



**GUAM WATERWORKS AUTHORITY**

*Good Water Always*

**ENGINEERING  
CAPITAL IMPROVEMENT PLAN**

**2011-2015**

**November 23, 2010**

**Approved by CCU November 24, 2010**

**ENGINEERING  
CAPITAL IMPROVEMENT PLAN  
2011-2015**

**Table of Contents**

	Page #
Narrative.....	2
Summary Tables:	4
Summary Table Potable Water.....	4
Summary Table Wastewater.....	4
Summary Table Electrical Engineering.....	5
Summary Table Miscellaneous .....	5
Summary By Project Type .....	5
Funding Tables:	6
Potable Water Funding Table .....	6
Wastewater Funding Table .....	7
Electrical Engineering Funding Table .....	7
Miscellaneous Funding Table .....	8
Funding Source Summary .....	8
Department of Defense (DoD) Funding:	9
DoD Funded GWA Wastewater CIP's.....	9
DoD Wastewater Project Description .....	9
Estimated DoD Funding .....	9
Project Sheet:	10
Project Sheet Water.....	10
Project Sheet Wastewater.....	39
Project Sheet Electrical .....	66
Project Sheet Misc .....	77
Project Sheet DoD .....	80

# **ENGINEERING CAPITAL IMPROVEMENT PLAN 2011-2015**

## **NARRATIVE**

### **Developing the Capital Improvement Plan (CIP)**

The Engineering CIP is GWA's five-year blueprint for creating, maintaining, renewing, and replacing the crucial infrastructure that will support Guam's continued growth. This CIP was developed to include a narrative and project description sheets detailing the projects. Other documents, such as the Master Plan, 2006 Stipulated Order, and Production Plan provided 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 an important public communication medium. The CIP gives residents and businesses a view of GWA's direction for capital improvement and a better understanding of the Island's ongoing need for stable revenue sources to fund large or multi-year capital projects. The CIP is also an important operational document, providing GWA Engineering, Operation, Finance, and support staff with a blue print of the overall direction and specific project GWA plans on implementing to improve the utility.

### **Definition of an Engineering Capital Improvement Project**

For the purposes of the Engineering CIP, a capital expenditure is one that results in acquiring and/or replacing GWA's capital assets. Major projects are those that cost more than \$50,000 or are listed in the 2006 Stipulated Order and/or Master Plan. Water production facilities, water distribution systems, wastewater collection systems, wastewater treatment plants, and major one-time equipment acquisitions 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 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.

# ENGINEERING CAPITAL IMPROVEMENT PLAN 2011-2015

## NARRATIVE (Continued)

### **Operating and Capital Budget Relationship**

The CIP also impacts the operating budget. As projects are completed, operating funds are necessary for routine maintenance and operation costs such as utilities, staffing, repairs, and equipment maintenance. For example, when the Supervisory Control and Data Acquisition (SCADA) system project is delivered, extensive operational, maintenance, and engineering support are required for a reliable and operable SCADA system.

### **CIP Organization**

This fiscally constrained CIP includes project summary tables, funding source tables, funding committed provide by the Department of Defense funding, and project sheets.

### **Department of Defense Funding**

The Department of Defense Funding is from the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010, and through commitments made through a series of meeting between Department of Defense and Guam Waterworks Authority in 2010. The plan does not include the all the \$700M in unspecified utility upgrade described in the September 3, 2010 letter from Jared Blumenfeld, USEPA Region IX Administrators included in the Record of Decision.

This CIP was approved by CCU November 24, 2010 marking the first detailed Capital Improvement Plan to ensure GWA continues to provide excellence in water and wastewater services. 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 Greg Cruz, Thomas Cruz, and Prudencio Aguon.

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Martin Roush P.E.  
Chief Engineer

11/26/2010

## SUMMARY TABLES:

### Summary Table Potable Water (X 1,000)

CIP #	Name	2011	2012	2013	2014	2015
PW 05-01	Ground Water Disinfection	\$727				
PW 05-02	Water Reservoir Condition Assessment	\$439				
PW 05-03	Santa Rita Springs Booster Pump Rehabilitation, Phase II	\$303			\$125	
PW 05-04	Ugum Water Treatment Plant Refurbishment	\$200				
PW 05-05	"A" Series Well Transmission Line	\$745	\$600	\$59		
PW 05-06	Water Booster Pump Station	\$500			\$3,766	
PW 05-07	Meter Replacement Program	\$3,500				\$6,000
PW 05-08	Barrigada Tank Repair/Replacement	\$2,000				
PW 05-09	Leak Detection / Line Replacement	\$3,077			\$364	
PW 05-10	Potable Water System Planning	\$200		\$500	\$800	
PW 05-11	Implement Ground Water Rule					
PW 05-12	Brigade II (Ugum Lift) BPS Upgrade		\$1,200			
PW 05-13	Deep Well Rehabilitation		\$548			
PW 05-14	New Deep Wells at Down Hard Well Sites		\$3,773			
PW 05-15	Rehabilitation of Asan Springs Ground Reservoir	\$900				
PW 05-16	Master Meters	\$100	\$1,500			
PW 09-01	Ugum Water Treatment Plant Intake Modifications	\$1,470	\$2,200			
PW 09-02	Water Wells	\$2,356	\$1,000		\$9,500	\$5,500
PW 09-03	Water Distribution System Pipe Replacement	\$1,848	\$5,384	\$3,500	\$5,698	\$5,520
PW 09-04	Pressure Zone Realignment/Development 2005 Impr.	\$1,150	\$2,400			\$1,400
PW 09-05	Northern System Water Distribution System 2005 Impr.		\$2,425	\$300	\$875	\$500
PW 09-06	Central Water Distribution System 2005 Improvements	\$600	\$300	\$600		
PW 09-07	Southern Water Distribution System 2005 Improvements	\$500	\$650	\$1,300		
PW 09-08	Mechanical/Electrical Equipment Replacement	\$500	\$430	\$860		
PW 09-09	Water Reservoir Internal/External Corrosion Asmt.	\$500				
PW 09-10	Water Reservoir Internal/External Corrosion Rehb.	\$800	\$800	\$800	\$400	\$400
PW 09-11	Water System Reservoirs 2005 Improvements	\$3,697	\$8,000	\$5,000	\$3,000	\$12,503
PW 11-01	Distribution System Upgrades		\$1,500	\$1,682	\$618	
PW 11-02	Ugum Water Treatment Plant Reservoir Replacement		\$1,322	\$2,350		
Total		\$26,112	\$34,032	\$16,951	\$25,146	\$31,823

