



City of San Diego

**PUBLIC UTILITIES**

Water & Wastewater

**THE CITY OF SAN DIEGO**

**PUBLIC UTILITIES DEPARTMENT**

**SUMMARY OF FY2011 EFFICIENCY INITIATIVES**

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## A Message from the Director, Public Utilities Department

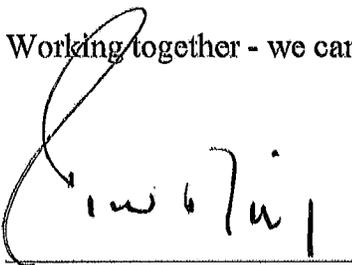
The Public Utilities Department is proud to present the FY2011 Efficiency Studies Report. This report documents the Efficiency Studies conducted in FY2011 and our efforts toward continuing to be an industry leader in the delivery of water, wastewater, and recycled water services by reducing costs for operations. We want to continue to be an accessible cost conscious agency known for reliable services. Achievement of the efficiencies presented in this report will have a positive impact for years to come.

Starting in FY2010, the Department began to utilize an annual Efficiency Study process which serves as a catalyst for reducing the cost of delivering water, wastewater, and recycled water services. Twenty-eight Efficiency Studies were conducted by employees who are subject matter experts in their functional areas.

This report documents the eleven Efficiency Studies that were initiated in FY2011, and the efficiencies obtained by each study. The FY2011 Strategic Plan and principles of Effective Utility Management (EUM) helped in directing us to the high impact areas that an effectively-managed utility, such as ours, should be focusing its energies on during the year. As a result, the Efficiency Studies were conducted and implemented as directed by Strategic Initiatives #8, *"Continue to conduct effectiveness/efficiency studies"* and #9, *"Implement approved Efficiency Study recommendations."* The studies were also developed in accordance with the EUM attribute of Operational Optimization which "ensures ongoing, timely, cost-effective, reliable, and sustainable performance improvements in all facets of its operations. It minimizes resource use, loss, and impacts from day-to-day operations."

The Public Utilities Department has demonstrated great capacity to improve our organizational effectiveness and operational resilience. In the coming years, we will continuously strive to be an accessible, cost conscious agency. This Efficiency Studies Report establishes our dedication to containing costs, increasing efficiencies, and improving service delivery and overall customer satisfaction.

Working together - we can make it happen.



Roger S. Bailey, P.E.  
Director of Public Utilities

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## **I. Introduction, Background, and Purpose of Studies**

The Department began conducting Efficiency Studies in the summer of 2010, following the consolidation of the Water and Wastewater Departments into a Public Utilities Department. The purpose of the Efficiency Studies was to examine different functions and services in the Department for opportunities to increase efficiency and effectiveness. The Efficiency Studies were conducted by employees who are subject matter experts in their functional areas, and were facilitated by Strategic Support Services Team members.

A total of 28 Efficiency Studies were conducted in FY2010 (Appendix A) and an additional 11 Efficiency Studies were initiated in FY2011. The FY2011 Efficiency Studies included: Customer Support Division Climate Improvement Study, Wastewater Collection and Water Operations Co-Location of Staff and Cooperative Yard Study, Confined Space Study, Construction Staffing Study, Generator Maintenance Study, Meter Services Study, Wastewater Collection Planning and Scheduling Section Staffing Study, Wastewater Collection Pump Station Staffing Study, Wastewater Vehicle Utilization Study, Wastewater Treatment and Disposal and Water Operations Warehousing Study, and the Water Conservation Process Optimization Study.

Each Efficiency Study was reviewed by the Strategic Planning Committee, which is comprised of the Assistant Directors, Deputy Directors and Program Managers. The Strategic Planning Committee was initially established to provide leadership and oversight of the consolidation of the Water and Wastewater Departments into a consolidated Public Utilities Department. It has continued to serve as an efficiency advisory body in subsequent years. The Strategic Planning Committee provided direction to the Study Teams in terms of both their charter and mandate, as well as providing direction for additional research and analysis, following presentations of their interim reports.

The employees on the Efficiency Study Teams have done a commendable job of addressing the inherent complexities of seeking opportunities for greater effectiveness and efficiency. The employees completed these projects in addition to their regular jobs, and put in considerable time and effort. The Department recognizes the significance of these efforts and thanks all employees involved in this process for their hard work on these projects.

## **II. Summary of Efficiencies Attained and Dollar Savings**

The Department engaged in eleven Efficiency Studies in FY2011, and several other projects that resulted in dollar savings and efficiencies. Combined, the eleven Efficiency Studies, the Point Loma Wastewater Treatment Plant (PLWTP) Beneficial Use of Digester Gas Project, previous changes in chemical purchases (PRISC Study), and savings due to loans and grants from the State Revolving Fund (SRF), will result in anticipated savings of \$10,184,220, with additional savings anticipated in future years (Appendix D).

