



GUAM WATERWORKS AUTHORITY

COMPREHENSIVE MANAGEMENT PLAN 09/2013 REPORT

WITH APPENDIX A ONLY



Authored by Martin L. Roush, MPA, P.E.

An Update to the 03/2012 Comprehensive Management Plan for
the Implementation of the 2011 Court Order

Consolidated Commission on Utilities (CCU)

Current CCU Board Members

Simon A. Sanchez, II - Elected and Chairman Since 2003
Former Senator, Vice Chairman of the PUC, and Businessman

Benigno M. Palomo - Elected Since 2003
Former Senator and 30 year Government of Guam Employee

Eloy P. Hara - Elected Since 2007
Former Assistant GM of GPA and PUC Member

Joseph T. Duenas - Re-elected in 2012
Former PUC Chairman and Rev & Tax/DOA Director, Local Businessman

Pedro S.N. Guerrero - Elected in 2012
35 years experience working with federal government and Navy utility sector.



From Left to Right:
Joseph T. Duenas, Eloy P. Hara, Simon A. Sanchez, II (Chairman), Benigno M. Palomo, Pedro S.N. Guerrero

Guam Waterworks Authority (GWA) began operations as an autonomous agency in 1997 under a board appointed by the Governor. GWA organized efficiently by operations and by service functions boasts 324 full time employees, over 41,000 customers and \$459 million in total assets. GWA also provides some wastewater services to DOD.

In 2002, GWA became a Guam public corporation under the control of the Consolidated Commission on Utilities (CCU). The CCU, an independent governing board which oversees GWA and GPA, was created by Public Law in 2002. Five members are elected at large with staggered four year terms to oversee the Guam Waterworks Authority and the Guam Power Authority. The CCU functions in the manner of a Board of Directors with fiduciary, strategic and oversight responsibilities which includes setting of rates subject to the regulatory review and approval of the Public Utilities Commission. The CCU hires GWA's General Manager, Chief Financial Officer and Attorney and retains contracting authority for GWA.

GWA has made tremendous progress under the guidance and leadership of the CCU.

GWA today delivers potable water and wastewater services to 160,000 Territory of Guam residents, U.S. Defense Installations and up to 136,000 international visitors in peak month. Guam's quality of life and economy depends on clean, efficient, and safe drinking water and wastewater infrastructure. We do our best to compassionately treat every customer like our grandparents. According to Guam traditions, we "Respetu i taotao i guma" which interpreted means we respect the people of the house.

The CCU has acted independently to improve GWA performance, obtain federal compliance, and plan for the future.



Martin L. Roush, MPA, P.E., General Manager

GWA has an experienced and proven management team in place helmed by General Manager

Martin Roush. Mr. Roush has nearly 30 years of experience in public works, water and wastewater utilities, over 10 years of utility executive experience, over 4 years at GWA. GWA's general manager is an expert in water system operations, financing, customer service and planning, and has a thorough understanding of the water issues facing water systems in GUAM and the western United States. Roush has managed the agency pursuant to the leadership of the CCU and the financial support of the PUC, through the most challenging time in the CCU's history, restoring consumer trust, stabilizing revenues and earning the confidence of the Environmental Protection Agency due to stellar compliance of Court Order deadlines.

CONTENTS

List of Figures	vii
List of Tables	vii
List of Abbreviations	viii
Executive Summary	1
Part 1. Introduction	1-1
1.1 Business Model	1-1
1.2 GWA Planning Efforts	1-1
1.3 Purpose of Plan	1-3
1.4 Summary of Plan	1-4
Part 2. GWA's 2011–13 Improvements	2-1
2.1 GWA'S "Perfect Storm" Continues	2-1
2.2 The 03/2012 CMP is a Blend of Leadership and Management	2-1
2.3 Compliance Improvements	2-2
2.3.1 2011 Court Order	2-2
2.3.2 2012 USEPA's Significant Findings Water	2-4
2.3.3 Compliance Funding	2-5
2.4 System Planning Improvement	2-5
2.4.1 Water Hydraulic Model	2-5
2.4.2 Wastewater Hydraulic Model	2-5
2.4.3 "3D Subsurface (Aquifer) Model"	2-6
2.5 Asset Management Improvements	2-6
2.5.1 Definition	2-6
2.5.2 Asset Management Program	2-6
2.5.3 Funding for Asset Management	2-7
2.6 Management Capacity Improvements	2-7

2.7	Operational Improvement	2-7
2.7.1	Improvements in Water Distribution Division	2-7
2.7.2	Improvements in Water Production Division	2-8
2.7.3	Improvements in Wastewater Collections Division	2-10
2.7.4	Improvements in Wastewater Treatment Division	2-10
2.7.5	Improvements in Meter Division	2-10
2.8	Fiscal Improvement	2-12
2.8.1	Reduction in Expenditures	2-12
2.8.2	Increase in Revenues	2-12
Part 3.	The Management Plan	3-1
3.1	GWA's Driving Documents	3-1
3.1.1	Capital Improvement Plan 2013–18	3-1
3.1.2	Potable Water Enhancement Plan	3-2
3.1.3	Water Audit Program and Water Loss Control Plan	3-2
3.1.4	2011 Court Order	3-3
3.1.5	2012 Significant Findings Water	3-3
3.1.6	2013 Request for Information Significant Findings Wastewater	3-3
3.1.7	NPDES Permit HWWTP and NDWWTP Requirements	3-3
3.1.8	Groundwater under Direct Influence	3-4
3.1.9	Public Utilities Commission 2012 Stipulations	3-4
3.1.10	GWA's Management Initiatives	3-4
3.1.11	GWA 2007 Water Resources Master Plan	3-5
3.1.12	USEPA's PG Environmental Reports	3-5
3.1.13	AWWA and WEF Benchmark	3-5
3.1.14	USEPA's Technical Assistance	3-5
3.1.15	PUC \$18,333,333 Order	3-6
3.2	Priorities	3-6
3.3	Resources	3-7
3.3.1	GWA Employees	3-7
3.3.2	GWA Workforce Planning and Development	3-8
3.3.3	Succession Planning Overview	3-8
3.3.4	09/2013 CMP Knowledge Transfer and Training	3-8
3.3.5	Program Management Office	3-9
3.3.6	Performance Management Contract	3-9
3.3.7	GWA's Staffing and Resources to Implement 09/2013 CMP	3-9

3.4	Toolbox Approach	3-10
3.4.1	2012 Master Dashboard	3-10
3.4.2	Engineering CIP Dashboard	3-10
3.4.3	Engineering CIP Project Report	3-10
3.4.4	Production Plan Dashboard	3-11
3.4.5	WAP and WLC Plan Dashboard	3-11
3.4.6	PUC 2012 STIP Dashboard	3-11
3.4.7	2011 Court Order Quarterly Report	3-11
3.4.8	2011 Court Order Dashboard	3-11
3.4.9	2-Year Court Order Dashboard	3-11
3.4.10	2012 Significant Findings Water Dashboard	3-12
3.4.11	2013 RFI Significant Findings Wastewater Dashboard	3-12
3.4.12	NPDES Permits HWWTP and NDWWTP Dashboard	3-12
3.5	Relationships of the Reports	3-12
3.5.1	List of Plans	3-12
3.5.2	List of Report and Dashboards	3-12
3.5.3	The CIP Reporting Relationship	3-12
Part 4.	Recommendations and Conclusion	4-1
4.1	Recommendations	4-1
4.1.1	Recommendation A	4-1
4.1.2	Recommendation B	4-1
4.1.3	Recommendation C	4-2
4.2	Conclusion	4-2
4.2.1	Fiscal Improvements	4-2
4.2.2	Compliance Improvements	4-3
4.2.3	Improvements in Effectiveness and Efficiency	4-3
4.2.4	Communicating Success	4-3

Appendices

Appendix A	GWA Dashboard Document
Table 1	Master Dashboard
Table 2	Production Plan Dashboard
Table 3	Water Audit Program & Water Loss Control Plan Dashboard
Table 4	Action Items for Implementation of WAP & WLC Plan
Table 5	PUC STIP Dashboard FY2011
Table 6	The CIP Engineering Dashboard
Table 7	2011 Court Order Dashboard
Table 8	2 Year Dashboard, 2011 Court Order
Table 9	2012 Significant Findings Water Dashboard
Table 10	2013 Significant Findings Wastewater Dashboard
Appendix B	GWA Compliance Dashboard Documents
Report	The Engineering CIP Project Report
Report	Court Order GM Quarterly Report
Report	Workforce Planning and Development Report, 12/2012
Report	Hydraulic Analysis Plan: Potable Water Hydraulic Modeling (Paragraph 29), 02/2012
Report	I/I Analysis and SSES Work Plan (2011 CO Paragraph 8), 03/2012
Report	Water Meter Plan (2011 CO Paragraph 23), 05/012
Appendix C	The 09/2013 CMP Training PowerPoint Presentation
Appendix D	GWA Capital Improvement Plan
Appendix E	GWA Potable Water Enhancement Plan, 06/10/2010
Appendix F	GWA Water Audit Program & Water Loss Control Plan, 07/13/2011
Appendix G	Deadlines for Outstanding Projects Under the Amended Stipulated Order, Filed 11/10/2011
Appendix H	Stipulation – FY 2012
Appendix I	Baker Tilly, GWA, Phase 2 Summary Results, Recommendation, and Roadmap February 2010
Appendix J	GWA General Manager Priorities, July 2010
Appendix K	PG Environmental, GWA Master Planning Technical Assessment, January 2010
Appendix L	PG Environmental, Draft Cost Estimate for the Operation and Maintenance of GWA, October 2010
Appendix M	CDM, Technical Assistance to Guam Waterworks Authority (GWA) In-Kind Services, December 2010 & updates
Appendix N	2012 Significant Findings Water
Appendix O	2013 Request for Information NEIC Wastewater Report Significant Finding
Appendix P	Development Plan Long Term Comprehensive Water Distribution System
Appendix Q	ARRA Improvement Program Energy Efficiency Report
Appendix R	Assessment of GWA Apparent Loss Report
Appendix S	List of BC Deliverables
Appendix T	03/2012 CMP w/o appendix
Appendix U	The NPDES Permits for NDWWTP and HWWTP
Appendix V	List of CDM Smith Deliverables

List of Figures

Figure A: Reduction of Expenditures from Prompt Leak Repair	2-8
Figure B: Reduction of Navy Water Purchases	2-9
Figure C: GWA Water Sales Moving 4-Month Average	2-11
Figure D: GWA Water Revenue 4-Month Rolling Average with Back Billings	2-13
Figure E: GWA Water Revenue 4-Month Rolling Average Excluding Back Billings	2-14

List of Tables

Table A: Plans Authored by GWA Management Team	1-2
Table B. GWA's "Perfect Storm"	2-1
Table C. USEPA Fines to GWA	2-2
Table D: First-Year Report Card 2011 Court Order	2-3
Table E. Midterm Report Card 2012 Significant Findings Water	2-4
Table F. CIP Summary 2013 through 2018 by Project Type (x \$1,000)	2-5
Table G: Historical Navy Purchases Normalized at Current Navy Rate	2-9
Table H: Unique Sewer Lines Cleaned and Inspected by CCTV in Miles per Year	2-10
Table I: Historical Annual Water Sales in kgal	2-12
Table J: Revenues Actual/Revenues Budget (RA/RB)	2-13

List of Abbreviations

03/2012 CMP	03/2012 Comprehensive Management Plan	NDWWTP	Northern District Wastewater Treatment Plant
09/2013 CMP	09/2013 Comprehensive Management Plan	NEIC	National Enforcement Investigation Center
2012 SFW	2012 Significant Findings Water	NPDES	National Pollutant Discharge Elimination System
2013 RFI SFWW	2013 Request for Information Significant Findings Wastewater	O&M	operations and maintenance
AMA	American Management Association	PG Report	USEPA's PG Environmental Report
APWA	American Public Works Association	PMC	Performance Management Contract
ARRA	American Recovery and Reinvestment Act	PMO	Program Management Office
AWWA	American Water Works Association	PUC	Public Utility Commission
BC	Brown and Caldwell	PUC 2012 STIP	PUC's Stipulation: FY 2012 Annual True Up for FY 2013 Rates
CCTV	closed-circuit television	RFI	Request for Information
CCU	Consolidated Commission on Utilities	SCADA	supervisory control and data acquisition
CIP	Capital Improvement Plan	SFWW	Significant Findings Wastewater
CMP	Comprehensive Management Plan	SOP	Standard Operating Procedure
CPM	Certified Public Manager	SRF	State Revolving Fund
DoD	Department of Defense	TOC	total organic carbon
GWUDI	groundwater under direct influence	USEPA	United States Environmental Protection Agency
GEPA	Guam Environmental Protection Agency	USGS	United States Geological Survey
GIS	geographic information system	WAP	Water Audit Program
gpm	gallons per minute	WAP & WLC Plan	Water Audit Program and Water Loss Control Plan
GWA	Guam Waterworks Authority	WEF	Water Environmental Federation
HWWTWP	Hagåtña Wastewater Treatment Plant	WERI	Water Environmental Research Institute
kgal	1,000 gallons	WRMP 2007	Water Resources Master Plan
KPI	key performance indicator	WTP	water treatment plant
mgd	million gallons per day		

EXECUTIVE SUMMARY

Since its inception, the CCU has guided and supported GWA's planning efforts for continuous improvement. The PUC has provided critical resources by levying rates sufficient to improve financial performance and fund necessary capital improvements. The utility's operational plans advance GWA's business model; for example, the Potable Water Enhancement Plan, the Water Audit Program and Water Loss Control Plan (WAP and WLC Plan), and GWA's Management Initiatives include elements to advance GWA's business model and ultimately prepare the utility for best-in-class standing. The financial plans and operational plans, along with GWA's performance on the 2011 Court Order and USEPA's SFW, demonstrate GWA's ability to develop precise comprehensive management tools for full implementation of all plans. This 09/2013 CMP demonstrates how all the plans, court order, and stipulation will be managed and tracked and how the elements of these plans fit into the whole. The interrelationship of the plans will also be shown; for example, the implementation of the CIP is the common denominator for GWA's success.

This 09/2013 CMP is an update to the 03/2012 Comprehensive Management Plan (03/2012 CMP). The purpose of this plan is to serve as an internal management document providing a framework for communicating, tracking, and reporting GWA's management initiatives and long-term strategies. The 09/2013 CMP focuses on implementing and developing a culture of leadership for GWA managers. The intent of this plan is to provide the leadership to allow GWA to thrive under the 2011 Court Order and other compliance requirements and create a strong, sustainable utility.

This 09/2013 CMP is presented to the management audience and does not provide all the details of GWA's efforts. This plan clearly shows that the implementation of the 2011 Court Order cannot be separated from GWA's implementation of the business model. Although this plan has all the basic elements of a business model, this plan is not GWA's business model.

The 09/2013 CMP creates a blueprint for success over the next few years by focusing on implementation of the existing plans and management dashboards defined in Part 3 of this plan.

The purpose of this plan is to serve as an internal management document providing a framework for communicating, tracking, and reporting GWA's management initiatives and long-term strategies.

Part 1 highlights the CCU leadership in developing a culture of three-dimensional planning. Three dimensional planning is analogous to having vertical, horizontal and depth components. Vertical, because GWA's plans do not sit on a shelf, are living documents that are refined, updated, and used continually. Horizontal, because GWA's planning encompasses system-wide short term and long-term planning, financial planning, and operational and management planning. The depth component includes staff training, knowledge transfer, and session planning that perpetuates planning abilities in the future generations at GWA. Part 1 emphasizes the fiscal pressure GWA is under and the need for GWA to obtain bond funding. Additionally, Part 1 defines the purpose of this plan.

Part 2 of this plan demonstrates GWA's success with the Dashboard and Toolbox approach of the 03/2012 CMP. The 03/2012 CMP shows how GWA faced the challenges of the 2011 Court Order, and shows how GWA excelled by prioritizing revenue increases, expenditure decreases, and environmental compliance.

Part 3 of this plan briefly summarizes and prioritizes GWA's driving documents. In Part 3, existing resources are discussed and additional resource requirements are presented. Finally, the Toolbox approach defines how GWA's management initiatives are employed, including how GWA's management initiatives will be reported and communicated.

Part 4 of this plan presents recommendations and a conclusion with the focus on the implementation of this 09/2013 CMP.

GWA has made tremendous progress under the guidance and leadership of the CCU. As general manager during this period, Martin Roush has received the full support of the CCU. Under the general manager's guidance, the organization has developed and implemented progress in the following six areas:

- compliance improvements
- system planning improvements
- asset management improvements
- management capacity improvements
- operational improvements
- fiscal improvements



Using GWA's business model approach, overall agency performance improved—underscoring that motivational leadership, comprehensive planning, and effective management yield positive results. The updated 09/2013 CMP will continue GWA's successful response in this challenging regulatory and financial environment. Moreover, GWA's employees are reminded that no amount of leadership alone could turn an organization around - their dedication is the key to GWA's success.

INTRODUCTION

PART 1

Since 1997, Guam Waterworks Authority (GWA) has operated as a governmental entity purposed with developing and maintaining systems and infrastructure to deliver water and wastewater services to public, industry, and private consumers. Today, GWA's leadership successfully applies private-sector business model methods to propel the utility on a long-term, progressive path to "best-in-class" performance by instituting sound resource management practices; developing solid management foundations, planning, and financial systems; engaging consumers and providing them appropriate levels of service; and establishing a road map for full regulatory compliance while moving toward long-term sustainability.

1.1 Business Model

The traditional business model is a plan implemented by a company to generate revenue and make a profit from operations. The idea of a business model should be applied to government agencies because the public expectation is that government must operate in an effective and efficient way. However, unlike the private sector, public agencies are not expected to make a profit. Although profits are not mandated, a sound leader must manage a utility effectively and efficiently to generate sufficient revenues to build contingency funds and make long-term investments.

GWA is a publicly created monopoly operated as an enterprise fund. Government enterprise funds are, by definition, funds garnered through rates and fees that are used to operate the agency. Most utilities operate via enterprise funds obtained through monthly utility bills or user fees. A sound utility generates the funds to operate the utility on a day-to-day basis and makes prudent investments to maintain the utility long term. Using the concept of a business model, GWA has made investments to reduce expenditures, increase revenues, lower the cost of services, and improve customer satisfaction.



1.2 GWA Planning Efforts

The Consolidated Commission on Utilities (CCU), GWA's public governing board, authorized and supported the utility's planning efforts:

- GWA plans are living documents constantly refined and updated with new external and internal data and information
- GWA develops a wide range of plans from long-term plans, financial plans, system planning, and operational plans to management plans
- GWA implements knowledge transfer, training, and session planning to grow the utility's next generation of planners

The 2007 Water Resources Master Plan (WRMP 2007) is an example of a three-dimensional complete planning document developed under the direction of the CCU. Today, this 09/2013 Comprehensive Management Plan (09/2013 CMP) clearly demonstrates GWA's three-dimensional planning culture. This section explores some of GWA's planning efforts.

Table A lists all GWA plans internally developed within the past 4 years. Because these plans are authored by a variety of GWA managers, the plans demonstrate that a culture of planning is developing in GWA and the succession planning process is working at GWA.

Table A: Plans Authored by GWA Management Team

Date	Name	Author
07/2009	2009 5-Year Financial Plan	Greg Cruz
10/2009	Capital Improvement Plan, 2010–2014	Martin Roush Prudencio Aguon
05/2010	Bubble Map and WSA Map	Martin Roush
06/2010	Potable Water Enhancement Plan	Martin Roush
11/2010	Capital Improvement Plan, 2011–2015	Martin Roush Tom Cruz
07/2011	Water Audit Program and Water Loss Control Plan	Martin Roush
02/2012	Hydraulic Analysis Plan: Potable Water Hydraulic Modeling (2011 Court Order, paragraph 29)	Martin Roush
03/2012	I/I Analysis and SSES Work Plan (2011 Court Order, paragraph 8)	Jude Calvo Prudencio Aguon
03/2012	03/2012 Comprehensive Management Plan	Martin Roush
05/2012	Water Meter Plan (2011 Court Order, paragraph 23)	Jon Quidachay Martin Roush
06/2012	Capital Improvement Plan, 2012–2016	Tom Cruz
12/2012	SOP Training and Teambuilding, Utilizing a System Approach to Construction Management	Martin Roush
12/2012	Workforce Planning and Development Report	Nicole Ballesta Quan
02/2013	Capital Improvement Plan, 2013–2018	Tom Cruz
03/2013	5-Year Financial Plan, FY2012–FY2018	Greg Cruz
06/2013	5-Year Staffing Plan	Martin Roush
09/2013	09/2013 Comprehensive Management Plan	Martin Roush

GWA has effectively used the WRMP 2007 to initiate, prioritize, and monitor projects, providing high-quality, sustainable drinking water, wastewater treatment, and services to individual, public, and industry consumers. The WRMP 2007 defines \$1 billion of projects needed to be completed in 20 years to thrust GWA into a position as a sustainable utility. GWA acquired \$219 million in capital improvement project funding from the Series 2005 Revenue Bonds and the Series 2010

Revenue Bonds to plan, design, and construct the capital projects needed to implement the WRMP 2007. Additional capital projects were necessitated in order to comply with U.S. Environmental Protection Agency (USEPA) stipulations and court orders.

Under the direction of the CCU, GWA has completed several financial plans over the last few years that have placed GWA on a successful path. The 5-Year Financial Plan FY2012–FY2018 (03/2013) provides the foundation to acquire the loan and bond financing required to achieve the 2011 Court Order and other

compliance requirements. The 2013–18 Capital Improvement Plan (CIP) drives the 5-Year Rate Plan, which includes the projects needed to comply with the 2011 Court Order and other compliance requirements. With these financial plans in place, GWA can obtain the 2013 bonds needed to continue implementation of the WRMP 2007 and further progress on the 2011 Court Order and other compliance requirements.

With USEPA's 06/2013 National Pollutant Discharge Elimination System (NPDES) Permit requirement to upgrade GWA's two major wastewater treatment plants (WWTPs) to secondary treatment levels, estimated at more than \$260 million, GWA must continually refine its funding strategy to acquire the required loans and bonds. The planned 2013 bond will only partially fund the 2011 Court Order, estimated at more than \$300 million, in addition to beginning to fund the USEPA findings of significant deficiencies in the water system (2012 Significant Findings Water [SFW]), estimated at more than \$50 million. In order to acquire the required financing, GWA must improve GWA's fiscal position and improve GWA's business model while continuing to develop a sustainable utility.

GWA must focus on a business model with defined priorities to achieve the timelines set in the 2011 Court Order and other compliance requirements. Implementing this business model demonstrates GWA's creditworthiness to secure the loans, generate the revenues to operate the utility, cover the debt payment, make investments that have a high rate of return, and invest in developing a sustainable utility. The business model includes, but is not limited to, improving GWA's debt cover ratio, cash position, and cash reserves. More importantly, its purpose is to run GWA like a business. A sustainable utility includes investment in workforce development, succession planning, water conservation, system planning, and asset management. Investment in an Asset Management Program is a natural step in improving GWA's business model, because making these basic investments in operations and maintenance (O&M) will ensure that life-cycle costs are minimized.

1.3 Purpose of Plan

Since its inception, the CCU has guided and supported GWA's planning efforts for continuous improvement. The utility's operational plans advance GWA's business model; for example, the Potable Water Enhancement Plan, the Water Audit Program and Water Loss Control Plan (WAP and WLC Plan), and GWA's Management Initiatives include elements to improve GWA's business model and ultimately prepare the utility for best-in-class standing. The financial plans and operational plans, along with GWA's performance on the 2011 Court Order and USEPA's SFW, demonstrate GWA's ability to develop precise comprehensive management tools for full implementation of all plans. This 09/2013 CMP demonstrates how all the plans, court order, and stipulation will be managed and tracked and how the elements of these plans fit into the whole. The interrelationship of the plans will also be shown; for example, the implementation of the CIP is the common denominator for GWA's success.

This 09/2013 CMP is an update to the 03/2012 Comprehensive Management Plan (03/2012 CMP), as included in Appendix T. The purpose of this plan is to serve as an internal management document providing a framework for communicating, tracking, and reporting GWA's management initiatives and long-term strategies. The 09/2013 CMP focuses on implementing and developing a culture of leadership for GWA managers. The intent of this plan is to provide the leadership to allow GWA to thrive under the 2011 Court Order and other compliance requirements and create a strong, sustainable utility. The 2011 Court Order, 2012 SFW, 2013 Request for Information Significant Findings Wastewater (2013 RFI SFWW), and NPDES Permit for Hagåtña (Agana) Wastewater Treatment Plant (HWWTP) and Northern District Wastewater Treatment Plant (NDWWTP) provide a blueprint to ensure that GWA develops the projects and programs required to meet USEPA's regulatory compliance. This 09/2013 CMP demonstrates how GWA will manage and communicate that compliance blueprint.

Purpose of this Plan

The purpose of this plan is to serve as an internal management plan providing a framework for communicating, tracking, and reporting of GWA's management initiatives and long-term strategies.

Intent of this Plan

The intent of this plan is to provide the leadership to allow GWA to thrive under the 2011 Court Order and other compliance requirements and create a sustainable utility.

This 09/2013 CMP is presented to the management audience and does not provide all the details of GWA's efforts. This plan demonstrates that GWA thrived under the 2011 Court Order by focusing on leadership, management, and communication. This plan clearly shows that the implementation of the 2011 Court Order cannot be separated from GWA's implementation of the business model. Although this plan has all the basic elements of a business model, this plan is not GWA's business model.

The 09/2013 CMP creates a blueprint for success over the next few years by focusing on implementation of the existing plans and management dashboards defined in Part 3 of this plan.

