



GUAM WATERWORKS AUTHORITY

Good Water Always

**ENGINEERING
CAPITAL IMPROVEMENT PLAN**

2010-2014

October 2009



GUAM WATERWORKS AUTHORITY

Date: September 4, 2009

To: Leonard J. Olive, ScD, General Manager

From: Martin L. Roush, P.E., Chief Engineer

Cc: Greg P. Cruz, CPA, Chief Financial Officer
Thomas Cruz, P.E., Engineering Supervisor

Subject: Draft Engineering Capital Improvement Plan 2010-2014

The Engineering Division would like to submit for your review and approval the Draft Engineering Capital Improvement Plan (CIP) 2010-2014. This CIP is intended to communicate the engineering division's goals for the next five years, particularly the completion of projects cited in the Stipulated Order. The CIP will address needed upgrades in the water and wastewater systems throughout the island to ensure GWA continues to provide excellence in water and waste disposal services. Any comments you may have would be greatly appreciated.

I acknowledge this project was truly a team effort with the combined energy of the engineering staff and the support of the Finance Department. Specifically, I want to recognize and thank Thomas Cruz, P.E. for his work ethic and leadership in the role of Assistant Project Manager for this draft of the Engineering CIP.

GWA Capital Improvements Plan Project Sheet FY 2010-2014

SUMMARY TABLES:

Potable Water (X 1,000)

CIP #	Name	2010	2011	2012	2013	2014
PW 05-01	Ground Water Disinfection	\$757				
PW 05-02	Water Reservoir Condition Assessment	\$430				
PW 05-03	Santa Rita Springs Booster Pump Rehabilitation, Phase II	\$429				
PW 05-04	Ugum Water Treatment Plant Refurbishment	\$3,000				
PW 05-05	"A" Series Well Transmission Line	\$500				
PW 05-06	Water Booster Pump Station		\$500	\$700		
PW 05-07	Meter Replacement Program	\$5,000	\$2,500			
PW 05-08	Barrigada Tank Repair/Replacement	\$2,500				
PW 05-09	Leak Detection / Line Replacement	\$3,950				
PW 05-10	Potable Water System Planning	\$200				
PW 09-01	Ugum Water Treatment Plant Intake Modifications	\$620				
PW 09-02	Water Wells	\$2,356		\$1,000		
PW 09-03	Water Distribution System Pipe Replacement	\$2,300	\$2,500	\$5,000	\$4,500	
PW 09-04	Pressure Zone Realignment/Development 2005 Impr.	\$1,450		\$1,000	\$1,000	
PW 09-05	Northern System Water Distribution System 2005 Impr.	\$2,600		\$1,100	\$300	\$1,300
PW 09-06	Central Water Distribution System 2005 Improvements	\$600		\$300	\$300	\$300
PW 09-07	Southern Water Distribution System 2005 Improvements	\$500		\$650	\$650	\$650
PW 09-08	Mechanical/Electrical Equipment Replacement		\$500	\$430	\$430	\$430
PW 09-09	Water Reservoir Internal/External Corrosion Asmt.	\$500				
PW 09-10	Water Reservoir Internal/External Corrosion Rehb.	\$800	\$800	\$800	\$800	
PW 09-11	Water System Reservoirs 2005 Improvements	\$5,000	\$5,700	\$5,000	\$5,000	\$2,500
PW 11-01	Distribution System Upgrades			\$1,600	\$1,700	\$500
PW 11-02	Ugum Water Treatment Plant Reservoir Replacement			\$2,350	\$2,350	
Total		\$33,492	\$12,500	\$19,930	\$17,030	\$5,680

Wastewater (X 1,000)

CIP #	Name	2010	2011	2012	2013	2014
WW 05-01	Old Agat Wastewater Collection (I/I reduction)	\$2,200				
WW 05-02	Collection Line Upgrade/ Collection System Upgrades			\$1,600	\$1,700	\$500
WW 05-03	NDWTP Diffuser Installation	\$3,000				
WW 05-04	Wastewater System Planning	\$200				
WW 05-05	Wastewater Vehicles	\$235				
WW 05-06	Wastewater Pump Station Upgrades	\$225				
WW 05-07	NDWWTP - Chlorine Tanks	\$250				
WW 05-08	Umatac-Merizo STP Improvements	\$535				
WW 09-01	LS Priority 1 Upgrades	\$2,000		\$8,500	\$8,900	
WW 09-02	Moratorium	\$18,000	\$20,000			
WW 09-03	Old Agat Collection Continuation (III)	\$2,200				
WW 09-04	Manhole Frame Seal Repair	\$84				
WW 09-05	Agat Manhole Rehabilitation	\$55				
WW 09-06	Wastewater Collection System Repl./Rehabilitation	\$250	\$250	\$1,750	\$1,000	
WW 09-07	Tumon Bay Sewer Upgrades	\$1,500				
WW 09-08	Facilities Plan/Design for Baza Gardens STP Repl.	\$1,250	\$1,250			
WW 09-09	Facilities Plan/Design for the N. District STP Bio-solids	\$500				
WW 09-10	Facilities Plan/Design for Agat-Santa Rita STP Repl.	\$600				
WW 09-11	WWTP Priority 1 Upgrades	\$1,000	\$1,000	\$5,000	\$2,500	
WW 11-01	Priority 1 Sewer Upgrades – Agat District			\$500		
WW 11-02	Priority 1 Sewer Upgrades – Baza Garden District			\$650		
WW 11-03	Baza Gardens STP Replacement			\$7,667	\$7,578	\$7,667
WW 11-04	Facilities Plan/Design for the Umatac-Merizo STP Impr.			\$140		
WW 11-05	Facilities Plan for Hagatna STP Impr. & Effluent WWPS				\$1,900	
WW 11-06	Hagatna STP Improvements and Effluent WWPS				\$2,000	
WW 11-07	Northern District STP Expansion – Biosolids Electrical			\$2,500	\$2,500	
Total		\$34,084	\$22,500	\$28,307	\$28,078	\$8,167

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

SUMMARY TABLE:

Electrical Engineering (X 1,000)

CIP #	Name	2010	2011	2012	2013	2014
EE 05-01	Well Electrical Protection	\$200				
EE 05-02	SCADA Pilot Project	\$300				
EE 09-01	Wastewater Pumping Station Electrical Upgrade	\$250	\$250	\$750	\$750	
EE 09-02	Electrical Upgrade - Water Wells	\$500	\$500	\$1,500	\$1,500	
EE 09-03	Electrical Upgrade - Water Booster Pump Stations	\$325	\$325			
EE 09-04	Electrical Upgrade -Water Booster Pump Stations	\$350				
EE 09-05	Electrical Upgrade - Other Water Booster Pump Stations	\$250				
EE 09-06	SCADA Improvements – Phase 1	\$250				
EE 09-07	SCADA Improvements – Phase 2	\$1,100				
EE 09-08	SCADA Improvements – Phase 3		\$2,500			
EE 09-09	SCADA Improvements – Phase 4		\$850			
Total		\$3,525	\$4,425	\$2,250	\$2,250	

Miscellaneous (X 1,000)

CIP #	Name	2010	2011	2012	2013	2014
MC 05-01	Laboratory Modernization			\$1,200		
MC 05-02	Land Survey	\$500	\$500	\$800	\$250	
MC 09-01	General Plant Improvements / Water Distribution System	\$2,000	\$2,000	\$5,000	\$5,000	\$1,342
Total		\$2,500	\$2,500	\$7,000	\$5,250	\$1,342

Summary (X 1,000)

		2010	2011	2012	2013	2014
PW	Potable Water	\$33,492	\$12,500	\$19,930	\$17,030	\$5,680
WW	WasteWater	\$34,084	\$22,500	\$28,307	\$28,078	\$8,167
EE	Electrical Engineering	\$3,525	\$4,425	\$2,250	\$2,250	
MC	Miscellaneous	\$2,500	\$2,500	\$7,000	\$5,250	\$1,342
Total		\$73,601	\$41,925	\$57,487	\$52,608	\$15,189

GWA Capital Improvements Plan

Project Sheet FY 2010-2014

NARRATIVE

Developing the Capital Improvement Plan (CIP)

The Engineering CIP is the GWA's five-year blueprint for creating and maintaining the crucial infrastructure that will support the renewing and replacing the infrastructure and the continued growth of the Island of Guam. This year, the Chief Engineer wanted to enhance the CIP to include a narrative and project description sheets. As detailed in the project description sheet, a Capital Improvement Project is just one component of the overall Capital Improvement Plan; there are 64 projects listed in this plan. Other documents, such as the Master Plan and 2006 Stipulated Order provide valuable information and guidance in the preparation of the CIP.