**Efficiency Studies:** The eleven Efficiency Studies initiated in FY2011 will provide unaudited savings and/or efficiencies totaling approximately \$1,452,681. These savings are described in the report, and summarized in Appendix B. It is anticipated that the Department will achieve additional savings as a result of other efficiency and effectiveness efforts that have been implemented during the past year. Three of these efforts are described below, and include: the Point Loma Wastewater Treatment Plant (PLWTP) Beneficial Use of Digester Gas Project, Peroxide Regenerated Iron for Sulfide Control Project (PRISC), and State Revolving Fund (SRF) Loans and Other Grants.

**Point Loma Wastewater Treatment Plant (PLWTP) Beneficial Use of Digester Gas (BUDG) Project:** The BUDG Project will utilize excess digester gas produced at the PLWTP to generate renewable electricity and clean the air by reducing the release of greenhouse gases. The BUDG project uses the excess digester gas from the PLWTP to produce natural gas that will be injected into the San Diego Gas & Electric (SDG&E) natural gas distribution system for transporting (or wheeling) to the South Bay Water Reclamation Plant (SBWRP) and University of California, San Diego (UCSD). The BUDG system will be sized to take a minimum of 0.62 MMSCFD and a maximum of 1.6 MMSCFD of excess digester gas produced by the PLWTP. The feed gas will go through a low pressure blower and an initial purification step to remove the H<sub>2</sub>S. The gas will then go through process steps to remove water, volatile organic compounds, and other compounds, before entering a step to remove carbon dioxide. The resulting product will be natural gas that will be injected into the SDG&E natural gas pipeline for transportation to the fuel cells at SBWRP and UCSD. The BUDG Project will produce revenues in sales of raw digester gas of about \$250,000 per year and will save the South Bay Water Reclamation Plant approximately \$78,000 per year in energy costs. The City will receive \$500,000 at startup for compensation for various contract changes and delays associated with the pipeline injection system. The first five years of environmental credits from these projects have been sold by *BioFuels*. The City's share of these additional environmental revenues is expected to be about \$300,000. In sum, this Digester Gas project is anticipated to result in \$1,128,000 in savings over ten years, or \$112,800 per year.

**Peroxide Regenerated Iron for Sulfide Project (PRISC):** Another source of savings from FY2011 efficiency efforts are the changes in the purchase of chemicals, supplies, and services for PRISC. The patented PRISC technology in partnership with US Peroxide was initiated in 2010 and results in on-going savings. Essentially, the process consists of ferrous chloride addition at Pump Station 1 for hydrogen sulfide control, hydrogen peroxide addition at Pump Station 2 to regenerate the available iron, hydrogen peroxide addition upstream of PLWTP for regeneration of the available iron, and then ferric chloride addition at the plant for coagulation. These additions reduce the amount of ferrous and ferric chloride the Department has to purchase, and result in a net daily savings of \$3,300 and an estimated annual savings of \$1,200,000.

**State Revolving Fund (SRF) Loans and Other Grants:** Another source of dollar savings the Public Utilities Department has achieved based on FY2011 decisions and efforts was from the successful pursuit of State Revolving Fund (SRF) loans and other grants. The Water and Wastewater branches achieved savings due to pursuing SRF loans and other grants. The

Water Fund executed \$47.7 million in grants and \$50 million in low interest SRF loans for a combined total of \$97.7 million. By pursuing grants and low interest SRF loans instead of traditional bond financing, the Water Fund expects to save approximately \$136 million over a 30-year period, or \$4.5 million annually. The Wastewater Fund executed \$29.9 million in low interest SRF loans and anticipates executing an additional \$80 million for a combined total of \$109.9 million. By pursuing \$109.9 million in low interest SRF loans instead of traditional bond-financing, the Wastewater Fund expects to save approximately \$78 million over a 30-year period, or \$2.6 million annually. Appendix C includes a list of loans and grants and their related projects.

### **III. Analytical Evaluation Methods and Activities**

Each Study Team met approximately 5-9 times as a group to discuss and evaluate their designated topic. Various methods were used to evaluate and analyze different areas, depending on the issue. Some methods utilized included: team brainstorming, benchmarking, cost-benefit analyses, reviewing supporting reports and documents, collaborating with external consultants and interviewing subject matter experts.

The Study Teams presented an Interim Report outlining their findings and recommendations to the Strategic Planning Committee. The Strategic Planning Committee then identified additional follow-up action items to further explore potential efficiencies. The Study Teams repeated this process until final decisions were made by the Strategic Planning Committee.

### **IV. General Findings of Studies**

#### **1. Customer Support Division Climate Improvement Study**

**a) Summary of Study Purpose**

The purpose of this study was to evaluate morale issues, identify obstacles to effective teamwork, and to recommend steps to improve morale, teamwork, and effectiveness.

**b) Main Findings**

Several factors influenced the timeline and scope of this study. Two of these included the implementation of the Customer Care Solutions project, and the announcement that the Call Center had been selected for participation in the Managed Competition program.

The team identified potential obstacles to effective teamwork, some of the causes of low morale, and recommendations for enhancing teamwork and climate in the section. These findings and recommendations were presented to the Deputy Director.

**c) Final Results**

The Deputy Director will respond to recommendations in FY2012, and activities and recommendations to enhance morale and teamwork will be implemented in FY2012.