1.4 Summary of Plan

Part 1 highlights the CCU leadership in developing a culture of three-dimensional planning. Part 1 emphasizes the fiscal pressure GWA is under and the need for GWA to obtain bond funding. Additionally, Part 1 defines the purpose of this plan.



Part 2 of this plan demonstrates GWA's success with the Dashboard and Toolbox approach of the 03/2012 CMP. The 03/2012 CMP shows how GWA faced the challenges of the 2011 Court Order, and shows how GWA excelled by prioritizing revenue increases, expenditure decreases, and environmental compliance. GWA wants it to be understood that going forward, the utility does the right things in the right ways with stellar leadership. The 09/2013 CMP implementation will create exemplary regulatory compliance, ample infrastructure, financial stability, asset management systems, consumer satisfaction, and overall utility sustainability.

Part 3 of this plan briefly summarizes and prioritizes GWA's driving documents. In Part 3, existing resources are discussed and additional resource requirements are presented. Finally, the Toolbox approach defines how GWA's management initiatives are employed, including how GWA's management initiatives will be reported and communicated.

Part 4 of this plan presents recommendations and a conclusion with the focus on the implementation of this 09/2013 CMP.

Appendix A provides the standalone management dashboards. The various related management plans and reports are provided in Appendix B. Appendix C is a training PowerPoint presentation for this plan. Appendix D through Appendix T are reference documents and provide the reader with a background on GWA's plans and its organizational capacity. The entire Appendix provides a library of GWA plans completed since the time of the WRMP 2007.

GWA'S 2011-13 IMPROVEMENTS

PART 2

GWA has made tremendous progress under the guidance and leadership of the CCU. As general manager during this period, Martin Roush has received the full support of the CCU. Under the general manager's guidance, the organization has developed and implemented progress in the following six areas:

- compliance improvements
- system planning improvements
- asset management improvements
- management capacity improvements
- operational improvements
- fiscal improvements

Using GWA's business model approach, overall agency performance improved—underscoring that motivational leadership, comprehensive planning, and effective management yield positive results. The updated 09/2013 CMP will continue GWA's successful response in this challenging regulatory and financial environment.

Part 2 of the plan defines a portion of what GWA employees have accomplished. These accomplishments demonstrate that GWA's employees have the skill, knowledge, experience, and leadership to take GWA to best-in-class utility status. Employee dedication is the key to GWA's success.

Part 2 of the plan defines a portion of what GWA employees have accomplished. These accomplishments demonstrate that GWA employees have the skill, knowledge, experience, and leadership to take GWA to best-in-class utility status. Employee dedication is the key to GWA's success.

2.1 GWA's "Perfect Storm" Continues

GWA weathered a "perfect storm" of numerous compliance issues, military buildup, water production distress, and fiscal losses due to catastrophic failure of meters. Today the perfect storm continues as USEPA issued the 2012 SFW, 2013 RFI SFWW, and NPDES Permits for HWWTP and NDWWTP to comply with secondary treatment levels.

Table B demonstrates clearly the external and internal stressors facing the utility during the most challenging period in its history.

Table B: GWA's "Perfect Storm"

Date	Event	
12/2009	Fiscal distress begins (meter failures)	Internal
02/2010	Military buildup	External
04/2010	Water production distress begins	Internal
10/2010	District Court hearings begin	External
03/2011	GWA and USEPA court-ordered negotiations	External
06/2011	PUC \$18.3M order	External
06/2011	GWA fiscal distress intensifies (meter failures)	Internal
11/2011	Court Order	External
04/2012	NEIC inspection	External
11/2012	Findings of Significant Deficiencies Water	External
05/2013	2013 RFI Significant Findings Wastewater	External
06/2013	NPDES Permit HWWTP and NDWWTP Requirements	External

2.2 The 03/2012 CMP is a Blend of Leadership and Management

The 03/2012 CMP provided the framework for the communication, tracking, and reporting of GWA's management efforts. The 03/2012 CMP promotes GWA's ability to succeed under the 2011 Court Order by focusing on leadership and management. This plan, combined with the 5-Year Financial Plan FY2012–FY2018, puts GWA on a solid footing for the next 20 years. One example of the importance of documenting

strong utility management is its significance to credit rating agencies. Favorable ratings often result in lower financing fees and interest rates, which in turn reduce expenditures and increase funds needed for investments.

Leadership is the art of motivating, inspiring, and building confidence in a group of people to attain specific goals. GWA viewed the perfect storm along with the “tsunami wave” of the 2011 Court Order as an opportunity to plan and execute improvements. Internally, the general manager led by example writing the 03/2012 CMP, provided training on this plan, and used this plan to motivate and inspire employees to reach a common goal. This plan also demonstrates leadership by building utility confidence in the Guam community, the consumers, CCU, USEPA, District Court, and Public Utility Commission (PUC).

Management is the practice of measuring, tracking, and reporting progress, and holding people accountable to attain specific goals. The 03/2012 CMP is the written guide that defines the values and priorities of the GWA. The plan clearly communicates expectations, measures, and outcomes and tracks progress, while holding personnel accountable in accordance with the provisions of the plan.

By regularly (daily and weekly) updating and using the comprehensive plan, information was kept relevant and timely. Management also set expectations for weekly Dashboard updates. Leadership’s commitment to the tools and use of the tools put and kept the team on the same page. Adhering to this process ensured that all members of the GWA team had the same common goals.



As a result, during the perfect storm GWA’s management team was able to practice the leadership necessary to inspire each other to “consistently do what most people believe is impossible.”

GWA’s following performance demonstrates the effectiveness of this leadership combined with management and proper planning.

2.3 Compliance Improvements

Although GWA currently has an excellent compliance record, in the past deadlines were not met. In fact, most of the fines listed in Table C are for deadlines missed over a period of 6 years, which ultimately resulted in the 2011 Court Order.

Table C: USEPA Fines to GWA

Penalty date	SO paragraph	Amount, \$
01/22/2004	37 Chaot	6,000
03/08/2004	11-12 Disinfection Program	11,000
05/18/2005	10 Hydraulic Model: WRMP \$13k and 45 Well Rehab \$4.75k	17,750
08/04/2005	11-12 Disinfection Program \$1k and 37 Chaot \$3k	4,000
12/06/2005	10 WRMP \$20k/15 Parts Inventory \$5k/21 O&M Manuals \$7k	32,000
03/16/2006	10 WRMP Completion Date: Missed	35,000
07/11/2006	10 WRMP Completion Date: Missed	55,000
09/04/2007	39 NDSTP \$20k/42 Hagåtña STP and Lift Station \$20k	40,000
01/14/2008	14 Water Meter Improvement Program	30,000
01/14/2008	41 Ugum Surface Water Treatment Plant	9,000
07/23/2008	38(B) Sinahana Water Transmission Line	9,000
08/17/2009	38(C) Water Reservoir Condition Assessment	19,000
01/25/2010	38(C) Water Reservoir Condition Assessment	57,000
03/29/2010	12(C), 14, 38(B) together	65,000
Total		\$389,750

2.3.1 2011 Court Order

Today, GWA boasts outstanding compliance of the 2011 Court Order, exemplified by the performance on the 2011 Court Order over the first year. GWA met 53 of 54 USEPA deadlines in the first year of the 2011 Court Order. NDWWTP, the only late project, was completed within 3 months of the deadline. As of 01/2013, using advanced primary treatment, NDWWTP achieved compliance for the first time since enactment of the Clean Water Act in 1972. This outstanding compliance

was a direct result of the 03/2012 CMP Toolbox approach. Table D documents GWA's success on this positive compliance report card. The 2011 Court Order is explained further in Section 3.1.4 of this report.

Table D is an example of a dashboard or a table with rows and columns. The rows representing a project name, stipulated order, project description, status, and

due date. The columns represent the projects in the 2011 Court Order due within the first 6 months. A goal of a dashboard is to represent the maximized amount of data in a minimum of space, this way a 90 page court order is reduced to a two page table with updated information on the status of the project/program.

Table D: First-Year Report Card 2011 Court Order

Year One Court Order Report Card: Deliverables 11/11/2011 to 11/11/2012					
Name	SO #	Project	GWA submittal date	USEPA date due	Met deadline
NDWWTP Primary Treatment Upgrades	2, 4c	Interim Primary Improvements Complete, Biosolids Management, Repair and Replace Facilities	Notified USEPA of delay 10/01/2012	09/30/2012	No
	4(a)	Sludge and Biosolids Management Plan	@ USEPA 12/29/2011	02/08/2012	✓
			@ USEPA 03/29/2012	03/29/2012	✓
			@ USEPA 08/13/2012	08/13/2012	✓
HWWTP Interim Measures	5(a)	Scope and Schedule	@ USEPA 11/17/2011	09/30/2011	N/A
			@ USEPA 12/22/2011	12/28/2011	✓
	5(b) 1	Grit and FOG Design Contract	@ USEPA 12/28/2011	12/31/2011	✓
	5(c) 1	Septage Design Contract	@ USEPA 12/28/2011	12/31/2011	✓
SSES Work Plan	6	Effluent Back Surge Plan	@ USEPA 11/17/2011	09/30/2011	N/A
			@ USEPA 12/22/2011	12/28/2011	✓
Agat/Santa Rita	9(a)	Bypass Report	@ USEPA 03/26/2012	05/08/2012	✓
			@ USEPA 08/13/2012	08/13/2012	✓
Baza Gardens	9(c) 1, 2, 3	Report Evaluating Near-Term Measures	@ USEPA 01/04/2012	01/09/2012	✓
			@ USEPA 04/17/2012	05/08/2012	✓
			@ USEPA 07/30/2012	07/29/2012	✓
Chlorine Residual Monitors	22	Plan	@ USEPA 05/07/2012	05/08/2012	✓
			@ USEPA 09/04/2012	09/10/2012	✓
Water Metering	23(a)	Plan and Schedule	@ USEPA 05/07/2012	05/08/2012	✓
			@ USEPA 06/25/2012	11/10/2012	✓
Ugum Surface Water Treatment Plant	24	Construction Complete/PE Inspection	@ USEPA 07/30/2012	07/30/2012	✓
			@ USEPA 09/04/2012	09/10/2012	✓
	24, 25	PE Inspection and PE Performance Operation Assessment	@ USEPA 08/10/2012	08/10/2012	✓
	26	O&M Plan and Procedures	@ USEPA 11/09/2012	11/10/2012	✓
Sinajana Water Transmission Line	27	Plant Compliance	@ USEPA 12/23/2011	05/08/2012	✓
			@ USEPA 05/07/2012	05/08/2012	✓
	28(a)	Existing Construction Complete	@ USEPA 07/30/2012	07/30/2012	✓
			@ USEPA 01/19/2012	09/23/2011	N/A
28(b)	Hydraulic Evaluation	@ USEPA 03/26/2012	03/29/2012	✓	
		@ USEPA 09/07/2012	09/13/2012	✓	
Storage Tank/Reservoir Rehabilitation and Replacement Program	29(a) 1	Plan Hydraulic Analysis	@ USEPA 02/06/2012	02/08/2012	✓
			@ USEPA 11/09/2012	11/13/2012	✓

N/A: Due date before order was issued.

2.3.2 2012 USEPA's Significant Findings Water

GWA's exemplary compliance with the 2012 SFW was a direct result of the Toolbox approach. Table E documents GWA's success in completing 20 of 40 (or 50 percent) of the items in the first 6 months. The 2012 SFW is presented in further detail in Section 3.1.5 of this report.

Table E: Midterm Report Card 2012 Significant Findings Water

#	Function	Significant deficiencies	Internal milestone	Due date		Notes
2	Sources	No wellhead protection plan	05/30/2013	06/06/2013	BC	Already started.
3	Sources Ugum	Diesel fuel storage tank containment located near intake for Ugum Water Treatment Plant (WTP) is undersized	05/06/2013	N/A	Tom, Karen	Complete.
4	Sources well	Some wells have cracks and other openings in the well pads, well casings, and improperly sealed sanitary seals	05/06/2013	06/06/2013	BC	Complete.
5	Sources well	Missing screens on well casing vents	05/06/2013	03/07/2013	BC	Complete.
6	Sources well	Wells have bypass lines that were routed into the ground and offsite without an air gap	05/06/2013	03/07/2013	BC	Complete.
7	Sources spring	Lack of operating flow meter at spring source makes operation (including chlorine dosing) problematic	05/06/2013	N/A	Tom, Karen	Complete.
8	Sources spring	Santa Rita Spring box (clear well)	05/06/2013	N/A	Tom, Karen	Complete.
10	Treatment	Lack of operating turbidimeter at Santa Rita Spring source	05/06/2013	N/A	Tom, Karen	Complete.
11	Treatment	Plant operators do not regularly conduct jar tests and do not optimize precursor removal at Ugum WTP	05/13/2013	06/06/2013	Karen, Paul	Change order for TOC meeting. Documentation training required.
12	Treatment	Inadequate turbidity monitoring and reporting at Ugum	05/13/2013	06/06/2013	Tom, Karen	Programming SCADA.
13	Treatment	At least one well (D-5) did not have a chlorination system in place	05/13/2013	N/A	BC, Paul	Complete.
14	Treatment well	At at least one well, the well log indicated chlorine gas had run out in the past	05/13/2013	N/A	Paul, Karen	Complete.
23	Distribution system	Inadequate cross-connection control program exists within GWA	05/06/2013	06/06/2013	BC	BC task order on schedule.
24	Distribution system	Undersized water lines impact water pressure and water quality and contribute to potential cross-connections	05/06/2013	06/06/2013	BC	GEPA provided no adequate records of pressure problems.
29	Water quality	Inadequate monitoring and reporting: Ugum WTP and Santa Rita Spring (turbidity and chlorine residual)	05/13/2013	04/09/2013	Paul, Karen	GWA has made this KPI and it is managed via weekly reports.
38	Operator compliance	Plant operators do not regularly conduct jar tests	05/13/2013	06/06/2013	Karen, Paul	GWA has made this KPI and will manage with weekly reports.
39	Operator compliance	Plant operators and engineering staff did not understand the correlation between ineffective coagulant dosing and membrane performance	05/30/2013	06/06/2013	BC Tom, Karen	GWA specific training planned. Training will be documented.
40	Operator compliance	No Level 4 operator is located on site at the Ugum WTP, as required	05/20/2013	06/06/2013	Martin, Karen, Encho	Level 4 operator by 02/06/2013. GWA has always been in compliance.

Table F: CIP Summary 2013 through 2018 by Project Type (x \$1,000)

ID	Project type	2013	2014	2015	2016	2017	2018	Total
PW	Potable water	25,784	58,695	45,500	35,250	47,000	51,250	263,479
WW	Wastewater	24,936	16,171	26,400	41,500	26,400	28,000	163,407
EE	Electrical engineering	600	2,470	2,925	500	4,500	1,000	11,995
MC	Miscellaneous	2,344	5,500	4,000	3,000	800	3,000	18,644
	Total	53,664	82,836	78,825	80,250	78,700	83,250	457,525

2.3.3 Compliance Funding

GWA has begun the process of acquiring 2013 bond funds. The CCU approved GWA's 2013–2018 Capital Improvement Plan and GWA's 5-Year Financial Plan FY2012–FY2018 on 03/2013. The approval of these two plans is the first step for obtaining loans and bond financing to continue to fund compliance measures of the 2011 Court Order, 2012 SFW, and 2013 RFI SFWW. Finally, the 5-Year Rate Plan was filed with the PUC, which should allow bond proceeds to flow to GWA in 12/2013. Table F shows that the scale of GWA efforts exceeds \$457 million over 6 years.

2.4 System Planning Improvement

Even during this period of critical compliance issues and utility operations challenges, GWA remains focused on and committed to long-term planning by improving the water hydraulic model, wastewater hydraulic model, and 3D aquifer subsurface model. These models are fundamental to sound long-term planning.

The CCU demonstrated its strong commitment to system planning in the WRMP 2007 by developing a first-generation water hydraulic model and wastewater hydraulic model. GWA's current chief engineer and current general manager demonstrated their commitment to long-term planning by updating these first-generation models, and planning the steps for a third-generation water hydraulic model. USEPA demonstrated its commitment to GWA's system planning by awarding a \$9.3 million grant for sewer system evaluations and assessments, hydraulic model development, and master planning activities to identify and prioritize projects. System planning is now fully ingrained in GWA's culture.

2.4.1 Water Hydraulic Model

In 05/2013, GWA completed the second-generation water hydraulic model. GWA chose a major update to the water hydraulic model for the evaluation of the water storage tanks in the 2011 Court Order, to demonstrate best management practices while implementing the PG Environmental Report (PG Report), which is further detailed in Section 3.1.12. The model was based on the Hydraulic Analysis Plan: Potable Water Hydraulic Modeling (2011 Court Order, paragraph 29), 02/2012 included in Appendix B. The water model incorporates the “Bubble Map” and “Water Service Area Map” developed by the current general manager. The third-generation water hydraulic model, currently being planned, will incorporate the data from the master meter program and the recently ascertained hydraulically independent well fields.

2.4.2 Wastewater Hydraulic Model

The GWA wastewater hydraulic model was structurally updated in 2010 to ensure that all pipe and system configurations were correct. But data to properly calibrate the second-generation wastewater model were not collected due to a lack of available resources. Included in Appendix B is The I/I Analysis and SSES Work Plan (2011 Court Order, paragraph 8), 03/2012, which provided the framework for collection of the required data in the southern and central sewer basins. GWA has plans to collect island-wide rain and flow data. GWA will focus on completing a second-generation model for the southern systems, also a 2011 Court Order requirement.



2.4.3 “3D Subsurface (Aquifer) Model”

The Department of Defense (DoD), during 2009 preparation for the military buildup, agreed to use the United States Geological Survey (USGS) to create a 3D subsurface model of the aquifer. This state-of-the-art model is a great leap forward in water resources management for Guam. The study will help GWA sustain our most precious resource, the water aquifer. The study, which will be completed in 12/2013, is a major milestone and includes a recharge report, regional numeric model, and water availability report. Detailed information is available online at <http://hi.water.usgs.gov/studies/guam/>.

The study findings include the percent of water recharge caused by rainwater that occurs in the north. Aquifer properties are input into the numerical model to demonstrate the effective porosity and transmissivity of the soil or the ease of flow of water in the aquifer. These maps contain basic assumption information for the 3D model. After calibrating a 3D subsurface model for baseline conditions, this model can predict future drought conditions and future growth scenarios. This major step in water resource planning for GWA will be used by GWA staff in conjunction with best management practices to recommend policy decisions for the future. Additionally, this study will provide a tool for assessing the capacity of the aquifer and identifying the best location for future wells.

2.5 Asset Management Improvements

This section outlines asset management improvements GWA has made to comply with the 2011 Court Order, including developing an Asset Management Program and securing funds to implement and sustain it.

2.5.1 Definition

The problem with many utilities is that preventive maintenance is one of the first things to be deferred under funding shortfalls. This was the case with GWA, where virtually no preventive maintenance occurred prior to 2003 and as of 2013 the funding for such a program is still not currently available at substantial levels. So asset management has two fundamental parts: the Asset Management Program and the money to fund and to implement it. The funding to implement the Asset Management Program includes both asset replacement and the human resources to maintain these assets. The good news is that GWA is positioned for success in both of these areas.

2.5.2 Asset Management Program

In 2012, GWA secured a grant from the USEPA for system-wide asset management. GWA also matched the grant with the funding, management commitment, and personnel support to realize this goal. Today, because of the goal to develop an enterprise-wide asset management system, the programming of the JD Edwards Plant and Equipment Maintenance module is complete. One of GWA's contributions to the project was the funding for Split Rock Consulting in the amount of \$400,000. Split Rock Consulting went live with the module in 09/2012 and GWA began beta-testing the preventive maintenance on its assets at the start of 2013. Phase 1 of CDM Smith technical support for asset management is complete. The work in this phase included training of GWA staff, creation of maintenance job plans for 25 water asset types, maintenance schedules for all facility types in water O&M, developing Standard Operating Procedures (SOPs) related to asset management, and organization of the GWA Asset Management Steering Committee.

2.5.3 Funding for Asset Management

Table F on page 2-5 has the funding programmed to implement the Asset Management Program. When approved, the 5-Year Financial Plan FY2012–FY2018 will generate \$50 million in internally funded CIPs over the cumulative life of the CIP. In the meantime, the current CIP has programmed about \$40 million in projects through bond funds as a booster shot to the Asset Management Program, which has significant overlap with the 2012 SFW and 2013 RFI SFWW.

Major asset management and replacement programs will have to be funded to make GWA a sustainable utility. They include, but are not limited to, water pipe, wastewater pipe, water pump station, sewer lift stations, fire hydrants, water valves, and sewer manholes.

To demonstrate the scale of Asset Management Program requirements, one element of GWA's system will be explored: pipe replacement. One example of the scale of the asset replacement is that GWA must spend \$11.7 million per year on pipe replacement for the potable water system over the next 10 years. The \$11.7 million is clearly defined in the Development Plan Long-Term Comprehensive Water Distribution System included in Appendix P. This pipe replacement is one of the fundamental elements of the WAP and WLC Plan, which is discussed in Section 3.1.3.

2.6 Management Capacity Improvements

GWA developed 102 written SOPs in the last 2 years, 76 of which are approved and 26 are pending approval. The USEPA Technical Assistance grant in collaboration with GWA staff has created SOPs for Construction Management, Cost Estimating, Contract Administration, and Procurement. The development of written procedures will assist GWA in its goal of becoming a sustainable utility.

Appendix B includes GWA SOP Training and Teambuilding, Utilizing a System Approach to Construction Management, 12/2012, which is one example of the training included in implementation of the SOPs.

2.7 Operational Improvement

GWA achieved significant improvements in five operations divisions: Water Production, Water Distribution, Wastewater Collections, Wastewater Treatment, and Meter Services. An example of these improvements will be presented for each of the five operational divisions. Some are standard key performance indicators (KPIs) of the industry and others show a direct relationship to reduction of expenditure or increase in revenues.

2.7.1 Improvements in Water Distribution Division

One example of Improvements in the Water Distribution Division is the reduction of expenditures from prompt leak repair. Prompt leak repair was one of GWA's focused areas of the WAP and WLC Plan, which is discussed in Section 3.1.3. GWA successfully implemented this element of the WAP and WLC Plan by substantially reducing the time to repair leaks. In 12/2011, GWA established a proactive leakage management system based on a simple concept. GWA saves water and thus money by performing prompt leak repairs. For example, if a pipe leaks at 20 gallons per minute (gpm) at a cost of \$1.60 per 1,000 gallons (kgal), the cost to GWA if the pipe is fixed in 2 days is \$92.16 versus the price \$1,382.40 if the pipe is fixed in 30 days—resulting in a savings of more than \$1,200 from one leak.

The price of water on Guam ranges from the lowest cost of \$1.60/kgal for an efficient, high-production well to the high cost \$4.34/kgal for Navy purchase water. The average cost of GWA production water is estimated at \$2.05/kgal, with the average cost of all water being \$2.25/kgal when the Navy purchase water is averaged in.

GWA's leak detection program estimated flow from the average leak at 7 gpm: in contrast, the leak repair program has estimated the average leak at 5 gpm. These values may be considered high because line breaks are included. Within the range of experienced leakage rates, GWA assumed a conservative number of 4 gpm for use in the following estimates.

GWA has estimated that a sustainable level of cost reduction can be achieved through prompt leak repair. This estimate is based on 2011 average leakage rates compared to averages from the period 07/2012 to 06/2013. The 2011 average is \$215,400 and

Leak Cost Based on Average Days to Repair from Oct 2010 to June 2013

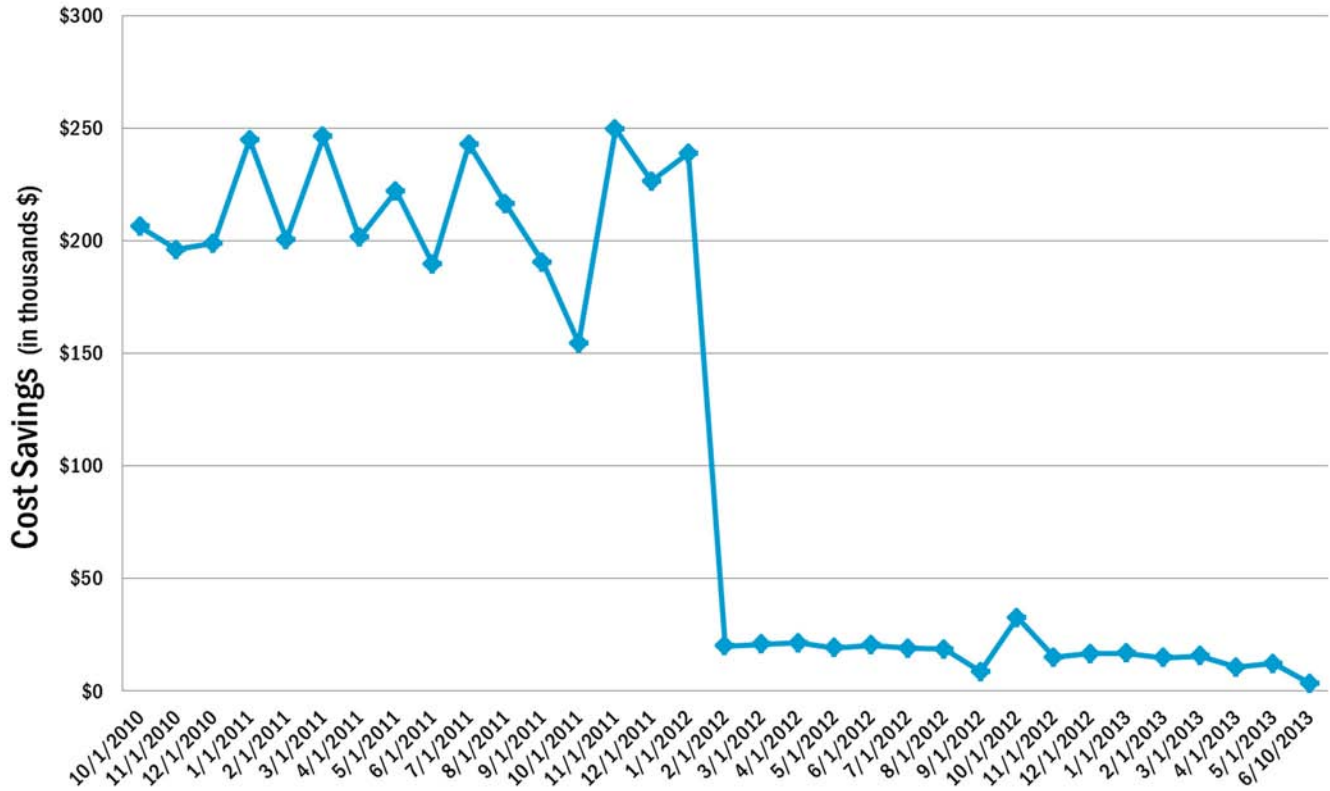


FIGURE A
Reduction of Expenditures from Prompt Leak Repair

the 07/2012–06/2013 average is \$15,400. This represents a cost reduction of \$200,000 per month in savings by repairs being completed in 3.7 days instead of 38 days. Figure A demonstrates the cost savings per month. The estimate was derived by using conservative estimates based on the monthly total number of completed leak repairs on Work Order Count using a 4 gpm leak per work order and a water rate of \$2.25/kgal. GWA averaged 3.7 days to repair leaks from 07/2012 to 06/2013.