### Summary Table Wastewater (X 1,000)

CIP #	Name	2011	2012	2013	2014	2015
WW 05-01	Old Agat Wastewater Collection (Phase II)	\$1,200				
WW 05-02	Collection Line Upgrade/ Collection System Upgrades*					
WW 05-03	NDWTP Diffuser Installation*					
WW 05-04	Wastewater System Planning	\$1,500				
WW 05-05	Wastewater Vehicles	\$235				
WW 05-06	Wastewater Pump Station Upgrades*					
WW 05-07	NDWWTP - Chlorine Tanks	\$250				
WW 05-08	Umatac-Merizo STP Improvements*					
WW 09-01	LS Priority 1 Upgrades*					
WW 09-02	Moratorium	\$5,000				
WW 09-03	Old Agat Collection Continuation (Phase III)	\$1,200				
WW 09-04	Manhole Frame Seal Repair*					
WW 09-05	Agat Manhole Rehabilitation					
WW 09-06	Wastewater Collection System Repl./Rehabilitation*					
WW 09-07	Tumon Bay Sewer Upgrades		\$100			
WW 09-08	Facilities Plan/Design for Baza Gardens STP Repl.		\$2,575			
WW 09-09	Facilities Plan/Design for the N. District STP Bio-solids*					
WW 09-10	Facilities Plan/Design for Agat-Santa Rita STP Repl.	\$600	\$1,624			
WW 09-11	WWTP Priority 1 Upgrades				\$6,751	
WW 11-01	Priority 1 Sewer Upgrades – Agat District				\$2,500	
WW 11-02	Priority 1 Sewer Upgrades – Baza Garden District	\$650				
WW 11-03	Baza Gardens STP Replacement			\$3,567	\$6,267	\$12,078
WW 11-04	Facilities Plan/Design for the Umatac-Merizo STP Impr.					\$140
WW 11-05	Facilities Plan for Hagatna STP Impr. & Effluent WWPS*					
WW 11-06	Hagatna STP Improvements and Effluent WWPS*					
WW 11-07	Northern District STP Expansion – Biosolids Electrical*					
WW 11-08	Agat/Santa Rita STP Replacement			\$14,289		
Total		\$10,635	\$4,299	\$17,856	\$15,518	\$12,218

\* See Department of Defense Funding Table listed below

## SUMMARY TABLES (continued):

### Summary Table Electrical Engineering (X 1,000)

CIP #	Name	2011	2012	2013	2014	2015
EE 05-01	Well Electrical Protection	\$134				
EE 05-02	SCADA Pilot Project	\$300				
EE 09-01	Wastewater Pumping Station Electrical Upgrade			\$614		
EE 09-02	Electrical Upgrade - Water Wells	\$500	\$500	\$2,000	\$500	
EE 09-03	Electrical Upgrade - Water Booster Pump Stations			\$650		
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	\$1,500	\$1,000			
EE 09-09	SCADA Improvements – Phase 4		\$850	\$750	\$1,250	
Total		<b>\$3,784</b>	<b>\$2,350</b>	<b>\$4,614</b>	<b>\$1,750</b>	

### Summary Table Miscellaneous (X 1,000)

CIP #	Name	2011	2012	2013	2014	2015
MC 05-01	Laboratory Modernization	\$400	\$400	\$400		
MC 05-02	Land Survey	\$743	\$500	\$500	\$493	
MC 09-01	General Plant Improvements / Water Distribution System	\$7,070	\$6,800	\$7,500	\$3,342	\$997
Total		<b>\$8,213</b>	<b>\$7,700</b>	<b>\$8,400</b>	<b>\$3,835</b>	<b>\$997</b>