## **2. Wastewater Collection-Water Operations Co-Location of Staff & Cooperative Yard Study**

### **a) Summary of Study Purpose**

The purpose of these studies was to provide an analysis with recommendations as to the feasibility of sharing yards, with the ultimate goal of optimizing resources, tools and materials accessibility, and to save time and fuel costs. The studies were originally conducted independently, but as they unfolded it was determined the teams' efforts could be combined. The Study Teams examined the issue of crew location, exploring the costs and benefits of placing Water and Wastewater crews at various locations and provided a Return on Investment (ROI) analysis to support their findings.

### **b) Main Findings**

The Study Team investigated multiple options for the co-location of staff including Metro Operations Complex (MOC), Chollas, Metropolitan Biosolids Center (MBC), and Rose Canyon. After a thorough analysis of multiple options, the Study Team determined that there would be substantial efficiencies attained by relocating some Water crews to MOC, and some Wastewater crews to Chollas. The benefits of co-housing include providing Water crews from Chollas with a more central location, and reduced windshield time. Chollas is already set up for both fueling and maintenance.

The first phase of co-location was completed in March 2011 when 6 Main Cleaning and Rodding crews, a Senior Supervisor, and a portion of a General Water Utility Supervisor position were transferred to Chollas. The Water Branch implemented the transfer of 23 Construction and Recycled Water crew employees, a Supervisor and a portion of a District Manager from Chollas to MOC II. By July, 21 positions from the Canyon Access main cleaning crews were moved to Chollas.

### **c) Final Results**

Staff relocation was fully implemented by July 23, 2011. Six Main Cleaning crews, 25 vehicles and 27 employees were moved to Chollas. These moves are estimated to save \$52,000 per year in travel time and \$52,000 per year in fuel consumption. Footage cleaning capacity is anticipated to increase by 65 miles per year. Relocation of the Wastewater Collection Division's assets has an estimated seven-year savings of \$295,963 in increased efficiencies due to reduced fuel costs and a decrease in windshield time of 1,827 hours, or 289 hours per year. The relocation of Water Staff to MOC is anticipated to save \$37,335 in reduced fuel costs in FY2012. In addition, reduced windshield time is anticipated to save 4,330 hours, or \$86,115.

### 3. Confined Space Study

#### a) Summary of Study Purpose

The key goals of this efficiency study were to analyze and recommend best practices for more efficient scheduling of confined space entries, resulting in reduced dollar expenditures, without compromising safety. Other specific outcomes included the following:

1. Identify, increase and maximize efficiencies in the Confined Space program.
2. Develop and implement best practices regarding confined space policies, safety enforcement and training.
3. Develop and implement a uniform, practical interpretation of the California Code of Regulations as they apply to the Department's confined space operations, as well as other applicable standards.
4. Examine the necessity of entering and performing work in confined spaces.
5. Develop and implement best practices for scheduling entry operations.
6. Develop and implement best practices for employee health issues related to confined space operations (e.g., respiratory limitations, weight, claustrophobia, etc.).

#### b) Main Findings

The Confined Space Study is a collaborative effort between staff and external consultants. The Study Team developed recommendations for a break-down of consultant vs. "in-house" work and estimated the total cost for consulting services.

In FY2011 the team developed the consultant scope of work and suggested revisions to Chapter 5 of the Department Health and Safety Manual. The team is in the process of reviewing the Request for Proposals (RFP). They developed a few quick wins including:

1. Changing the language in the MOU to create consistent policies and procedures for MEA and 127 to hold everyone accountable.
2. Combining Department of Transportation and Confined Space Entry exams to save time and money.
3. Requiring supervisors to uphold and consistently police the CFS policies and procedures.

The Study Team proposed changes regarding scheduling and confined space entry procedures. These recommendations were approved by Wastewater Branch management in May of 2011, and have projected savings of \$186,000 in FY2012. Similar changes in scheduling and confined space entry procedures are being considered for implementation in the Water Operations Branch for FY2012. These dollar savings will be documented in FY2012.

The Study Team's next steps include completing the inventory of spaces in more detail, updating the qualified spreadsheets, drafting a scheduling policy, and developing additional quick wins. They are also in the process of identifying and contacting potential consultants.

c) **Final Results**

The Study Team will continue their efforts in FY2012, and recommendations should be implemented in FY2012. Dollar savings of \$186,000+ are anticipated due to improved management of confined space entries.

**4. Wastewater Construction Staffing Study**

a) **Summary of Study Purpose**

The purpose of this study was to evaluate the overall efficiency of the Wastewater Construction Section by reviewing the functions it currently performs; making recommendations for near-term and long-term functional and staffing adjustments; and implementing immediate and long-term changes as required to ensure that the Section is as efficient as possible.

b) **Main Findings**

This study was initiated in FY2011 and recommendations will be made in March 2012.

c) **Final Results**

As of this time, no recommendations have been made. Follow up activities will occur in FY2012.