Based on the above, GWA estimates that cost reduction through prompt leak repair can save \$200,000 per month, or \$2.4 million per year, on a sustainable basis.

2.7.2 Improvements in Water Production Division

One example of Improvements in Water Production Division is the reduction of expenditures from Navy water purchases. Navy water purchases were a GWA-focused area as defined in the Potable Water Enhancement Plan, which is discussed in Section 3.1.2. GWA successfully implemented this element of the Potable Water Enhancement Plan by substantially reducing Navy water purchases (see Figure B). As discussed in Section 2.7.1, GWA water production cost is \$2.05/kgal as compared to Navy purchase water at \$4.34/kgal. This is a cost difference of \$2.29/kgal. GWA saves on average \$2.29/kgal when Navy purchases are reduced. Because this is a significant saving, GWA made reducing Navy water purchases the focus of a major effort.

Navy Water Purchases 6-Month Rolling Average FY 2010 - FY 2013

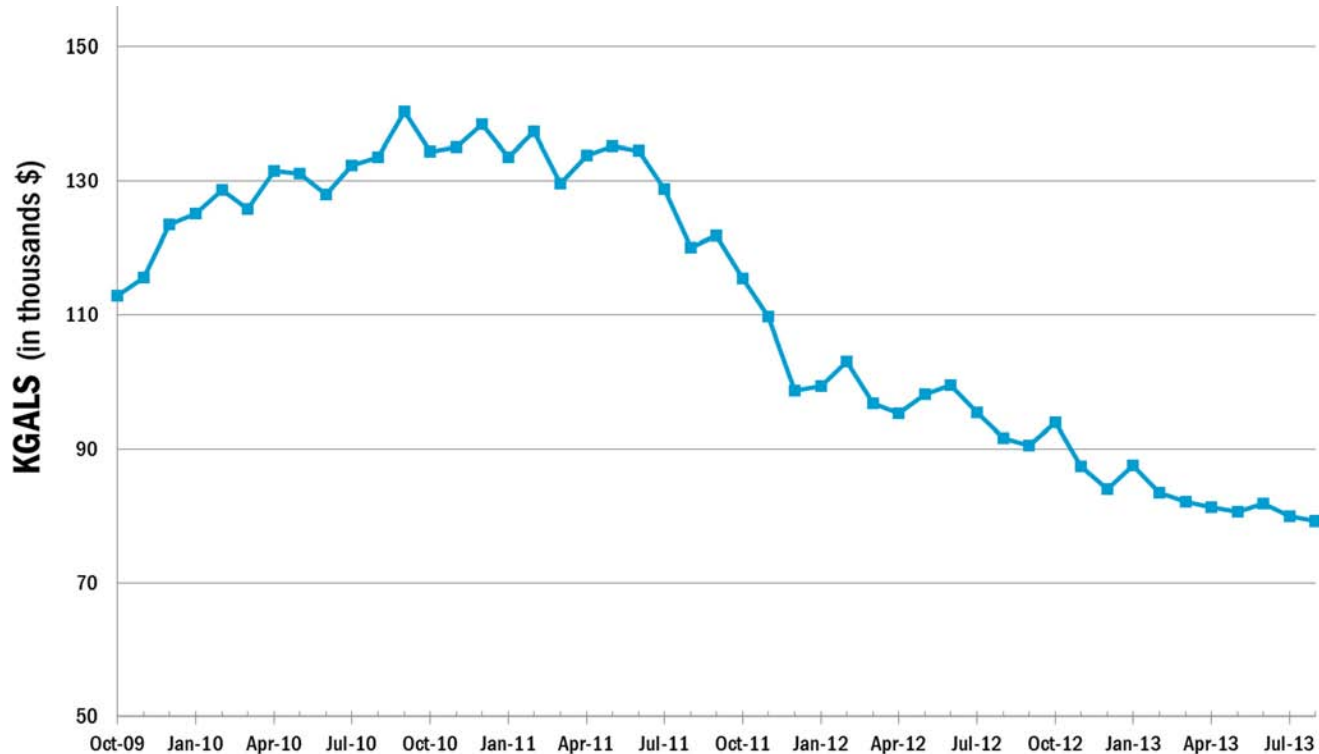


FIGURE B
Reduction of Navy Water Purchases

GWA used the following information and assumptions to calculate the sustainable level of reduction of expenditures from Navy water purchases from a recent 12-month period, 06/2012 to 05/2013, compared to FY2010. In FY2010, GWA purchased 1,596,665 kgal. From 06/2012 to 05/2013, GWA purchased 1,008,235 kgal, for a difference of (589,000) kgal. Using the current 2013 Navy rate of \$4.57, and using the average cost of GWA production water of \$2.24, yields a difference of \$2.33 and savings of \$1,372,000 per year (\$2.33 times 589,000), or about \$114,360 per month. The amount of a sustainable level of reduction in revenues based on the reduction of Navy water purchases is estimated at \$1,370,000 per year.

GWA compared the financial history for annual Navy purchase normalized on price. Navy water prices have consistently increased over the past few years: \$4.06/kgal in FY2010, \$4.11/kgal in FY2011, \$4.48/kgal in FY2012, and \$4.57/kgal in 2013. Table G demonstrates that GWA is using 38 percent less Navy water compared to FY2010.

Table G: Historical Navy Purchases Normalized at Current Navy Rate

Year	FY 2010	FY2011	FY2012	FY2013 ^a
Purchase (\$)	\$6.48M	\$6.20M	\$5.03M	\$4.53M
Rate (\$/kgal)	4.06M	4.11M	4.48M	4.57M
Normalized ^b	1.596	1.508	1.123	0.991
% of 2010 purchase	100%	94.5%	70.3%	62.1%
% reduction	0%	5.5%	29.7%	37.9%

a. Based on 8 months of data at \$3.02M, FY2013 estimated at \$4.53M year.

b. Normalized by price of water; e.g., 6.48/4.06 = 1.596.



2.7.3 Improvements in Wastewater Collections Division

Two examples of Improvements in Wastewater Collections Division are the miles of unique sewer lines cleaned and miles of sewer lines inspected by closed-circuit television (CCTV) per year. The outcome of unique sewer lines cleaned is a reduction in sewer overflows and an overall increase in system capacity. The outcome of sewer lines CCTV is that the lines can be assessed for repair/replacement and location of illegal connections can be identified. Table H demonstrates that GWA can meet the requirement of the 2011 Court Order.

Table H: Unique Sewer Lines Cleaned and Inspected by CCTV in Miles per Year

Fiscal year	2007	2008	2009	2010	2011	2012
Unique sewer lines cleaned	0	0	2	10	28	55
Sewer lines CCTV	0	0	2	10	28	55

2.7.4 Improvements in Wastewater Treatment Division

GWA's Wastewater Treatment Division has demonstrated that it has the technical ability to handle complex treatment plant operations. The Wastewater Treatment Division is a partner with GWA's Engineering Department in the delivery of wastewater treatment plant improvements. This teamwork is evident in the smooth transition from new construction to operations. The following three examples demonstrate recent improvements in wastewater treatment plants:

- As of 01/2013, with advanced primary treatment NDWWTP is in compliance for the first time since the 1972 passing of the Clean Water Act. The daily reports demonstrate that GWA continues compliance since the construction was completed.
- HWWTP is currently under construction to add advanced primary treatment and is scheduled to be completed by 12/2013. A major milestone of sealing the old outfall and installing a pump on the new outfall was completed in 06/2013. This prevents the possible contamination of the bay that GWA has experienced about once a year from an old deteriorating outfall.
- Baza Gardens WWTP interim improvements were completed on 05/03/2013. This \$500,000 project included structural repair to improve safety and process reliability.

2.7.5 Improvements in Meter Division

Improved meter accuracy is one major focus of the WAP and WLC Plan, which is discussed in Section 3.1.3. GWA successfully implemented this element of the WAP and WLC Plan by substantially improving the meter accuracy and implementing a meter maintenance program. The replacement of GWA meters is required by the 2011 Court Order, paragraph 23. Included in Appendix B is The Water Meter Plan (2011 Court Order, paragraph 23), 05/2012, which provides the framework for the installation and prioritization of

The combined amount of sustainable level of expenditure reduction from prompt leak repair and reduction of Navy water purchases is estimated at \$314,000 per month, or \$3,770,000 per year.

meter replacement. This requirement is included in the 2011 Court Order to ensure that GWA generates the revenues needed to support a sustainable utility.

At the time of the 2006 Stipulated Order, the utility did not have a maintenance program for the existing Sensus meters, so the meters were beyond their useful life. Additionally, many of the Sensus meters were not installed in meter boxes, but were just lying on the ground. Thus, GWA was required to complete the meter replacement as part of the 2006 Stipulated Order. But in this process, GWA experienced failure of all 27,000 replaced meters. All of these meters, named “pre-2010 meters,” have since been taken out of service. The manufacturer provided replacement meters, which GWA named the “post-2010 meters.” Today, all of these 27,000 “pre-2010 meters” are now replaced with either the “post-2010 meters” or a new manufacturer, Badger Meters. To summarize: GWA currently has three types of meters in the ground: new Badger meters, the old Sensus meters, and the “post-2010 meters.” The 2011 Court Order requires GWA to replace all of the old Sensus meters.

The meter situation is vastly improved over last year. First, the CCU authorized GWA management to enter into a \$5.9 million contract with Badger Meter. The Badger Meters replacement program began in

08/2012. From 09/2012 to 08/2013, more than 21,000 meters have been installed.

This meter replacement program will increase revenue for the utility by approximately 11 percent compared to water sales before and after replacements of post-2010 meters to Badger meters. This comparison, based on 9,000 replacements, concluded that GWA saw a 77 percent increase in water sales from the Badger meters over the pre-2010 meters. The data used a 6-month rolling average from the existing pre-2010 meter billing and a 3-month rolling average for Badger meter billing. When this 77 percent increase in performance of 9,000 residential meters was projected on the total island-wide meter revenues, it was estimated that GWA would see an 11 percent increase in total water sales. This study was presented to the CCU on 04/23/2013 as an attachment to the General Manager’s Report; reference Appendix B, Technical Memo D. In the next phase, GWA expects to see improvement in revenues from the replacement of all the old Sensus meters.

Figure C demonstrates that water sales have increased consistently since the Badger meters replacement program started in 08/2012. This is confirmed by Table I, which demonstrates the total annual water sales increased between 2012 and 2013.

Water Sales (RevenueGals) 4-Month Moving Average FY 2011 - FY 2013

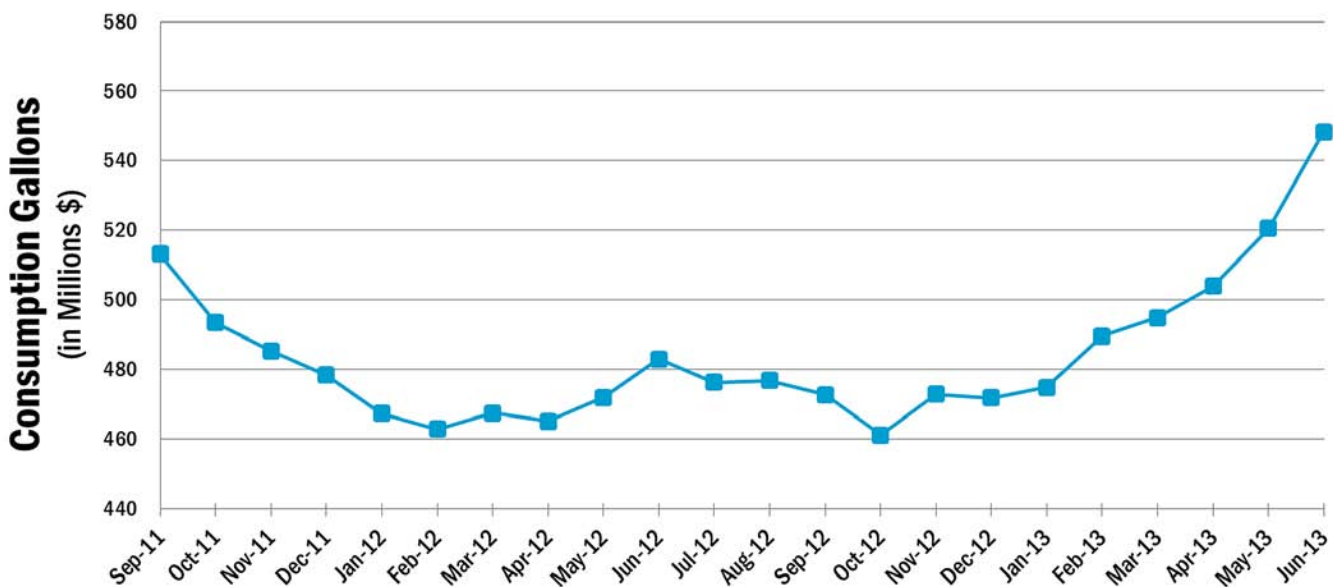


FIGURE C
GWA Water Sales Moving 4-Month Average



Table I: Historical Annual Water Sales in kgal

	FY2011	FY2012	FY2013*
(kgal)	5.99M	5.79M	6.29M

* In FY 2013, 4.72 kgal for 9 months yield = 6.29M kgal for 12 months.

Two obvious benefits from the Badger meter replacement program is that GWA's revenue will stabilize and GWA will see an increase in water sales. Additional benefits are improved customer service and increased automatic read-rate. The Badger meters enable GWA to enhance customer service by providing consumers with accurate and real-time information about their water usage, leaks, and concerns. Additionally, the Badger meters have improved the GWA's automatic read-rate to 96 percent, up from 74 percent from the previous manufacturer.

The Water Meter Plan (2011 Court Order, paragraph 23), 05/2012 also establishes the framework for a meter maintenance program. GWA takes great pride in the newly created sustainable meter program, which includes a meter test bench. The meter test bench was installed in 06/2013 along with the required employee training. This meter test bench is one of the fundamental tools in understanding and determining non-revenue water, because it is used to estimate the efficiency of the meters. The meter test bench is housed in a temporary facility. A permanent facility is currently under construction.

GWA is confident that the Badger meters will provide long-term, reliable service because they are the same type of meter design as the old Sensus meters. Those meters on Guam passed the test of time because, even though they were not maintained and extended beyond their useful life, they did not fail. The Sensus meters just reduced in efficiency over time.

2.8 Fiscal Improvement

This section describes methods GWA has employed to both reduce expenditures and increase revenues to improve its long-term financial position.

2.8.1 Reduction in Expenditures

GWA has been exceptional at operating within its means and not spending more funds than are generated. GWA has achieved substantial ongoing reductions in expenditures, ranging from reduction of Navy purchases, prompt leak repair, the general manager's hiring freeze, and other measures instituted to control expenditures, including power savings. Expenditures were reduced by \$500,000 per month during a 12-month period through the combined efforts listed above. These savings supported the systems and operations improvements necessitated by the 2011 Court Order.

GWA estimates the level of cost reduction due to prompt leak repair at \$200,000 per month. GWA estimated the level of cost reduction based on the reduction of Navy water purchases at \$114,000 per month.

The combined amount of sustainable level of expenditure reduction from prompt leak repair and reduction of Navy water purchases is estimated at \$314,000 per month, or \$3,770,000 per year.

2.8.2 Increase in Revenues

Section 2.7.5 includes a discussion about the revenue improvement from the meter replacement program. Total water revenue is a good indicator of how the meters are performing because the water revenue does not include wastewater user fees, system development charges, PUC surcharges, and bad debt. The total water revenue does include the impact from rate increases.

For budgeting purposes, the forecasted increases for water revenues were 6.7 percent in 2012 and 3.3 percent in 2013. Therefore, going forward, the expected increase in revenues from rate increases should be in the range of 10 percent above the 2012 revenues.

GWA has done an outstanding job acquiring rate relief due to CCU's oversight, support, and coordination with the PUC. Since 2004, the PUC has approved a total of 73 percent of base-rate increases to support GWA programs and operations. GWA received a base-rate increase of 12.77 percent, effective 10/2011, and another base-rate increase of 6 percent, effective 01/2013. The 01/2013 rate increase was approved late in the fiscal year, causing compression in the time to collect, so the rate collected will be 9 percent.

Moreover, GWA water revenues also have increased 20 percent overall: \$600,000 per month (or \$3.6M/yr) in the last 2 years. This is demonstrated by Figure D and Figure E. These increases occurred in a challenging

economic climate when global recession decreased the demand for water, causing water sales to drop below 2010 levels. Revenue increases were attributed to the meter replacement program and the two rate increases.

GWA has recently approached revenue stability by meeting its revenue projection. The revenues performance is detailed in Table J.

Table J: Revenues Performance

FY2011 average	\$3.09M
FY2012 average	\$3.32M
FY2013 budget	\$3.68M
FY 2013 avg	\$3.71M
06/2013 4-mo avg	\$4.04M
June 2013 actual	\$4.3M

Water Sales (Revenue\$\$) FY2009-2013 Moving 4-mos Ave with Back Billings

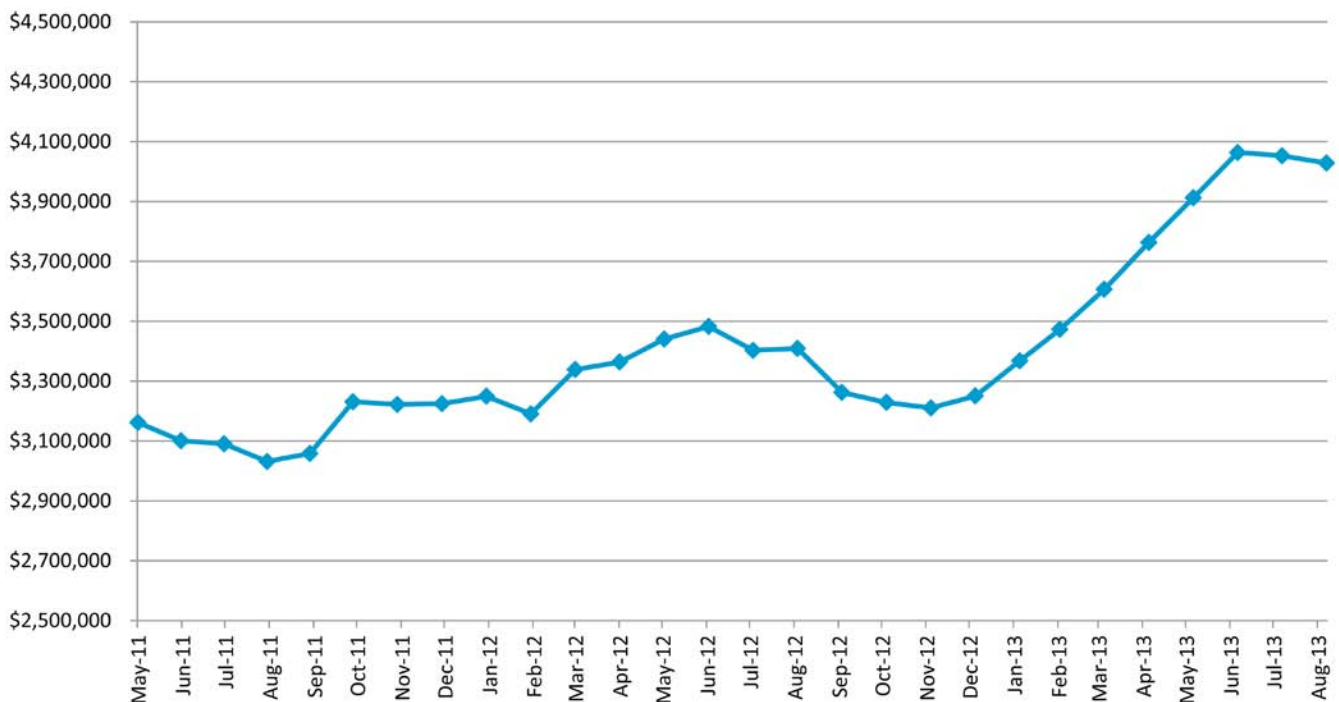


FIGURE D
GWA Water Revenue 4-Month Moving Average with Back Billings

Water Sales (Revenue\$\$) FY2009-2013 Moving 4-mos Ave Excluding Back Billings

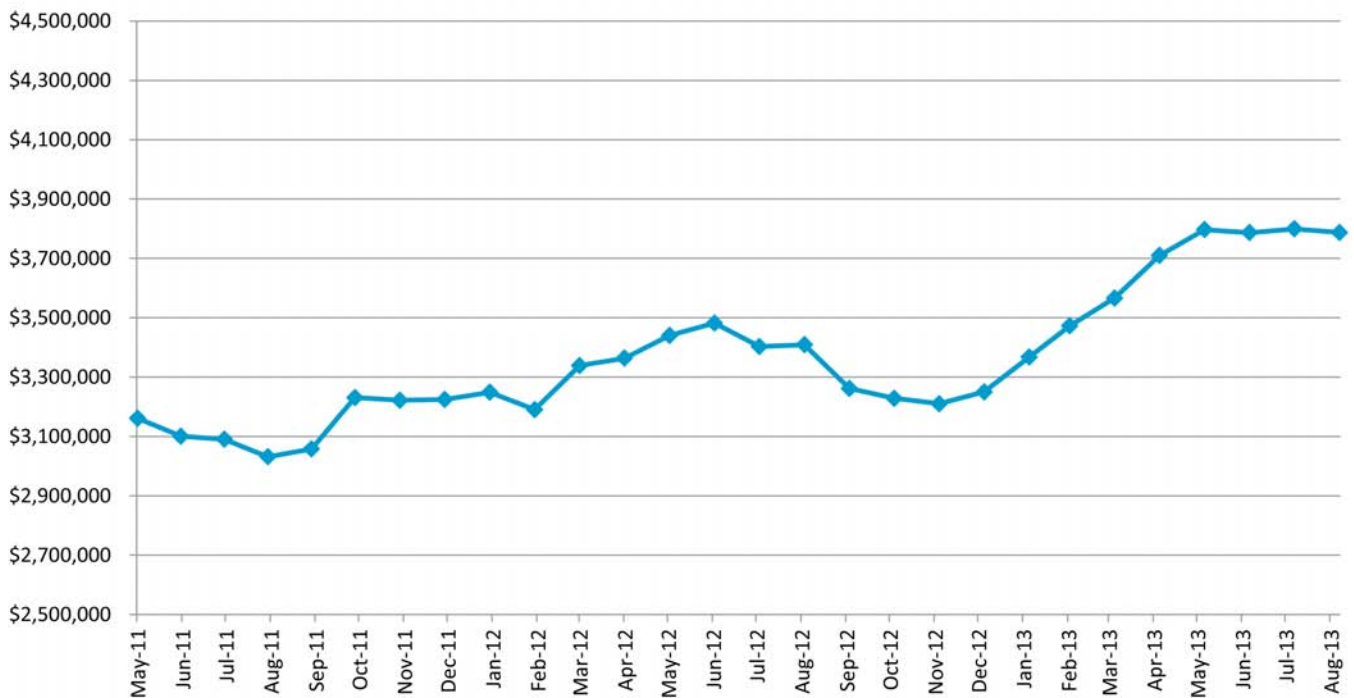


FIGURE E
GWA Water Revenue 4-Month Moving Average Excluding Back Billings

GWA water revenues also have increased 20 percent overall, \$600,000 per month or \$7.2M per year in the last two years.

THE MANAGEMENT PLAN

PART 3

Part 3 outlines GWA's driving documents, priorities, resources, the Toolbox approach, and relationships of the various reports that comprise the driving documents.

3.1 GWA'S Driving Documents

The following is a brief summary of GWA's driving documents. First, these driving documents include the plans such as the 2011 Court Order, USEPA Significant Findings (2012 SFW and 2013 RFI SFWW), and PUC stipulations GWA must follow to be in environmental and fiscal compliance. Second, these driving documents include plans to demonstrate GWA's management capacity to come into compliance, such as the CIP. Third, these driving documents include ongoing efforts to improve GWA's efficiency, such as the WAP and WLC Plan. And fourth, the documents include plans that address external factors that increase the uncertainty of GWA ability to come into compliance, such as groundwater under direct influence (GWUDI) and the PUC \$18.3 million Order.