### Summary By Project Type (X 1,000)

		2011	2012	2013	2014	2015
PW	Potable Water	\$26,112	\$34,032	\$16,951	\$25,146	\$31,823
WW	Wastewater	\$10,635	\$4,299	\$17,856	\$15,518	\$12,218
EE	Electrical Engineering	\$3,784	\$2,350	\$4,614	\$1,750	
MC	Miscellaneous	\$8,213	\$7,700	\$8,400	\$3,835	\$997
Total		<b>\$48,744</b>	<b>\$48,381</b>	<b>\$47,821</b>	<b>\$46,249</b>	<b>\$45,038</b>

## FUNDING TABLES:

### Funding Source Key:

2005 Bond	B2005
2011 Bond	B2011
2013 Bond	B2013
System Development Charge	SDC
Short Term Loan	STL
Internally Funded CIP	IFCIP
Grants	GRANT

### Potable Water Funding Table (X 1,000)

CIP #	Name	2011	2012	2013	2014	2015
PW 05-01	Ground Water Disinfection	\$727 B2005				
PW 05-02	Water Reservoir Condition Assessment	\$439 B2005				
PW 05-03	Santa Rita Springs Booster Pump Rehabilitation, Phase II	\$303 B2005			\$125 B 2013	
PW 05-04	Ugum Water Treatment Plant Refurbishment	\$200 B2005				
PW 05-05	"A" Series Well Transmission Line	\$745 B 2005	\$600 B 2011	\$59 B 2013		
PW 05-06	Water Booster Pump Station	\$500 B 2011			\$3,766 B 2013	
PW 05-07	Meter Replacement Program	\$1,000 B 2005 \$2,500 B 2011				\$6,000 B 2013
PW 05-08	Barrigada Tank Repair/Replacement	\$2,000 Grant				
PW 05-09	Leak Detection / Line Replacement	\$1,032 B2005 \$2,045 GRANT			\$364 B2013	
PW 05-10	Potable Water System Planning	\$200 B2011		\$500 B2013	\$800 B2013	
PW 05-11	Implement Ground Water Rule					
PW 05-12	Brigade II (Ugum Lift) BPS Upgrade		\$1,200 B2011			
PW 05-13	Deep Well Rehabilitation		\$548 B2011			
PW 05-14	New Deep Wells at Down Hard Well Sites		\$3,773 B2011			
PW 05-15	Rehabilitation of Asan Springs Ground Reservoir	\$900 B2011				
PW 05-16	Master Meters	\$100 B2011	\$1,500 B2011			
PW 09-01	Ugum Water Treatment Plant Intake Modifications	\$1,470 B2011	\$2,200 B2011			
PW 09-02	Water Wells	\$356 GRANT \$2,000 B2011	\$1,000 GRANT		\$2,200 B2013 \$7,300 SDC	\$5,500 B2013
PW 09-03	Water Distribution System Pipe Replacement	\$1,848 GRANT	\$384 B2011 \$5,000 GRANT	\$3,500 GRANT	\$2,000 B2013 \$3,698 GRANT	\$5,520 B2013
PW 09-04	Pressure Zone Realignment / Development 2005 Impr.	\$1,150 B2011	\$2,400 B2011			\$1,400 B2013
PW 09-05	Northern System Water Distribution System 2005 Impr.		\$2,425 B2011	\$300 B2011	\$875 B2013	\$500 B2013
PW 09-06	Central Water Distribution System 2005 Improvements	\$600 B2011	\$300 B2011	\$300 B2011 \$300 B2013		
PW 09-07	Southern Water Distribution System 2005 Improvements	\$500 B2011	\$650 B2011	\$650 B2011 \$650 B2013		
PW 09-08	Mechanical/Electrical Equipment Replacement	\$500 B2011	\$430 B2011	\$430 B2011 \$430 B2013		
PW 09-09	Water Reservoir Internal/External Corrosion Asmt.	\$500 B2011				
PW 09-10	Water Reservoir Internal/External Corrosion Rehb.	\$800 B2011	\$800 B2011	\$800 B2011	\$400 B2013	\$400 B2013
PW 09-11	Water System Reservoirs 2005 Improvements	\$3,697 B2011	\$8,000 B2011	\$5,000 B2013	\$3,000 B2013	\$12,503 B2013
PW 11-01	Distribution System Upgrades		\$1,500 B2011	\$1,682 B2011	\$618 B2013	
PW 11-02	Ugum Water Treatment Plant Reservoir Replacement		\$1,322 B2011	\$2,350 B2011		
<b>Total</b>		<b>\$26,112</b>	<b>\$34,032</b>	<b>\$16,951</b>	<b>\$25,146</b>	<b>\$31,823</b>

