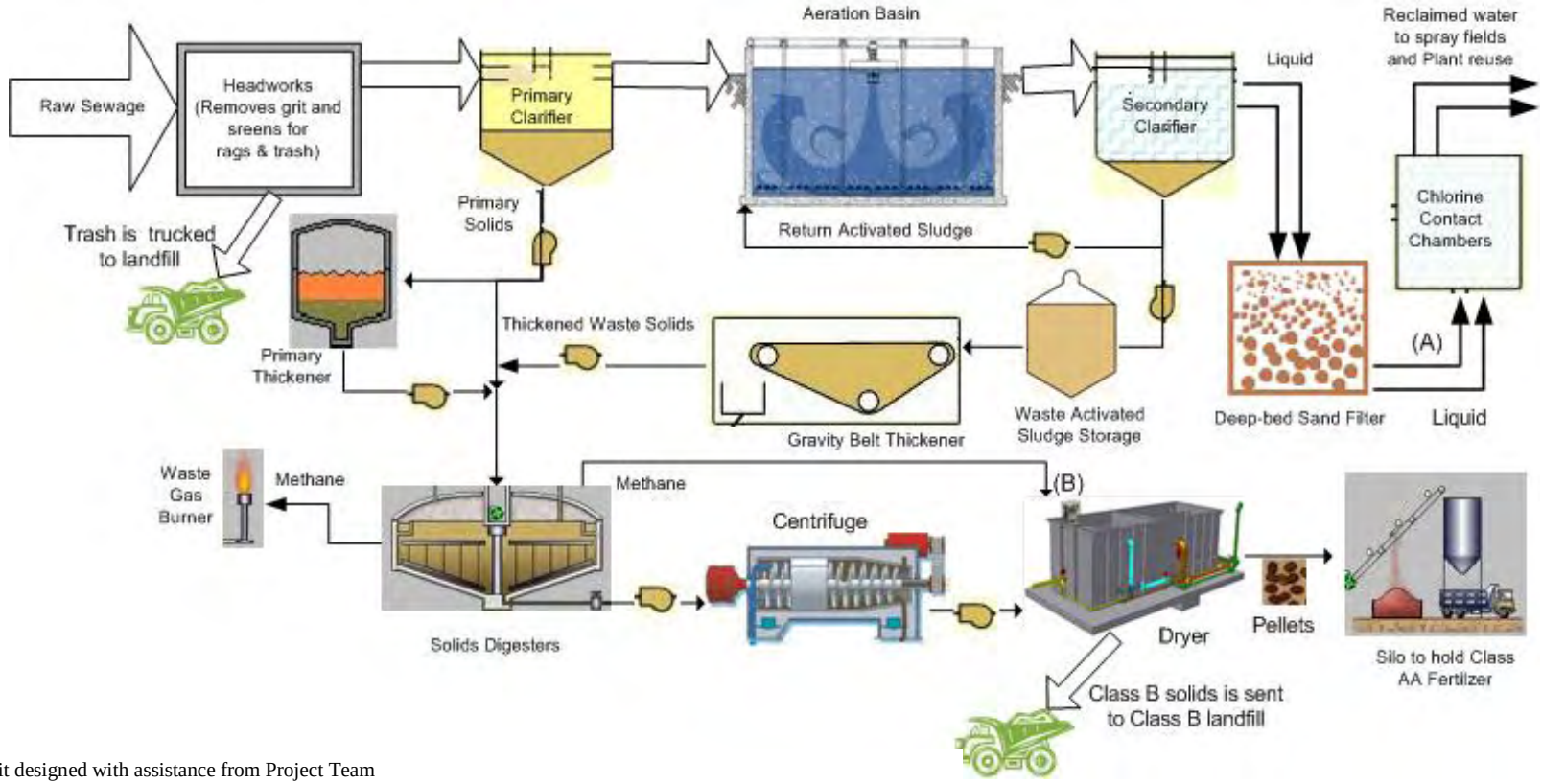

Source: Audit designed with assistance from Project Team
Notes: (A) Sodium hypochlorite is injected between the Deep-bed Sand Filter and Chlorine Contact Basin.
(B) The dryer is primarily fueled using high level natural gas and secondarily by methane gas produced in the digesters.