3.1.1 Capital Improvement Plan 2013–18

The CIP is a 5-year plan listing GWA's capital projects, project completion timetables, and individual project financing plans. Project detail sheets are included and clearly communicate the scope of each project. This fiscally constrained CIP is intended to be updated annually. For municipal governments, the budget is considered the primary planning document. Like most utilities, GWA considers the CIP its second-most important planning document. A sound CIP is clearly a critical step in long-term fiscal planning. This CIP is based on GWA's WRMP 2007 and is updated annually pursuant to a dynamic planning process.

The 2010–14 CIP, GWA's first CIP, includes the addition of a detailed summary of project funding and details. The 2011–15 CIP details how the military buildup projects interface with GWA's CIP and includes the DoD funding

related to the military buildup. The 2012–16 CIP as updated incorporates the 2011 Court Order and the 2011 PUC Stipulation, as well as the USEPA State Revolving Fund (SRF) grant. The CIP 2013–18 had the following three major additions:

- provide funding for 2012 SFW
- provide funding for 2013 RFI SFWW
- change from a 5-year CIP to a 6-year CIP for the 5-Year Rate Plan

The key to successfully maintaining the CIP is GWA's management team's commitment to updating and maintaining the plan. These past four annual updates to the CIP demonstrate that succession planning and knowledge transfer processes are working at GWA. This has been accomplished by focusing on staff development and leadership development. Today, engineering and planning managers are trained to update the CIP. For example, Chief Engineer Tom Cruz, P.E., was the author of GWA Capital Improvement Plan 2013–2018, 02/26/2013, which is included in Appendix D. These four additions to the CIP are available online at guamwaterworks.org.



3.1.2 Potable Water Enhancement Plan

GWA's supply of drinking water was critically low in 03/2010, as the utility had not developed a new well since the early to mid 1990s. In 03/2010, GWA's water production was 38.5 million gallons per day (mgd) while system demand was 43 mgd; the production:demand ratio is 0.977 (42 mgd:43 mgd) with Navy water purchases making up 3.5 mgd. A production:demand ratio of below 1 indicates that GWA was using more water than it produced. Decreased production was the clear cause of water outages. These outages posed a potential health risk due to the potential for back siphon or system contamination. Additionally, water outages inconvenience GWA's customers. The GWA Potable Water Enhancement Plan is a short- and medium-term plan that recommends a course of action to ensure GWA's drinking water supply.

The Plan sets a production:demand ratio standard of 1.2 to ensure adequate GWA water supplies. Consequently, implementation of this plan will vastly reduce water outages. The implementation of the Potable Water Enhancement Plan is also very important to the business model approach. If you have water outages, GWA cannot meet its primary organizational objective, which is to sell water to its customers. Additionally, Navy water purchase is twice the cost of GWA water production. The implementation of the production plan must be one of GWA's priorities. The GWA Potable Water Enhancement Plan, 06/10/2010, is included in Appendix E as well as online at guamwaterworks.org.

Since the 03/2011 CMP, GWA has further improved production, allowing reductions in Navy water purchases as well as placing wells in reserve. A root cause analysis study completed by Brown and Caldwell (BC) confirmed that many undersized well shafts were causing motors to overheat. This problem, combined with some wells being at the end of their useful life, indicates that a major re-drill program should be incorporated into the CIP as part of the Asset Management Program. The next step is to complete an assessment of the well shafts in order to define their useful life and develop a well re-drill priority list.



3.1.3 Water Audit Program and Water Loss Control Plan

The WAP and WLC Plan, which is based on the AWWA M36 publication on water audit standards, has two major components: the water audit program and water loss control program. The water audit program's purpose is to manage water losses, measure the components of water loss, and provide for water audit reporting based on M36 standards. The water loss control plan provides a framework for managing water losses based on the M36 publication, "Water System Monitoring Plan." This publication was expanded to include GWA's initiative with respect to water loss control. This plan's holistic approach combines the priorities of increasing meter revenues and reducing water loss. The plan is fundamental to developing a GWA business model including but not limited to reducing water loss and increasing revenues. By reducing water loss, GWA decreases expenses, lowers power cost, lowers chemical cost, reduces Navy water purchases, and reduces overall costs in capacity-related CIP projects. Moreover, reducing water loss preserves our precious aquifer.

GWA successfully implemented the elements of the WAP and WLC Plan as discussed in Sections 2.5.3, 2.7.1, 2.7.5, and 2.8. The implementation of this plan increased meter revenues and started a sustainable program to maintain meters. Because meters are GWA's cash register, properly maintaining them is fundamental in any utility's business model. The WAP and WLC Plan includes the basic elements needed to establish a meter shop: test, calibrate, and maintain

meters. The continued implementation of the WAP and WLC Plan must be one of GWA's top priorities. The WAP and WLC Plan, 07/13/2011, is included in Appendix F as well as online at guamwaterworks.org.

Since publication of the 03/2011 CMP, GWA has implemented the non-revenue water or M36 reporting system. In addition, improvements on meters are clearly communicated in Part 2 of this document as well as later in the Dashboard in the Appendixes.

3.1.4 2011 Court Order

The 2011 Court Order outlined GWA's duties and responsibilities in managing the projects and programs required to meet USEPA's compliance requirements. Meeting USEPA compliance requirements and timelines was GWA's top priority. GWA strove to increase transparency and enhance communications while tracking the progress of the 2011 Court Order compliance efforts. Plans and reporting tools were designed to communicate to management and the compliance audience. Implementation of the 2011 Court Order was done in conjunction with GWA's business model. This 09/2013 CMP reviews GWA's efforts to increase communication and transparency to implement the 2011 Court Order while focusing on the fiscal reality. The 2011 Court Order, or Civil Case No. 02-00035 Order for Preliminary Relief re: Deadlines for Outstanding Projects Under the Amended Stipulated Order, filed 11/10/2011, is attached in Appendix G.

Since publication of the 03/2011 CMP, as discussed in Part 2 GWA's 2011-13 Improvements, GWA boasts an outstanding report card for the first year of compliance deadlines. In the second year GWA is projecting to be late on two deadlines, but the construction for both of these projects is underway and will be complete within 3 months and 6 months of the deadlines, respectively. The 2011 Court Order will continue to be GWA's top priority.

3.1.5 2012 Significant Findings Water

On 04/24/2012 through 05/04/2012, USEPA's Inspectors from the National Enforcement Investigation Center (NEIC) forensic lab in Lakewood, Colorado, visited Guam to conduct a technical inspection of GWA's water infrastructure. The focus was on drinking water plants and water supply wells. USEPA Region 9 requested this inspection to evaluate the physical and operational condition of the water systems. On 04/18/2013, USEPA and GWA held a teleconference on the 2012 SFW received by GWA on

11/05/ 2012. GWA was asked to uphold the deadlines committed in GWA's Dashboard and ensure that the specific items presented in the USEPA's "Response Plan," and included documentation on the items, were completed. The 2012 SFW must be one of GWA's top four priorities. USEPA's 11/01/2012 letter re: Findings of Significant Deficiencies Water and the NEIC Inspection Report for its inspection of GWA on 04/23/2012-05/04/2012 are included in Appendix N.

3.1.6 2013 Request for Information Significant Findings Wastewater

On 04/24/2012 through 05/04/2012, USEPA's inspectors from the NEIC forensic lab in Lakewood, Colorado, visited Guam to conduct a technical inspection of GWA's wastewater infrastructure. The focus was on the wastewater treatment plants and collection system. USEPA Region 9 requested this inspection to evaluate the physical and operational condition of the water and wastewater systems. The 2013 RFI SFWW must be one of GWA's top four priorities. Appendix O includes USEPA's Request for Information NEIC Wastewater Report Significant Findings, 05/03/2013.

3.1.7 NPDES Permit HWWTP and NDWWTP Requirements

In 09/2009, the USEPA directed GWA to upgrade its wastewater plants to secondary treatment; GWA appealed the decision. In 01/2012, the Environmental Appeals Court denied GWA's request to continue with its 301(h) waiver to continue to treat wastewater at the primary treatment standard and not upgrade the NDWWTP and HWWTP to secondary treatment. Today GWA is required to migrate to secondary treatment plant requirements at HWWTP and NDWWTP, our two largest treatment plants. The cost of this upgrade is estimated in the range of \$260 million.

USEPA, in cooperation with GWA, has established the Secondary Treatment Plant Water Quality Requirements. In early 2012, USEPA and GWA began discussions on the new NPDES permits for both treatment plants. The new permits went into effect on 06/01/2013, and must be one of GWA's top four priorities. GWA will be seeking the same types of timeline extensions to migrate to secondary treatment that have been granted to other communities in order



to keep rates affordable. For example, the City and County of Honolulu has been given 15 and 25 years, respectively, to upgrade two plants in order to afford the \$5 billion estimated cost to upgrade its entire system. Attached in Appendix U are the NPDES Permits for NDWWTP and HWWTP.

3.1.8 Groundwater under Direct Influence

The status of GWUDI is currently under review by the Guam Environmental Protection Agency (GEPA). This is important because if the Guam Aquifer is classified as GWUDI, the cost impact to GWA could range from \$200 million to \$300 million based on planning-level cost estimates. Currently, the study from USEPA does not recommend that Guam be placed under the GWUDI. Also, the scientific community, Water Environmental Research Institute (WERI), GWA, and DoD agree that Guam groundwater should not be classified as GWUDI. However, GEPA is reluctant to relinquish the decision to define Guam's groundwater as GWUDI, although GEPA has put in writing a contrary decision that favors implementation of the groundwater rule, which negates a finding for GWUDI.

3.1.9 Public Utilities Commission 2012 Stipulations

An appointed board, the PUC, approves and ultimately sets all GWA rate increases and approves GWA's contracts over \$1 million under its contract review protocol. The PUC's Stipulation: FY 2012 Annual True Up for FY 2013 Rates (PUC 2012 STIP) is a requirement for GWA receiving the 2013 rate increase. In the PUC 2012 STIP update from the 03/2012 CMP, the 2012 PUC STIP Dashboard underwent a major reduction from the 2011 STIP due to GWA negotiations. Four stipulations are required, including the following:

- monthly billing consumption analysis for the newly installed Badger meters
- annual meter testing
- updated water loss control plan
- filing of actual costs of chemicals for the NDWWTP

Additionally, the 03/2013 contract review protocol calls for additional items, which are listed in Table K below. GWA applauds the PUC's leadership to improve GWA's business model, and is further appreciative of the historical support of GWA's business model. The PUC 2012 STIP is found in Appendix H.

To further update the 03/2012 CMP, three important management documents were produced as a requirement of the 2011 PUC STIP: Development Plan Long-Term Comprehensive Water Distribution System, American Recovery and Reinvestment Act (ARRA) Improvement Program Energy Efficiency Report, and Assessment of GWA Apparent Water Loss Report, included in Appendixes P, Q, and R, respectively. Table 5 in Appendix A provides the PUC 2013 PUC STIP Dashboard.

3.1.10 GWA's Management Initiatives

GWA's Management Initiatives include the GWA Management Study by the consultant Baker Tilly as defined in the document: GWA, Phase 2 Summary Results, Recommendations, and Roadmap, 02/2010. The Baker Tilly study recommended 40 specific tasks related to the following six focus areas:

- organizational alignment
- financial planning and strategic alignment
- financial controls and process
- workforce planning and development
- customer service
- crew efficiency and safety

The 2010 GWA general manager's priorities were added to the Baker Tilly Management Matrix and include the following:

- increase water production capacity
- increase meter accuracy
- complete stipulated order requirements
- reduce water losses
- implement CIP projects

The Baker Tilly Management study is included in Appendix I. GWA General Manager Priorities, 07/2010, is included in Appendix J.

3.1.11 GWA 2007 Water Resources Master Plan

GWA's completion of the Water Resources Master Plan, 2007 is a comprehensive study done in collaboration with the USEPA. The full implementation of the Master Plan will help GWA become a sustainable utility and thus improve GWA's long-term business model. The Master Plan goals of improving asset management, capital planning, O&M, financial planning, and level of service, and achieving full regulatory compliance are still valid today. GWA should continue to use the Master Plan as a guiding foundational document. GWA should continue the efforts in updating the Master Plan, such as the CIP revisions, GIS updates, asset management improvements, wastewater hydraulic model updates, and water hydraulic model updates. The Master Plan is available online at guamwaterworks.org.

The current CIP and 09/2013 CMP, combined with all the Appendixes, serve as a draft update to the Master Plan.

3.1.12 USEPA's PG Environmental Reports

The USEPA's consultant, PG Environmental, completed a series of reports with recommendations to improve GWA. GWA believes the USEPA's PG Reports contain valuable insights on how to improve GWA. The broad-based reports focus on two areas of improving GWA's sustainable utility model: improving master planning and investing in operation and maintenance. Of course, the PG Reports fully support the investment into the Production Plan and WAP and WLC Plan. The PG Reports include cost estimating of GWA projects, future capital needs, and priorities for USEPA grants.

The two main reference reports by PG Environmental are as follows. First, GWA Master Planning Technical Assessment, 01/2010 (included in Appendix K) set the stage for improving GWA system planning and capital planning capabilities. Second, Draft Cost Estimate for

the Operation and Maintenance of GWA, 10/2010 (included in Appendix L) provides a recommendation for the cost of operation and maintenance based on similar utilities assuming the original high-paced military buildup. Although these reports have some limitations, GWA will use these PG Reports for years to come and have elements of improving GWA's business model.

3.1.13 AWWA and WEF Benchmark

GWA has completed additional efforts to assess the utility, ranging from management reviews to capital improvement needs. In 2005 GWA conducted an external review by QualServe using the AWWA and Water Environmental Federation (WEF) benchmarks. This study provided benchmarks for water operations, wastewater operations, and customer service. In 2009 GWA management reviewed the American Public Works Association (APWA) certification program's requirements that provide a prescriptive approach to completing best management practices for specific work sections. The APWA is an ideal tool for the creation of a new section or development of SOPs for an existing section; for example, the development of a fleet services section. The AWWA and APWA models will be used when practical.

3.1.14 USEPA's Technical Assistance

To aid in the implementation of a portion of the PG Reports GWA worked with USEPA to provide additional technical assistance in collaboration with GWA. As a result, USEPA contracted with CDM Smith for technical assistance. This technical assistance is funded by a grant from USEPA. Phase I of this work completed the following tasks:

- **Task 2:** CIP Program Planning, Cost Estimating, and Project Identification/Prioritization
- **Task 3:** Procurement and Contract Administration Program
- **Task 4:** Construction Management and Work Inspection Program
- **Task 5:** Utility-Wide Asset Management Program including Operation and Maintenance Program, as discussed in Subsection 2.5.2

Included in Appendix M is CDM, Technical Assistance to Guam Waterworks Authority (GWA) In-Kind Services, 12/2010.

Because USEPA and GWA agree that this technical assistance grant was very successful, USEPA agreed to fund a Phase II, which includes substantial additional grant funds from USEPA. The total amount of grants for system planning-related projects is \$9.3 million. Phase 2 of CDM Smith technical support is in negotiations with USEPA. Proposed work includes the following:

- island-wide asset data collection and condition assessment
- perform system inventory and condition assessment for water operations and maintenance
- develop geographic information system (GIS) system-wide mapping
- staff training and SOP development
- confirm and update existing water/wastewater GIS layers
- management capacity development through various workshops in the implementation of asset management

A list of CDM deliverables is included in Appendix V.

3.1.15 PUC \$18,333,333 Order

In early 2011, the PUC ordered GWA to pay \$18,333,333 out of the 2010 Bond to the Government of Guam. In mid-2011, GWA challenged the order in the Superior Court of Guam Case No. SP-0118-11. Although GWA appeared to win the case, the PUC required the \$18,333,333 to be encumbered from the 2010 Bond funds. This issue has not yet been resolved.

3.2 Priorities

As discussed above in the PUC 2011 STIP, GWA Management Initiatives, and PG Reports, GWA's practices and procedures have been audited, reviewed, and studied extensively. GWA acknowledges how far it must go in order to fulfill the objectives of its mission statement. Presently, however, GWA must concentrate its efforts on meeting the 2011 Court Order and other compliance requirements by focusing on the business model. It is acknowledged that all the audits, reports, and recommendations have very productive and positive suggestions. But GWA cannot feasibly implement all of these at once. This plan clearly defines GWA's priorities and includes the flexibility to adapt to the compliance and fiscal environment.

Since publication of the 03/2012 CMP, GWA has made tremendous progress in moving forward on management initiatives. But realistically, GWA must focus on the following priorities:

- increase water production capacity
- increase meter accuracy
- complete 2011 Court Order requirements
- complete 2012 WSF requirements
- complete 2013 RFI SFWW requirements
- complete NPDES permit for HWWTP and NDWWTP short-term requirements
- reduce water losses
- implement CIP projects
- implement the asset management program



Due to the tremendous amount of staff time and resources required for these initiatives, GWA must focus on productively implementing existing plans.

GWA has made forward progress on the priorities listed above. GWA has demonstrated that it can work on multiple priorities simultaneously; in fact, these priorities overlap and are interrelated. GWA must focus on the 2011 Court Order as its top priority, including acquiring the financing to complete the deliverables. Completing the 2011 Court Order will also complete a significant portion of the 2012 SFW, as well as help promote an asset management culture.

3.3 Resources

This section describes resources at GWA's disposal, including its employees, workforce planning and development, succession planning overview, knowledge transfer and training and other resources.

3.3.1 GWA Employees

GWA's Mission Statement and Value Statement express GWA priorities. GWA's Mission Statement is as follows: "We will provide outstanding customer service in delivering excellent water and wastewater services in a safe, reliable, responsible, and cost effective manner." GWA's Value Statement is as follows: "The Consolidated Commission on Utilities and Management recognizes that its employees are its most valuable resource."

GWA's Value Statement

The Consolidated Commission on Utilities and Management recognizes that its employees are its most valuable resource.

Part 2 of the plan shows the employees what they have accomplished. These accomplishments demonstrate that GWA employees have the skill, knowledge, experience, and leadership necessary for GWA to become a best-in-class utility. Employee dedication is the key to GWA's success.

GWA has the professional management and dedicated employees that are crucial to propelling the utility forward. GWA's commitment to workforce development—combined with management's encouragement of GWA staff leading the system



planning, capital planning, and strategic planning efforts—allows the utility to thrive under the 2011 Court Order and other compliance requirements. The 03/2012 CMP, this 09/2013 CMP update, the CIP and its updates, the 5-Year Rate Plan, the Production Plan, and the WAP and WLC Plan are just part of GWA's efforts that clearly demonstrate GWA's management capacity.

The organization's technical capacity is constantly improving. As of 08/01/2013 GWA has seven professional engineers, four of whom hold civil professional engineers with master's degrees. As of 06/01/2013, GWA has three certified public accountants. The PG Report fully applauded GWA's management; for example, the PG Report recognized GWA has:

...began to implement management, engineering, and financial programs that will ultimately help GWA become a sustainable utility. Specific examples include the reorganization of the Engineering Division, the 2010–2014 CIP Program document, the Five-Year Financial Plan, and the further development of decision-making tools such as geographic information systems (GIS) and hydraulic models. These accomplishments and their continued improvement should be commended... ..PG applauds the Chief Engineer's efforts to create the 2010–2014 CIP report.

3.3.2 GWA Workforce Planning and Development

Workforce planning and development is one of the most important elements of sustainability of an isolated island utility. Since 07/2011, GWA has made tremendous strides in employee training. GWA has some of the best employees in the country and with effective training opportunities, there is no limit to where the utility can ascend. Over the past 2 years, GWA has implemented two internal training programs, one for all employees and one for supervisors and managers. Training includes all of the elements of organizational success: strategic planning, ethics, interview training, and organizational ownership.

In order to build management and leadership capacity in GWA, GWA focused on the development of 24 employees. Partially funded from a Department of Interior grant, 24 managers and supervisors have graduated from a supervisor academy, each having passed a 60-hour course taught by the University of Guam that was a prerequisite for “Certified Public Manager” (CPM) Program in 2011. In 2012, this group of 24 also achieved CPMs, a nationally recognized management certification program offered by Arizona State University that requires 24 day-long courses. Today, this same group is completing the American Management Association (AMA) Certification Program with one training module remaining. The investment in these managers has also created a team-building environment.

During these fiscally challenged times, GWA conducted 4,464 man-hours, or 2.14 man-years, of operator training in 1 year. This is close to the target of 3 percent it would like to establish. This training included Water and Wastewater Operators Training conducted by Hawaii Rural Water Association, Infrastructure Operation and Maintenance and Management Training for Territorial Water and Wastewater Operators, and GWA Operator Math and Tech Class. Details of these and other training opportunities are provided in Appendix B, Workforce Planning and Development Report, 12/2012.

Awaiting AWWA national approval this 12/2013, GWA is also in the final stages of starting the Western Pacific AWWA subsection, a subsection of Hawaii. This subsection will be established with a training focus.

GWA senior management is developing management skills and is well-versed in using a Toolbox and Dashboard approach. For example, Assistant General Manager Paul Kemp is responsible for managing and updating all the 2011 Court Order Dashboards and Reports. Paul also generated the 6-month 2012 SFW report card included in Section 2.3.2 and developed the draft NPDES Permits HWWTP and NDWWTP Dashboard listed below in Section 3.4.12. Chief Engineer Tom Cruz, P.E., is responsible for managing and updating all the related CIP Dashboards. Tom also developed the 2013 RFI SFWW Dashboard as defined below in Section 3.4.11. Prudencio Aguon is responsible for managing and updating the PUC 2012 STIP Dashboard listed below in Section 3.4.5. Clearly, GWA senior managers have adopted the Toolbox and Dashboard approach.

3.3.3 Succession Planning Overview

The previous paragraph demonstrates that GWA's succession planning is working with respect to implementing the 03/2012 CMP. In addition, the leadership and management training provided by the CPM Program provided the resources for succession planning. In fact, when two division manager positions became available in 03/2013 due to retirements, these two active capacity positions were filled by graduates of the CPM program. The development of annual updates to the CIP demonstrates that succession planning and knowledge transfer processes are working at GWA, as documented in Section 3.1.1. Today, engineering and planning managers are trained to update the CIP. For example, Chief Engineer Tom Cruz, P.E., was the author of the last two CIPs, as listed in GWA Table A in Section 1.2. Table A also demonstrates that succession planning is part of the culture of GWA by the number of planning documents being developed by GWA's managers.

3.3.4 09/2013 CMP Knowledge Transfer and Training

This plan provides the knowledge transfer process and training for GWA employees on GWA's management efforts. In addition to this plan, GWA has developed a PowerPoint presentation to ensure that GWA management and key staff are trained regarding this plan, the Toolbox approach, and the elements of the plan. The general manager is committed to giving updated comprehensive training to all GWA employees. The 09/2013 CMP Training PowerPoint presentation is provided in Appendix C.



Based on Recommendation B of the 03/2012 CMP, this training program was presented to all supervisors and managers, and because of the positive response it was expanded to GWA employees. A follow-up training was provided to all employees on the status of the 03/2012 CMP to demonstrate the improvement GWA employees accomplished, as documented by Part 2 of this plan.

3.3.5 Program Management Office

As with all utilities, GWA uses professional service contracts and construction contracts to deliver its CIP projects. GWA will use the Program Management Office (PMO) to complete the deadlines defined in the 2011 Court Order. BC, an international engineering consulting firm with a proven track record of managing projects successfully for utilities across the country and around the world, was recently hired to assist GWA management in the completion of 2011 Court Order projects over the next several years. BC serves as the PMO contractor and assists GWA in deliverables related to water and wastewater. Additionally, the PMO will help implement the GWA business model. This includes, but is not limited to, assisting in delivering the requirements of the PUC 2011 STIP and the WAP and WLC Plan. GWA must ensure that the PMO assists GWA employees with training and knowledge transfer. Appendix S provides a list of reports and deliverables produced by BC.

3.3.6 Performance Management Contract

Veolia Water Guam serves as the Performance Management Contract (PMC) to assist GWA in wastewater operation. The contract expires at the end of 2013. GWA is in the procurement process to hire a PMC for wastewater collections operations. GWA must manage the PMC so that it can be successful. Additionally, as with the Veolia contract, GWA must ensure that the PMC provides GWA employees with training and knowledge transfer.

3.3.7 GWA's Staffing and Resources to Implement 09/2013 CMP

GWA is critically understaffed with respect to environmental compliance and other regulatory compliance, such as the PUC. Although a general manager hiring freeze was instituted in 2011 and 2012 to alleviate GWA's fiscal stress, it was fully acknowledged that GWA was critically understaffed as detailed in both USEPA's PG Reports referenced above. In order to fully implement and maintain the 2011 Court Order, the USEPA's 2012 SFW Dashboard and the USEPA's 2013 Significant Findings Wastewater Dashboard, GWA must commit to additional levels of staffing. Because of this, GWA created a draft 5-Year Staffing Plan, which details a 3 percent increase in staff.

With respect to PUC oversight, the time spent by senior management in order to secure the GWA rate increase, the contract review protocol, and meeting the various stipulations was, and continues to be, substantial.

Although only a 2 percent increase in staff was requested in the 5-Year Rate Plan, GWA compromised on the shortfall by finding a reduction of 1 percent of staff through increased efficiency. One of the assumptions of the draft 5-Year Rate Plan staffing level was that the PMO would be maximized.

In 07/2013, the CCU is challenging GWA management to create an organizational structure including senior management to take GWA into the future.

3.4 Toolbox Approach

The Toolbox approach to the reporting and implementation of GWA's management initiatives outlined in this 09/2013 CMP is employed because of reporting requirements, priorities, and organizational responsibilities. The following dashboards are tools that together make up the Toolbox, these dashboards are presented in detail in Appendix A. In this 09/2013 CMP, GWA is adding three new tools: the 2012 SFW Dashboard, 2013 RFI SFWW Dashboard, and NPDES Permit HWWTP and NDWWTP Dashboards. If asked to perform another major management initiative, another dashboard or tool is created. The 2012 SFW Dashboard is an example of a new tool, as this 09/2013 CMP update is analogous to buying a bigger Toolbox. The 2012 Master Dashboard is the framework for the Toolbox and communicates all elements of the Toolbox by reference.