## FUNDING TABLES (continued):

### Wastewater Funding Table (X 1,000)

CIP #	Name	2011	2012	2013	2014	2015
WW 05-01	Old Agat Wastewater Collection (Phase II)	\$1,200 GRANT				
WW 05-04	Wastewater System Planning	\$1,500 B2011				
WW 05-05	Wastewater Vehicles	\$235 B2011				
WW 05-07	NDWWTP - Chlorine Tanks	\$250 B2011				
WW 09-02	Moratorium	\$5,000 STL				
WW 09-03	Old Agat Collection Continuation (Phase III)	\$1,200 GRANT				
WW 09-07	Tumon Bay Sewer Upgrades		\$100 B2011			
WW 09-08	Facilities Plan/Design for Baza Gardens STP Repl.		\$1,250 B2011 \$1,325 GRANT			
WW 09-10	Facilities Plan/Design for Agat-Santa Rita STP Repl.	\$600 B2011	\$300 B2011 \$1,324 GRANT			
WW 09-11	WWTP Priority 1 Upgrades				\$2,451 GRANT \$4,300 SDC	
WW 11-01	Priority 1 Sewer Upgrades – Agat District				\$2,500 GRANT	
WW 11-02	Priority 1 Sewer Upgrades – Baza Garden District	650 B2011				
WW 11-03	Baza Gardens STP Replacement			\$3,567 B2011	\$3,267 B2013 \$3,000 SDC	\$12,078 B2013
WW 11-04	Facilities Plan/Design for the Umatac-Merizo STP Impr.					\$140 B2013
WW 11-08	Agat/Santa Rita STP Replacement			\$2,968 B2011 \$6,172 B2013 \$5,149 GRANT		
<b>Total</b>		<b>\$10,635</b>	<b>\$4,299</b>	<b>\$17,856</b>	<b>\$15,518</b>	<b>\$12,218</b>

### Electrical Engineering Funding Table (X 1,000)

CIP #	Name	2011	2012	2013	2014	2015
EE 05-01	Well Electrical Protection	\$108 B2005 \$26 B2011				
EE 05-02	SCADA Pilot Project	\$300 B2011				
EE 09-01	Wastewater Pumping Station Electrical Upgrade			\$614 B2013		
EE 09-02	Electrical Upgrade - Water Wells	\$500 B2011	\$500 B2011	\$2,000 B2011	\$500 B2013	
EE 09-03	Electrical Upgrade - Water Booster Pump Stations			\$325 B2011 \$325 B2013 \$650		
EE 09-04	Electrical Upgrade -Water Booster Pump Stations			\$350 B2011		
EE 09-05	Electrical Upgrade - Other Water Booster Pump Stations			\$250 B2011		
EE 09-06	SCADA Improvements – Phase 1	\$250 B2011				
EE 09-07	SCADA Improvements – Phase 2	\$1,100 B2011				
EE 09-08	SCADA Improvements – Phase 3	\$1,500 B2011	\$1,000 B2011			
EE 09-09	SCADA Improvements – Phase 4		\$850 B2011	\$750 B2013	\$1,250 B2013	
<b>Total</b>		<b>\$3,784</b>	<b>\$2,350</b>	<b>\$4,614</b>	<b>\$1,750</b>	



## FUNDING TABLES (continued):

### Miscellaneous Funding Table (X 1,000)

CIP #	Name	2011		2012		2013		2014		2015	
MC 05-01	Laboratory Modernization	\$400	B2011	\$400	B2011	\$400	B2011				
MC 05-02	Land Survey	\$243 \$500	B2005 B2011	\$500	B2011	\$500	B2011	\$493	B2013		
MC 09-01	General Plant Improvements / Water Distribution System	\$6,570 \$500	B2011 INCIP	\$4,800 \$2,000	B2011 INCIP	\$3,000 \$2,000 \$2,500	B2011 B2013 INCIP	\$2,342 \$1,000	B2013 INCIP	\$997	B2013
Total			<b>\$8,213</b>		<b>\$7,700</b>		<b>\$8,400</b>		<b>\$3,835</b>		<b>\$997</b>

### Funding Source Summary (X 1,000)

	Source	2011	2012	2013	2014	2015	Total
B2005	2005 Bond	\$4,797					\$4,797
B2011	2011 Bond	\$26,798	\$37,732	\$19,872			\$87,402
B2013	2013 Bond			\$16,800	\$22,000	\$45,038	\$83,838
STL	Short Term Loan	\$5,000					\$5,000
SDC	System Dev. Charge				\$14,600		\$14,600
GRANT	Grants	\$8,649	\$8,649	\$8,649	\$8,649		\$43,245
IFCIP	Internally Funded CIP	\$500	\$2,000	\$2,500	\$1,000		\$6,000
		<b>\$48,744</b>	<b>\$48,381</b>	<b>\$47,821</b>	<b>\$46,249</b>	<b>\$45,038</b>	

## Department of Defense (DoD) Funding

### DoD Funded GWA Wastewater CIP's

CIP #	Name
WW 05-02	Collection Line Upgrade/ Collection System Upgrades
WW 05-03	NDWTP Diffuser Installation
WW 05-06	Wastewater Pump Station Upgrades
WW 09-01	LS Priority 1 Upgrades
WW 09-02	Moratorium
WW 09-04	Manhole Frame Seal Repair
WW 09-06	Wastewater Collection System Repl./Rehabilitation
WW 09-09	Facilities Plan/Design for the N. District STP Bio-solids
WW 11-05	Facilities Plan for Hagatna STP Impr. & Effluent WWPS
WW 11-06	Hagatna STP Improvements and Effluent WWPS
WW 11-07	Northern District STP Expansion – Biosolids Electrical

### DoD Wastewater Project Description

Project	Project Details	GWA CIP Included
Northern District WWTP	Interim Capacity 8-9 MGD	
	Phase 1: Primary Capacity 12 MGD	WW 05-03, WW 11-07
	Phase 2: Secondary Capacity 12 MGD	
	Phase 3: Final Capacity 16 MGD	
Hagatna WWTP	Phase 1: Primary Capacity 12 MGD	WW 11-05, WW 11-06
	Phase 2: Secondary Capacity 12 MGD	
Collection System Improvements	Central and Northern Systems	WW 05-02, WW 05-06, WW 09-01 WW 09-02, WW 09-04, WW 09-06 WW 09-09