**5. Generator Maintenance Study**

a) **Summary of Study Purpose**

The purpose of this study was to conduct a cost benefit analysis of keeping maintenance of wastewater gas and diesel generators in-house versus contracting out.

b) **Main Findings**

This study was initiated in FY2011 and recommendations will be made in March 2012.

c) **Final Results**

As of this time, no recommendations have been made. Follow-up activities will occur in FY2012.

**6. Meter Services Study**

a) **Summary of Study Purpose**

The purpose of this study was to realign and adjust Meter Services Section's resources to improve their ability to carry out daily maintenance, increase productivity, enhance system maintenance, and increase cost efficiency and competitiveness. Organizational structure, FTE's, and vehicle usage were investigated to identify potential efficiency gains.

**b) Main Findings**

The Meter Services Section is responsible for operational maintenance for the City-owned backflow devices, and all domestic and commercial water meters. There are three separate work groups within the section for an overall total of 43 employees supervised by 3 supervisors. The total FTE cost is approximately \$3,627,000. The section has 30 vehicles of various sizes used to conduct daily maintenance. The current cost is \$364,150 a year in usage and assignment fees.

The Study Team utilized historical repair data located in the SWIM maintenance management program to identify potential efficiencies. Additional areas of consideration included certification requirements (backflow testing), confined space applications (vault entries), crew size needed for specific task and vehicle size, availability, and cost to operate. They identified efficiencies by comparing historical needs versus current needs and redundancy of work tasks. They also aimed to re-align Meter Shop resources to their largest workload, the domestic meter replacement program.

The Department is currently working with Labor Relations to complete the Meet & Confer process for the identified changes to the Meter Services Section.

**c) Final Results**

Final results will be determined following the completion of the Meet & Confer process.

**7. Wastewater Collection Planning and Scheduling Section Staffing Study**

**a) Summary of Study Purpose**

The purpose of this study was to evaluate the staffing levels in the Planning and Scheduling Section relative to the work performed by the section and recommend efficiencies to optimize the number of full-time equivalents (FTEs).

**b) Main Findings**

The staffing level consisted of seven FTEs: one General Water Utility Supervisor; five Plant Process Control Supervisors (Plant Maintenance Coordinator Option); and one Word Processing Operator. The section is responsible for planning and scheduling all non-emergency maintenance work for the Main Cleaning, Construction, and Pump Sections.

It was determined that the following positions were carrying a full workload: General Water Utility Supervisor, Construction Maintenance Planner, and Main Cleaning Maintenance Planner.

The Pump Section Planner had an available capacity of approximately 25% work time, the Canyon Main Cleaning Planner had an available capacity of approximately 45% of work time, and the CCTV Planner had an available capacity of approximately 35% of work time.

The Word Processing Operator spent 100% of their time performing data entry. However, the merge of the warehousing functions in the Pump Section and Wastewater Treatment and Disposal Division will reduce the position's workload by approximately 15%.

It was determined that the total available capacity within the section was approximately 1.00 FTE Planner position. Recommendations were made to reassign one SME from the Planning Section to the EAM project. In anticipation of workload shifts when the planner SME is diverted to the EAM project, it was recommended that cross training be initiated for those incumbents with some available capacity, in order to allow for staff flexibility and ease of workload absorption at that time.

**c) Final Results**

The recommendations were accepted. Subsequently, one of the Plant Process Control Supervisor positions became vacant and will not be filled, resulting in savings of approximately \$68,460 for salary and fringe benefits.

**8. Wastewater Collection Pump Station Staffing Study**

**a) Summary of Study Purpose**

The primary purpose of this study was to evaluate the staffing levels at the Sewer Pump Stations Section relative to the work performed by the section. Recommendations were made to optimize the number of full-time equivalents (FTEs).

**b) Main Findings**

The Pump Station Section provides all scheduled preventative maintenance, performs repairs, and installs equipment as needed for 74 sewer pump stations. The section also provides maintenance on low flow interceptor facilities that are owned by the Storm Water Division of the General Services Department. The Wastewater Collection Division is reimbursed for these services via a Service Level Agreement (SLA). The following table is a helpful illustration of staffing distribution by function/section:

In FY2011, the Pump Station Section allocated 42 FTEs as follows:

<b>Section</b>	<b>Total # of FTEs</b>	<b>Comment</b>
General Water Utility Supervisor	1.0	
Electricians	11.0	3.0 FTEs dedicated to SLA (with Storm Water)
Pumps/Interceptors 1	12.0	5.15 FTEs dedicated to SLA (with Storm Water)
Pumps/Interceptors 2	18.0	

**Estimated Efficiencies Associated with Optimizing EMPAC Usage:** The Pump Section staff utilizes a computerized maintenance management system, EMPAC, in order to record work hours performed and data relevant to work orders. However, EMPAC is largely underutilized and the data could not be relied upon for the purposes of this Staffing Study. An assessment of the Section's use of EMPAC was conducted and recommendations were made to optimize the use of the system (Appendix E). Staff estimated that the Section can achieve up to 20% improvement in productivity in the future with this optimization.