3.4.1 2012 Master Dashboard

The 2012 Master Dashboard reports all the priority management initiatives within GWA using the GWA Management Initiatives in Section 3.1.10 as a starting point. The Master Dashboard, along with this 09/2013 CMP, provides the big picture of GWA's priority management initiatives. For example, the Production Plan is tracked by reference in this dashboard and the Production Plan Dashboard provides the details of each project. Additional examples reported in the Master Dashboard are Workforce Planning and Improving Master Planning Tools. Any new management initiatives can easily be added to the Master Dashboard. This includes the CCU's performance guidelines for the general manager, established in 08/2013. The Master Dashboard is updated on a quarterly basis and is included in Table 1 of Appendix A.

3.4.2 Engineering CIP Dashboard

The CIP Engineering Dashboard has been in place for more than 2 years and is presented at the monthly CCU meetings. Chief Engineer Tom Cruz, P.E., redesigned and improved this CIP Dashboard. The CIP Engineering Dashboard directly communicates the status of CIP projects and is based on GWA Capital Improvement Plan 2013–2018, which includes the Summary Table Potable Water, Summary Table Wastewater, and Summary Table Electrical Engineering. This planning effort shows that the CIP Plan is being managed as a whole. The report includes the whole cycle of project delivery including engineering procurement, engineering design, construction procurement, and construction. The percentage completed in each of these phases is included in the report. Procurement on Guam, and more specifically within GWA, is a threat to GWA's success in project delivery. Managing and reporting the progress of project procurement is as important as reporting the progress of design and construction projects. The CIP Engineering Dashboard is provided in Table 6 of Appendix A.

3.4.3 Engineering CIP Project Report

The Engineering CIP Project Report has been in place for more than 3 years and is presented at the monthly CCU meetings. The Engineering CIP Project Report reports the details of the CIP Engineering Dashboard to a management audience in a classic general manager monthly report to governing board format. The importance of the report is to provide management overview of the projects. Specific project details are provided in a separate Project Management Monthly Report. CIP Project Procurement reporting is included because it is the biggest threat to GWA's success in project delivery. The Engineering CIP Project Report is provided in Appendix B.

3.4.4 Production Plan Dashboard

The Production Plan Dashboard is based on Table C: "Short Term" Planning Level Cost Estimate on page 7 of the GWA Potable Water Enhancement Plan. The Production Plan Dashboard tracks specific CIP Projects that increase production. One indicator of the effectiveness of the implementation of this Plan is the amount of Navy water purchased (reference Section 2.7.2). The Production Plan was updated on 03/01/2012, and communicated GWA's reduction of Navy water purchases. The Production Plan Dashboard, which will be updated on a quarterly basis, is included in Table 2 of Appendix A.



3.4.5 WAP and WLC Plan Dashboard

The WAP and WLC Plan Dashboard is based on Table 3: GWA Action Plan “Now Term” and Table 8: GWA Action Plan “Short Term” of the WAP and WLC Plan and was modified to include the status of the specific activity. The WAP and WLC Plan Dashboard includes a second table to detail progress of the specific activities: Table 4, Action Items for Implementation of Dashboard for WAP and WLC Plan, which is included in Appendix A. The Action Items for Implementation of the Dashboard for the WAP and WLC Plan includes the following tasks:

- Meter Moving Forward
- Leak Detection
- Leak Repair Project/Line Replacement Project
- Back Office Billing

The WAP and WLC Plan Dashboard, which will be updated on a quarterly basis, is included in Table 3 of Appendix A.

3.4.6 PUC 2012 STIP Dashboard

Completing the requirements of the PUC 2012 STIP is important to keeping GWA’s credibility and relationship with the PUC. The implementation of the PUC 2012 STIP moves GWA forward in development of its business model. The PUC 2012 STIP Dashboard is a simple outline of the PUC 2012 STIP including the required tasks, due dates of the task, and GWA’s progress on completing the task. The PUC 2012 STIP Dashboard, which will be updated on a quarterly basis, is included in Table 5 of Appendix A.

3.4.7 2011 Court Order Quarterly Report

The 2011 Court Order Quarterly Report is a written report that details the progress made on the 2011 Court Order, including summarizing important milestones such as the project funding, project approval, and awards of contracts. The Court Order Quarterly Report communicates to the CCU in a management audience format the history, background, and forward progress on the 2011 Court Order deliverables. The Court Order GM Quarterly Report, which will be updated every 3 months, is included in Appendix B.

3.4.8 2011 Court Order Dashboard

The purpose of the 2011 Court Order Dashboard is to list all the requirements of the 2011 Court Order time frames, due dates, critical-path items, and resources GWA plans on using to complete the specific paragraphs. These resources can include the PMO, PMC, professional service contacts, construction contracts, or by GWA employees. The 2011 Court Order Dashboard, which will be updated monthly and included in the General Manager’s CCU Report, is included in Table 7 of Appendix A.

3.4.9 2-Year Court Order Dashboard

The 2-Year Court Order Dashboard focuses on meeting the 2011 Court Order requirements due in the first 2 years, the 2011 Court Order requirements due in the first 3 years, and the critical-path items of the 2011 Court Order. The 2-Year Court Order Dashboard tracks milestones and the due dates of the Court Order and, more importantly, defines in the note section the responsible parties and due dates for the internal submission. The 2-Year Dashboard is updated weekly as needed. The 2-Year Court Order Dashboard, which will be updated monthly and included in the General Manager’s CCU Report, is included in Table 8 of Appendix A.

This Dashboard is updated from the 03/2012 CMP. After the first 90 days of the Court Order, this Dashboard was modified to a 180-day Dashboard. After the 180 Days Court Order, the Dashboard progressed to a 1-year Dashboard. Now the 2-year Dashboard demonstrates that this management tool is an established part of GWA culture.

3.4.10 2012 Significant Findings Water Dashboard

The 2012 SFW Dashboard tracks milestones and due dates of the Significant Findings, defines the responsible party, and tracks due dates for the internal submission. The 2012 SFW Dashboard, which is updated weekly as needed, is included in Table 9 of Appendix A.

3.4.11 2013 RFI Significant Findings Wastewater Dashboard

The 2013 RFI SFWW Dashboard tracks milestones, the due dates of the Significant Findings, due dates for the internal submission, and defines the responsible party. The 2013 RFI SFWW Dashboard was created by Chief Engineer Tom Cruz, P.E., demonstrating that succession planning and knowledge transfer are working at GWA. This has been accomplished by focusing on staff development and leadership development. The 2013 RFI SFWW Dashboard, which is updated weekly as needed, is included in Table 10 of Appendix A.

3.4.12 NPDES Permits HWWTP and NDWWTP Dashboard

This dashboard is very preliminary and will be updated as required to track the progress on the NPDES permit requirements as a result of monthly meetings with USEPA. The NPDES Permit takes effect on 06/01/2013 and includes a Fats, Oil, and Grease Program; a Pretreatment Program; additional monitoring with reporting; Secondary Treatment Plant upgrades at HWWTP; and Secondary Treatment Plant upgrades at NDWWTP. The draft NPDES Permits HWWTP and NDWWTP Dashboard was created by Assistant General Manager Paul Kemp, demonstrating that succession planning and knowledge transfer are working at GWA.

3.5 Relationships of the Reports

This section summarizes the reports, restates the major points of the reports, and attempts to define the relationships of the reports to each other.

3.5.1 List of Plans

GWA has internally developed plans to vastly improve the utility and, more specifically, the planning process and business model. The next step is the implementation of the following plans:

- GWA Potable Water Enhancement Plan, 06/10/2010
- GWA WAP and WLC Plan, 07/13/2011
- GWA Capital Improvement Plan 2013–2018, 02/26/2013
- GWA Comprehensive Management Plan, 09/2013 (this plan)

3.5.2 List of Report and Dashboards

Provided in Appendix A are all the dashboards generated to assist the general manager in the management, implementation, communication, tracking, and reporting of GWA's management initiatives:

- 2012 Master Dashboard
- Engineering CIP Dashboard
- Production Plan Dashboard
- WAP and WLC Plan Dashboard
- Action Items for Implementation of Dashboard for WAP and WLC Plan
- PUC 2013 STIP Dashboard
- 2011 Court Order Dashboard
- 2-year Court Order Dashboard
- 2012 SFW Dashboard
- 2013 RFI Significant Findings Wastewater Dashboard

3.5.3 The CIP Reporting Relationship

Completing individual projects is a requirement of implementing the 2011 Court Order, 2011 PUC STIP, Production Plan, and WAP and WLC Plan. Management of individual CIP projects is one of the keys to the success of improving GWA. These project monthly reports drive the Engineering CIP Dashboard and thus the Engineering CIP Project Report. The CIP Project Report drives all other reporting: 2011 Court Order Dashboard, WAP and WLC Dashboard, Production Plan Dashboard, and 2011 PUC STIP Dashboard.

RECOMMENDATIONS AND CONCLUSION

PART 4

This section presents conclusions and recommendations resulting from this 09/2013 CMP.

4.1 Recommendations

At the time of publication of the 03/2012 CMP, the greatest threat to GWA compliance orders was GWA making investments only in the capital projects needed to meet the deliverables of the Compliance Order “at the cost of” investment in the utility’s business model and investment in the utility’s sustainability model. That is, investment in solely capital projects will not solve GWA’s compliance problems. In the 2006 Stipulated Order, USEPA supported the investments in the business model and sustainability model by requiring the master planning efforts and requiring GWA to obtain qualified staff. USEPA’s PG Report strongly supports investment in master planning and investments in operations and maintenance. With the implementation of the 03/2012 CMP, GWA demonstrated that it strongly supports investments in the business model and investments in the utility’s sustainability model. But GWA must stay diligent and keep up its current momentum in order to focus on this plan. Therefore, recommendations described in the following sections are made.

4.1.1 Recommendation A

Keep focused on GWA’s top priority, the 2011 Court Order. Next, focus on the other top priorities: 2012 SFW Dashboard, 2013 RFI SFWW Dashboard, and NPDES Permit HWWTP and NDWWTP. Next, make progress on the remaining priorities—the Production Plan, WAP and WLC Plan, PUC STIP, and management initiatives—while focusing on the elements that can increase revenues and decrease expenditures. Finally, under these “perfect storm” conditions, complete the low-hanging fruit as defined in the Master Dashboard.

4.1.2 Recommendation B

Invest in training all staff on the initiatives in this 09/2013 CMP. This should include annual updates on the progress of the 09/2013 CMP. Update and implement the 5-Year Staffing Plan to provide the human resources to ensure that compliance, asset management, and training are supported at sustainable levels. The plan must include and define the dedicated resources to maintain the dashboards and reports defined by this plan, as well as the resources required to comply with the PUC requirements. Have the CCU approve an organizational structure including senior management to take GWA into the future. Update the dashboards and reports as defined in this plan using a team approach.



4.1.3 Recommendation C

Continue improving the business model and sustainability model with respect to workforce development, master planning, and investment asset management. The next step is for GWA to make meaningful efforts in preventive maintenance and asset replacement in order to sustain its O&M efforts. Make sure the training and communication includes developing the improvements in Part 2 into KPIs for GWA's five operational divisions. These KPIs should be integrated into the budget process.

4.2 Conclusion

Guam Waterworks Authority (GWA) is committed to providing excellent water and wastewater products, programs and services in a safe, reliable, cost effective and responsible manner, developing and maintaining systems, infrastructure, and community outreach to enhance Guam's drinking water and wastewater systems.

GWA successfully implemented the Water Resources Master Plan (WRMP 2007) to propel the utility on a long-term, progressive path to "best in class" performance by:

- Instituting sound resource management practices
- Developing sound management foundations, planning, and financial systems
- Engaging consumers to provide them appropriate levels of service
- Achieving long-term resource sustainability
- Establishing a road map for full regulatory compliance

The 09/2013 CMP springs from the tremendous progress GWA's management team and the employees of GWA have made over the past year under the leadership and support of the CCU and PUC.

This internal management plan is a framework for communicating, tracking, and reporting GWA's management initiatives and long-term strategies. The intent of this plan is to provide GWA leadership to allow GWA to excel under the 2011 Court Order and other compliance requirements by creating a sustainable utility. This plan clearly demonstrates that GWA is thriving under the 2011 Court Order and other

compliance requirements. This plan demonstrates that GWA management can respond to the changing compliance environment and possible military buildup for the following reasons:

- This is an update to the 03/2012 CMP.
- GWA has updated its CIP each year.
- GWA responded quickly to the 2012 SFW.

This living document incorporated past efforts and aligns GWA for the future.

- The first step was the completion and communication of the 03/2012 CMP.
- The second step was the implementation of the 03/2012 CMP.
- The third step was to document GWA's success; the 09/2013 CMP documents GWA's success of the 03/2012 CMP and GWA's improvements over the last 2 years.

But more importantly, the 09/2013 CMP sets the course for future success. Success is based on the 09/2013 CMP being used as a living document, by employing GWA's Toolbox approach to management and the specific tools or dashboards. GWA will use the 2013 CMP to manage the 2011 Court Order, other compliance requirements, and GWA's initiatives. The management tools, specifically the dashboards, are included in Appendix A.

Part 1 of this 09/2013 CMP defines the business model and includes implementation of programs to improve GWA's business model. This 09/2013 CMP demonstrates that the 2011 Court Order cannot be separated from GWA's business model. With an improved business model, GWA's credit quality will be in place to receive the financing to complete the 2011 Court Order and fulfill other compliance requirements.

4.2.1 Fiscal Improvements

Part 2 of this plan demonstrates that GWA has vastly improved its organization-wide operations, compliance, planning, and fiscal position. GWA has improved its fiscal position by sustainable levels of reduction in expenditures and a substantial level of increase in revenues combined with revenue stability. This plan documents a reduction in expenditures from two sources to be over \$300,000 per month (or \$3.6M/yr). This plan documents substantial increases in revenues of approximately \$600,000 per month (or \$7.2M/yr). The documented fiscal swing for GWA is over \$900,000

per month (or \$10.8M/yr) over the last two years. This equates to over 15 percent of GWA's total operating revenues.

4.2.2 Compliance Improvements

Today GWA has had exemplary compliance as demonstrated by the performance on the 2011 Court Order over the first year and outstanding compliance with the 2012 SFW. GWA met 53 of 54 USEPA deadlines in the first year of the 2011 Court Order. The one late project, NDWWTP, was completed within 3 months of the deadline. GWA's outstanding compliance with the 2012 SFW was demonstrated by GWA completing 20 of 40 items in the first 6 months.

4.2.3 Improvements in Effectiveness and Efficiency

Today, GWA is a more effective and efficient utility and this plan demonstrates GWA's commitment to continuous improvement through its commitment to the business model path and sustainability model goal. Today the business model is working at GWA, demonstrated by the fiscal improvements outlined in Part 2 of this plan. Today the sustainability model is working at GWA, demonstrated by the improvement in planning, system planning, asset management, staff development, and succession planning.

4.2.4 Communicating Success

GWA's general manager completed 70% of employee training as indicated in the Update to the 03/2012 CMP Part 2, showcasing employee accomplishments and proving that GWA employees have the skill, knowledge, experience, and leadership to take GWA to best-in-class utility status. GWA's employees are reminded that no amount of leadership alone could turn an organization around - their dedication is the key to GWA's success. GWA recognizes and expresses its gratitude to its employees for their contributions to these efforts and reminds them that their team-building efforts lifted morale, the key element in GWA's turnaround. The general manager acknowledges that GWA's employees are clearly our most valuable asset, and they are encouraged to continue to take ownership of their agency.



Special thanks went out to the employees for the following team-building efforts in the last year:

- for the first time in 10 years, created an employee-funded Christmas party
- created the employee council
- volunteered for more than two dozen site cleanups to demonstrate pride in our workplace
- participated in GWA events, such as painting and maintenance of bus stops and the National Water Week walk

The next step is to provide training to staff on this plan, with the emphasis on encouraging management to take a leadership role in the implementation of these initiatives.

In conclusion, combined with the leadership of the CCU and because of GWA's experienced, qualified, and dedicated employees, GWA will continue to thrive under the 2011 Court Order by focusing on leadership, management, planning, and communication.

The documented fiscal swing for GWA is over \$900,000 per month (\$10.8M per year) over the last two years. This equates to over 15 percent of GWA's total operating revenues.

APPENDIX A

GWA Dashboard Documents

- Table 1 Master Dashboard, Updated 09/26/2013
- Table 2 Production Plan Dashboard, Updated 09/30/2013
- Table 3 WAP & WLC Plan Dashboard, Updated 09/30/2013
- Table 4 Detailed Action Items (WAP & WLC Plan), Updated 09/30/2013
- Table 5 PUC STIP Dashboard FY2011, Updated 07/09/2013
- Table 6 CIP Engineering Dashboard, Updated 08/27/2013
- Table 7 2011 Court Order Dashboard, Updated 09/26/2013
- Table 8 2-Year Dashboard, 2011 Court Order, Updated 08/07/2013
- Table 9 2012 Significant Findings Water Dashboard, Updated 09/06/2013
- Table 10 2013 Significant Findings Wastewater Dashboard, Updated 08/28/2013

Table 1: Master Dashboard, Updated 09/26/2013

#	Name	Lead	Notes
BT 1a	Implement strategic planning	MR	Mission & Vision Statement approved by CCU 05/25/2010 01/20/2012 memo Implementation of Plan 08/23/2013 memo WDM in charge of Ugum Operations
BT 1b	Define CCU and GWA reporting requirements	MR	09/30/2011 SOP GM-01, 09/30/2011 SOP GM-02, 09/30/2011 SOP GM-03
BT 1c	Establish clear performance measures	MR	09/30/2011 SOP GM-01, 09/30/2011 SOP GM-02, 09/30/2011 SOP GM-03, Performance Evaluations Completed 2010
BT 1d	Improve accountability process	MR	10/12/2011 memo Employee Dev. Specialist
BT 1e	Reorganize senior management structure	MR	09/01/2011 memo Administrative Pool, 09/01/2011 memo Finance Division, 09/01/2011 memo Certification of Funds, 09/01/2011 memo Responsibility of Claims 01/02/2013 memo Improve Internal CS in IT Section 01/31/2013 memo Improve Internal CS in Procurement & Supply 03/21/2013 memo Improve Alignment of WW units 06/24/2013 memo Certification of Funds
BT 1f	Improve business unit organizational alignment	MR	09/01/2011 memo Administrative Pool, 09/01/2011 memo Finance Division, 09/01/2011 memo Certification of Funds, 09/01/2011 memo Responsibility of Claims, 01/02/2013 memo Improve Internal CS in IT Section 01/31/2013 memo Improve Internal CS in Procurement & Supply 03/28/2013 memo RoR to Water O&M 04/05/2013 memo RoR to Water O&M 04/19/2013 memo W/WW Organizational Alignment and Governance
BT 1g	Consolidate duplicate functions	MR	09/01/2011 memo Administrative Pool, 09/01/2011 memo Finance Division, 09/01/2011 memo Certification of Funds, 09/01/2011 memo Responsibility of Claims, W/WW 01/02/2013 memo Improve Internal CS in IT Section 01/31/2013 memo Improve Internal CS in Procurement & Supply 04/19/2013 memo Organizational Alignment and Governance
BT 2a	Implement budget planning process	GC	09/01/2011 memo Responsibility of Claims Budget / Finance Strategic Plan 80%
BT 2b	Improve financial modeling and forecasting	GC	
BT 2c	Formalize CIP decision making	GC	

Table 1: Master Dashboard, Updated 09/26/2013 (Continued)

BT 3a	Improve asset accounting	PA	01/11/2012 memo Asset Management (AM) 01/11/2012 memo Collection System 02/01/2012 memo AM Support 02/08/2013 memo Assistance with Asset Management
BT 3b	Improve control over CIP	TC	Reference 09/01/2011 memo Certification of Funds
BT 3c	Improve inventory controls	GC	02/21/2012 memo Procurement & warehouse 02/08/2013 memo Storekeeper for WMO 02/11/2013 memo Improve Inventory Control 02/19/2013 memo Support for W/WW Supply and Inventory needs
BT 3d	Formalize financial reporting policies	GC	
BT 3e	Improve procurement processes	GC	GWA engineering completed 16 draft SOP's. 09/01/2011 memo Finance Division 01/31/2013 memo Improve Internal CS in Procurement & Supply 02/08/2013 memo Improve Vendor Relationship 02/19/2013 memo Centralized Procurement for W/WW
BT 3f	Improve vendor relationships	GC	02/21/2012 memo Procurement & warehouse 02/08/2013 memo Improve Vendor Relationship 02/19/2013 memo Centralized Procurement for W/WW
BT 4a	Implement workforce planning	NQ	See Draft Workforce Planning and Development Report 02/2012 03/12/2013 memo W/S Maint Leader for PLU 06/07/2013 memo W/S Maint Supervisor for PLU 06/10/2013 memo Radio Communication
BT 4b	Improve recruiting and hiring processes	NQ	See Draft Workforce Planning and Development Report 03/2012.
BT 4c	Focus on employee development	NQ	See Draft Workforce Planning and Development Report 03/2012.
BT 4d	Build leadership development program	NQ	See Draft Workforce Planning and Development Report 03/2012.
BT 5a	Build a customer centric culture	DY	10/12/2011 memo Employee Dev. Specialist 09/01/2011 memo Responsibility of Claims
BT 5b	Improve Meter Reading Processes	DY	CCU approved New meter contract on 03/13/2012 02/25/2013 memo Metron Farnier Meters 02/26/2013 memo Small Meters Warranty Issue 03/04/2013 memo Firmware Update for Badger Meters
BT 5c	Focus on proactive Account Management	DY	09/30/2011 SOP GM-04 09/30/2011 SOP GM-05

Table 1: Master Dashboard, Updated 09/26/2013 (Continued)

BT 5d	Enhance CIS and reduce manual processes	DY	Working with GPA consultant
BT 6a	Implement SCADA program	TC	SCADA Master Plan in Fee Negotiation Phase
BT 6b	Develop and roll-out SOP	AC	01/27/2012 memo Leak Detection Group 01/27/2012 memo Fire Hydrant Group 01/27/2012 memo Meter Shop 01/30/2012 memo Water Operation Support
BT 6c	Improve accuracy of system maps	TC	Leak Detection Program Includes large GIS component
BT 6d	Focused training for line staff	AC	10/12/2011 memo Employee Dev. Specialist 01/27/2012 memo Leak Detection Group 01/27/2012 memo Fire Hydrant Group 01/27/2012 memo Meter Shop
BT 6e	Implement data-driven approach to manage operations	PA	01/10/2012 memo Asset Management 02/01/2012 memo AM Support 01/27/2012 memo Leak Detection Group 01/27/2012 memo Fire Hydrant Group 01/27/2012 memo Meter Shop 01/11/2012 memo Collection System 02/01/2012 memo AM Support 02/08/2013 memo Assistance with Asset Management 02/15/2013 memo Improve Efficiency, Internal CS and Productivity 03/28/2013 memo RoR to Water O&M 04/05/2013 memo RoR to Water O&M
BT 6f	Implement preventative maintenance program	PA	01/10/2012 memo Asset Management 01/30/2012 memo Water Operation Support 02/01/2012 memo AM Support 01/27/2012 memo Leak Detection Group 01/27/2012 memo Fire Hydrant Group 01/27/2012 memo Meter Shop 01/11/2012 memo Collection System 02/01/2012 memo AM Support 02/08/2013 memo Assistance with Asset Management 03/28/2013 memo RoR to Water O&M 04/05/2013 memo RoR to Water O&M
BT 6g	Evaluate Heavy Equipment Operator staff	AC	
BT 6h	Improve inter-utility coordination	AC	06/09/2011 SOP SP3010-18
BT 6i	Develop fleet management program	AC	Use APWA BMP
BT 6j	Increase availability of tools and critical parts	AC	07/11/2013 memo Tool Room Accountability
BT 6k	Improve safety compliance	PK	Training started for water operations
GM P1	Implement Production Plan	TC	See Production Plan Dashboard, Santa Rita saved ~\$700K/mo. in Navy purchases
GM P2	Implement WAP & WLC Plan	MR	Completed Plan Started M-36 reporting See WAP & WLC Plan Dashboard

Table 1: Master Dashboard, Updated 09/26/2013 (Continued)

GM P3	Deliver CIP	TC	See CIP Dashboard and CIP 2012-2016 CIP Update
GM P4	Deliver the 2011 Court Order	MR	See 2011 CO Dashboards and GM Quarterly Report 04/19/2013 memo Support of 2011 CO 04/25/2013 memo Establishment of CO Unit Collection System
GM P5	PUC STIP	MR	WAP & WLC Plan Dashboard PUC STIP Dashboard 02/06/2013 memo Meter Consumption Analysis Report
GM P6	Improving Master Planning Tools	TC	CIP Updates, Hydraulic Model Updates
GM P7	Strategic fiscal planning	MR	80% Draft Strategic Fiscal Plan 50% long term fiscal planning
GM P8	EPA Assistance Task 2 Cost Estimating		07/09/2012 SOP GM-041, 07/09/2012 SOP GM-042, 07/09/2012 SOP GM-043, 07/09/2012 SOP GM-044, 07/09/2012 SOP GM-045, 07/09/2012 SOP GM-046, 07/09/2012 SOP GM-047, 07/09/2012 SOP GM-048, 07/09/2012 SOP GM-049, 07/09/2012 SOP GM-050
GM P9	EPA Assistance Task 3 Procurement and Contract Administration		07/09/2012 SOP GM-051, 07/09/2012 SOP GM-052, 07/09/2012 SOP GM-053, 07/09/2012 SOP GM-054, 07/09/2012 SOP GM-055, 07/09/2012 SOP GM-056, 07/09/2012 SOP GM-057, 04/25/2013 SOP GM-058, 04/25/2013 SOP GM-059, 04/25/2013 SOP GM-060, 04/25/2013 SOP GM-061, 04/25/2013 SOP GM-062, 04/25/2013 SOP GM-063, 04/25/2013 SOP GM-064, 04/25/2013 SOP GM-065, 04/25/2013 SOP GM-066, 09/06/2013 SOP GM-085
GM P10	EPA Assistance Task 4 Construction Management		07/09/2012 SOP GM-031, 07/09/2012 SOP GM-032, 07/09/2012 SOP GM-033, 07/09/2012 SOP GM-034, 07/09/2012 SOP GM-035, 07/09/2012 SOP GM-036, 07/09/2012 SOP GM-037, 07/09/2012 SOP GM-038, 07/09/2012 SOP GM-039, 07/09/2012 SOP GM-040