### Estimated DoD Funding

CIP	Project Details	2011	2012	2013	2014	2015
DOD-01	NDWWTP Interim Capacity 8-9MGD	\$10,000				
DOD-02	NDWWTP Phase 1: Primary Capacity 12 MGD	\$60,000				
DoD-03	NDWWTP Phase 2: Secondary Capacity 12MGD	\$100,000				
DoD-04	NDWWTP Phase 3: Final Capacity 16 MGD	\$29,000				
DoD-05	HWWTTP Phase 1: Primary Capacity 12 MGD			\$15,000		
DoD-06	HWWTTP Phase 2: Secondary Capacity 12MGD			\$135,000		
DoD-07	Central and Northern Systems Wastewater System	\$82,000				
DoD-08	Water Transmission loop in Northern Guam		\$159,000			
Total	\$580,000	\$271,000	\$159,000	\$150,000		

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP PW 05-01

**Name of Project:** Ground Water Disinfection

**Reference Documents:**

- a) Stipulated Order 2006, Item 12 (C) Ground Water Chlorination Systems - 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 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:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		\$875,000
2011	Construction	\$727,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$1,602,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 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		
2011	Assessment/Planning	\$439,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$439,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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.
- b.) *GWA Engineering Division, Potable Water Production Enhancement Plan*, June 10, 2010.

**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. The new external pressures that affect the current production issue are as follows. GEPA's Water Resources Management Program (WRMP) is responsible for the protection of the aquifer. The Guam aquifer has a fresh water lens that rests on salt water. An early warning indicator of the stress on the fresh water lens is the chloride levels which measure the amount of sea water in the lens. Based on GEPA 2009 Annual Production Well Inspection Report, 13 of GWA's wells were required to decrease production due to the chloride levels; and 16 wells were approaching the chloride limit. One approach to supplementing the water supply due to the decrease in production of these 13 wells is to maximize the use of GWA's surface water and ground water. It is estimated that an increase in production of 2 MGD is needed to offset this loss in production. In June 24, 2008 and December 15, 2009 the Navy notified GWA that GWA adhered to the allocation of 3.5 MGD. In the most recent letter however, GWA's water purchase of 4.1 MGD cannot be continued by the Navy this dry season.

**Financing Options & Grants:**

The source of funding for this project will be the 2005 bond and 2013 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		\$1,000
2011	Construction	\$303,000
2012		
2013		
2014		\$125,000
2015		
<b>Project Total</b>		<b>\$429,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

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

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity	Construction	\$1,057,000
2011		\$200,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$1,257,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 4 phases. Phase 1 is completed, Phase 2a is under construction, Phase 2b is pending contact approval, and Phase 3 is currently in the planning phase. Phase 4 will provide the water service area with the acceptable pressure once the transmission lines are put in service.

**Project Justification:**

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

**Financing Options & Grants:**

The source of funding for this project will be the 2005 bond, 2011 bond, and 2013 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:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity	Construction	\$1,805,000
2011		\$745,000
2012		\$600,000
2013		\$59,000
2014		
2015		
<b>Project Total</b>		<b>\$3,209,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 to provide 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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Design/Construction	\$500,000
2012		
2013		
2014		\$3,766,000
2015		
<b>Project Total</b>		<b>\$4,266,000</b>



## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 because the new meters and the electronic loggers/transmitters have been problematic. Installation of the remaining meters is on hold until the metering problems are resolved.

**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 billed. Currently, GWA's unaccounted water rate is 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 source of funding for this project will be the 2005 bond, 2011 bond and 2013 bond.

**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	Replacement	\$210,000
2011		\$3,500,000
2012		
2013		
2014		
2015		\$6,000,000
<b>Project Total</b>		<b>\$9,710,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 source of funding for this project will be the Department of Interior grant.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		\$8,000
2011	Planning/Design/Construction	\$2,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$2,008,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 water) from all sources are >50% of total production.

**Financing Options & Grants:**

The source of funding for this project will be the 2005 bond, 2013 bond and U.S EPA, Grant.

**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	Leak Assessment	\$579,000
2011		\$3,077,000
2012		
2013		
2014		\$364,000
2015		
<b>Project Total</b>		<b>\$4,020,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP PW 05-10

**Name of Project:** Potable Water System Planning

**Reference Documents:**

- a) MASTER PLAN, VOLUME 2, CHAPTER 6
- b) GUAM CONSOLIDATED COMMISSION ON UTILITIES RESOLUTION NO. 11

**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 by the GUAM CONSOLIDATED COMMISSION ON UTILITIES RESOLUTION NO. 11 - FY2007 RELATIVE TO APPROVING THE GUAM WATERWORKS AUTHORITY MASTER PLAN THAT WILL BE USED AS A ROADMAP FOR MOVING THE GUAM WATERWORKS AUTHORITY FORWARD FOR THE NEXT TWENTY YEARS "The Guam Waterworks Authority is hereby directed to continue refining the Master Plan and every two years from the date of approval of this document to recommend to the Consolidated Commission on Utilities improvements and modifications to the Master Plan and the hydraulic model and to recommend and re-prioritize capital projects resulting from said changes or modifications."