Individual projects will continue to be subjected to ongoing review by the Chief Engineer, General Manager GWA, General Manager CUS, Consolidated Commission on Utilities (CCU) and possibly the Public Utilities Commission (PUC). The CIP is also an important public communication medium. The CIP gives residents and businesses a view of GWA's direction in the area of capital improvement and a better understanding of the Island's ongoing need for stable revenue sources to fund large or multi-year capital projects.

Definition of an Engineering Capital Improvement Project

For the purposes of the Engineering CIP, a capital expenditure is one that results in the acquisition and/or replacing GWA's capital assets. The assets included in the Major CIP costs greater than \$50,000 or are listed in the 2006 Stipulated Order and/or Master Plan. Water production facilities and water distribution systems, wastewater collection system, wastewater treatment plants, and major one-time acquisitions of equipment are all examples of capital improvements.

Carryover Projects/Fund Balance

Due to the nature of capital projects, the life of a project may span across fiscal years. As funds are received to fund a project, they are accumulated in the appropriate capital fund and expended as projects progress. When the funds are not spent in one year they remain in the fund balance to be used in the future. This is also referred to as carryover. As the GWA refines the annual CIP, these carryover projects will be redefined into areas of contractual obligation, and ongoing projects will be re-appropriated in the following year as all of the financing is reevaluated to ensure project funding and funding viability.

Operating and Capital Budget Relationship

The Capital Improvement Plan also impacts the operating budget as projects are completed and operating funds are necessary for the routine maintenance and operation of facilities and equipment including, utilities, staffing, repairs, and equipment maintenance. For example, in the delivery of the Supervisory Control And Data Acquisition (SCADA) system, once the project is delivered SCADA system requires extensive operational, maintenance, and engineering support for the SCADA system to operate reliable.

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

NARRATIVE

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-01

Name of Project: Ground Water Disinfection

Reference Documents:

- a) Stipulated Order 2006, Item 12(C) Ground Water Chlorination System - Due April 1, 2007. There is \$12,000 in fines to date.

Project Description:

Design of this project is complete. The remaining scope includes the upgrade and construction of new chlorination systems for 99 deep wells and one spring source.

Project Justification:

This project is identified in the Stipulated Order 2006, Item 12(C).

Financing Options & Grants:

The main source of funding for this project is the 2005 bond from which \$37,000 remains. This project also assumes a 2005 Bond reallocation in the amount of \$720,000.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$2,223,023
2010	Construction	\$757,000
2011		
2012		
2013		
2014		
Project Total		\$2,980,023

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-02

Name of Project: Water Reservoir Condition Assessment

Reference Documents:

- a) Stipulated Order 2006, Item 38(C) - Water Reservoir Condition Assessment - Due March 1, 2008.
There is \$19,000 in fines to date.
- b) Phase 1 Summary Report for inspection of water storage tanks, October 17, 2008.
- c) CIP PW 09-08, 09 & 10

Project Description:

This project includes professional engineering service and construction service contracts to conduct an assessment of the structural integrity and soundness for all GWA reservoirs. The assessment will include internal and external inspections from which recommendations will be provided in the form of a work plan and schedule.

Project Justification:

This project is identified in the Stipulated Order 2006, Item 38(C).

Financing Options & Grants:

The main source of funding for this project will be the 2005 bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Assessment/Planning	\$430,000
2011		
2012		
2013		
2014		
Project Total		\$430,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-03

Name of Project: Santa Rita Springs Booster Pump Rehabilitation, Phase II

Reference Documents:

- a) Stipulated Order 2006, item 44. Basis of Design Santa Rita Springs Booster Pump Rehabilitation Project, July 2005.

Project Description:

Phase I of the project completed the Route 5 Transmission Line and a portion of the Santa Rita Booster Station. Phase II includes additional improvements to the booster station, specifically the impound reservoir. Additional pressure regulating valves are required to optimize the distribution system.

Project Justification:

This project is identified in the Stipulated Order 2006, Item 44

Financing Options & Grants:

The main source of funding for this project will be the 2005 bond. This project assumes a 2005 Bond reallocation in the amount of \$240,000.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Construction	\$429,000
2011		
2012		
2013		
2014		
Project Total		\$429,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-04

Name of Project: Ugum Water Treatment Plant Refurbishment

Reference Documents:

- a) Stipulated Order 2006, Item 41 - Ugum Surface Water Treatment Plant - Due January 5, 2008.
There is \$9,000 in fines to date.
- b) CIP PW 09-01 Ugum Water Treatment Plant Intake Modifications.

Project Description:

This project will renovate the Ugum Treatment Plant. The refurbishment will include the conversion of existing conventional surface water plant to a micro-filtration system; replacement of electrical control systems; replacement of finished water pumps; installation of SCADA equipment; and the refurbishment of the backwash waste handling system.

Project Justification:

The Ugum Treatment Plant is a vital drinking water source. An integrated approach is needed to ensure the reliability of this treatment plant.

Financing Options & Grants:

The main source of funding for this project will be the 2005 Bond and grants. The grants include a U.S. EPA fund in the amount of \$1,724,970 and FEMA fund in the amount of \$400,000. This project assumes a 2005 Bond reallocation in the amount of \$488,000.

Project Staffing Implications:

Major Contract Administration, Major Project Management Services, and Major Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$5,218,964
2010	Construction	\$3,000,000
2011		
2012		
2013		
2014		
Project Total		\$8,218,964

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-05

Name of Project: "A" Series Well Transmission Line

Reference Documents:

- a) Stipulated Order 2006, Item 38(B), Sinajana Water Transmission Line, Due June 30, 2008. There is \$9,000 in fines to date.

Project Description:

Design and construction of approximately 24,800-feet of 8, 12, and 24-inch water transmission lines between the Chaot and Agana Heights water storage tanks; the connection of 7 existing A-series wells to the transmission line, and chlorination equipment at each of the two storage tanks. The new pipeline will be a dedicated transmission line to the storage tanks. This project is broken down to 3 phases. Phase 1 is completed, Phase 2a is under construction, and Phase 2b is pending contact approval.

Project Justification:

This project is identified in the Stipulated Order 2006, Item 38(B)

Financing Options & Grants:

The main source of funding for this project will be the 2005 Bond and a grant from the U.S.EPA in the amount \$4,163,606. This project assumes a 2005 Bond reallocation in the amount of \$500,000.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$2,707,708
2010	Construction	\$500,000
2011		
2012		
2013		
2014		
Project Total		\$3,208,708

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-06

Name of Project: Water Booster Pump Station

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-13

Project Description:

The 2005 hydraulic model for GWA's three water systems identified deficiencies in water booster pump capacity on providing adequate supply to areas in the Southern and Central water systems.

Project Justification:

This project will provide additional booster pump capacity to ensure adequate supply to affected areas.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$66,734
2010		
2011	Design/Construction	\$500,000
2012	Construction	\$700,000
2013		
2014		
Project Total		\$1,266,734

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-07

Name of Project: Meter Replacement Program

Reference Documents:

- a) Stipulated Order 2006, Item 14: Due: November 30, 2007. There is \$30,000 in fines to date.

Project Description:

The project will continue to replace all GWA customer water (mechanical) meters with AMR (automatic meter reading) meters. This project will replace old, underperforming and broken meters. The AMR meters will allow data logging and electronic collection of monthly metering data.

Installation began December 2005. Almost all (97.2%) of the large commercial meters and 68% of the residential meters have been changed. Substantial completion of the meter change out has not resulted in expected revenue gains, and problems are being experienced with both the electronic loggers/transmitters and with the meters. Installation of the remaining meters is on hold pending resolution of metering problems being encountered with the new meters.

Project Justification:

This project will develop a water meter improvement program to ensure that each connection to the three public water systems has an accurate and accessible water meter that is read monthly and used for billing. Currently, GWA has an unaccounted water rate of over 50%. It is believed that a portion of this loss is due to leakage, and a portion is attributable to metering problems.

Financing Options & Grants:

The main source of funding for this project will be the 2005 and 2010 bonds. This project assumes a 2005 Bond reallocation in the amount of \$2,500,000.