Table 1: Master Dashboard, Updated 09/26/2013 (Continued)

GM P11	EPA Assistance Task 5 Utility Wide Asset Management Program; Including O&M Program		05/22/2013 SOP GM-067, 05/20/2013 SOP GM-068, 05/20/2013 SOP GM-069, 05/20/2013 SOP GM-070, 05/06/2013 SOP GM-071, 05/06/2013 SOP GM-072, 05/22/2013 SOP GM-073, 05/22/2013 SOP GM-074, 05/24/2013 SOP GM-075, 05/22/2013 SOP GM-076, 05/24/2013 SOP GM-077, 05/24/2013 SOP GM-078, 05/24/2013 SOP GM-079, 05/24/2013 SOP GM-080, 05/20/2013 SOP GM-081, 05/24/2013 SOP GM-082, 05/22/2013 SOP GM-083, 06/03/2013 SOP GM-084
CCU 1a	Product Quality: Comprehensive Management Plan		90%
CCU 1b	Product Quality: Drug Free Work Place		
CCU 2a	Employee & Leadership Development: Update WP&D Report		50%
CCU 2b	Employee & Leadership Development: CPM Phase II		90%
CCU 2c	Employee & Leadership Development: 5 Year Staffing Plan		50%
CCU 2d	Employee & Leadership Development: Workforce placement plan		
CCU 2e	Employee & Leadership Development: AWWA Subsection		90%
CCU 3a	Financial Viability: Complete Strategic Financial Plan (fiscal first aid)		
CCU 3b	Financial Viability: Communicate rate plan (5 yr plan, public awareness, financing)		
CCU 3c	Financial Viability: Fraud, Waste, & Abuse Program		
CCU 3d	Financial Viability: Suspense SOP		
CCU 3e	Financial Viability: Contract close out SOP		

Table 1: Master Dashboard, Updated 09/26/2013 (Continued)

CCU 4a	Community Sustainability: Improve lifeline rates for target community		
CCU 4b	Community Sustainability: Protect aquifer (3D subsurface model)		
CCU 4c	Community Sustainability: Protect oceans SSES Reduction		
CCU 4d	Community Sustainability: Improve permit section		
CCU 4e	Community Sustainability: Draught Planning / Conservation Plan		
CCU 5a	Customer Satisfaction & Support: Complete Citizen & Business Survey		
CCU 5b	Customer Satisfaction & Support: Interpret Survey Data		
CCU 6a	Customer Satisfaction: Establish KPI's USA, Permits, NAD, W ops, WW ops, dispatch		
CCU 6b	Customer Satisfaction: Customer service program (3)		
CCU 7a	Operational Optimization & Stability: Asset Management System Implementation		
CCU 7b	Operational Optimization & Stability: Mobile Workforce Management Solution		
CCU 7c	Operational Optimization & Stability: Implement CIS		

Table 2: Production Plan Dashboard, Updated 09/30/2013

CIP #	Name	% complete	Mile stone	Lead	Notes
PW 05-03	Santa Rita Springs Rehabilitation	100%	Online	CH	Major Decreases in Navy Purchase
PW 05-12	Brigade II BPS Upgrade (Design Only)	Design 70% complete	12/2013	GB	EPA reviewing drawings
PW 05-13	Deep Well Rehabilitation	Design 90%	12/2013	BR	EPA reviewing drawings
PW 05-14	New Deep Wells at Down Hard Well Sites	Design 95%	12/2013	BR	EPA reviewing drawings
PW 09-01	Ugum Water Treatment Plant	95% Construction	12/2013	BR	\$1.7M CO approved by CCU 08/23/2011
PW 09-02	Water Wells (Design Only)		01/2014	BR	Planned 2013 bond funded project
PW 05-15	Rehabilitation of Asan Spring	Facility Plan Complete	12/2013	GB	Plan & recommendations under review.
PW 05-16	Master Metering	Construction Bid 50%	06/2014	GB	Approved by CCU 02/28/2012. Design Complete
PW 09-03	Water Distribution System Pipe Replacement	45% complete	02/2014	GB	
EE 09-06	SCADA Improvements Phase 1	Procurement 90%	04/2014	BC	RFP In Fee Negotiation Phase

Table 3: WAP & WLC Plan Dashboard, Updated 09/30/2013

Task #	Activity	Mile Stone	Lead	Notes & Action Item
0.01	Develop meter shop with meter calibration capacities	8/17/12	JQ	Completed
0.02	GWA Priority 2A, Meter Revenues Change out zero and low reads	7/18/12	LSN	Completed
0.03	GWA Priority 2B, Meter Revenues Remove back flow preventers	N/A	N/A	Completed
0.04	GWA Priority 2C, Increase Meter Revenues Outsource Assistance Bid	N/A	N/A	See "Action Item #3" below
0.05	GWA Priority 2D, Meter Revenues Replace Commercial Meters	02/2014	JQ	Project Ongoing 70% completed
1.01	Calibrate production flow meters	02/2014	JQ	See "Action Item #1" below
1.02	Flowchart the customer billing process; compile general demographics	4/13/12	PMO	Completed back office study.
1.03	Perform meter accuracy testing on a small sample of customer meters.	8/17/12	JQ	Completed. PUC stipulation annual report in October.
1.04	Audit billing records and visit promises for unauthorized consumption.	4/13/12	PMO	Completed back office study
1.05	Review maintenance records, summarize statistics on leaks.	6/15/14	MW	See "Action Item #2A" below
1.06	Review policies for customer service connection piping	02/2014	PMO	See "Action Item #4" below
1.07	Establish a pilot DMA; perform minimum hour leakage analysis.	02/2014	MW	DMA's established see bubble & WSA maps
1.08	Compile data pressure throughout the water distribution system.	02/2014	MW	Completed model. Third generation planned
1.09	Launch a pilot leak detection survey, via a consultant	02/2014	MW	See "Action Item #2" below
1.10	Complete CIP EE SCADA master plan	04/2014	TC	80% completed
1.11	GWA Priority 2F Meter Reading Reports	N/A	LSN	Ongoing
1.12	CIP PW 05-16 System Master Meter	6/2014	TC	Design completed; bid preparation & funding
1.13	Meter Replacement Program (complete Court Order STIP)	02/2014	MR	See "Action Item #5"
1.14	GWA Priority 4B & CIP PW 05-09 Line Repair / Line Replacement Contract	12/2013	MW	See "Action Item #3" below
1.15	GWA Priority 4A Reduce leak back log	monthly report	AC	On-going & completed.
1.16	GWA Priority 4E (install meter as appropriate at unmetered accounts)	02/2014	MR	Addressed in 2011 Court Order
1.17	GWA Priority 4E (Complete SOP's for "Unbilled Unmetered" water)	4/13/12	PMO	Completed back office study & CDM Smith assisting in AM
1.18	Fix meter clusters on private property by adding One property meter	04/2014	LSN	Survey complete
1.19	Implement Baker Tilly, 5b. Improve Meter Reading Process	12/2013	LSN	See "Action Item #4"

Table 4: Detailed Action Items (WAP & WLC Plan), Updated 09/30/2013

Action Item #1 Subtasks Meter Moving Forward			
	Meter Test Bench Major Change Order Contractor: Metron-Farnier contract amount of \$447,000. The test bench arrived July 10, 2012. A temporary rental unit is in procurement process. Five employees trained on Test Bench conducted on June 2013.		
	Design/Build Meter Test Facility was approved by the CCU on 01/24/2012. Construction is 90% complete. The new meter test facility is expected to be completed by October 2013. GWA currently leasing space for the test bench operations at Airport facility; on a one year lease expiring February 2014.		
	GWA Water Meter Replacement Program (new meters) was approved by CCU on 3/13/2012 for \$4.0M. Additional \$1.9M change order executed increasing funding for additional meters. Funds expended for the program total \$5,737,870.00 used to purchased 31,140 meters. As of 9/06/2013 GWA has installed 25,316. This project was started 08/20/12.		
Action Item #2 Subtasks Leak Detection			
	Phase 1 of the leak detection contract provide records on location and type of leak. Phase 2 will continue the efforts of phase 1. The leak detection contract is 60% complete.		
Action Item #3 Subtasks Leak Repair Project / Line Replacement Project			
	Leak Repair Contract approved by CCU 01/10/2012 amount \$474,160. The contractor has completed \$474,160 of work as of 05/31/2012. Two \$400,000 change orders were executed additional work. As seen below, force account work shows significant progress in leak repair.		
	Achievements of Contract	Total Repairs Made	450
		KGAL/Day Loss Avoided	2,592
	GWA Force Account Jul 2012 thru Jul 2013	Total Repairs Made	9,480
		KGAL/Day Loss Avoided	5,460.8
	Line Replacement Contract approved by CCU 02/28/2012 in the amount \$883,534.00. The contractor received the Notice to Proceed on May 16, 2012. Contract is approximately 45% complete. Completed 5,193 lf 6-inch lines and 240 lf of 2-inch lines.		
	GWA Force Account line replacement program used to develop a construction crew that will have line replacement capabilities. Currently planned for early 2014, when the meter task force winds down and resources freed up. Work to increase technical knowledge has started since the restarting of the Apprenticeship Program for existing employees, began August 2013 with six existing trades helpers qualifying and accepted. This is anticipated to reopen annually for more applicants.		
Action Item #4 Subtasks PMO Assistance w/ 2011 PUC STIP			
	The PMO will serve as the primary consultant to assist with the implementation of the 2011 PUC STIP, the PMO contract was approved by the CCU on 12/12/2011. The PMO was approved by the PUC 01/11/2012. The task order was signed on 06/05/2012. The procurement has been completed and work is in progress.		

Table 5: PUC STIP Dashboard FY 2011, Updated 07/09/2013

Docket	GWA	DOCKET 09-03 Revenue Implementation Program		
	Item No.	Description of Stipulation	Due	Notes
09-03	1	Billing Consumption Analysis Badger meters installed subsequent to July 2012	monthly	monthly
09-03	2	Annual Meter Testing of no less than 160 residential, government and small commercial meters	October	yearly
09-03	3	Updated Water Loss Control Plan. Should identify all investments required & known barriers to implementation	June 2013	once
09-03	4	Filing of actual cost of performance for chemicals & sludge removal associated with the conversion of the Northern District Wastewater Treatment Plant to advance primary treatment	June 2013	once
13-01	A	Balance of 2010 Series Bond Proceeds net of future project commitments	7/28/13	once
13-01	B	Complete copy of B&C contract with GWA & amendments	7/28/13	once
13-01	C	PMO Progress Reports	7/28/13	monthly
13-01	D	Information on percentage of B&C payments in 2012 to local firms for sub-contracts & goals to increase each successive year & include realized results in their progress reporting	7/28/13	yearly

Table 6: CIP Engineering Dashboard, Updated 08/27/2013

Summary Table 2012-2016 CIP Projects - Potable Water

CIP #	Name	Change Order	RFP	Engineering Services	Bid	Constr.
PW 05-01	Ground Water Disinfection					
	Phase III Construction – Asanuma Corp		Complete	Complete	Complete	Complete
PW 05-02	Water Reservoir Condition Assessment					
	Phase I – External Inspection – DCA		Complete	Complete	Complete	Complete
	Phase II – Internal Inspection – DCA		Complete	Complete	Complete	45%
PW 05-03	Santa Rita Springs BP Rehab., Phase II					
	Phase II Construction – Bascon Corp		Complete	Complete	Complete	Complete
PW 05-04	Ugum Water Treatment Plant Refurbishment					
	Construction – Smithbridge		Complete	Complete	Complete	99%
PW 05-05	"A" Series Well Transmission Line					
	Phase I		Complete	Complete	Complete	Complete
	Phase II		Complete	Complete	Complete	Complete
	Phase III – Engineering Hydraulic Assessment		Complete	Complete	N/A	N/A
PW 05-06	Water Booster Pump Station					
	Malojloj Line BPS Improvements Project				<50%	
PW 05-07	Meter Replacement Program					
	Meter Replacement Vendor – Badger		Complete	N/A	Complete	
	Meter Replacement Vendor – 2 nd proponent		Complete	N/A	99%	
	Metron Change Order for Meter Test Bench	Complete				
PW 05-08	Barrigada Tank Repair/Replacement					
	Engineering Construction Management – GHD		Complete	Complete		75%
	Construction - DCK				Complete	75%
PW 05-09	Leak Repair / Line Replacement					
	Phase I – GRH		Complete	Complete	Complete	Complete
	Phase II – GRH		Complete	Complete	Complete	100%
PW 05-10	Potable Water System Planning					
	Potable Water System Planning		50%			
	Water System Hydraulic Analysis - PMO			100%		
	Modeling training			Complete		
PW 05-11	Implement Ground Water Rule					
	Chlorine Residual Analyzer Design Project		90%			
PW 05-12	Brigade II (Ugum Lift) BPS Upgrade					
	Engineering Design – EM Chen		Complete	70%		
PW 05-13	Deep Well Rehabilitation					
	Engineering Design – GHD		Complete	95%		
PW 05-14	New Deep Wells at Down Hard Well Sites					
	Engineering Design – GHD		Complete	95%		
PW 05-15	Rehabilitation of Asan Springs Ground Reservoir					
	Engineering Service Facility Plan/30%Design – EMPSCO		Complete	100% (facility plan)		
PW 05-16	Master Meters					
	Engineering Design – Chugach		Complete	100%	50%	
PW 09-01	Ugum Water Treatment Plant Intake Modifications					
	Ugum Water Treatment Master Plan		50%			
PW 09-02	Water Wells					
PW 09-03	Water Distribution System Pipe Replacement and Upgrades					
	Line Replacement (Phase I) – Giant Constr.		N/A	N/A	Complete	70%
	Change Order Giant Constr. - Leak Repair	complete			complete	complete
	Leak Repair Phase II				complete	100%
	Line Replacement Phase II				<50%	
	Leak Repair Phase III				<50%	
PW 09-04	Pressure Zone Realignment/Development Improvements					
PW 09-05	Northern System Water Distribution (Refer to PW 09-03)					
	Refer to PW 09-03		N/A	N/A	N/A	N/A
PW 09-06	Central Water Distribution System 2005 Improvements					
	Line Replacement (Phase I) – Giant Constr.		N/A	N/A	Complete	60%
PW 09-07	Southern Water Distribution System 2005 Improvements					
	Refer to PW 09-03		N/A	N/A	N/A	N/A

Table 6: CIP Engineering Dashboard, Updated 08/27/2013 (Continued)

Summary Table 2012-2016 CIP Projects - Potable Water

CIP #	Name	Change Order	RFP	Engineering Services	Bid	Constr.
PW 09-08	Mechanical/Electrical Equipment Replacement					
	In-house Equipment purchases					
PW 09-09	Water Reservoir Internal/External Corrosion Assessment					
PW 09-10	Water Reservoir Internal/External Corrosion Rehabilitation					
	Water Reservoir Major Repairs				99%	
PW 09-11	Water System Reservoirs 2005 Improvements					
	Barrigada 2MG Tank Design – Parsons		Complete	Complete		
	Reservoir 2005 Impro. Phase I – Chaot/Agana Hts Reservoir			30%		
PW 11-01	Distribution System Upgrades					
	Leak Repair Construction – Giant Constr.				Complete	Complete
PW 11-02	Ugum Water Treatment Plant Reservoir Replacement					
	RFP Design Package		55%			
PW 12-01	Water Audit Program & Water Loss Control Plan					
PW 12-02	Production Plan / Reduce Navy Purchases					
PW 12-03	Hydraulic Assessment of Tanks					
	Assessment by PMO			100%		
PW 12-04	Agana Heights & Chaot Tanks					
	PMO handling design build package			complete		
	CM Chaot/Agana Hts Tank Construction		100%			15%
	Chaot/Agana Hts Tank Construction				100%	15%
PW 12-05	Tank Major Repair Yigo #1, Mangilao #2, Agat#2					
	Yigo and Astumbo 2MG Design Project		99%			
PW 12-06	Tank Replacement Piti & Hyundai					
PW 12-07	Assessment/Repl. of Malojioj Elevated & Yigo Elevated					
PW 12-08	Public Water System Asset Inventory/ Condition Assessment					
PW 12-09	Public Water System GIS & Mapping					

Table 6: CIP Engineering Dashboard, Updated 08/27/2013 (Continued)

Summary Table 2012-2016 CIP Projects - Wastewater

CIP #	Name	Change Order	RFP	Engineering Services	Bid	Constr.
WW 05-04	Wastewater System Planning					
	I&I Study Southern Basins	100%				
	SSES Study Agana Basin	98%				
WW 05-05	Wastewater Vehicles					
	Vehicle purchase - VWG				complete	
WW 05-07	NDWWTP - Chlorine Tanks					
	Removal Contract - VWG					Complete
WW 09-01	LS Priority 1 Upgrades					
	Waste System Upgrades Improvements					100%
WW 09-02	Moratorium					
	Moratorium Change Order	100%				
	Original Design Build - GCIFI				Complete	100%
WW 09-06	Wastewater Collection System Repl./Rehabilitation					
	Barrigada SPS Refurbishment Project				100%	
	Old Agat Wastewater Collection (I&III)		45%			
WW 09-08	Facilities Plan/Design for Baza Gardens STP Repl.					
	Baza Gardens WWTP Structural Improv. – Black Const.	complete				5%
WW 09-10	Facilities Plan/Design for Agat-Santa Rita STP Repl.					
WW 09-11	WWTP Priority 1 Upgrades					
WW 11-03	Baza Gardens STP Replacement					
WW 11-04	Facilities Plan/Design for the Umatac-Merizo STP Impr.					
	Umatac-Merizo WWTP Interim Improvements Design		95%			
WW 11-08	Agat/Santa Rita STP Replacement					
WW 12-01	Northern District WWTP Primary Treatment Upgrades					
	Change Order #3	95%				
	Interim Construction - VWG					100%
WW 12-02	Bio Solids Management Plan					
WW 12-03	Agana WWTP Interim Measures					
	30% Design - VWG			complete		
	Interim Construction – Change Order with GCIFI	complete				45%
WW 12-04	I&I SSES Southern					
WW 12-05	I&I SSES Central					
	Central Sewer Basin I&I Project		90%			
WW 12-06	I&I SSES Northern					
WW 12-07	Umatac Merizo STP Replacement					
WW 12-08	Wastewater System GIS & Mapping					
WW 12-09	Wastewater Facility Back Up Power					
WW 12-10	Wastewater System Asset Inventory					

Table 6: CIP Engineering Dashboard, Updated 08/27/2013 (Continued)

Summary Table 2012-2016 CIP Projects - Electrical Engineering Support

CIP #	Name	Change Order	RFP	Engineering Services	Bid	Constr.
EE 05-02	SCADA Pilot Project					
EE 09-01	Wastewater Pumping Station Electrical Upgrade					
EE 09-02	Electrical Upgrade - Water Wells					
EE 09-03	Electrical Upgrade - Water BPS					
EE 09-04	Electrical Upgrade -Water BPS					
EE 09-05	Electrical Upgrade - Other Water BPS					
EE 09-06	SCADA Improvements – Phase 1					
	SCADA Master Plan – TG Engineer		Complete	60%		
EE 09-07	SCADA Improvements – Phase 2					
EE 09-08	SCADA Improvements – Phase 3					
EE 09-09	SCADA Improvements – Phase 4					

Summary Table 2012-2016 CIP Projects - Miscellaneous Engineering Support

CIP #	Name	Change Order	RFP	Design	Bid	Constr.
MC 05-01	Laboratory Modernization					
MC 05-02	Land Survey					
	Duanes Camacho & Ass.		complete	50%		
MC 09-01	General Plant Improvements/Water Distribution System					
	Meter Test Facility Design Build – Designland Builders		N/A	N/A	Complete	90%
	Bio Solid Management Plan - VWG			80%		

Table 7: 2011 Court Order Dashboard, Updated 09/26/2013

Name	SO #	Project	GWA SO Timeline	Due to EPA	Critical Path	Status
Northern District WWTP Primary Treatment Upgrades.	2	Interim Primary Treatment Improvements Complete	09/30/2012	@EPA	X	Done Construction completed 12/13/2012
	2	Interim Primary Treatment notice of completion	30 days before	@EPA		
	3(a)	Interim Effluent to meet Table 1	09/30/2012 monitoring started	@EPA	X	Done Table 1 compliance beginning January 9, 2013. 3(a)(1) Engineering capacity report Received 07/32/2013
	3(a)(1)	PE Review (Application for 7.5 MGD pending)	3 mo after compliance	N/A		
	3(c)	Effluent monitoring (calendar-year quarter)	Completed	@EPA		Done Full year completed 01/08/2012
	4(a)	Sludge & Biosolids Management Plan	12/31/2011	@EPA		Done. Biosolids to Landfill
	4(a)	Adequate stabilization and dewatering	08/13/2012	@EPA		Done. VWG Design-Build contract signed
	4(b)	Biosolids Management, Quarterly Report	Quarterly Report	@EPA		Routine Monitoring Report, Repeats Quarterly
	4(c)	Biosolids Management, repair & replace facilities	09/30/2012	@EPA		Done Construction Complete 12/13/2012. Biosolids to Landfill
4(d)	Biosolids Management, implement plan	08/13/2012	@EPA		Biosolids to Landfill	
Agana WWTP Interim Measures.	5	Primary Treatment Plant Upgrades	06/30/2013	@EPA		Done. Phase I of this project is complete - Design Concept, 30% plans.
	5(a)	Scope and schedule	09/30/2011	@EPA		
	5(b)	Septage Handling Complete	06/30/2013	@EPA		Done. Septage Receiving is completed at the NDWWTP (location option) reported 06/26/2013.
	5(b) 1	Septage handling design contract signed	12/31/2011	@EPA		
	5(b) 2	Septage handling construction notice to proceed	06/30/2012	@EPA		Phase III is in progress by Core Tech under change order (possible delay on completing CEPT portion only.) Done Grit and FOG reported 06/06/2013
	5(c)	Grit and FOG Complete	06/30/2013	@EPA		
	5(c) 1	Grit and FOG design contract signed	12/31/2011	@EPA		
	5(c) 2	Grit and FOG construction notice to proceed	06/30/2012	@EPA		
	5(d)	Repair Solids handling	06/30/2013	@EPA		Done O & M Plan reported 05/31/2012 Done Full year completed 01/08/2012
	5(e)	O & M Plan	05/31/2013	@EPA		
	5(f)	Effluent monitoring (calendar-year quarter)	Completed	@EPA		Done Old outfall decommissioned (plugged) 06/25/2013
	6	Prevent Effluent Back Surge	06/30/2013	@EPA		
	6	Effluent Back Surge Plan	12/30/2011	@EPA		
	I&I SSES	7	Collection System SSES and I/I evaluation	N/A	N/A	
SSES Work Plan	8	Work Plan	180 days	@EPA		Done Reported 08/13/2012
	8(a)	Flow and rainfall data	N/A	@EPA	X	Done Reported 04/25/2013
	8(b)	I/I Southern	540 days	@EPA		Done Reported 04/25/2013
	8(c)	I/I Central	900 days			Review requirement to use SRF funds or alternatives funding
	8(d)	SSES Southern	540 days	@EPA	X	Done Reported 04/25/2013
	8(e)	SSES Central	900 days			Review requirement to use SRF funds or alternatives funding
	8(e) 2	SSES Central Report	06/26/2014			Review requirement to use SRF funds or alternatives funding
Agat / Santa Rita,	9(a)	By Pass Report	60 days	@EPA		Done Reported 01/04/2012
	9(b)	Flow Meter	180 days	@EPA		Done Reported 07/26/2012
	9(c)1,2,3	Report evaluating near term measures	180 days	@EPA		Done Reported 05/07/2012t PMO
	9(d)	Implement approved near term measures 1	180 days after approval of report #9(c)	@EPA		Pending EPA approval of 9(c)(1), 9(c)(2) and 9(c)(3). PMO task.
	9(e)	Implement approved near term measures 2	180 days after approval of report #9(c)	@EPA		
	9(f)	Implement approved near term measures 3	180 days after approval of report #9(c)	@EPA		
	10	System Evaluation	12/31/2013	@EPA	X	CO 10 Done Reported 04/25/2013
	11	System Upgrades	12/31/2016			
	11(a)	System Upgrades design	12/31/2014			
	11(b)	System Upgrades notice to proceed	12/31/2015			

Table 7: 2011 Court Order Dashboard, Updated 09/26/2013 (Continued)