**Electrician Staffing Levels:** Under ideal conditions, EMPAC should capture staff hours allocated to jobs. Due to the inconsistent input of data into EMPAC, the team was unable to use the system to determine average number or hours per job. Instead, they interviewed supervisors in each section to obtain input as to the optimum staffing levels for the work currently being performed in the section. An Electrician Section supervisor estimated that the optimum number of FTEs for the Electrician Section was nine, which is two FTEs less than the current number.

**Staffing for Pump/Interceptors 1 and 2:** In previous years, ten FTEs in Pump/Interceptors 1 and 2 were assigned to work primarily on the requirements of the SLA with the Storm Water Department. In FY2011, the number of SLA-related FTEs was reduced to 5.15. However, these numbers were reduced in the SLA, but not cut from the FY2011 Budget. This means that 4.85 FTEs were diverted back to the maintenance of the lift stations. Thus, out of the 30.0 FTEs in the Pumps/Interceptors sections, 24.85 are working on non-SLA functions (i.e., the pump stations and the Tool Room).

**Recommended Staffing Levels:** According to both Senior Water Utility Supervisors, under the current circumstances, it takes nine two-person crews to accomplish all preventative and corrective maintenance work on the 74 lift stations, for a total of 18.0 FTEs. With the addition of 2.0 Senior Water Utility Supervisors, 1.0 FTE for the Tool Room, and 5.15 FTEs dedicated to SLA, the recommended staffing in the Pumps/Interceptors Sections is 26.15 FTEs. Both Senior Supervisors agreed that 26.0 FTEs is sufficient, and that with further improvements to the process of utilizing EMPAC and subsequent improvements to their work process, the sections can likely add additional efficiencies later on.

**Reductions in Positions:** Based upon the estimates of each of the Section Supervisors of the optimum number of FTE's required for the work that is currently performed within their sections, a total of 6.0 FTEs can be reduced from the Pump Section's current staffing, detailed as follows:

<b>Section</b>	<b>Classification</b>	<b># FTE's Proposed for Reduction from FY2012 Budget</b>
Electricians	PPCE	2.0
Pumps/Interceptors 1	ET II	1.0
Pumps/Interceptors 1	ET I	1.0
Pumps/Interceptors 1	ET I	1.0
Pumps/Interceptors 1	WUW	1.0

**c) Final Results**

Six FTEs were submitted for reduction in the FY2012 budget, resulting in estimated savings of \$425,000 for salaries and fringe benefits. As stated above, Asset Management has provided recommendations for improving its planned maintenance program. These recommendations will be reviewed in FY2012.

**9. Wastewater Vehicle Utilization Study**

**a) Summary of Study Purpose**

The purpose of this study was to identify inefficiencies in vehicle allocations and to supply recommendations to improve savings.

**b) Main Findings**

The initial study results found 19 vehicles for reduction (7% of the fleet). This reduction would result in an annual savings in usage and assignment fees of \$227,570. However, two vehicles were later reinstated as they were deemed essential to operations. Thus, the net savings were approximately \$212,000. The Strategic Planning Committee asked the team to continue assessing vehicle use and to report back in the spring of 2011.

In 2011, the Study Team identified an additional 6 vehicles for reduction in the Construction Section. The net result is an actual reduction by the division of 23 vehicles, for an annual savings of \$467,490, including associated refund of assignment fees.

The Study Team suggested the implementation of a MOC facility vehicle pool to increase vehicle efficiency. The vehicle pool would make vehicles currently utilized by office personnel in various divisions available for use across divisions. Vehicle pool implementation would list vehicles in Outlook, similar to the process for booking conference rooms. Reservations could be made by any MOC staff with a City driver's license. Three staff (one in each WWC, EPM and ESQA) would approve reservations and hold keys.

The vehicle pool would be composed of nine vehicles. Four vehicles currently assigned to specific sections would remain under the ownership of their respective divisions, but would be moved toward vehicle pool implementation. One vehicle

would come from FIT and EPM and two from WWC. Five vehicles would come from PUD's Safety Section with availability restricted to 2 pm or later, as they are all in use prior to that time of day.

The vehicle pool will provide a way to more fully utilize vehicles for department business. The pool is intended to encourage employees who currently use their personal vehicles for City business to use pool vehicles, resulting in savings in mileage reimbursements. Dollar savings are anticipated from implementation of this new system for vehicle pool utilization. It is premature to estimate what these dollar savings will be at this time.

c) **Final Results**

As a result of the study recommendations, 23 vehicles were removed from operation. The MOC Vehicle Pool was established in the Outlook Calendar and was fully implemented by July 31, 2011. Implementation of this plan will be monitored and managed effectively during FY2012 to ensure optimal efficiency gains. The reduction in vehicles resulted in a total annual dollar savings of \$467,490.