APPENDIX C
DEP Permit Requirements and Time Schedule for City Treatment Facilities

(NLT = No longer than)
TP Smith Wastewater Facility

Item #	DEP Description of Permit Requirement	DEP Due Date	City's Current Status
1	Undertake a feasibility study to evaluate reuse water demand for reclaimed water from Lake Bradford Road WWTP and TP Smith WRF. The study should identify potential users, evaluate feasibility of providing reuse water to such entities, and calculate capital and operating costs for PART III reclaimed water reuse system.	NLT 12 months (January 2009)	• **Completed**. A Reuse Feasibility Analysis Report was completed in March 2009.
2	Submit results of the above reuse feasibility study to the DEP	NLT 15 months (April 2009)	• **Completed.** A Reuse Feasibility Analysis Report was completed and submitted in March 2009.
3	Complete Upgrade to Biosolids Treatment to produce all Class AA biosolids	*Revised to: NLT 60 months (January 2013)*	• **Completed. The dryer was commissioned into service on January 31, 2013.**
4	Complete construction of and place into full operation the approved Treatment Train upgrade modifications specified in the permit application and Preliminary Design Report over a 7-year period as indicated to the right. Treatment Trains shall be completed in order as needed to meet required treatment limits and completion dates.	*Revised to: NLT 60 months (January 2013)*	• **Treatment train #4 (Basin #1) was completed and placed into service in January 2013.**
		Revised to: NLT 72 months (January 2014)	♦ **Treatment train #3 (Basins 3-4) is in process.** Design completed; construction began in February 2013, and is on schedule to be completed in January 2014.
		Revised to: NLT 84 months (January 2015)	○ **Treatment train #2 (Basins 5-6) has not started yet.** Design completed; construction is scheduled to begin January 2014 with an expected completion date of January 2015.
5	Reduce Total Nitrogen (TN) in reclaimed water reaching Southeast Farm sprayfields (R-001 and R-003) and Southwest Sprayfield (R-002). TN is to be reduced from 12.0 to 3.0 mg/l over a 72 month period as indicated to the right	12.0 mg/l NLT 6 months (July 2008)	• **Completed.** Achieved by July 2008.
		9.0 mg/l NLT 36 months (January 2011)	• **Completed**. Achieved in August 2009.
		6.5 mg/l NLT 60 months (January 2013)	• **Completed.** Achieved in November 2012.
		3.0 mg/l NLT 72 months (January 2014)	♦ **In process** and on schedule
6	Comply with final reclaimed water AWT limits specified in DEP Permit No. FLA010139 referenced above (Section III.2)	NLT 72 months (January 2014)	♦ **In process** and on schedule

Source: DEP Permit No. FLA010140, issued January 29, 2008, *revised on March 10, 2009, and December 2011.(revisions shown in red italics)*

APPENDIX C (Continued)
DEP Permit Requirements and Time Schedule for City Treatment Facilities

Lake Bradford Wastewater Facility

Item #	DEP Description of Permit Requirement	DEP Due Date	City's Current Status
1	Undertake a feasibility study to evaluate reuse water demand for reclaimed water from Lake Bradford Road WWTP and TP Smith WRF. The study should identify potential users, evaluate feasibility of providing reuse water to such entities, and calculate capital and operating costs for PART III reclaimed water reuse system.	NLT 12 months (January 2009)	• **Completed**. A Reuse Feasibility Analysis was released March 2009.
2	Submit results of the above reuse feasibility study to the Department	NLT 15 months (April 2009)	• **Completed.** A Reuse Feasibility Analysis was released March 2009.
3	Complete construction of and place into full operation the approved treatment plant upgrade modifications specified in the permit application and Preliminary Design Report	***Indefinitely deferred***	X ***Deferral Approved.*** *The City requested and received an indefinite deferral to complete items #3 and #4 due to the City's evaluation that upgrading the LBR treatment facility is not cost effective or necessary. Based on revised capacity needs, the 4.5 MGD treatment capacity previously planned to be provided at LBR facility is not needed. Project analyses showed that it will be more cost effective to expand the TP Smith treatment facility to provide any additional capacity needs rather than retrofitting the existing older LBR treatment facility. The LBR facility is not currently used to treat wastewater and will not be used to treat wastewater in the future without the required upgrades.*
4	Comply with final reclaimed water AWT limits specified in DEP Permit No. FLA010140 referenced above (Section III.2)	***Indefinitely deferred***	