Project Staffing Implications:

Major Field Support, Contract Administration, Project Management, and GIS Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$14,009,422
2010	Replacement	\$5,000,000
2011	Replacement	2,500,000
2012		
2013		
2014		
Project Total		\$19,00422

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-08

Name of Project: Barrigada Tank Repair/Replacement

Reference Documents:

Project Description:

This project will replace the 1.0 MG tank that collapsed in 2003. The new tank will be located in the same footprint as the previous tank. This project will include a design analysis for a replacement tank.

Project Justification:

The reduction in storage capacity of the Barrigada reservoirs due to the catastrophic failure of the previous 1.0 MG steel tank has negatively impacted the ability of GWA to effectively supply adequate water source to the villages of Barrigada and Maite.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond. Staff will apply for a Department of Interior grant.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity	Demolition	\$30,648
2010	Planning/Design/Construction	\$2,500,000
2011		
2012		
2013		
2014		
Project Total		\$2,530,648

GWA Capital Improvements Plan

Project Sheet FY 2010-2014

Project Number: CIP PW 05-09

Name of Project: Leak Detection / Line Replacement

Reference Documents:

Project Description:

This project will perform system wide leak detection, line location and mapping, leak repair and inspection, leak analysis and control, and training and technology transfer. Line location will be performed where GIS and model data are incomplete. Leak detection will be performed on 450 miles of system pipe, including use of acoustical surveying and water audits. Leaks and repairs will be inspected, standard operating procedures reviewed/revised, and material inventories developed. GWA personnel will receive training in leak detection methods and equipment. Pressure, surge and frequency analysis will be conducted, and recommendations developed for pipeline replacement, system reconfiguration, and other adjustments needed to control leakage. Data from leak detection will be used to set line replacement priorities, with a goal to design and construct the replacement of approximately 10 miles of distribution mains annually depending on availability of funding.

Project Justification:

GWA system consists of hundreds of miles of water distribution mains consisting of numerous different pipe sizes and types. Many of these lines are undersized and/or failing due to improper construction, earthquake damage, and/or material failures. Operating personnel average about 5 distribution main breaks per week. Water losses (unaccounted for water) from all sources are >50% of total production.

Financing Options & Grants:

The main source of funding for this project will be the 2005 Bond. This project funding assumes a U.S. EPA ARRA grant in the amount of \$2,045,000 if no funding is reprogrammed from the 2010 Bond and appropriate CIP Projects. This project assumes a 2005 Bond reallocation in the amount of \$450,000.

Project Staffing Implications:

Major Contract Administration, Major Project Management Services, and Major Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$5,098,621
2010	Leak Assessment	\$3,950,000
2011		
2012		
2013		
2014		
Project Total		\$9,048,621

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 05-10

Name of Project: Potable Water System Planning

Reference Documents:

- a) MASTER PLAN, VOLUME 2, CHAPTER 6

Project Description:

This project will include long term planning, system planning, and environmental planning. Specific applications will include potable water hydraulic modeling and the potable water bubble map. This will be used to update a portion of the Master Plan.

Project Justification:

Long term planning, system planning, and environmental planning is essential for developing capital improvement programs. Potable Water System Planning ensures that a system approach is used in project development which specifies how specific projects fit into the overall planning goals. In addition, the 2006 Master Plan requires updating every two years.

Financing Options & Grants:

This project assumes a 2005 Bond reallocation in the amount of \$200,000.

Project Staffing Implications:

Major modeling services and GIS support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Design Planning	\$200,000
2011		
2012		
2013		
2014		
Project Total		\$200,000

**GWA Capital Improvements Plan
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Project Number: CIP PW 09-01

Name of Project: Ugum Water Treatment Plant Intake Modifications

Reference Documents:

- a) Stipulated Order 2006, item 41, Ugum Surface Water Treatment Plant. Due January 5, 2008.
There is \$9,000 in fines to date.
- b) MASTER PLAN, VOLUME 2, TABLE 9-6

Project Description:

This project includes an alternative analysis and a design concept report to refine the extent and cost of this critical project. This project will improve the intake structure of the Ugum Water Treatment Plant to minimize siltation and provide more reliable raw water supply during low river flow conditions.

Project Justification:

The existing intake is susceptible to siltation and requires frequent maintenance. The Ugum WTP is a major source of water for supplying the Southern Water System.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Project Management, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/construction	\$620,000
2011		
2012		
2013		
2014		
Project Total		\$620,000

GWA Capital Improvements Plan

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Project Number: CIP PW 09-02

Name of Project: Water Wells

Reference Documents:

- a) GWA Needs Assessment for Anticipated Guam Military Buildup 08/2007 and 08/2009 update.

Project Description:

GWA projects a need to construct approximately 16 new production wells to produce an additional 7 MGD. In addition, the Department of Defense projects a need for approximately 22 new production wells to produce approximately 15 MGD (estimated number of wells is lower based on expected para-basal production). Together with existing well and wells under construction these new demands will push the total withdrawal from the aquifer to greater than 70 MGD. Because this withdrawal rate is nearing the estimated maximum sustainable yield, it is imperative that the site locations and development of these wells are executed with a whole-aquifer perspective rather than based on current property boundaries and well ownership. Therefore, GWA is seeking approval to site and develop wells to meet the total demands of both civilian and military populations as noted above (38 wells @ 37 MGD).

Project Justification:

Military operational water demands as well as demands from personnel and dependents living on base will be satisfied by existing military operated sources and/or by new sources currently under development by the military. Water demands for all population residing in all other areas of Guam will be met by GWA sources. Ultimately, the projected demands can be satisfied through a program of line replacements and leak reduction. However, line replacements cannot be accomplished rapidly enough to meet the increased demands that are expected.

Financing Options & Grants:

A source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$2,356,000
2011		
2012	Construction	\$1,000,000
2013		
2014		
Project Total		\$3,356,000

**GWA Capital Improvements Plan
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Project Number: CIP PW 09-03

Name of Project: Water Distribution System Pipe Replacement

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-7

Project Description:

In addition to specific pipe replacement projects identified through hydraulic modeling, there is an ongoing need to create funding reserves for pipe replacement to address leak, failure and age issues. The basis for this reserve is to replace 13,500 linear feet of pipe per year through 2015 and 2,000 feet of pipe replacement per year thereafter.

Project Justification:

Specific replacement areas are not identified at this time, but an allocation of resources is reserved in the CIP for accounting purposes and to ensure funds are available.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, Major GIS Support, and Major Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$2,300,000
2011	Construction	\$2,500,000
2012	Construction	\$5,000,000
2013	Construction	\$4,500,000
2014		
Project Total		\$14,300,000

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP PW 09-04

Name of Project: Pressure Zone Realignment/Development 2005 Improvements

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-12

Project Description:

The hydraulic modeling of the water system identified areas with inadequate service pressures and flows. Installation of pressure regulating valve and pressure sustaining valve stations is required at strategic locations to facilitate the development of defined pressure zones, and improve circulation of flow from a higher pressure zone to a lower pressure zone.

Project Justification:

Pressure zone changes needed to improve flow circulation and defined pressure zones.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, Major GIS Support, and Major Modeling Support are required. The modeling support to achieve this project will be extensive.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$1,450,000
2011		
2012	Construction	\$1,000,000
2013	Construction	\$1,000,000
2014		
Project Total		\$3,450,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 09-05

Name of Project: Northern System Water Distribution System 2005 Improvements

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-11

Project Description:

The 2005 hydraulic model for GWA's Northern Water System identified deficiencies in pumping capacity and pipe size to provide adequate fire flow and pressure, and reduce high velocities and friction losses.

Project Justification:

This project's primary justification is to improve fire flow and pressure in the respective areas.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$2,600,000
2011		
2012	Construction	\$1,100,000
2013	Construction	\$300,000
2014	Construction	\$1,300,000
Project Total		\$5,300,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 09-06

Name of Project: Central Water Distribution System 2005 Improvements

Reference Documents:

a) MASTER PLAN, VOLUME 2, TABLE 9-10

Project Description:

The 2005 hydraulic model for GWA's Central Water System identified deficiencies in pumping capacity and pipe size to provide adequate fire flow and pressure, and reduce high velocities and friction losses.