**10. Wastewater Treatment and Disposal-Water Operations Warehousing Study**

a) **Summary of Study Purpose**

The Warehousing team was asked to conduct a study to assess the utilization of warehouse space and software tools, and appropriateness of the materials being stored at MOC, Chollas, and plant warehouses. The team assessed the approach of different work groups to inventory management.

b) **Main Findings**

The Warehousing team meetings identified several approaches to increasing Warehouse efficiencies. The most comprehensive approach to warehousing was found in the Wastewater Treatment and Disposal Division (WWTD). WWTD utilizes 12 FTE to manage five warehouses (MOC 3, 8 & 9, MBC, Pt. Loma, South Bay and North City). They have an integrated warehousing approach using a software tool (EMPAC) to not only manage the warehouse inventory but also work orders and assets. The Wastewater Collection Division (WWC) and the Water Operations Branch take a different approach utilizing crew leads, supervisors and managers to handle inventory using the City's procurement methods and Central Stores. The Collection Division stores inventory in MOC 6 and 9 and other satellite locations such as MBC. The Water Operations Branch staff at Chollas use 87 Conex boxes and other outside storage for their inventory along with Storeroom 2 (Central Stores), and the three water treatment plants store items within their plant as necessary.

The anticipated implementation of the SAP EAM module in the future played heavily in the team's discussions. Acknowledging SAP EAM is 2-4 years out, the team suggested capturing inventory data electronically in an Oracle database as items are purchased. The goal is to capture relevant data in a usable format for

the anticipated process of moving to SAP EAM, and the data can be utilized by EMPAC if SAP EAM is delayed.

The team recommended that the WWC Sewer Pump Section adopt WWTD's approach to inventory management, since the section is already using the EMPAC system for maintenance scheduling. It was decided that centralized warehousing should be used for not only pumps, but also for consumables. An implementation plan was developed and approved. The plan to utilize the WWTD warehouse and EMPAC for both sections went live on July 1, 2011. In FY2012, the remainder of WWC will determine if a pilot project, similar to the one used by WWC SPS for pump assets, will be helpful to capture data in a common database while looking ahead to SAP EAM implementation or if using EMPAC and centralized warehousing is feasible.

**c) Final Results**

Savings are anticipated as the result of decreased windshield time and more efficient use of storage space. More efficient use of warehousing space is expected to minimize duplicate inventory. Increased use of EMPAC is anticipated to ensure accuracy of available materials. The team will continue to re-evaluate inventory management in other sections throughout FY2012.

**11. Water Conservation Process Optimization Study**

**a) Summary of Study Purpose**

In January 2010, a Study Team was created to examine the current processes, functions, and staffing levels within the Water Conservation Section (WCS). The purpose of the WCS Optimization Study Team was to determine the best use of limited resources by identifying efficiencies or improvements to daily work and/or structure.

**b) Main Findings**

There were 12 recommendations proposed for the WCS. Eight of these were ultimately implemented and these are described below.

1. Provide Irrigation Specialists with laptops to use while collecting data in the field. Irrigation Specialists are expected to save approximately 30 minutes per meter by entering data and conducting research on-site. This recommendation would save approximately 90.5 hours a year, based on the number of meters done in 2009 ( $90.5 \times \$21.76 = \$1,969.28$ ).
2. Establish a partnership between the PIOs, Recycled Water Section, and the WCS regarding the public outreach efforts. This will ensure materials distributed by each group are the most up-to-date, and will help in identifying opportunities for a shared effort and event coverage that would ease the workload of both groups.

3. Designate the Water Resources Manager position as the liaison to Water Operations Branch to address "System Water Audits, Leak Detection and Repair and Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections." This is anticipated to manage the progress of meeting the Best Management Practices (BMPs). Direct monetary savings are not anticipated, but implementation will help meet the BMPs and ensure funding for the Department.
4. Move the Clerical Assistant II in the Water Conservation Section to the 6th floor. This recommendation will allow the Clerical Pool staff used for the 6th floor reception area to be eliminated and is estimated to save \$36,000 in annual funding cost for the Clerical Pool position.
5. Train administrative and clerical support staff in the WCS so the City's correspondence standard is understood and produced throughout the Long Range Planning & Water Resources Division. This recommendation is anticipated to decrease the time spent by others re-formatting documents that are not City standard.
6. Recommend the reduction of one Senior Clerk Typist full-time position. This recommendation was approved, but slightly modified. The Executive Sponsor Team believed that it would be better to reclassify the Senior Clerk Typist to a Senior Management Analyst position to work on priority projects that needed to be completed, including Water Budget Based Billing. This reclassification was approved and the recruiting/hiring process was completed during the summer of 2011. The reclassification increased salary costs from \$3,639 to \$6,001 monthly, but the Senior Management Analyst completes projects that bring in revenue and grants. Therefore, efficiencies are still anticipated.
7. Recommend the continued effort with the Human Resource Section to explore options to reclassify positions based on their new requirements and duties. This recommendation will ensure that each position's job specifications match the duties assigned.
8. Recommend Management continue to assess the program and projects within the WCS to identify if any are appropriate for outsourcing. This recommendation is anticipated to alleviate the workload of the current WCS staff and assist them in meeting the BMPs.

c) **Final Results**

The Water Conservation Study resulted in multiple efficiencies, both quantifiable and non-quantifiable. Non-quantifiable efficiencies include the ease of workloads as the result of a partnership in public outreach efforts, and training administrative and clerical support staff to decrease formatting time. In addition, providing Irrigation Specialists with laptops is anticipated to save time and increase productivity. Designating the Water Resources Manager as the liaison to Water

Operations Branch and assessing programs and projects for outsourcing will help staff meet the BMPs. Two recommendations were made to increase staffing efficiencies: reclassify the Senior Clerk Typist to a Senior Management Analyst position to take on the duties identified as not being met, and continued effort with the Human Resource Section to explore options to reclassify positions based on their new requirements and duties. Quantifiable anticipated savings include \$36,000 as a result of moving the Clerical Assistant II and eliminating the need for staff from the Clerical Pool.