Name	SO #	Project	GWA SO Timeline	Due in 365 day	Critical Path	Status
Baza Gardens	12(a)	Interim Measures Evaluation (Independent PE)	180 days	@EPA		Done Reported 05/07/2012, PMO task
	12(b)	Interim Measures Complete	540 days	@EPA		Done Reported 05/01/2013 PMO task
	12(c)	Evaluation Bio Solids Report	180 days	@EPA		Done Reported 03/21/2013
	12(d)	Complete Bio Solids	360 days	@EPA	X	Done Reported 03/21/2013
	13	System Evaluation	04/30/2014		X	Critical path, need to complete I&I/SSES
	14	System Upgrades	04/31/2018			
	14(a)	System Upgrades, Design Starts	10/31/2015			
	14(b)	System Upgrades, Construction Starts	10/31/2016			
Umatac-Merizo	15	Complete Evaluation	12/31/2013		X	Critical path, need to complete I&I/SSES
	16	System Upgrades	12/31/2018			
	16(a)	System Upgrades, Design Starts	06/30/2016			
	16(b)	System Upgrades, Notice to Proceed	06/30/2017			
Sewer Cleaning	17	Sewer Cleaning (in annual and quarterly reports)	N/A	@EPA	X	GWA WW Operations Continuous
Hot Spot Plan	18	Hot Spot Plan	180 days	@EPA		Done Reported 08/13/2012 GWA WW Ops task Continuous
CCTV	19	CCTV (in annual and quarterly reports)	Within 2 years	@EPA	X	GWA WW Operations Continuous (in annual and quarterly reports)
	19	CCTV (in annual and quarterly reports)	Within 5 years	@EPA		
	19	CCTV Report (in annual and quarterly reports)	01/30/2013	@EPA		
Sewer Hook-Up	20	Sewer Hook-Up	N/A	@EPA		Done – available on GWA web site or at GWA Customer Service
Groundwater Chlorination	21	Groundwater Chlorination	540 days	@EPA		Done Reported 04/29/2013
Chlorine Residual Monitors	22	Plan	180 days	@EPA		Done Reported 09/94/2012
	22(a)	High Risk Wells	540 days	@EPA	X	Done Reported 05/02/2013
	22(b)	Moderate Risk Wells	2 years	@EPA		Done Reported 07/31/2013
	22(c)	All Other Wells	3 years			Balance on schedule.
Water Metering	23(a)	Plan & schedule	180 days	@EPA		Done Reported 05/08/2012
	23(a)	All connections are metered and mapped	2 years		X	(possible delay) GWA task
	23(b)	Plan repair & maintain	180 days	@EPA		Done GWA Test facility operational 06/28/2013
Ugum Surface Water Treatment Plant	24	Construction complete	One year	@EPA		Done Reported 11/09/2012
	24	PE Inspection	60 days before start-up	@EPA		Done Reported 03/19/2013
	25	PE Performance Operation Assessment	60 days before start-up	@EPA		Done Reported 03/19/2013
	26	O&M Plan and Procedures	90 days before start-up	@EPA		Done Reported 08/10/2012
	27	Plant compliance	365 days	@EPA		Done Reported 02/07/2013
Sinajana Water Transmission Line	28(a)	Existing Construction Complete	180 days	@EPA		Done Reported 12/23/2011
	28(b)	Hydraulic Evaluation	180 days	@EPA		Done Reported 05/22/2012
	28(c)	Construction Complete (2 tanks)	540 days from 06/21/2013= 12/13/2014		X	PMO has procured design-build contract
	28(d) 1	Monitoring Plan	90 days prior	@EPA		Done Reported 09/07/2012
	28(d) 1	Implement- Monitoring Plan	For one year after start up			GWA Compliance
	28(d) 2	Monitoring Plan	180 days prior	@EPA		Done Reported 06/21/2013
	28(d) 2	Implement- Monitoring Plan	For one year after start up			GWA Compliance
Storage Tank/Reservoir Rehabilitation and Replacement Program.	29(a) 1	Plan hydraulic analysis	90 days	@EPA		Done Reported 11/09/2012
	29(a) 2	Hydraulic analysis	540 days	@EPA	X	Done Reported 05/02/2013
	29(b) 1	Plan minimize service interruptions	90 days after approval	@EPA		Submitted 05/28/2013 for EPA approval
	29(b) 2	Tank inspection schedule	540 days	@EPA		Done Reported 05/02/2013
	29(b) 3	Complete Barrigada (1 @ 2 MG tank)	540 days		X	Completion delayed by Guam EPA
	29(b) 4	Assess additional 7 tanks	5 years			DCA contract task, on schedule
	29(b) 5	RRR 7 additional tanks	5 years		X	On schedule, PMO to execute procurement
	29(b) 6 i	RRR 10 additional tanks	7 years		X	Critical path, need to complete hydraulic analysis
	29(b) 6 ii	RRR remaining	12/31/2020			
29(c)	In Quarterly / Annual Report	Quarterly / Annual Report	@EPA		GWA Compliance Repeats Quarterly	

Table 8: 2 Year Dashboard, 2011 Court Order, Updated 08/07/2013

Name	SO #	Project	Percent Complete	Challenges /Notes	GWA Milestone	EPA Date Due	GWA SO Timeline	EPA Correspondence
Northern District WWTP Primary Treatment Upgrades.	2, 4c	Interim Primary Improvements Complete, Biosolids Management, repair & replace facilities	70%	Courtesy late letter sent out 10/01/12 proposed completion date 12/30/12	@ EPA 10/17/12 @ EPA 01/09/13	09/30/12		EPA informal letter 10/17/12 Notice construction complete 01/09/2013
	3(a)	Interim Effluent Agreement meet Table 1 90 consecutive days of compliance 04/30/2013	100%	90 consecutive days of compliance 04/30/2013 Needs submittal		09/30/12 (start)	Met on 04/30/13	3 consecutive months of compliance at 5 MGD met on 04/30/2013
	3(a)(1)	Application to move to 3(a)(1) Table 2	0%	Ready for request fo increase flow to 7.5 MGD monthly average flow		09/30/12 (start)		Pending Independent AWCOM Engineering Report (DMR DATA COMPLETE)
	3(a)(2)	Interim Effluent Agreement meet Table 3	0%			09/30/12 (start)		
	4(a)	Sludge & Biosolids Management Plan	100% 100% 100%		@ EPA 12/29/11 @ EPA 03/29/12 @ EPA 08/13/12	02/08/12 03/29/12 08/13/12	Achieved Achieved	EPA Letter 02/13/12 EPA Letter 07/02/12
Hagátña WWTP Interim Measures.	5	Primary Treatment Plant Upgrades		Letter of possible delay due on 11/19/12	@ EPA 11/19/12	06/30/13		
	5(a)	Scope and schedule	100% 100%	need monthly report	@ EPA 11/17/11 @ EPA 12/22/11	09/30/11 12/28/11	Achieved Achieved	EPA Letter 12/14/11 EPA letter 02/14/12
	5(b & c) 1	Grit and FOG / Septage handling design contract signed	100%		@ EPA 12/28/11	12/31/11	Achieved	EPA Letter 02/14/12
	5(b), 2	Septage handling Construction NTP	100%	Put in service on June 28/2013	@ EPA 06/28/13	06/30/12	Achieved	EPA notified 06/28/2013
	5(c), 2	Grit and FOG Construction NTP	100%	Core Tec Change Order Due	@ EPA 06/29/12	06/30/12		EPA letter 02/14/12
	5(c), 2	Grit and FOG Complete			@ EPA 06/06/13	06/30/13	Achieved	
	5(d)	Repair Solids handling			@ EPA 11/17/11	06/30/13	Achieved	
	5(e)	O & M Plan	100%		@ EPA 05/31/13	05/31/13	Achieved	First Edition O&M Manual
	6	Prevent Effluent Back Surge Plan	100%		@ EPA 06/25/13	06/30/13	Achieved	Old Outfall sealed 06/20/2013, 2:45 pm
6	Effluent Back Surge Plan	100% 100%		@ EPA 11/17/11 @ EPA 12/22/11	09/30/11 12/28/11	Achieved Achieved	EPA Letter 12/14/11	
II and SSES Work Plan	8	Work Plan	100% 100% 100%		@ EPA 03/26/12 @ EPA 08/13/12 @ EPA 09/06/12	05/08/12 08/13/12	Achieved	EPA Letter 12/01/11 EPA Letter 07/02/12 EPA verbal request 09/06/12
	8(b)	II for Southern	100	BC collected reports	@ EPA 04/26/13	05/03/13	Achieved	
	8(d)	SSES Southern	100%	Flow monitoring contract underway [8(a)] VWG to invite GWA to all meeting & Submit mo report	@ EPA 04/30/13	02/02/13 05/03/13	Achieved	
	8(e)	SSES Central				04/28/14		
	Agat / Santa Rita	9(a)	By Pass Report	100%		@ EPA 01/04/12	01/09/12	Achieved
9(b)		Flow Meter	100%		@ EPA 04/17/12 @ EPA 7/30/12	05/08/12 07/29/12	180 days	See e-mail 3/5/2011 EPA Letter 07/02/12
9(c)1,2,3		Report Evaluating Near Term Measures	100%		@ EPA 05/07/12	05/08/12	180 days	
9(c)3		Complete Near Term Measures		Received Preliminary Change Order from Black Construction, need EPA approval		05/03/13		Pending EPA Approval
10		System Evaluation				12/31/13		
Baza Gardens	12(a)	Interim Measures Evaluation (Independent PE)	100%	No Further Action per EPA phone call on 09/06/12	@ EPA 05/07/12 N/A	05/08/12 N/A	180 days	EPA Letter 08/28/12
	12(b)	Complete Structural Repairs	65%	OCCP in place, on schedule	@ EPA 05/01/13	05/03/13	Achieved	
	12(c)	Evaluation Bio Solids Report	100%	EPA letter to resubmit by 02/21/2013 GWA Response 03/21/2013	@ EPA 05/07/12 @ EPA 03/21/13	05/08/12 03/21/13	180 days	EPA letter 02/04/13 GWA Response 03/21/2013
	12(d)	Complete Bio Solids		Received Preliminary Change Order from Black Construction		365 Day After EPA		
	13	System Evaluation				04/30/14		
Umatac-Merizo	15	System Evaluation				12/31/13		
Sewer Cleaning	17	Sewer Cleaning						
Hot Spot Plan	18	Hot Spot Plan	100% 100%		@ EPA 04/09/12 @ EPA 08/13/12	05/08/12 08/13/12	180 days	EPA Letter 07/02/12
CCTV	19	CCTV				11/10/13		
Groundwater Chlorination	21	Construction Complete	100%		@ EPA 04/29/13	05/03/13	Achieved	
Chlorine Residual Monitors	22	Plan	100%		@ EPA 02/28/12 @ EPA 09/04/12	05/08/12 09/10/12	Achieved Approved	EPA Letter 7/27/12 EPA Approval letter 02/27/2013
	22(a)	High Risk Wells	100%		@ EPA 05/02/13	05/03/13	Achieved	
	22(b)	Moderate Risk Wells	100%	05/23/2013	@ EPA 07/31/13	11/10/13	Achieved	Letter to EPA 04/19/2013 re Non-working 22b wells
	22(c)	All Other Wells				11/10/14		
	Water Metering	23(a)	Plan & Schedule Installation	100%		@ EPA 05/08/12	05/08/12	180 days
23(a)		All connections are metered and mapped		Delay letter sent	@ EPA 08/07/13	11/10/2013		90 day estimated delay
23(b)		Plan and Schedule-Meter Repair & Maintenance	100%		@ EPA 05/08/12	05/08/2012	180 days	
Ugum Surface Water Treatment Plant	24	Construction complete/ PE Inspection	One year	Approved by EPA Plan pending approval by EPA Corrections Completed by GWA	@ EPA 06/25/12 @ EPA 02/07/13 @ EPA 03/19/13	11/10/12 02/07/12		Incorrectly titled CO 27 Resubmitted court order letter 02/07/13 Deficiencies corrected letter 03/19/2013

Table 8: 2 Year Dashboard, 2011 Court Order, Updated 08/07/2013 (Continued)

Name	SO #	Project	Percent Complete	Challenges /Notes	GWA Milestone	EPA Date Due	GWA SO Timeline	EPA Correspondence
Ugum Surface Water Treatment Plant	24, 25	PE Inspection & PE Performance Operation Assessment		Critical Path	@ EPA 09/04/12 @ EPA 04/12/13	09/10/12 04/13/13		EPA Letter 02/27/2013 Revised plan and Response 04/12/2013
	26	O&M Plan and Procedures	100%		@ EPA 08/10/12	08/10/12		
	27	Plant Compliance	365 days	Draft letter due 11/01/12	@EPA 02/08/13	Not specified	One Year	NPDES Exception to be remedied in Q2 FY 13
Sinajana Water Transmission Line	28(a)	Existing Construction Complete	100%	No Further Action per EPA phone call on 09/06/12	@ EPA12/23/11 N/A	05/08/12 N/A	Achieved	
	28(b)	Hydraulic Evaluation	100%		@ EPA 05/07/12 @ EPA 7/30//12 @EPA 01/03/13	05/08/12 07/30/12 01/05/13	180 days	EPA Letter 11/21/12
	28(c)	Construction Complete (2 tanks)		Bid Date		06/21/13		180 days before tank completion
	28(c)	Complete Construction from Evaluation [28(b)]				01/21/14		
	28(d)1	Monitoring Plan (pipeline)	100% 100% 25%	3 rd submittal	@ EPA 01/19/12 @ EPA 03/26/12 @ EPA 09/07/12	05/08/12 09/13/12	Achieved	EPA Letter 02/13/12 EPA Letter 07/30/12 EPA Letter 11/21/12
	28(d)2	Monitoring Plan (tanks)	100%		@ EPA 06/21/13	06/21/13	Achieved	180 days before tank completion
Storage Tank/Reservoir Rehabilitation and Replacement Program	29(a) 1	Plan hydraulic analysis	100%	BC will provide draft comments by 10/30/2012	@ EPA 02/06/12 @ EPA 11/09/12	02/08/12 11/13/12	Achieved Approved	EPA Letter 09/28/12 EPA Approval Letter 02/27/13 (See 29(b)(1))
	29(a) 2	Hydraulic analysis	20%	BC Task Order	@ EPA 05/02/13	05/03/13	540 days	
	29(b) 1	Procedures – Operate and Monitor	100%	Procedures to be submitted to EPA.	@ EPA 05/28/13	05/28/13	Achieved	
	29(b) 2	Tank inspection schedule		BC/tom Cruz report	@ EPA 05/02/13	05/03/13	540 days	Critical path (for EPA Approval)
	29(b) 3	Complete Barrigada (1 X 2 MG tank)		Need Progress Report		08/28/13		Delay Letter to EPA on 03/28/2013.
	29(b) 4	Assess 7 additional tanks						
	29(d) 5	RRR 7 additional tanks						

Table9: 2012 Significant Findings Water Dashboard, Updated 09/06/2013

#	Function	Significant Deficiencies	Internal Milestone	GWA Schedule	Due Date	Notes
1	Sources	Lack of routine maintenance (both corrective and preventative of sources).	Ongoing	GWA is implementing new O&M SOPs, programs, and systems and it will be an on-going process.	Ongoing	AM Report Due CIP Update
2	Sources	no wellhead protection plan	Done	GWA will build from the existing 1992 Guam Law, Ch. 7 section 7130 of the Water Resource Development and Operating Regulations (GEPA) entitled "Well Head Protection for Public Water Supply Well".	06/06/13	Already started
3	Sources Ugum	Diesel fuel storage tank containment located near intake for Ugum Water Treatment Plant (WTP) is undersized.	Done	Completed.	N/A	100% Complete
4	Sources Well	Some wells have cracks and other openings in the well pads, well casings and improperly sealed sanitary seals.	Done	GWA can correct within a 180 day time frame.	06/6/2013	100% complete
5	Sources Well	Missing screens on well casing vents.	Done	GWA can correct within a 90 day time frame.	03/7/2013	100% complete.
6	Sources Well	Wells have bypass lines that were routed into the ground and off-site without an air gap.	Done	GWA can correct within a 90 day time frame.	3/7/2013	100% Complete
7	Sources Spring	Lack of operating flow meter at spring source makes operation (including chlorine dosing) problematic.	Done	Completed.	N/A	100% Complete
8	Sources Spring	Santa Rita Spring Box (Clear Well) –	Done	Completed.	N/A	100% Complete
9	Treatment	Lack of operations and maintenance (Ugum, Santa Rita Spring)	Ongoing	GWA is implementing new O&M SOPs, programs, and systems and it will be an on-going process.	Ongoing	2011 CO PP 26, Documentation of SR Springs SOP training required
10	Treatment	Lack of operating turbidimeter at Santa Rita Spring source	Done	Completed.	N/A	Complete
11	Treatment	Plant operators do not regularly conduct jar tests and do not optimize precursor removal at Ugum WTP	Done	GWA can correct within a 180 day time frame.	6/6/2013	Change Order for TOC Meeting. Documentation training required
12	Treatment	Inadequate turbidity monitoring and reporting at Ugum	Done	GWA can correct within a 180 day time frame.	6/6/2013	Programming SCADA
13	Treatment	At least one well (D-5) did not have a chlorination system in place.	Done	Completed.	N/A	Complete
14	Treatment Well	At least one well, the well log indicated chlorine gas had run out in the past	Done	Completed.	N/A	Complete
15	Water Storage	Severe internal/external rust and corrosion including roofs, roof vents, walls, base and other welds,	2011 CO	The schedule was established per the 2011 Court Order	N/A	See Quarterly report for 2011 Court Order
16	Water Storage	Bolts, many completely rusted through, compromise structural stability of tanks.	2011 CO	See response to #15.	N/A	See Quarterly report for 2011 Court Order
17	Water Storage	Inadequate Site Security (holes in fences, missing gates) and unlocked hatches allow easy access to	2011 CO	GWA can correct within a 270 day time frame.	N/A	Change Order executed on 02/01/2013
18	Water Storage	Leaking tanks.	2011 CO	See response to #15.	N/A	See Quarterly report for 2011 Court Order
19	Water Storage	Flooded, uncovered and unsecured valve vaults.	2011 CO	GWA can correct within a 1 year time frame.	N/A	Change Order executed on 02/01/2013
20	Water Storage	No screen or flapper on the storage tanks' overflows.	2011 CO	GWA can correct within a 270 day time frame.	N/A	Change Order executed on 02/01/2013

Table9: 2012 Significant Findings Water Dashboard, Updated 09/06/2013 (Continued)

#	Function	Significant Deficiencies	Internal Milestone	GWA Schedule	Due Date	Notes
21	Water Storage	Ladders not locked, allow easy potential access by vandal.	2011 CO	GWA can correct within a 270 day time frame.	N/A	Change Order executed on 02/01/2013
22	Water Storage	Ladders severely corroded or no cage will prevent adequate maintenance	2011 CO	See response to #15.	N/A	See Quarterly report for 2011 Court Order
23	Distribution System	Inadequate cross connection control program exists within GWA	Preliminary Done	A preliminary plan within a 180 day, full-scale program over the next year.	12/31/2013 Final Plan	Final Plan Mark Miller.
24	Distribution System	Undersized water lines impact water pressure and water quality and contribute to potential cross-connections.	Done	An initial plan and schedule for replacement will be developed within a 180 day time frame.	06/6/2013	GEPA provide no adequate records of pressure problems
25	Pumps	No pump controls at many of the booster pump stations; lack of maintenance Leaking seals in pumps and valves	03/10/13	Plan submitted to EPA for approval. Line Item in CIP.	09/06/13	CIP update approved by CCU on 02/26/2013, Inspection Report on schedule.
26	Pumps	Lack of adequate backup pumps. Flooding of booster pump stations.	03/10/13	Plan submitted to EPA for approval. Line Item in CIP.	09/06/13	NTP issued for construction to raise FFE.
27	Pumps	No controls on well pumps or booster pumps.	03/10/13	Plan submitted to EPA for approval. Line Item in CIP.	09/06/13	CIP update approved by CCU on 02/26/2013, Inspection Report on schedule.
28	Pumps	Leaking pump seals, valves, lines, and highly rusted piping.	03/10/13	Plan submitted to EPA for approval. Line Item in CIP.	09/06/13	CIP update approved by CCU on 02/26/2013, Inspection Report on schedule.
29	Water Quality	Inadequate monitoring and reporting – Ugum WTP and Santa Rita Spring (turbidity and chlorine residual)	Done	GWA will perform within a 120 day time frame.	04/09/13	GWA has made this KPI and it is managed via weekly reports
30	SDWA Compliance	Lead and Copper monitoring overdue.	03/10/13 Round 1	GWA will complete the two 2013 rounds of sampling,	12/31/13 Round 2	On schedule
31	SDWA Compliance	Unaddressed Stage 2 Disinfection/Disinfectant Byproducts rule (DBP) Rule MCL Violations, required public notification?	Ongoing	Tier 2 report, Quarterly.	Quarterly	New SOP being established.
32	Administration	No formal, comprehensive training program for operators and other personnel	Ongoing	GWA will certify funds for training in 2013.	11/10/2013	GWA to complete a annual Workforce Development Report
33	Administration	Hydraulic model is neither complete nor accurate enough to make operational or design decisions.	2011 CO	To be completed May 2013.	N/A	On schedule
34	Administration	No preventative maintenance programs for most operational areas.	N/A	Preventative maintenance program currently in development.	N/A	GWA is working with EPA & CDM to improve assets management
35	Administration	Data are collected, but do not have the capacity to analyze the information to assist with operational decisions.	N/A	GWA is currently in the process of improving data collection. This will be on-going.	N/A	GWA will improve data collection and assessment function.
36	Administration	Lack of Standard Operating Procedures (“SOPs”).	05/10/13	GWA can correct within a 270 day time frame.	09/06/13	Update sent to EPA. SOP training required on routine basis.
37	Operator Compliance	No proper operator certification for system type.	Done	Lead operator is level IV Certified..	09/06/13	GWA has always been in compliance See 08/08/2005 GEPA memo
38	Operator Compliance	Plant operators do not regularly conduct jar tests.	Done	GWA can correct within a 180 day time frame.	6/6/2013	GWA has made this KPI and will manages with weekly reports
39	Operator Compliance	Plant operators and engineering staff did not understand the correlation between ineffective coagulant dosing	Done	GWA can correct within a 180 day time frame.	6/6/2013	GWA specific training planned, Training will be documented.
40	Operator Compliance	No level 4 operator is actually located on site at the Ugum WTP, as required.	Done	GWA can correct within a 180 day time frame with proper clarification from GEPA	6/6/2013	Level 4 Operator by 02/06/2013 GWA has always been in compliance

Table 10: 2013 Significant Findings Wastewater Dashboard, Updated 08/28/2013

Facility/function	#	Findings	GWA Response
Pump Station Inspection Observations	1	GWA's ability to respond to pump station failures and operational issues in a timely manner is a major concern. Of GWA's 73 pump stations, only 7 were equipped with telemetry and alarm systems, while the remainder had no alarm systems to alert GWA of pump system failures and other problems. (p.12)	To date GWA has 11 stations that have alarm systems. GWA is developing a plan to improve/ upgrade those SPS's with no telemetry or alarm system. GWA will install localized alarm system for SPS lacking alarms. GWA intends to expand to an alarm system that has calling features. The long term goal is for GWA to implement telemetry solutions as called for in the SCADA Master Plan.
Pump Station Inspection Observations	2	GWA's rover system is not a reliable means for detecting all pump station issues and spills. A review of rover travel sheets for all three wastewater districts for January through April 2012 shows numerous instances when no visit to certain pump stations was documented during a given shift. (p.12)	See response to #1 GWA restructured Wastewater collection management to allow oversight of SOP and elevate enforcement of SOP to site supervisor. This change is intended to improve documentation and oversight of the rovers.
Pump Station Inspection Observations	3	GWA staff discovered a spill at the Yigo pump station on January 25, 2012 that was estimated to have been occurring for at least two days, following the failure of the rovers to make a documented scheduled visit to the pump station. (p.12)	See response's # 1 and #2 COMPLETED
Pump Station Inspection Observations	4	Seven of the 29 pump stations inspected had one or more pumps out of service for periods ranging from 1 week to more than 1 year. Three of the inspected pump stations had no backup power. (p.12)	See items 4a through 4i below.
	4a	Two of four pumps at the Route 16 (Liguan Terrace) pump station were out of service. The pumps had been out of service for more than 1 year.	GWA currently has a project to rehabilitate the SPS and replace two pumps not working through a Design-Build contract that has already been executed. Progress to date is 5% complete.
	4b	No backup power was available at the Santa Ana pump station. Backup power has not been available at the pump station for at least 2 years.	GWA will develop a project to provide a back-up power or emergency pumping capabilities through telemetry for the SPS and use funds from 2011/2012 SRF.
	4c	One of two ejector pumps was out of service at the Namu pump station. The ejector pump had been out of service for approximately 6 months. In addition, no backup power was available at the Namu pump station.	Both ejector pumps are currently in service. GWA will develop a project to provide a back-up power or emergency pumping capabilities through telemetry for the SPS and use funds from 2011/2012 SRF.
	4d	No backup power was available at the Casimero pump station.	GWA will develop a project to provide a back-up power or emergency pumping capabilities through telemetry for the SPS and use funds from 2011/2012 SRF.
	4e	One of four pumps at the Agaña Main pump station was out of service. The pump had been out of service for about 1 week due to a bearing issue.	In May 2013, GWA completed the Agaña Main SPS rehabilitation project which replaced non-functioning pumps and motors, controls systems, etc. COMPLETED
	4f	One of three pumps at the Mamajanao pump station was out of service. The pump had been out of service for about 1 year.	In May 2013, GWA completed the Mamajanao SPS rehabilitation project which replaced non-functioning pumps and motors, controls systems, etc. COMPLETED
	4g	One of two pumps at the Umatac-Merizo pump station 20 was out of service. The pump had been out of service for about 1 month.	Pump Station #20 is a single pump station, not a dual station. The pump is fully functional. COMPLETED
	4h	One of two pumps at the Inarajan Main pump station was out of service. The pump had been out of service for about 2 months.	In May 2012 GWA completed a pump/motor change out to the non-functioning pump. Two pumps are currently operational. COMPLETED
	4i	One of two pumps at the Talofoto pump station was out of service. The pump had been out of service for about 1 week.	In July 2012 GWA completed a pump/motor change out to the non-functioning pump. Two pumps are currently operational. COMPLETED
Pump Station Inspection Observations	5	GWA lacks a robust spare parts and equipment inventory and is unable to repair certain pieces of equipment in a timely manner. (p.13)	EPA is currently funding an Asset Management Program. GWA acknowledge importance of spare parts and robust equipment inventory. GWA will work with Performance Management Contract (PMC) to provide a spare parts and robust equipment inventory.
Pump Station Inspection Observations	6	Of the 136 total Sanitary Sewer Overflows (SSO's) reported by GWA from October 2011 through September 2012, 44 SSO's were associated with pump stations. 31 of the pump station related SSO's (23 percent of the total) were attributed to pump station equipment failure or power outages. (p.13)	See items 6a through 6f below.
	6a	8 SSO's were reported at the Harmon pump station (identified as "Rojas Dr."), 7 of which were attributed to high flows exceeding the capacity of the pump station.	COURT ORDER ISSUE See response to #1, Additionally GWA is currently in negotiation with an engineering consultant to conduct an I&I/SSSES study for the central system which the Harmon SPS falls under. This study will help GWA identify high areas of I&I from which GWA can address areas of high SSO's. GWA to conduct wastewater hydraulic model update to further evaluate system capacity.
	6b	5 SSO's were reported at the Astumbo No. 1 pump station (also identified as "Ch. Fago or Chalan Fago St."), all of which were attributed to equipment failures.	GWA has replaced two pump/motor and level control systems (pressure transducers). COMPLETED
	6c	4 SSO's were reported at the Yigo pump station (identified as "Chn. or Chalan. Nanalao"), all of which were attributed to repeated bubbler level control compressor failures.	GWA currently in the process of replacing level control systems (pressure transducers).
	6d	3 SSO's were reported at the Mangilao pump station, all resulting in the overflow of sewage from a nearby baseball field restroom.	GWA has replaced one pump/motor and level control systems (pressure transducers). COMPLETED
	6e	3 SSO's were reported at the Mongmong Toto pump station for varying causes.	This is a telemetry issue, see response to #1
	6f	2 SSO's were reported at the Namu pump station, both attributed to equipment failures.	This is a telemetry issue, see response to #1
Infiltration and Inflow Analysis	7	During the time frame of October 2011 through September 2012, GWA reported 22 SSO's that were attributed to capacity-related issues and heavy rainfall. (p.14)	COURT ORDER ISSUE Item #7 is being addressed through I&I/SSSES studies (underway), line cleaning and hot spots in addition to alarm system upgrades (see response to #1). GWA is planning to upgrade the wastewater hydraulic model to further evaluate system capacity.