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

Major modeling services and GIS support are required.

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011	Design Planning	\$200,000
2012		
2013		\$500,000
2014		\$800,000
2015		
<b>Project Total</b>		<b>\$1,500,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP PW 05-11

**Name of Project:** Implement Ground Water Rule

**Reference Documents:**

Implementation of the Groundwater Rule GEPA

**Project Description:**

This project will provide upgrades to wells for the implementation of the Groundwater Rule. This project will install chlorine residual monitors on all GWA wells. The wells will include SCADA equipment to communicate the well chlorine levels to central location.

**Project Justification:**

The Groundwater Rule requires GWA to install chlorine residual monitors on all GWA wells.

**Financing Options & Grants:**

This project will be funded from USEPA, Safe Drinking Water and State Revolving Fund (SRF).

**Project Staffing Implications:**

A control system technician will be required to maintain the monitors and related SCADA equipment.

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		\$2,200,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$2,200,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP PW 05-12

**Name of Project:** Brigade II (Ugum Lift) BPS Upgrade

**Reference Documents:**

*GWA Engineering Division, Potable Water Production Enhancement Plan, June 10, 2010.*

**Project Description:**

A new Brigade II booster pump station is required to fully utilize the surface supply from the south or the Ugum Treatment Plant. A new pump station, located at the Brigade II BPS site, will serve both the Windward Hills Reservoir and the Pulantat Reservoir. To provide this operational flexibility, the new pump station is to be located on the downstream side of Ugum Reservoir and should be able to overcome the pipe head loss plus the elevation difference (139 feet) between the Pulantat Reservoir and the Ugum Reservoir. Approximately 1100 feet of pipe is required in addition to the pump station. Additionally, the Brigade booster pump station and Windward Hills booster pump station will be upgraded to increase reliability and energy savings.

**Project Justification:**

The new external pressures that affect the current production issue are as follows. GEPA's Water Resources Management Program (WRMP) is responsible for the protection of the aquifer. The Guam aquifer has a fresh water lens that rests on salt water. An early warning indicator of the stress on the fresh water lens is the chloride levels which measure the amount of sea water in the lens. Based on GEPA 2009 Annual Production Well Inspection Report, 13 of GWA's wells were required to decrease production due to the chloride levels; and 16 wells were approaching the chloride limit. One approach to supplementing the water supply due to the decrease in production of these 13 wells is to maximize the use of GWA's surface water and ground water. It is estimated that an increase in production of 2 MGD is needed to offset this loss in production. In June 24, 2008 and December 15, 2009 the Navy notified GWA that GWA adhered to the allocation of 3.5 MGD. In the most recent letter however, GWA's water purchase of 4.1 MGD cannot be continued by the Navy this dry season.

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012	Design Construction	\$1,200,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$1,200,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP PW 05-13

**Name of Project:** Deep Well Rehabilitation

**Reference Documents:**

*GWA Engineering Division, Potable Water Production Enhancement Plan, June 10, 2010.*

**Project Description:**

This project will rehabilitate up to 3 wells to increase supply and include the rehabilitation of “down-hard” wells. This project will require a feasibility study to determine the specific approach and cost estimate for each well.

**Project Justification:**

The new external pressures that affect the current production issue are as follows. GEPA's Water Resources Management Program (WRMP) is responsible for the protection of the aquifer. The Guam aquifer has a fresh water lens that rests on salt water. An early warning indicator of the stress on the fresh water lens is the chloride levels which measure the amount of sea water in the lens. Based on GEPA 2009 Annual Production Well Inspection Report, 13 of GWA's wells were required to decrease production due to the chloride levels; and 16 wells were approaching the chloride limit. One approach to supplementing the water supply due to the decrease in production of these 13 wells is to maximize the use of GWA's surface water and ground water. It is estimated that an increase in production of 2 MGD is needed to offset this loss in production. In June 24, 2008 and December 15, 2009 the Navy notified GWA that GWA adhered to the allocation of 3.5 MGD. In the most recent letter however, GWA's water purchase of 4.1 MGD cannot be continued by the Navy this dry season.

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012	Planning, design, construction	\$548,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$548,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP PW 05-14

**Name of Project:** New Deep Wells at Down Hard Well Sites

**Reference Documents:**

*GWA Engineering Division, Potable Water Production Enhancement Plan, June 10, 2010.*

**Project Description:**

This project will provide wells to increase supply and include new source water by drilling new wells adjacent to existing wells. This cost of these new wells will include casing and the transmission line to tie the wells into the system. This project will require a feasibility study to determine the specific approach and cost estimate for each well.