Source: DEP Permit No. FLA010140 issued January 29, 2008, and *revised and December 2011 (revisions shown in red italics).*

APPENDIX D – AWT Construction Related Work (of total $227 million project cost)

Project Work Package Description	Date Construction Started	Date Construction Completed or Scheduled to be Completed	Percent completed as of 12/31/12	Original Construction Budget	Approved Field Change as of 12/31/12 (NOTE 1)	Value Engineering Savings as of 12/31/12 (NOTE 2)	Total Construction Costs as of 12/31/12
Preliminary Project Work – Construction planning, select demolition and site work, and pond construction and relining.	February 2009	September 2009	100%	$467,000	$0	$0	$467,000
Improvements to Train #3	February 2010	January 2014	100%	$1,045,484	$40,280 (3.9%)	$0	$1,085,764
Facility SCADA hardware and software upgrades (across the entire plant) - original budget includes planned scope increases. Approved field changes were not planned increases.	January 2009	January 2015	85%	$6,468,828	$376,292 (5.8%)	$0	$6,845,120
Work Package 1 – WP 1 "Liquid Treatment Improvements" Includes site work preparation, piping, and/or construction for the headworks facility, dewatering facility, methanol feed facility, effluent storage ponds 1-7, primary clarifiers, digested sludge tanks and odor control, gravity thickening tank.	September 2009	April 2011	100%	$65,088,524	$3,826,216 (5.9%)	($375,452)	$68,539,288
Work Packages 2 and 3 – WP 2 "Solids" was combined with WP 3 "Biological Nutrient Reduction (BNR) Upgrade for 3 sub-phases:							
WP 2A - Phase I Biosolids Improvements - Includes construction of belt thickening facility, sludge thickening tank, dewatering facility, sludge holding tanks and odor control facilities.	June 2009	August 2011	100%	$22,225,211	$674,850 (3.0%)	$0	$22,900,061
WP 2B/3A – WP 2B is Phase II Solids (Digester) - Includes modifications to existing digesters (will be #3, #4, and Waste Activated Sludge storage tank), 2 new digesters, new waste gas burner, site work, and demolition of existing waste gas burners and various piping and utilities. WP 3A – Involves early site preparation work preparing for the BNR modifications, including investigative and relocation work.	September 2010	September 2012 (with exception of digesters to repair damages, see Note 3)	100%	$32,515,398	$847,391 (2.6%) (NOTE 3)	$0	$33,362,789
WP 2C/3B – WP 2C is Phase III Solids (Dryer) - Includes the construction of a new dryer facility and the purchase and installation of a new dryer facility. WP 3B is to convert the treatment "trains" methodology to 4-stage activated sludge treatment (called Bardenpho or BNR method, utilizing fine bubble diffusers to more efficiently remove the nitrates and treat the waste).	December 2010	January 2015	60%	$49,420,732	$290,067 (06%)	$0	$49,710,799
Overall, for AWT Project Construction Work Packages	**February 2009**	**January 2015**	**85%**	**$177,231,177**	**$6,055,096 (3.4%)**	**($375,452)**	**$182,910,821**

Note 1: Field changes are additional costs incurred as a result of changes in scope or unforeseen conditions.
Note 2: The contracts with MWH provide for shared (70% City / 30% MWH) savings of the net savings for any cost savings measures initially identified by MWH and agreed to by the City.
Note 3: The cost of the digester repairs (approximately $649,000 to date) is included in the WP 2B/3A approved change orders. The repairs to the digesters are scheduled to be completed by August 2013.

APPENDIX E - TP Smith Wastewater Treatment Facility Photos

Source: AWT Project Team