Project Justification:

This project's primary justification is to improve fire flow and pressure in the respective areas.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Contract Administration, Project Management Services, Construction Management Services, GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$600,000
2011	Construction	
2012	Construction	\$300,000
2013	Construction	\$300,000
2014	Construction	\$300,000
Project Total		\$1,500,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 09-07

Name of Project: Southern Water Distribution System 2005 Improvements

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-9

Project Description:

The 2005 hydraulic model for GWA's Southern Water System identified deficiencies in water pipe sizes required to provide adequate fire flow.

Project Justification:

This project's primary justification is to improve fire flow and pressure in the respective areas.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Contract Administration, Project Management Services, Construction Management Services, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$500,000
2011		
2012	Construction	\$650,000
2013	Construction	\$650,000
2014	Construction	\$650,000
Project Total		\$2,450,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 09-08

Name of Project: Mechanical/Electrical Equipment Replacement

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-8

Project Description:

This project will create an equipment reserve for routine mechanical/electrical equipment replacement due to age, capacity, or failure. This reserve includes well pumps, booster pumps, valves, emergency generators and other items associated with the Northern, Central and Southern Water Systems.

Project Justification:

Sufficient funds must be reserved to ensure water system mechanical and electrical equipment is replaced in a timely manner.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011	Planning/Design/Construction	\$500,000
2012	Construction	\$430,000
2013	Construction	\$430,000
2014	Construction	\$430,000
Project Total		\$1,790,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 09-09

Name of Project: Water Reservoir Internal/External Corrosion Assessment Program

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-2

Project Description:

This project will develop and implement a corrosion assessment program for all steel water reservoirs to determine the extent of internal and external reservoir corrosion and necessary course of action to rehabilitate or replace the affected reservoirs.

Project Justification:

The failure of the Barrigada Water Reservoir #1 in June 2005 demonstrated the urgent need to internally inspect and carryout a full condition assessment of all steel reservoirs to determine the degree of corrosion damage and establish remedial action or reservoir replacement as appropriate.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Project Management, and Construction Inspection are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Assessment/Planning	\$500,000
2011		
2012		
2013		
2014		
Project Total		\$500,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 09-10

Name of Project: Water Reservoir Internal/External Corrosion Rehabilitation Program

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-3

Project Description:

This project will program the rehabilitation of designated reservoirs over a four-year period as a phased project based on the results of the corrosion assessment program for all steel water reservoirs.

Project Justification:

The failure of the Barrigada Water Reservoir #1 in June 2005 demonstrated the urgent need to internally inspect and carryout a full condition assessment of all steel reservoirs to determine the degree of corrosion damage and establish remedial action or reservoir replacement as appropriate.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Major Contract Administration, Major Project Management, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Assessment/Planning/Construction	\$800,000
2011	Construction	\$800,000
2012	Construction	\$800,000
2013	Construction	\$800,000
2014		
Project Total		\$3,200,000.00

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 09-11

Name of Project: Water System Reservoirs 2005 Improvements

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-14 & 15

Project Description:

This project will construct additional reservoirs that address deficiencies in water storage capacity.

Project Justification:

The 2005 hydraulic model for GWA's three water systems identified deficiencies in reservoir capacity. This project will provide adequate capacity and pressure for fire and customer supply.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Major Contract Administration, Major Project Management, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Assessment/Planning/Construction	\$5,000,000
2011	Construction	\$5,700,000
2012	Construction	\$5,000,000
2013	Construction	\$5,000,000
2014	Construction	\$2,500,000
Project Total		\$23,200,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 11-01

Name of Project: Distribution System Upgrades

Reference Documents:

Project Description:

Waterlines from the 2009 Leak Detection Program distribution system upgrades will be identified that are in conformance with the Master Plan but are not scheduled with the current time horizon but need to be repaired sooner.

Project Justification:

Water Distribution System Pipe: GWA's system consists of hundreds of miles of water distribution mains consisting of numerous different pipe sizes and types. Many of these lines are undersized and/or failing due to improper construction, earthquake damage, and/or material failures. Additionally, pressure zone changes are needed to improve flow circulation and define pressure zones.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012	Assessment/Planning/Construction	\$1,600,000
2013	Construction	\$1,700,000
2014	Construction	\$500,000
Project Total		\$3,800,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP PW 11-02

Name of Project: Ugum Water Treatment Plant Reservoir Replacement

Reference Documents:

Project Description:

This project will provide a 2.0 million gallon finished water reservoir at the Ugum Water Treatment Plant. This reservoir is the sole source of finished water for most of the Southern Water System. Failure of this reservoir would result in a significant hardship on customers in the system. The new reservoir would allow the existing reservoir to be taken off-line and refurbished.

Project Justification:

To provide redundancy in storage at the treatment plant that will allow for periodic maintenance. The existing reservoir is damaged, but cannot be taken out-of-service for repair because there is no back-up.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012	Assessment/Planning/Construction	\$2,350,000
2013	Construction	\$2,350,000
2014		
Project Total		\$4,700,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 05-01

Name of Project: Old Agat Wastewater Collection (I/I reduction)

Reference Documents:

Project Description:

This project will replace about 32,800 LF (6.21 miles) of existing wastewater collection line including manholes and sewer service laterals in the Agat collection system. The replacement sewer lines will be connected to the mainline along Route 2A at the Tomas Mesa Street.

Project Justification:

A major collection system rehabilitation program is needed in this area due to capacity-related sewer back-ups, overflows, and the age and material of the pipe.

Financing Options & Grants:

This project will be primarily funded with an EPA grant of \$4,074,684. The main source of funding for this project will be the 2005 Bond. A \$200,000 08/09 Clean Water Act (CWA) State Revolving Fund (SRF) grant was also obtained for this project.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management and GIS services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Construction	\$2,200,000
2011		
2012		
2013		
2014		
Project Total		\$2,200,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 05-02

Name of Project: Collection Line Upgrade/ Collection System Upgrades

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-23

Project Description:

Annual recurring design and construction project to replace/rehabilitate collection systems. This would focus on the worst condition pipes not already scheduled for hydraulic related rehab or replacement. The Water Resources Master Plan prioritized sewer rehabilitation projects and recommended an annual rehabilitation budget. The Master Plan priority list undergoes continual updates as GWA Operations utilizes Closed Circuit TV to inspect the sewers and reprioritize rehabilitation projects. Ongoing collection line inspection reports are used to develop and update the priority rehabilitation list.

Project Justification:

An annual collection system rehabilitation program prevents condition (age, material, etc.) and capacity related sewer back-ups and overflows.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$51,638
2010		
2011		
2012	Planning/Design/Construction	\$1,600,000
2013	Construction	\$1,700,000
2014	Construction	\$500,000
Project Total		\$3,851,638

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 05-03

Name of Project: NDWWTP Diffuser Installation

Reference Documents:

- a) Stipulated Order 2006, Item 36

Project Description:

The USEPA-approved design for the Northern District Wastewater Treatment Plant (NDWWTP) outfall extension project included a diffuser to promote initial mixing at the discharge point. The design parameters for the diffuser, as illustrated in the Basis for Design document, were established in order to meet permit requirements at the boundary of a zone of initial dilution. Because of the costs which have exceeded the amount of funding GWA has available, the uncertainty regarding the regulatory advantage of utilizing a diffuser and the likelihood that the diffuser will be obsolete in the next two years because of the Department of Defense (DoD) build-up and possible expansion of NDWWTP, GWA postponed diffuser installation until the next bond issuance. However, having a properly designed and installed diffuser is critical for environmental protection and needs to be a priority.

Project Justification:

The outfall was designed to be used with the diffuser, and therefore having a properly designed diffuser for mixing is critical to environmental protection and compliance.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Design/Construction	\$3,000,000
2011		
2012		
2013		
2014		
Project Total		\$3,000,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 05-04

Name of Project: Wastewater System Planning

Reference Documents:

- a) MASTER PLAN

Project Description:

Wastewater System Planning will include long term planning, system planning, and environmental planning. Specific application would include wastewater hydraulic modeling and the wastewater skeletal basin map. This will be used to update a portion of the Master Plan.

Project Justification:

Long term planning, system planning, and environmental planning is essential for developing capital improvement programs. Wastewater System Planning ensures that a system approach is used in project development.

Financing Options & Grants:

This project assumes a 2005 Bond reallocation in the amount of \$200,000.