## **V. Follow-On Studies**

Two of the FY2011 Efficiency Studies presented in this report were follow-on efforts from FY2010 studies. These two studies included: The Maintenance Centralization and Consolidation Implementation Project, and the Warehousing Consolidation Implementation Project. The Maintenance Centralization and Consolidation project was investigated as a follow-up to Plant and Pump Maintenance efficiency studies, and the Warehousing Study was conducted in FY2011.

The Confined Space Study, Construction Staffing Study, and Generator Maintenance Study were initiated in FY2011 and will continue into FY2012. The Study Teams are continuing to identify and recommend efficiencies and reports are anticipated to be developed summarizing recommendations and efficiencies by the end of FY2012.

The Warehousing Study, Customer Support Climate Improvement Study, and Meter Services Study are in the process of evaluating or implementing recommendations. A more accurate estimate of efficiencies resulting from these studies will be available once implementation is complete.

## Appendix A: FY2010 Efficiency Studies

- I. Wastewater Treatment and Disposal
  1. Centralized Water and Wastewater Plant Repair and Maintenance
  2. Centralized Water and Wastewater Pump Repair and Maintenance
  3. Plant Process Control Electrician (PPCE), Electronic Technician (ETs), and Instrumentation and Control Technician (I&Cs) Position Series
  4. ISO Management for the Public Utilities Department
  5. EMPAC System
  6. Operations Optimizations of WWTP
  7. Consolidation of O&M Vendor Contracts
  8. Organization of Point Loma GUF Facility
  9. Automation of Major Pump Stations
- II. Wastewater Collection
  10. Sewer Pipe Cleaning Frequencies
  11. Closed Circuit Television Crews
  12. Non Right-of-Way Main Cleaning
  13. Location of the Division/Vactor Dumping
  14. FEWD
  15. CMMS
  16. Engineering
  17. Motive Fleet Coordinators
- III. Water Operations
  18. Corrosion Control
  19. Cooperative Yard Support
  20. Crew Size for Construction, Valve and Other Crew Types
  21. Organizational Location of the Metershop
  22. Water Treatment Plant Optimization
  23. Central Stores Open Purchase Orders
  24. Consolidate Electricians and Instrumentation Technicians within the Department
  25. Department Emergency Services and Standby Response
  26. Revitalize the WST Study
- IV. Department-Wide
  27. The Maintenance Centralization and Consolidation Implementation Project
  28. Warehousing Consolidation Implementation Project

**Appendix B: Un-Audited Department Wide FY2011 Efficiency Studies Savings Summary**

Efficiency Study	Efficiencies or Savings Gained
1. Customer Support Division Climate Improvement Study	<ul style="list-style-type: none"> <li>• Recommendations will be implemented in FY2012.</li> </ul>
2. Wastewater Collection- Water Operations Branch Co-Location of Staff and Cooperative Yard	<p>Savings Related to Wastewater Collection Relocation:</p> <ul style="list-style-type: none"> <li>• Seven year savings of \$295,963 (\$42,280.43 annually)</li> <li>• \$52,000 as a result of reduced windshield time</li> <li>• \$52,000 as a result of reduced fuel consumption</li> <li>• 65 miles per year additional footage cleaning capacity</li> </ul> <p>Savings Related to Water Operations Relocation:</p> <ul style="list-style-type: none"> <li>• \$37,335 in reduced fuel costs in FY2012.</li> <li>• 4,330 hours or \$86,115 as a result of reduced windshield time</li> </ul>
3. Confined Space Study	<ul style="list-style-type: none"> <li>• \$186,000 in Wastewater in FY2012</li> </ul>
4. Wastewater Construction Staffing Study	<ul style="list-style-type: none"> <li>• Ongoing study, recommendations to be presented in FY2012</li> </ul>
5. Generator Maintenance Study	<ul style="list-style-type: none"> <li>• Ongoing study, recommendations to be presented in FY2012</li> </ul>
6. Meter Services Study	<ul style="list-style-type: none"> <li>• Final results will be determined following the completion of the Meet and Confer process.</li> </ul>
7. Wastewater Collection Planning and Scheduling Section Staffing Study	<ul style="list-style-type: none"> <li>• Reduction of Plant Process Control Supervisor Position (\$68,460)</li> </ul>
8. Wastewater Collection Pump Station Staffing Study	<ul style="list-style-type: none"> <li>• Reduction of six FTEs, resulting in estimated savings of \$425,000 for salaries and fringe benefits.</li> <li>• Asset Management recommendations to be reviewed in FY2012.</li> </ul>
9. Wastewater Vehicle Utilization Study	<ul style="list-style-type: none"> <li>• 23 vehicles identified for forfeiture will provide an annual savings of \$467,490, including associated refund of assignment fees.</li> <li>• Anticipated savings due to decreased mileage reimbursement as a result of the MOC Vehicle Pool.</li> </ul>
10. Wastewater Treatment and Disposal- Water Operations Warehousing Study	<ul style="list-style-type: none"> <li>• Savings are anticipated due to decreased windshield time and more efficient use of Warehouse space.</li> </ul>
11. Water Conservation Process Optimization Study	<ul style="list-style-type: none"> <li>• Ease workloads and increase staffing efficiencies</li> <li>• Help staff meet the BMPs</li> <li>• Irrigation Specialists time savings</li> <li>• \$36,000 as a result of eliminating the Clerical Pool</li> </ul>
Total Anticipated Savings	\$1,452,681