**Project Justification:**

The new external pressures that affect the current production issue are as follows. GEPA's Water Resources Management Program (WRMP) is responsible for the protection of the aquifer. The Guam aquifer has a fresh water lens that rests on salt water. An early warning indicator of the stress on the fresh water lens is the chloride levels which measure the amount of sea water in the lens. Based on GEPA 2009 Annual Production Well Inspection Report, 13 of GWA's wells were required to decrease production due to the chloride levels; and 16 wells were approaching the chloride limit. One approach to supplementing the water supply due to the decrease in production of these 13 wells is to maximize the use of GWA's surface water and ground water. It is estimated that an increase in production of 2 MGD is needed to offset this loss in production. In June 24, 2008 and December 15, 2009 the Navy notified GWA that GWA adhered to the allocation of 3.5 MGD. In the most recent letter however, GWA's water purchase of 4.1 MGD cannot be continued by the Navy this dry season.

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012	Planning, design, construction	\$3,773,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$3,773,000</b>



## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP PW 05-15

**Name of Project:** Rehabilitation of Asan Springs Ground Reservoir

**Reference Documents:**

*GWA Engineering Division, Potable Water Production Enhancement Plan, June 10, 2010.*

**Project Description:** This project will include the reservoir rehabilitation and treatment and chlorination facilities upgrade.

**Project Justification:**

The new external pressures that affect the current production issue are as follows. GEPA's Water Resources Management Program (WRMP) is responsible for the protection of the aquifer. The Guam aquifer has a fresh water lens that rests on salt water. An early warning indicator of the stress on the fresh water lens is the chloride levels which measure the amount of sea water in the lens. Based on GEPA 2009 Annual Production Well Inspection Report, 13 of GWA's wells were required to decrease production due to the chloride levels; and 16 wells were approaching the chloride limit. One approach to supplementing the water supply due to the decrease in production of these 13 wells is to maximize the use of GWA's surface water and ground water. It is estimated that an increase in production of 2 MGD is needed to offset this loss in production. In June 24, 2008 and December 15, 2009 the Navy notified GWA that GWA adhered to the allocation of 3.5 MGD. In the most recent letter however, GWA's water purchase of 4.1 MGD cannot be continued by the Navy this dry season.

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		\$900,000
2012		
2013		
2014		
<b>Project Total</b>		<b>\$900,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP PW 05-16

**Name of Project:** Master Metering

**Reference Documents:**

a) The Bubble Map and Water Service Area Map.

**Project Description:**

This project will provide for the design, installation, and materials for water meters to be installed at major GWA facilities and pressure zones to fully account for water consumption. It is anticipated that this will greatly aid in analyzing and forming a more accurate picture related to leak detection studies and reports. The Leak Detection Contractor will make recommendations on key pressure zone locations.

**Project Justification:**

The project is needed to perform water audits on water service areas (WSA) as required by US EPA. This project will greatly enhance the data from the current leak detection contract.

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Design Planning	\$100,000
2012		\$1,500,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$1,600,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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
- c) GWA Engineering Division, Potable Water Production Enhancement Plan, June 10, 2010.

**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 source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011	Planning/Design/construction	\$1,470,000
2012		\$2,200,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$3,670,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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.
- b) GWA Engineering Division, Potable Water Production Enhancement Plan, June 10, 2010.

**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 @ 22 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:**

The source of funding for this project will be the 2013 bond, System Development Charge, and U.S.EPA Grant.

**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		
2011	Planning/Design/Construction	\$2,356,000
2012	Construction	\$1,000,000
2013		
2014		\$9,500,000
2015		\$5,500,000
<b>Project Total</b>		<b>\$18,356,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP PW 09-03

**Name of Project:** Water Distribution System Pipe Replacement

**Reference Documents:**

- a) MASTER PLAN, VOLUME 2, TABLE 9-7
- b) GWA Engineering Division, Potable Water Production Enhancement Plan, June 10, 2010.

**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 source of funding for this project will be the 2011 bond, 2013 bond, U.S.EPA Grant.

**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		
2011	Planning/Design/Construction	\$1,848,000
2012	Construction	\$5,384,000
2013	Construction	\$3,500,000
2014	Construction	\$5,698,000
2015		\$5,520,000
<b>Project Total</b>		<b>\$21,950,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 source of funding for this project will be the 2011 bond and 2013 bond.

**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		
2011	Planning/Design/Construction	\$1,150,000
2012	Construction	\$2,400,000
2013	Construction	
2014		
2015		\$1,400,000
<b>Project Total</b>		<b>\$4,950,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond and 2013 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:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012	Planning/Design/Construction	\$2,425,000
2013	Construction	\$300,000
2014	Construction	\$875,000
2015		\$500,000
<b>Project Total</b>		<b>\$4,100,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design/Construction	\$600,000
2012	Construction	\$300,000
2013	Construction	\$600,000
2014		
2015		
<b>Project Total</b>		<b>\$1,500,000</b>



**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design/Construction	\$500,000
2012	Construction	\$650,000
2013	Construction	\$1,300,000
2014	Construction	
2015		
<b>Project Total</b>		<b>\$2,450,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design/Construction	\$500,000
2012	Construction	\$430,000
2013	Construction	\$860,000
2014	Construction	
2015		
<b>Project Total</b>		<b>\$1,790,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 carry out 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 source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Assessment/Planning	\$500,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$500,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Assessment/Planning/Construction	\$800,000
2012	Construction	\$800,000
2013	Construction	\$800,000
2014	Construction	\$400,000
2015		\$400,000
<b>Project Total</b>		<b>\$3,200,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Assessment/Planning/Construction	\$3,697,000
2012	Construction	\$8,000,000
2013	Construction	\$5,000,000
2014	Construction	\$3,000,000
2015	Construction	\$12,503,000
<b>Project Total</b>		<b>\$32,200,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 various 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 source of funding for this project will be the 2011 bond and 2013 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:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012	Assessment/Planning/Construction	\$1,500,000
2013	Construction	\$1,682,000
2014	Construction	\$618,000
2015		
<b>Project Total</b>		<b>\$3,800,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		\$28,000
2011		
2012	Assessment/Planning/Construction	\$1,322,000
2013	Construction	\$2,350,000
2014		
2015		
<b>Project Total</b>		<b>\$3,700,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP WW 05-01