Project Staffing Implications:

Major modeling services and GIS support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design	\$200,000
2011		
2012		
2013		
2014		
Project Total		\$200,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 05-05

Name of Project: Wastewater Vehicles

Reference Documents:

Project Description:

Approval is requested for \$235k to replace 8 of existing vehicle fleet with: 4 pickups fitted with tool boxes; 3 maintenance vans; and 1 ton pickups fitted with racks, tool boxes.

Project Justification:

The operations and maintenance team have a critical need for safe and reliable vehicles. Many of the existing vehicles are in an extremely poor and unsafe condition. Due to their unsafe condition, a number of vehicles have been taken off the road reducing efficiency and effectiveness of the team. To maintain minimum levels of coverage, 3 vehicles have been leased. This is not a cost effective solution.

Due to the age of the vehicles (11 of the 31 vehicles are over 10 years old), there are an increasing number of breakdowns which result in lost time of high value employees. This often leads to delays in essential operator input or equipment repairs.

On a number of occasions repair bills have been presented which are greater than the value of the vehicle.

Financing Options & Grants:

This project assumes a 2005 Bond reallocation in the amount of \$235,000.

Project Staffing Implications:

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		\$235,000
2011		
2012		
2013		
2014		
Project Total		\$235,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 05-06

Name of Project: Wastewater Pump Station Upgrades

Reference Documents:

Project Description:

In the first part of 2009, pumps at Fujita, Yigo, Chalon Pago, PS 14, Harmon and Tupalao SPS have failed. Due to the age of the pumps they are beyond economic repair. This project is to replace pumps at these key sites.

Project Justification:

The above sites are now operating with no or inadequate standby pumps. This leaves the sites at high risk of critical failures with sewage flooding as a consequence. There has been a number of sewage overflows from these SPS's while this level of operation has existed.

When the Fujita pump station fails, the Hyatt Regency hotel is flooded. When this has happened in the past and it has caused significant issues for the hotel. A repeat of these incidents would certainly be a high profile event.

Due to the public health risk issues associated with sewage overflows and the critical operating regimes at these sites, it is highly recommended that funding approval be given to replace pumps at these key sites.

Financing Options & Grants:

This project assumes a 2005 Bond reallocation in the amount of \$225,000.

Project Staffing Implications:

Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		\$225,000
2011		
2012		
2013		
2014		
Project Total		\$225,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 05-07

Name of Project: NDWWTP - Chlorine Tanks

Reference Documents:

- a) Performance Management Contract, CIP / PIP Review June 2007

Project Description:

There are eleven (11) one ton chlorine cylinders of indeterminate age located at the Northern District Wastewater Treatment Plant. The tanks require expertise in removal of hazardous materials to ensure that they are emptied, removed and disposed of safely. The amount of chlorine in the tanks is unknown.

Project Justification:

These tanks represent a significant public health and safety threat and need to be removed as soon as possible, in a manner that protects the plant and surrounding community.

Financing Options & Grants:

This project assumes a 2005 Bond reallocation in the amount of \$250,000.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$250,000
2011		
2012		
2013		
2014		
Project Total		\$250,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: WW CIP 05-08

Name of Project: Umatac-Merizo STP Improvements

Reference Documents:

Project Description:

Installation of high efficiency motors, high efficiency aerator, new valves and dredging of the lagoon.

Project Justification:

The lagoon has continually been filling with sludge, significantly reducing capacity, increasing overflows from the system, and increasing the risk of NPDES violations. The project will also improve the overall energy efficiency of the plant.

Financing Options & Grants:

This project is funded through USEPA ARRA Grant in the amount of \$535,000.

Project Staffing Implications:

Contract Administration, Project Management, and Construction Inspection are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$535,000
2011		
2012		
2013		
2014		
Project Total		\$535,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-01

Name of Project: LS Priority 1 Upgrades

Reference Documents:

- a) Performance Management Contract, CIP / PIP Review June 2007

Project Description:

Specific rehabilitation and repair capital projects are needed for the sewage pump stations. These projects include: Health and Safety (e.g. overhead crane repair and fall protection barriers), Environmental Protection and Compliance (e.g. high level alarm systems), Energy Optimization Programs (e.g. upgrading electrical controls and motors), and economically beneficial Asset Replacement (e.g. replacement of a pump for \$9,000 rather than repair it for \$7,600).

Project Justification:

Sewage pump stations require ongoing capital upkeep in order to maintain safety, prevent sewer overflows, maintain environmental compliance and optimize energy usage.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds. A USEPA-ARRA grant titled "Wastewater System Upgrades-Energy Efficiency" was applied for to assist in completion of this project.

Project Staffing Implications:

Major Contract Administration, Major Project Management, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$2,000,000
2011		
2012	Construction	\$8,500,000
2013	Construction	\$8,900,000
2014		
Project Total		\$19,400,000.00

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-02

Name of Project: Moratorium

Reference Documents:

- a) Central Guam Sewer Improvements Functional Design Report, January 2009
- b) MASTER PLAN, VOLUME 3, TABLE 9-7, 8, 9, 10, 28, 29, 43, 44

Project Description:

The Moratorium project is a collection of specific wastewater projects within the Tamuning and Agana villages. These projects include upgrades to the Mamajanao, Route 16, and Agana Main Pump Stations, construction of a new pump station in Tamuning, and installation of sewer pipe from the new Chaot pump station to the Agana Wastewater Treatment Plant.

Project Justification:

The sewer system in the Central Guam catchment along Marine Corp. Drive and Route 4 close to Agana Bay is stressed. The primary sewers in these locations experience periodic overflows with 2008 flows and by 2025 the system could be completely overwhelmed. This problem is exacerbated by the Mamajanao Sewage Pump Station, which under certain operating conditions is unable to cope with the influent flows without surcharging and locally flooding the downstream system.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond. Staff will apply for a U.S. Department of Agriculture, Water & Waste Disposal grant/loan.

Project Staffing Implications:

Major Contract Administration, Major Project Management, GIS Support, and Modeling Support, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$18,000,000
2011	Construction	\$20,000,000
2012		
2013		
2014		
Project Total		\$38,000,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-03

Name of Project: Old Agat Collection Continuation (III)

Reference Documents:

- a) USEPA Priority List

Project Description:

This project will replace about 32,800 LF (6.21 miles) of existing wastewater collection line including manholes and sewer service laterals in the Agat collection system. The replacement sewer lines will be connected to the mainline along Route 2A at the Tomas Mesa Street.

Project Justification:

Sewers are in extremely poor condition and are a significant source of rainwater inflow and infiltration (I&I). Excessive I&I causes the Agat Wastewater Treatment Plant to exceed its design capacity, causing permit limit exceedances and occasional bypasses. The Inflow and & Infiltration (I&I) also caused the collection system design volume to be exceeded, leading to sewer back-ups and overflows. Sewers currently run behind houses and not in utility easements and cannot be accessed for maintenance.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond. Staff will apply for a U.S. Department of Agriculture, Water & Waste Disposal grant/loan.

Project Staffing Implications:

Contract Administration, Project Management Services, Construction Management Services, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$2,200,000
2011		
2012		
2013		
2014		
Project Total		\$2,200,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-04

Name of Project: Manhole Frame Seal Repair

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-20 & 21

Project Description:

Repair the manhole cover frame to barrel/cone seal at multiple manhole locations identified by manhole inspections and rehabilitate manholes with severe infiltration.

Project Justification:

The project will reduce the potential for inflow to the collection system during wet weather events, which will subsequently prevent system overloading and avoid backups and overflows.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Project Management and Construction Inspection are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$84,000
2011		
2012		
2013		
2014		
Project Total		\$84,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-05

Name of Project: Agat Manhole Rehabilitation

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-21

Project Description:

This project will rehabilitate four (4) manholes that were identified to have active infiltration by manhole inspection.

Project Justification:

This project will reduce infiltration to the collection system during wet and dry weather events.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Project Management and Construction Inspection are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$55,000
2011		
2012		
2013		
2014		
Project Total		\$55,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-06

Name of Project: Wastewater Collection System Replacement/Rehabilitation Program

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-23

Project Description:

Annual recurring design and construction project to replace/rehabilitate 3/4 of the total collection system (~8,600 feet) per year. This would focus on the worst condition pipes not already scheduled for hydraulic related rehab or replacement. The cost is estimated at \$240 per foot which assumes an average pipe diameter of 10 inches and does not include the cost of potential traffic control.