**Appendix C: State Revolving Fund (SRF) Loans and Other Grants**

<b>WATER</b>			
<b>Project</b>	<b>Amount</b>	<b>Grant or Loan</b>	<b>Savings</b>
Otay WTP Phase II	\$7,701,849	Grant	\$15,544,638
Alvarado WTP Ozone Improvement	\$20,000,000	Grant	\$40,375,683
Miramar WTP Ozone Contract A	\$20,000,000	Grant	\$40,375,683
<b>Grant Total</b>	<b>\$47,701,849</b>		<b>\$96,296,005</b>
Alvarado WTP Ozone Improvement	\$12,000,000	SRF Loan	\$8,300,000
Otay WTP Phase I	\$18,000,000	SRF Loan	\$14,900,000
Miramar WTP Ozone Contract A and C	\$20,000,000	SRF Loan	\$17,000,000
<b>SRF Loan Total</b>	<b>\$50,000,000</b>		<b>\$40,200,000</b>
<b>Total</b>	<b>\$97,701,849</b>		<b>\$136,496,005</b>

<b>WASTEWATER</b>			
<b>Project</b>	<b>Amount</b>	<b>Grant or Loan</b>	<b>Savings</b>
Point Loma Grit Processing Improvement	\$29,961,425	SRF Loan	\$19,600,000
Sewer Pipeline Rehabilitation	\$80,000,000	SRF Loan	\$58,400,000
<b>Total</b>	<b>\$109,961,425</b>		<b>\$ 78,000,000</b>

## **Appendix D: Pump Station Staffing Study Suggestions to Improve the Use of EMPAC**

1. Reduce or merge preventative maintenance procedures which are redundant.
2. Remove out-of-date maintenance techniques from the PM procedures.
3. Perform in-depth analysis of PM procedures to ensure tasks are beneficial.
4. Improve the use of predictive maintenance to dictate maintenance requirements rather than relying on predefined frequency-based scheduling.
5. Investigate opportunities to utilize runtime-based PM schedules.
6. Implement EMPAC functionality of “suppression” to eliminate overlapping PMS (i.e., automatically suppress the weekly PM if a monthly occurs at the same time).
7. Consider transitioning patrol PMS to EMPAC “routes” to allow for better tracking and coordination.
8. Arrange the PM schedules to allow for optimal geographic routing; investigate using the existing GIS-EMPAC interface to display work orders on a map to improve supervisors’ ability to schedule geographically.
9. Require that PS supervisors schedule non-emergency corrective work in advance and to review schedules with planning coordinator to allow for combining and/or eliminating PM visits.
10. Incorporate Wet/Dry season schedule for PMs to incorporate seasonal work requirements.
11. Differentiate heavy usage stations from low usage stations and set schedules accordingly.
12. Require documentation on work orders so that field observations can be conveyed to the coordinator who can then use the information to improve the PM procedures and schedules.
13. Improve communication between the PS staff and maintenance coordination staff.
14. Solicit recommendations for improvements in maintenance procedures from the PS staff.
15. Reassess the Storm Water SLA requirements which are far less rigorous than what is performed.

**Appendix E: Un-Audited Quantifiable Savings as the Result of All FY2011 Efficiency Efforts**

Source	Efficiencies or Savings Gained
Point Loma Wastewater Treatment Plant (PL WTP) Beneficial Use of Digester Gas Project (BUDG)	\$500,000 at start up; additional savings in following years
Peroxide Regenerated Iron for Sulfide Project (PRISC)	\$1.2 million annually
State Revolving Fund (SRF) Loans and other Grants	\$2.6 million annually (Wastewater) \$4.5 million annually (Water)
Wastewater Collection- Water Operations Co-Location of Staff & Cooperative Yard Study	\$269,730 annually
Confined Space Study	\$186,000 in Wastewater in FY2012
Wastewater Collection Pump Station Staffing Study	\$425,000 for salaries and fringe benefits.
Wastewater Vehicle Utilization Study	\$467,490 including associated refund of assignment fees
Water Conservation Process Optimization Study	\$36,000 annual funding cost for Clerical Pool
<b>Total Anticipated Savings for FY2012</b>	<b>\$10,184,220</b>