Table 10: 2013 Significant Findings Wastewater Dashboard, Updated 08/28/2013 (Continued)

FACILITY/FUNCTION	#	FINDINGS	GWA PLAN/SCHEDULE TO ADDRESS FINDINGS
Infiltration and Inflow Analysis	8	EPA's contractor, PG Environmental, determined that GWA's collection system hydraulic model was inadequate for depicting collection system capacity limitations. (p.14)	GWA is planning to upgrade the wastewater hydraulic model to further evaluate system capacity.
Infiltration and Inflow Analysis	9	GWA staff identified manhole structural defects as a major source of infiltration and inflow. (p.15)	I&/SSES study in the southern basin is completed. Underway are the central and northern basin which includes inspection of manholes. COMPLETED
Infiltration and Inflow Analysis	10	Another source of inflow identified by GWA was the direct connection of yard drains into the sewer system, most prevalent in the Southern District. (p.15)	COURT ORDER ISSUE I&/SSES study in the southern basin is completed. GWA to provide an action plan to address identified sources of I&I upon completion of study.
Infiltration and Inflow Analysis	11	A review of influent wastewater data for the Agat and Umatac-Merizo Sewage Treatment Plants (STP's) shows that relatively low strength influent wastewater was being discharged to those two Southern District STP's, which may be indicative of potential I/I problems. (p.15)	COURT ORDER ISSUE I&/SSES study in the southern basin is completed. GWA to provide an action plan to address identified sources of I&I upon completion of study.
Sewer Cleaning and Televising	12	One of GWA's two combination Vactor/jet cleaning trucks was out of service for repairs at the time of the inspection. (p.16)	Both GWA Vactor/jetter cleaning trucks are operational. An additional jetter truck has been purchased and is operational. COMPLETED
Sewer Cleaning and Televising	13	GWA staff stated that they were on schedule for 2012 to meet the 2011 Court Order sewer cleaning requirements, but behind schedule on meeting the CCTV inspection requirements. (p.16)	GWA has met schedule for both CCTV and cleaning requirements in 2012. COMPLETED
Sewer Cleaning and Televising	14	GWA does not typically clean the sewer lines prior to CCTV inspections, resulting in delays when CCTV cameras become stuck in sewer lines. (p.16)	GWA's current policy requires cleaning prior to CCTV. COMPLETED
Sewer Cleaning and Televising	15	During the inspection, GWA's CCTV camera winch and the camera transporter malfunctioned. This was the third such equipment issue in the last 4 months. (p.17)	GWA has purchased second van and currently has five cameras and transporters. All are operational. COMPLETED
Sewer Cleaning and Televising	16	GWA's CCTV inspection data was being sent exclusively to Veolia at an off-island location for analysis. GWA engineers were not receiving CCTV inspection data. (p.17)	GWA Planning Section is the custodian of CCTV data; all video has since been transferred to date. COMPLETED
Fats, Oils, and Grease (FOG) Management Program	17	M. Roush indicated that GWA does not have a formal FOG management program and that grease trap and interceptor enforcement is handled by the Guam Public Health Department and GEPA. (p.17)	New Source Control Manager has been appointed in May, 2013 to formulate FOG management program. COMPLETED
Fats, Oils, and Grease (FOG) Management Program	18	From October 2011 through September 2012, GWA reported 61 SSO's as attributed partially or exclusively to grease blockages, accounting for 45 percent of the SSO's during that time frame. (p.18)	COURT ORDER ISSUE See response to # 17, in addition GWA has scheduled cleaning of identified hot spots.
Fats, Oils, and Grease (FOG) Management Program	19	GWA staff indicated that large amounts of grease are being discharged to the STP's, specifically mentioning that grease is causing effluent issues at the Hagåtña STP. (p.18)	COURT ORDER ISSUE See response # 17. Currently the Agaña WWTP is being upgraded to Advanced Primary Treatment and the facility is scheduled for completion Dec. 2013. In addition an interim measures project addressed removal of grease at the treatment plant.
Overflow Locations	20	GWA staff identified known recurring SSO locations. (p.18)	See below
	20a	From October 2011 through September 2012, GWA reported 7 weather related SSO's from a manhole in Route 4, downstream of the New Chaot pump station.	GWA completed the Chaot SPS rehabilitation project which installed a new pump/motor and controls to stabilize flow pumped into the collection system instead of surging it. In addition GWA will be conducting I&/SSES study to be for central system from which a CIP rehabilitation/replacement program is planned. GWA to conduct wastewater hydraulic model update to further evaluate system capacity.
	20b	Similar surcharging conditions exist at the Mamajanao pump station where GWA reported 1 SSO's from this location between October 2011 and September 2012.	GWA completed the Mamajanao SPS rehabilitation project which installed a new pump/motor and controls to stabilize flow pumped into the collection system instead of surging it. COMPLETED
	20c	From October 2011 through September 2012, GWA reported 8 SSO's at the Harmon pump station, 7 of which were attributed to high flows exceeding the capacity of the pump station.	This is a duplicate of #6a
	20d	Evidence of a recent SSO was observed at a manhole in the sewer line just upstream of the New Chaot pump station on April 30, 2012. No SSO in this area or time frame was reported by GWA as part of its quarterly SSO report to EPA.	See response to #2 and #20a
Sanitary Sewer Overflow Identification, Response, Reporting, and Notification	21	The five separate spill response SOPs provided by GWA appear to be duplicative in purpose and/or scope in some instances. The existence of multiple SOPs with similar, but not identical, concurrent provisions could create confusion. (p.21)	GWA will review latest SOP's and report template and eliminate redundant SOP's fourth quarter CY 2013.
Sanitary Sewer Overflow Identification, Response, Reporting, and Notification	22	GWA does not have a public notification process for informing the public of SSO incidents and the potential associated health impacts. (p.22)	GWA does have a normal process to address public notification for SSO but will develop this process into an SOP.
Sanitary Sewer Overflow Identification, Response, Reporting, and Notification	23	For the January 25, 2012 spill at Yigo Pump Station, NEIC noted a discrepancy between the spill duration and volume recorded in GWA's Incident Notification Form (45 minutes, 180 gallons), GWA's report to EPA (680 gallons) and GWA staff description of the spill. GWA staff acknowledged during the NEIC inspection that the incident was of significantly greater duration and volume than reported to EPA. (p.23)	GWA has revised the incident reporting methods and QA/QC of spill calculations. COMPLETED
Sanitary Sewer Overflow Identification, Response, Reporting, and Notification	24	GWA's spill rate for October 2011 through September 2012 was 43.26 SSO's per 100 miles per year. By comparison, the average spill rate for the state of California, for data collected from 2007 through 2011, was 8.2 SSO's per 100 miles per year and the median spill rate was 3.4 SSO's per 100 miles per year. For similar sized municipal sewer systems to GWA (200 to 999 miles of sewer pipe), the average spill rate for the state of California was 4.32 SSO's per 100 miles per year and the median spill rate was 1.48 SSO's per 100 miles per year. (p.24)	GWA's position is that comparison to California is inappropriate. Comparison to other tropical island would be more appropriate. GWA is conducting an I&/SSES study and the upgrade of the wastewater hydraulic model will help evaluate system capacity.
Northern District STP	25	At the time of the inspection, the Northern District STP was undergoing major modification to provide enhanced primary treatment. (p.26)	Enhanced Primary Treatment Upgrade completed and facility has been in compliance since Feb. 2013 COMPLETED
Northern District STP	26	At the time of the inspection, only one of two influent channels at the Northern District STP was in operation. The other channel was out of service and being bypassed to allow installation of an automatic mechanically cleaned bar screen and conversion of the aerated grit chambers into a mixing tank for chemically enhanced primary treatment. (p.26)	Only one influent channel originally existed, the other mentioned channel was actually for a comminutor. The second channel was a bypass channel to provide maintenance of comminutor. A new mechanical bar screen is now place along with bypass channel. COMPLETED

Table 10: 2013 Significant Findings Wastewater Dashboard, Updated 08/28/2013 (Continued)

FACILITY/FUNCTION	#	FINDINGS	GWA PLAN/SCHEDULE TO ADDRESS FINDINGS
Northern District STP	27	Six months before the inspection, the drive system for one clarifier failed, requiring it to be taken out of service for repair. At the time of the inspection, only one of the clarifiers was in operation, with the other being bypassed. The out-of-service unit was being overhauled as per the modification plan. (p.27)	Both clarifiers have been completely renovated including new drive systems as of Jan. 2013 and are operational. COMPLETED
Northern District STP	28	Northern STP has reported frequent effluent limit violations for BOD and TSS. Substantial amounts of solids were observed passing over the weir at the clarifier and were observed being discharged at the plant outfall. (p. 27)	See Comment #25 COMPLETED
Northern District STP	29	At the time of the inspection, both of the two anaerobic sludge digesters were being used as sedimentation tanks only and for storing solids and, therefore, were not functioning as designed for solids stabilization. This condition had been ongoing since 2006. The out-of-service condition of the digesters increases BOD in the STP discharge. Finally, the inability to stabilize the solids at Northern STP places the burden of doing so on the facility at Hagåtña STP. (p. 27)	See comment #25 Upgrade to the WWTP plant has addressed the BOD permitted limits. Anaerobic digesters are also not in the plant process flow. COMPLETED
Northern District STP	30	The sludge dewatering centrifuges had been removed at the time of the inspection and the building housing them was under reconstruction to accommodate GWA's planned installation of replacement units. (p.28)	Building renovation and 2 new centrifuges installed and operational since Dec. 2012. Replaced under CO 4a. COMPLETED
Northern District STP	31	At the time of the inspection, GWA was not disinfecting effluent discharged to the ocean outfall. (p.28)	Disinfection is not an NPDES permit requirement.
Northern District STP	32	The effluent Parshall flume, designed for measuring effluent flow rate, was not in use at the time of the inspection. All plant flow was being reported based on the temporary flow measurement system at the headworks. (p.28)	New permanent mount flow meters installed at influent and effluent structures and both operational as of May 2013. COMPLETED
Northern District STP	33	At 12 MGD, the maximum flow recorded at the Northern District STP, the design peak hydraulic loading rate for the primary clarifiers is just met with both clarifiers in service; it is greatly exceeded when only one clarifier is in operation. Under those conditions, there is an increased risk of solids wash out, which could lead to permit effluent limit violations for BOD and Total Suspended Solids (TSS). (p.29)	See Comment #25 Reference AECOM NDWWTP Capacity Report July 2013; "The rated capacity of the existing primary clarifiers was provided by VWG. According to record plans and documentation the clarifiers are 130 feet diameter with a minimum side water depth of 7 feet. The documentation provided indicates that the effective treatment capacity is based on the following criteria: • Surface overflow rate at average flow = 900 gal/day/ft ² or 11.9 mgd average flow capacity" The design of the plant is 12 MGD. 2011 Court Order limits the NDWWTP to 6 MGD however the CO allows GWA to petition USEPA to move to 9 MGD. Currently GWA is only using one clarifier but should the second clarifier be required GWA will put the other on-line. (all flow based upon monthly average) COMPLETED
Northern District STP	34	With only one of two clarifiers in operation at the time of the inspection, if the operating clarifier fails, there will be no alternative but to bypass partially treated sewage. David Fletcher indicated that the acquisition of parts for the plant takes months, suggesting that major component failures may take considerable time to correct. (p.29)	See comment #27 COMPLETED
Northern District STP	35	The plant is incapable of adequately treating waste septage. (p.30)	New septage receiving station was completion date of June 2013 with satisfactory results. Required under CO 5(b) COMPLETED
Hagåtña STP	36	At the time of the inspection, one of the three clarifiers was out of service and being by-passed. The clarifier had been out of service for approximately two years at the time of the inspection. (p.31)	GWA currently has design build project to rehabilitate the plant which includes renovation of clarifier #2 that is out of service. Completion December 2013
Hagåtña STP	37	The Hagåtña STP receives unstabilized solids from the Northern District STP and septage waste into its Gravity Thickener. These waste streams may contribute substantial concentrations of BOD, particularly soluble BOD, to the plant effluent. (p.32)	Hagåtña no longer receives solids from NDWWTP and the new Septage Receiving Station located at NDWWTP will be completed in June 2013 COMPLETED
Hagåtña STP	38	No effluent disinfection was being provided at the time of the inspection. (p.32)	Disinfection is not an NPDES permit requirement.
Hagåtña STP	39	Flow monitoring is not provided at the effluent discharge. (p.32)	Effluent flow monitoring is not a permit requirement and current layout does not allow for flow monitoring.
Hagåtña STP	40	Hagåtña STP has reported repeated violations of the BOD and TSS limits. This may be due to exceptionally high ratios of soluble BOD to Total BOD in the incoming wastewater and to poor settleability of the incoming solids. Also, the BOD contributed by septage waste and unstabilized solids being added to the gravity thickener as described above may contribute to the problem. (p.33)	COURT ORDER ISSUE Enhanced Primary Treatment Upgrade construction project underway and planned completion date of Dec. 2013 to bring plant into compliance.
Agat-Santa Rita STP	41	The low influent BOD and TSS concentrations and peak influent flows reported at the Agat-Santa Rita STP (Agat) are indicative of high amounts of infiltration and inflow into the collection system. (p.34)	COURT ORDER ISSUE GWA is currently conducting I&I/SSSES study for southern system. GWA to conduct wastewater hydraulic model update to further evaluate system capacity.
Agat-Santa Rita STP	42	The wastewater influent line just upstream of the Agat headworks bar screen is hydraulically overloaded during high influent flow conditions such as those experienced during rain storms. To alleviate this overloading, GWA uses a trailer mounted pump to bypass influent wastewater around the bar screen and directly into the contact tank. Wastewater solids that would normally be removed by the bar screen can cause operational and maintenance problems in the STP. (pp. 34, 37)	COURT ORDER ISSUE GWA is currently conducting I&I/SSSES study for southern system. GWA awaiting USEPA response to CO 9(c) to allow GWA to further develop an action plan.
Agat-Santa Rita STP	43	The Agat plant regularly operates in excess of its maximum hydraulic design capacity and far in excess of the clarifier design surface loading rate. This increased surface loading rate may result in washing out of the clarifier, leading to possible permit limit exceedances of both BOD and TSS. (pp. 36, 39)	COURT ORDER ISSUE GWA is currently conducting I&I/SSSES study for southern system. GWA awaiting USEPA response to CO 9(c) to allow GWA to further develop an action plan.
Agat-Santa Rita STP	44	Peak wet weather flows at the Agat STP, including flow bypassed around the bar screen, cause hydraulic overloading in the biological treatment portion of the STP, resulting in under treatment of wastewater and solids washout to the plant discharge. GWA reported solids washout on at least 8 days during the period January 2011 through October 2011. (pp. 37, 38)	COURT ORDER ISSUE GWA is currently conducting I&I/SSSES study for southern system. GWA awaiting USEPA response to CO 9(c) to allow GWA to further develop an action plan.
Agat-Santa Rita STP	45	The aeration system does not provide even mixing and aeration throughout the contact basin, stabilization basin or the digester sections of the Agat STP. Inadequate aeration and mixing impairs the biological treatment system resulting in incomplete treatment of pollutants including BOD and ammonia. (pp. 35, 39)	COURT ORDER ISSUE New aeration and fine bubble diffuser system purchased. GWA seeking EPA approval to bypass facility to allow installation of equipment. GWA awaiting USEPA response to CO 9(c) to allow GWA to further develop an action plan.
Agat-Santa Rita STP	46	The Agat STP was constructed as a single-train system. Failure of a major component in the STP would effectively shut down the plant and result in either overloading of the plant or failure to meet permit effluent limits. (p.38)	COURT ORDER ISSUE To be address through CO Paragraph 10 – Agat/Santa Rita Wastewater Systems Evaluation

Table 10: 2013 Significant Findings Wastewater Dashboard, Updated 08/28/2013 (Continued)

FACILITY/FUNCTION	#	FINDINGS	GWA PLAN/SCHEDULE TO ADDRESS FINDINGS
Agat-Santa Rita STP	47	There is no disinfection system being operated at the plant, even though the permit specifies discharge limits for e. coli and fecal coliform. GWA has reported effluent limit violations for both e. coli and fecal coliform in the Agat discharge. (p.38)	COURT ORDER ISSUE To be address through CO Paragraph 10 – Agat/Santa Rita Wastewater Systems Evaluation
Agat-Santa Rita STP	48	Agat STP flow is measured by a magmeter installed between the headworks building and the contact tanks. Flow monitored at this location is not representative of the effluent flow rate and does not conform with the permit requirement to measure effluent flow rate. (p.38)	COURT ORDER ISSUE The current I&I study and collection system repairs should minimize the need to pump influent flow through temporary piping and trash pump location presently being utilized to prevent SSO and customer backups.
Baza Gardens STP	49	At the time of the inspection, the grit chamber aeration system was shut off because the diffusers were plugged. (p.40)	Diffuser now operational as of March, 2013 COMPLETED
Baza Gardens STP	50	The configuration of the aeration system reduces the efficiency of the activated sludge process. Mixing and aeration are uneven throughout the basin, and solids tend to build up along the outside perimeter wall. (p.41)	COURT ORDER ISSUE New aeration/mixing system needed but would require bypass of facility as this is a single train system facility.
Baza Gardens STP	51	In appearance, the mixed liquor appears thin, with insufficient solids concentration. According to D. Fletcher, the MLSS concentration tends to be 400–600 mg/L, well below the target range. (p.41)	COURT ORDER ISSUE See response to #50
Baza Gardens STP	52	Baza Gardens STP is not configured or equipped to meet the precision operational control conditions needed to provide effective removal for either nitrate or orthophosphate. (p.41)	COURT ORDER ISSUE To be address through CO Paragraph 13 – Baza Garden Wastewater System Evaluations
Baza Gardens STP	53	At the time of the inspection, the clarifier gear box emitted an unusual amount of noise, possibly indicating problems with the gears. The skimmer arm appeared to hang at certain points in its rotation. (p.41)	The gear box was rebuilt in August 2012 and is in operation. COMPLETED
Baza Gardens STP	54	The plant has no operational disinfection system. There is no system for disinfection of the effluent, although the permit specifies an e. coli and fecal coliform limit. (p.42)	COURT ORDER ISSUE To be address through CO Paragraph 13 – Baza Garden Wastewater System Evaluations
Baza Gardens STP	55	The permit requires flow rates to be reported at the effluent monitoring point. However, data for the plant was being reported from the temporary flow meter installation at the influent headworks. (p.42)	COURT ORDER ISSUE To be address through CO Paragraph 13 – Baza Garden Wastewater System Evaluations
Baza Gardens STP	56	The tank walls were corroded through in several locations and the concrete was spalling on exposed surfaces. (p.42)	Structural repairs completed April, 2013 COMPLETED
Baza Gardens STP	57	The age of the mechanical components elevates the risk of major failures and makes it more difficult to secure replacement parts as these are not readily in stock. (p.42)	COURT ORDER ISSUE To be address through CO Paragraph 13 – Baza Garden Wastewater System Evaluations
Baza Gardens STP	58	Baza Gardens STP was constructed as a single train system. Failure of a major component would effectively shut down the plant resulting in either overloading of the plant or failure to meet permit limits. (p.43)	COURT ORDER ISSUE To be address through CO Paragraph 13 – Baza Garden Wastewater System Evaluations
Baza Gardens STP	59	The May 2011 monthly operating report indicated a 3-inch hole in the wall between the digester and aerator. As of the inspection on April 2012, the hole had not been repaired. (p.43)	Structural repairs completed April, 2013 COMPLETED
Baza Gardens STP	60	The plant has reported permit effluent limit violations for percent removal of BOD, and violations of the effluent concentration limits for nitrogen, nitrate, phosphorus, and e. coli. (p.43)	COURT ORDER ISSUE To be address through CO Paragraph 13 – Baza Garden Wastewater System Evaluations
Umatac-Merizo STP	61	The ultrasonic probe associated with the influent flow measurement Parshall flume was not functional at the time of the inspection. GWA was using an ISCO 2150 as a temporary system to measure influent flow. (p.44)	COURT ORDER ISSUE To be address through CO Paragraph 15 – Umatac-Merizo Wastewater System Evaluation ISCO 2150 is calibrated and operational.
Umatac-Merizo STP	62	GWA does not have a flow measurement device capable of measuring the effluent flow rate at the permitted Discharge Point 001 as required by the permit. (p.45)	COURT ORDER ISSUE To be address through CO Paragraph 15 – Umatac-Merizo Wastewater System Evaluation
Umatac-Merizo STP	63	GWA reports frequent violations of effluent limits at discharge point 001 including fecal coliform, e. coli, ortho Phosphate and BOD and TSS percent removal. (p.46)	COURT ORDER ISSUE To be address through CO Paragraph 15 – Umatac-Merizo Wastewater System Evaluation
Umatac-Merizo STP	64	The Umatac-Merizo STP was constructed as a single-train system. Failure of a major component, such as the internal pump stations, would result in an eventual bypass. (p.46)	COURT ORDER ISSUE To be address through CO Paragraph 15 – Umatac-Merizo Wastewater System Evaluation. Additionally the internal pump stations #13 & #19 are both dual pump stations.
Umatac-Merizo STP	65	GWA bypassed the Wetland Treatment System (WTS) on at least 27 days between January 2011 and March 2012 and made unpermitted discharges of the disinfected partially treated bypassed wastewater from the facultative pond overflow basin to the Toguan River. The bypasses are caused by insufficient pumping capacity at peak wet weather flows or due to pump failures. (p.47)	Procurement is underway for a design engineer for the installation of new pump and discharge piping to increase pumping capacity at PS #19 and to eliminate non-permitted discharges from lower lagoon to river.
Umatac-Merizo STP	66	Although the plant is intended to be a no-discharge facility, during the inspection of the facility, the WTS was unable to absorb enough water to avoid discharging through Discharge Point 001. (p.48)	See response #65 Additionally, Umatac-Merizo WWTP is not a zero discharge plant.
Umatac-Merizo STP	67	There is no system for disinfection of the effluent, although the permit specifies an e. coli and fecal coliform limit. The plant has reported failing effluent limits for both e. coli and fecal coliform. (p.48)	COURT ORDER ISSUE To be address through CO Paragraph 15 – Umatac-Merizo Wastewater System Evaluation
Inarajan STP	68	Of the four cells in the treatment system, only one had a functioning aerator. (p.49)	Two cells are now aerated and cell # 3 is being utilized as a settling basin for clarification as of May 2013. COMPLETED
Pago-Socio STP	69	The plant did not appear to be receiving regular maintenance. (p.49)	GWA will conduct regular maintenance and monitor the facility. GWA will develop plans to convert the facility to handle the wastewater.
Pago-Socio STP	70	The aeration system was not operating. (p.49)	See response #69
Pago-Socio STP	71	The only access to the plant had been blocked by a retaining wall constructed across the gate. (p.49)	See response #69
Pago-Socio STP	72	The discharge percolation area had been taken over as a planting area by a local gardener. (p.49)	See response #69