Project Justification:

Replacement/rehabilitation program will upgrade sewer collection system as a proactive activity to mitigate catastrophic system failure.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Major Construction Management, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$250,000
2011	Construction	\$250,000
2012	Construction	\$1,750,000
2013	Construction	\$1,000,000
2014		
Project Total		\$3,250,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-07

Name of Project: Tumon Bay Sewer Upgrades

Reference Documents:

- a) Final Tumon Wastewater Study, January 2008

Project Description:

There are several major sewer project upgrades identified in the reference document that will increase the collection and pumping capacity for GWA. The continued growth in Tumon Bay has raised concerns with GWA regarding the current sewer capacity and the lack of system redundancy.

Project Justification:

Inadequate sewer capacity in Tumon Bay, Guam's premier tourist district and a Marine Preserve, leads to current overflows; future development will exacerbate this condition, potentially leading to a failure of the system.

Financing Options & Grants

The main sources of funding for this project will be Developer-Funded. Additional funding will come from the 2010 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$1,500,000
2011		
2012		
2013		
2014		
Project Total		\$1,500,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-08

Name of Project: Facilities Plan/Design for Baza Gardens STP Replacement

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-26
- b) Wastewater Facilities Plan, Baza Gardens WWTP, August 2008
- c) CIP WW 11-03 Baza Gardens STP Replacement
- d) Guam Environmental Protection Agency Requirements meeting minutes, December 19, 2007 and letter, May 13, 2008.

Project Description:

Planning and design for new wastewater treatment facilities to reliably meet secondary treatment limits. Due to strict effluent limits imposed by the stream discharge and difficulty in operating complex treatment systems to reliably meet these limits, an alternative means of disposal should be considered in the Facility Plan. Facility Plan process recommendations will be based on the recommended alternative means of disposal. The new facilities will incorporate provisions for redundancy to improve reliability and facilitate operations and maintenance activities. Design and test the concept of utilization of Underground Injection Wells (UIC) for effluent discharge and design a replacement for the existing wastewater treatment plant with a new Membrane Bioreactor plant at the same location.

Project Justification:

Existing facilities lack redundancy and reliability, are difficult to operate, and require significant repair. Existing disposal requirements cannot be achieved, so a different effluent disposal system must be identified. The current secondary treatment plant cannot meet the stringent nutrient limits in the receiving stream, and the facility has outlived its design life and has severe operational challenges. A new plant is required that discharges to an Underground Injection Well (pursuant to Guam Environmental Protection Agency requirements).

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design	\$1,250,000
2011	Design	\$1,250,000
2012		
2013		
2014		
Project Total		\$2,500,000

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP WW 09-09

Name of Project: Facilities Plan/Design for the Northern District STP Bio-solids

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-32
- b) CIP, WW CIP 11-08, Northern District STP Expansion - Biosolids

Project Description:

Planning and design for repairs to the biosolids stabilization facilities (digesters) and dewatering system (centrifuges) for present and future flows. Facility Plan should include an evaluation of creating a centralized biosolids treatment and processing facility at this location.

Project Justification:

Existing biosolids treatment facilities were damaged by the typhoon and have been out of service. Centralized processing of biosolids from smaller STPs may be more reliable and efficient than the current decentralized approach. The capacity of the existing solids treatment facilities should be adequate to process the solids from GWA's other treatment plants, although lacks redundancy.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design	\$500,000
2011		
2012		
2013		
2014		
Project Total		\$500,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 09-10

Name of Project: Facilities Plan/Design for Agat-Santa Rita STP Replacement

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-24

Project Description:

Planning and design for new wastewater treatment facilities at GWA's Tupalao site to meet existing and future flow capacity and reliably achieve regulatory compliance. The new facilities will incorporate provisions for redundancy to improve reliability and facilitate operations and maintenance activities.

Project Justification:

Existing facilities do not have sufficient capacity for current and future flow projections. Existing facilities lack redundancy and reliability, are difficult to operate, and require significant repair.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design	\$600,000
2011		
2012		
2013		
2014		
Project Total		\$600,000

GWA Capital Improvements Plan

Project Sheet FY 2010-2014

Project Number: CIP WW 09-11

Name of Project: WWTP Priority 1 Upgrades

Reference Documents:

- a) Performance Management Contract, CIP / PIP Review June 2007

Project Description:

Specific rehabilitation and repair capital projects are needed for the sewage pump stations. These include projects: Health and Safety (e.g. overhead crane repair and fall protection barriers), Environmental Protection and Compliance (e.g. grit removal), Energy Optimization Programs (e.g. upgrading electrical controls and motors), and economically beneficial Asset Replacement (e.g. replacement of a pump for \$9000 rather than repair it for \$7600).

Project Justification:

Aging infrastructure leads to environmental impacts, non-compliance, inefficiencies, and safety problems that must be addressed on an annualized basis.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 bond. A USEPA-ARRA grant titled "Wastewater System Upgrades-Energy Efficiency" was applied for to assist in completion of this project.

Project Staffing Implications:

Major Contract Administration, Major Project Management, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$1,000,000
2011	Construction	\$1,000,000
2012	Construction	\$5,000,000
2013	Construction	\$2,500,000
2014		
Project Total		\$9,500,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 11-01

Name of Project: Priority 1 Sewer Upgrades – Agat District

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-11

Project Description:

The Master Plan defined 1720 feet of sewer as priority 1 for upgrade to avoid overflows as population growth occurs.

Project Justification:

This project's primary justification is avoidance of overflows. Inadequate sewers for future growth will result in sewage back-ups and overflows.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, Construction Management Services, Major GIS Support, and Modeling Support are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012	Planning/Design/Construction	\$500,000
2013		
2014		
Project Total		\$500,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 11-02

Name of Project: Priority 1 Sewer Upgrades – Baza Garden District

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-13

Project Description:

1,600 feet of sewage lines have been assigned a Priority 1 ranking in the Master Plan for improvement in the Baza Gardens STP service area to respond to growth in the connected population. This also includes the sewers in the area of the Talofoto pump station service area that have currently unconnected sewers; these sewers were installed with gravity lines and force mains, but without pumps and those projects must be completed.

Project Justification:

This project's primary justification is avoidance of overflows. Inadequate sewers for future growth will result in sewage back-ups and overflows.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, Major GIS Support, Modeling Support, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012	Planning/Design/Construction	\$650,000
2013		
2014		
Project Total		\$650,000.

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 11-03

Name of Project: Baza Gardens STP Replacement

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-26 & 27

Project Description:

Construction of new wastewater treatment facilities that will meet secondary treatment limits. Due to strict effluent limits imposed by the stream discharge, and difficulty in operating complex treatment systems to reliably meet these limits, an alternative means of disposal should be considered in the Facility Plan. Facility Plan process recommendations will be based on the recommended alternative means of disposal. The new facilities will incorporate provisions for redundancy to improve reliability and facilitate operations and maintenance activities at the existing facility.

Project Justification:

Existing facilities lack redundancy and reliability, are difficult to operate, and require significant repair. Existing disposal requirements cannot be achieved, so a different effluent disposal system must be identified.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012	Construction	\$7,667,000
2013	Construction	\$7,578,000
2014	Construction	\$7,667,000
Project Total		\$22,912,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: WW CIP 11-04

Name of Project: Facilities Plan/Design for the Umatac-Merizo STP Improvements

Reference Documents:

a) MASTER PLAN, VOLUME 3, TABLE 9-36

Project Description:

Phase 1 of this project is a facilities plan; phase 2 is design. Planning and design for a new mechanically cleaned bar screen facilities to improve reliability and facilitate operations and maintenance requirements.

Project Justification:

Mechanically cleaned bar screens will improve process performance and reduce O&M requirements.

Financing Options & Grants

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Contract Administration, Project Management, and Construction Inspection are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012	Planning/Design	\$140,000
2013		
2014		
Project Total		\$140,000

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP WW 11-05

Name of Project: Facilities Plan for Hagatna STP Improvements & Effluent WWPS

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-28
- b) CIP 11-07 Hagatna STP Improvements and Effluent WWPS
- c) Stipulated Order 2006, Item 35

Project Description:

Planning and design for wastewater treatment plant improvements. The following improvements should be considered: Based on current and future flow projections, at least one additional primary clarifier of similar size is required to meet current and future wastewater capacity and redundancy requirements. New head works equipment (including mechanically cleaned screens and grit removal) is recommended to improve process performance, reduce wear on downstream equipment, and improve reliability. A new effluent pump station is required for the disposal of future flows at high tide conditions.

Project Justification:

Existing facilities lack redundancy to reliably treat existing and projected future flows. The Upstream screening facilities at the influent pump station are not functional and beyond repair. Relocating the preliminary treatment equipment to the STP will enhance operations and maintenance of the screens. Grit removal will reduce the amount of grit that gets into the clarifier and digester, improving performance and reducing O&M requirements.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012		
2013	Planning/Design	\$1,900,000
2014		
Project Total		\$1,900,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 11-06

Name of Project: Hagatna STP Improvements and Effluent WWPS

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-29

Project Description:

Provide a new primary clarifier to meet current and future wastewater capacity and redundancy requirements. Provide screenings and grit removal for wastewater treatment plant improvements. The new head-works equipment will improve performance, reduce wear on equipment, and improve reliability. The new equipment includes screenings, grit removal and effluent WWPS sized for current and future (Year 2015 projected flow).

Project Justification:

Existing facilities lack redundancy to reliably treat existing and projected future flows. The upstream screening facilities at the Hagatna influent pump station are not functional and beyond repair. Relocating equipment at the STP will enhance operations and maintenance of the screens. Grit removal will reduce the amount of grit that gets into the clarifier and digester, improving performance and reducing O&M requirements. Effluent WWPS required to convey effluent to outfall during high flow and tide periods.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012		
2013	Construction	\$2,000,000
2014		
Project Total		\$2,000,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP WW 11-07

Name of Project: Northern District STP Expansion - Biosolids

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-33

Project Description:

The project includes construction of repairs to the biosolids stabilization facilities (digesters) and dewatering system (centrifuges) for present and future flows. Design will be based on Facilities Plan recommendations. Master Plan construction budget is based on repairs to existing anaerobic digesters, construction of one additional digester tank to provide redundancy and new centrifuge facilities to serve as a centralized facility for treating GWA biosolids Project assumed to be built in two phases.

Project Justification:

Existing biosolids treatment facilities experienced typhoon damage and have been out of service. The centralized processing of biosolids from smaller STPs may be more reliable and efficient than the current decentralized approach. The capacity of the existing solids treatment facilities should be adequate to process the solids from GWA's other treatment plants, although lacks redundancy.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012	Construction	\$2,500,000
2013	Construction	\$2,500,000
2014		
Project Total		\$5,000,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 05-01

Name of Project: Well Electrical Protection

Reference Documents:

Project Description:

Variable frequency drives (VFD) are being considered to reduce the voltage imbalance in the power supply to well pumps (pumps designed for 1% imbalance – supply standard is 3% imbalance). Two pilot installations have been made at wells to gather data that can be used to develop a standard installation design and evaluate the effectiveness of the VFDs. On October 9, 2007, GWA issued an Invitation for Bid to install VFDs to provide adequate and effective electric motor protection at 20 priority deep well sites. It includes installation of magnetic flow meters and pressure transmitters for future application of variable speed motor operation.

Project Justification:

GWA utilizes 100 wells to produce approximately 80% of the water consumed on the island. These wells experience an unusually high rate of failure. Many of the failures are due to inadequate or non-existence of protections incorporated into the motor controls. This project will develop a standard design for electrical motor controls and install the new controls at critical well sites.

Financing Options & Grants:

This project assumes a 2005 Bond reallocation in the amount of \$200,000.

Project Staffing Implications:

Contract Administration, Project Management, Construction Inspection, and Technical Support after completion are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$41,352,740
2010	Construction	\$200,000
2011		
2012		
2013		
2014		
Project Total		\$41,552,740

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 05-02

Name of Project: SCADA Pilot Project

Reference Documents:

Project Description:

This pilot project is to procure communication services and install field instrumentation and a Human-Machine Interface (HMI) to support supervisory control and data acquisition (SCADA) of selected water and wastewater facilities. For this pilot GWA will only make functional real time data acquisition for status monitoring and alarming.

Project Justification:

This pilot project is to identify and evaluate proposed solutions and gather information that will be used to develop design standards for the Water and Wastewater SCADA system.

Financing Options & Grants:

This project assumes a 2005 Bond reallocation in the amount of \$300,000.

Project Staffing Implications:

Contract Administration, Project Management, Construction Inspection and Technical Support after completion are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$300,000
2011		
2012		
2013		
2014		
Project Total		\$300,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 09-01

Name of Project: Wastewater Pumping Station Electrical Upgrade

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-43

Project Description:

This project is to upgrade and standardize the electrical control system at the wastewater pumping stations as recommended in the GWA Master Plan Report. An initial assessment using a standard checklist will be conducted. Project scope will include the reconnection of the electrical service to a grounded WYE system involve replacement of the electrical meter and service conductors. Transient voltage surge suppression will also be installed at the station main service. The level control system will be standardized with a level transducer to provide level indication and communication with the SCADA unit. The back-up will be a float located out of the wet well. Also included are dry well level sensor alarms that are connected to SCADA, where applicable. The motor starters will be replaced with electronic soft start type to reduce mechanical wear.

Project Justification:

This project is to improve the electrical reliability at each of the wastewater pump stations and minimize overflows by implementing the recommendations of the GWA Master Plan. Priority stations that are critical to operations are to be completed first.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Construction Management, and Technical Support after completion are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$114,872
2010	Planning/Design/Construction	\$250,000
2011	Construction	\$250,000
2012	Construction	\$750,000
2013	Construction	\$750,000
2014		
Project Total		\$2,114,872

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 09-02

Name of Project: Electrical Upgrade - Water Wells

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-25

Project Description:

This project is to upgrade the electrical system at each of the water wells as recommended in the Electrical Assessment of the GWA Master Plan Report. The initial step is to develop a standard electrical checklist and guideline. Next is to conduct an assessment of the electrical system at each station with the goal to change the transformer secondary connection and surge suppression, replace the service conductors, correct the voltage unbalance, prevent water conductor entry, replace the meter socket, install transient voltage surge suppression, install electronic motor protection, install electronic motor starter, install power factor correction equipment, integrate voltage unbalance relays in the auto transfer switch control system, interlock the chlorination controls with the well controls, interlock with well flush controls, and documentation.

Project Justification:

This project is to improve the electrical reliability at each of the water pumping stations by implementing the recommendations of the GWA Master Plan. Those priority stations that are critical to operations and require high maintenance are to be completed first.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Construction Management, and Technical Support after completion are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$500,000
2011	Construction	\$500,000
2012	Construction	\$1,500,000
2013	Construction	\$1,500,000
2014		
Project Total		\$4,000,000

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP EE 09-03

Name of Project: Electrical Upgrade - Water Booster Pump Stations (Pago Bay, Brigade, Windward Hills)

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-22

Project Description:

This project is for the electrical upgrade at the Pago Bay, Brigade, and Windward Hills Water Booster Stations by replacing the existing motors with premium efficiency motors, improve the system grounding, install transient voltage surge suppression equipment (TVSS), replace the motor control center, replace instrumentation controls, and add power factor correction. This project includes a detailed engineering assessment and preparation of design engineering plans.

Project Justification:

The original distribution board and motor controls have reached their useful life, have signs of corrosion, and are missing parts. Improvements in motor efficiency and control devices reduce energy consumption costs. The voltage and transient surge suppressions reduce voltage surges within the facility while power factor correction help improve voltage stability.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Construction Management, and Technical Support after completion are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$325,000
2011	Construction	\$325,000
2012		
2013		
2014		
Project Total		\$650,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 09-04

Name of Project: Electrical Upgrade -Water Booster Pump Stations (Gayinero, Santa Rosa, Santa Rita Springs and Truman)

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-23

Project Description:

This project is for the electrical upgrade at the Water Booster Stations by replacing the existing motors with premium efficiency motors, improve the system grounding, installation of transient voltage surge suppression equipment (TVSS), replace the motor control center and main distribution board, replace the instrumentation controls, and add power factor correction, where applicable. Included is a detailed engineering assessment and preparation of design engineering plans and specifications.

Project Justification:

The original distribution board and motor controls reach their useful life, have signs of corrosion, and missing parts. Improvements in motor efficiency reduce energy costs. The application of transient surge suppressions and power factor capacitors reduce voltage surges and improve stability.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Construction Management, and Technical Support after completion are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$350,000
2011		
2012		
2013		
2014		
Project Total		\$350,000

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP EE 09-05

Name of Project: Electrical Upgrade - Other Water Booster Pump Stations

Reference Documents:

- a) MASTER PLAN, VOLUME 2, TABLE 9-24

Project Description:

This project is for the electrical upgrade at the other Water Booster Stations such as Yigo Elevated Tank, Pale Kieran, etc. Project scope includes: replacing the existing motors with premium efficiency motors, improve system grounding, install transient voltage surge suppression equipment (TVSS), replace the motor control center and main distribution board, replace instrumentation controls, and add power factor correction, where applicable.

Project Justification:

Several stations have their original distribution board and motor controls reach their useful life, have signs of corrosion, and missing parts. Improvements in motor efficiency reduce energy costs. The voltage and transient surge suppressions and power factor correction also reduce voltage surges and improve voltage stability.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, Construction Management and Technical Support after completion are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$250,000
2011		
2012		
2013		
2014		
Project Total		\$250,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 09-06

Name of Project: SCADA Improvements – Phase 1

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-44

Project Description:

Phase 1 of this project involves the development of a SCADA Master Plan, design and construction standards and installation of a SCADA Master Station and SCADA System at selected Critical Water Wells and Critical Wastewater Pumping Stations along with the Critical Chlorination System Wells. The SCADA System will convey SCADA data and status information to a GWA Central Dispatch Center where digital text messaging would be directed to key personnel.

Project Justification:

GWA's present method of monitoring the water and wastewater pumping stations is through the use of "rover" personnel to visit each site. Often times this does not produce timely notification of an outage or overflow condition. A GWA SCADA (Supervisory Control and Data Acquisition) System would allow 24/7 monitoring and provide timely alarm and status information to operations personnel. This will greatly enhance the effective and efficient use of GWA personnel and resources.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Major Project Management Services, Construction Inspection, and Major Technical Support after completion.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$250,000
2011		
2012		
2013		
2014		
Project Total		\$250,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 09-07

Name of Project: SCADA Improvements – Phase 2

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-45

Project Description:

In Phase 2 of this project, the critical water and wastewater pumping stations are monitored by activating and updating the existing Motorola SCADA system. In this phase of the project, the balance of the pumping stations and the treatment facilities are updated and incorporated into the GWA SCADA System. The treatment facility alarms would be identified and activated to a digital telephone text messaging unit to call key operations personnel related to that specific area.

Project Justification:

This phase is a continuation of this project to improve the efficiency and effective utilization of GWA personnel and performance of the water and wastewater pumping systems.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Major Project Management Services, Construction Inspection and Major Technical Support after completion.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$1,100,000
2011		
2012		
2013		
2014		
Project Total		\$1,100,000

GWA Capital Improvements Plan

Project Sheet FY 2010-2014

Project Number: CIP EE 09-08

Name of Project: SCADA Improvements – Phase 3

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-46

Project Description:

In Phase 3 of this Project, improvements in real time data acquisition for status monitoring and process control is expanded at the treatment facilities through the incorporation of Programmable Logic Controllers (PLCs). The data is conveyed to the GWA Central as well as identified engineering and operations personnel for analysis and process optimization through the use of Virtual Private Networks (VPNs) or other available secured technology. Further improvements and updating of the pumping station SCADA monitoring would be expanded using digital communications (the Gov Guam system is scheduled to be updated during this period) and the radio units would require replacement.

Project Justification:

This phase is a continuation of this project to improve the efficiency and effective utilization of GWA personnel and performance of the water and wastewater pumping systems.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Major Project Management Services, Construction Inspection and Major Technical Support after completion.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011	Planning/Design/Construction	\$2,500,000
2012		
2013		
2014		
Project Total		\$2,500,000

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP EE 09-09

Name of Project: SCADA Improvements – Phase 4

Reference Documents:

- a) MASTER PLAN, VOLUME 3, TABLE 9-47

Project Description:

In this Phase 4 of the project, accounting information such as equipment and part costs along with the condition data such as equipment operating time and preventive/predictive maintenance programs are to be incorporated into a asset management program. This portion is for the SCADA system role in being incorporated into the overall asset management program and for the updating of the SCADA equipment and hardware and software.

Project Justification:

This phase is a continuation of this project to improve the efficiency and effective utilization of GWA personnel and performance of the water and wastewater pumping systems.

Financing Options & Grants:

The main source of funding for this project will be the 2010 Bond.

Project Staffing Implications:

Contract Administration, Major Project Management Services, and Major Technical Support after completion.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011	Planning/Design/Construction	\$850,000
2012		
2013		
2014		
Project Total		\$850,000.00

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP MC 05-01

Name of Project: Laboratory Modernization

Reference Documents:

- a) Criteria and specification for Design of the Renovation and Enlargement of the Dededo Laboratory, 4/12/2007.

Project Description:

This project was included in the 2005 bond, but differed to 2012. Guam Waterworks Authority (GWA) has received bond money to renovate and expand the main laboratory. The design should be robust so that the laboratory would operate immediately after a typhoon has passed.

Project Justification:

The existing lab is about 2300 square feet with a frontage of 79 feet 2 inches and it will be enlarged to 8400 square feet. The current laboratory is certified by Guam EPA and after renovation the renewed laboratory must be capable of being certified with Guam EPA.

Financing Options & Grants:

The main source of funding for this project will be the 2012 Bond.

Project Staffing Implications:

Major Contract Administration, Major Project Management, and Major Construction Management are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$129,998
2010		
2011		
2012	Planning/Design/Construction	\$1,200,000
2013		
2014		
Project Total		

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP MC 05-02

Name of Project: Land Survey

Reference Documents:

- a) Public Law 22-47, 22-28, 22-18

Project Description:

This project will survey GWA property and property to be deeded to GWA. To date, all of these properties have not been surveyed and therefore the properties are not included in GWA assets. This project will add these properties to GWA assets. GWA has a contract for professional services ongoing for this project.

Project Justification:

GWA has been granted land from the Government of Guam for the purpose of locating water and wastewater system assets such as water storage tanks and water and wastewater treatment plants. The land was granted under the condition that GWA complete a legal boundary survey of the properties.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Contract Administration, Project Management, Major GIS Support.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$192,812.00
2010	Survey	\$500,000
2011	Survey	\$500,000
2012	Survey	\$800,000
2013	Survey	\$250,000
2014		
Project Total		\$2,242,812.00

GWA Capital Improvements Plan
Project Sheet FY 2010-2014

Project Number: CIP MC 09-01

Name of Project: General Plant Improvements / Water Distribution System Pipe Replacement

Reference Documents:

Project Description:

General Plant Improvements: These capital improvements project will provide GWA with for general plant improvements that will enhance operations and maintenance capabilities.

Water Distribution System Pipe: This project will replace failing pipelines and adjust pressure zones to improve the water system.

Project Justification:

General Plant Improvements: Capital improvements project are required to help maintain GWA level of service to its customers, these general plant improvements that will enhance operations and maintenance capabilities.

Water Distribution System Pipe: GWA system consists of hundreds of miles of water distribution mains consisting of numerous different pipe sizes and types. Many of these lines are undersized and/or failing due to improper construction, earthquake damage, and/or material failures. Additionally Pressure zone changes needed to improve flow circulation and discrete pressure zones.

Financing Options & Grants:

The main source of funding for this project will be the 2010 and 2012 Bonds.

Project Staffing Implications:

Contract Administration, Project Management Services, and Construction Management Services are required.

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010	Planning/Design/Construction	\$2,000,000
2011	Planning/Design/Construction	\$2,000,000
2012	Planning/Design/Construction	\$5,000,000
2013	Planning/Design/Construction	\$5,000,000
2014	Planning/Design/Construction	\$1,342,000
Project Total		\$15,342,000.00

**GWA Capital Improvements Plan
Project Sheet FY 2010-2014**

Project Number: CIP MC 09-02

Name of Project: Miscellaneous Grant Applications

Reference Documents:

- a) Project Management Monthly Reports August 2009.

Project Description:

This project covers the grant application process for various federal grants applied for in 2010. The following are the list of grants: Chaligan SPS Flood Mitigation & Well Electrical Protection (DOI), Central Septage Facility (USDA), and Surveillance Camera and IT Upgrade (DHS).

Project Justification:

Financing Options & Grants:

These are grant funded projects with no GWA funding.

Project Staffing Implications:

Project Time Table/Budget:

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2010		
2011		
2012		
2013		
2014		
Project Total		