**Name of Project:** Old Agat Wastewater Collection (Phase II)

**Reference Documents:**

CIP WW 09-03 Old Agat Wastewater Collection (Phase III)

**Project Description:**

This project will replace a portion of 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 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:**

The source of funding for this project will be the U.S. EPA Grant.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity	Construction	\$2,200,000
2011		\$1,200,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$3,400,000</b>



**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 is the Department of Defense.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		\$51,638
2011		
2012		
2013	Planning/Design/Construction	\$1,600,000
2014	Construction	\$1,700,000
2015	Construction	\$500,000
<b>Project Total</b>		<b>\$3,851,638</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 Department of Defense.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Design/Construction	\$3,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$3,000,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP WW 05-04

**Name of Project:** Wastewater System Planning

**Reference Documents:**

- a) MASTER PLAN, VOLUME 3, CHAPTER 4.7.3
- b) GUAM CONSOLIDATED COMMISSION ON UTILITIES RESOLUTION NO. 11-FY2007

**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.

In addition, the 2006 Master Plan requires updating every two years by the GUAM CONSOLIDATED COMMISSION ON UTILITIES RESOLUTION NO. 11 - FY2007 RELATIVE TO APPROVING THE GUAM WATERWORKS AUTHORITY MASTER PLAN THAT WILL BE USED AS A ROADMAP FOR MOVING THE GUAM WATERWORKS AUTHORITY FORWARD FOR THE NEXT TWENTY YEARS “The Guam Waterworks Authority is hereby directed to continue refining the Master Plan and every two years from the date of approval of this document to recommend to the Consolidated Commission on Utilities improvements and modifications to the Master Plan and the hydraulic model and to recommend and re-prioritize capital projects resulting from said changes or modifications.”

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

Major modeling services and GIS support are required.

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity	Planning/Design	\$500,000
2011		\$1,500,00
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$2,000,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
2011		\$235,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$235,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP WW 05-06

**Name of Project:** Wastewater Pump Station Upgrades

**Reference Documents:**

**Project Description:**

This project will replace aging pumps at Fujita, Yigo, Chalan Pago, PS 14, Harmon and Tipalao SPS. The pumps at these key sites failed in the first part of 2009 and are beyond economic repair.

**Project Justification:**

The above sites operate either without standby pumps or inadequate standby pumps. These sites have historically experienced a number of sewage overflows as a result of these conditions. For example, Fujita pump station failures have caused the Hyatt Regency Hotel to flood causing significant issues for the hotel.

Due to the public health risks 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:**

The main source of funding for this project is the Department of Defense.

**Project Staffing Implications:**

Project Management Services and Construction Management Services are required.

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		\$225,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$225,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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:**

This project will safely remove and dispose hazardous materials stored in eleven (11) one ton chlorine cylinders of indeterminate age located at the Northern District Wastewater Treatment Plant. 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:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		\$250,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$250,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design/Construction	\$535,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$535,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 is the Department of Defense.

**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		
2011	Planning/Design/Construction	\$2,000,000
2012		
2013	Construction	\$8,500,000
2014	Construction	\$8,900,000
2015		
<b>Project Total</b>		<b>\$19,400,000</b>



## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 source of funding for this project will be Short-Term Loan and Department of Defense.

**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
2011	Construction	\$5,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$5,000,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP WW 09-03

**Name of Project:** Old Agat Collection Continuation (Phase III)

**Reference Documents:**

CIP WW 05-01, Old Agat Wastewater Collection (Phase II)

**Project Description:**

This project will replace a portion of 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, exceed permit limits, requires occasional bypasses, and leads 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 source of funding for this project will be the U.S. EPA grant.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		\$1,500,000
2011		\$1,200,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$2,700,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 Department of Defense.

**Project Staffing Implications:**

Project Management and Construction Inspection are required.

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity	Planning/Design/Construction	\$84,000
2011		
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$84,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 2011 Bond.

**Project Staffing Implications:**

Project Management and Construction Inspection are required.

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity	Planning/Design/Construction	\$55,000
2011		
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$55,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 Department of Defense.

**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	Planning/Design/Construction	\$250,000
2011	Construction	\$250,000
2012	Construction	\$1,750,000
2013	Construction	\$1,000,000
2014		
2015		
<b>Project Total</b>		<b>\$3,250,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity	Planning/Design/Construction	
2011		
2012		\$100,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$100,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 source of funding for this project will be the 2011 bond and U.S. EPA 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		
2011		
2012		\$2,575,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$2,575,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 11-07, 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 Department of Defense.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design	\$500,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$500,000</b>



**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond and U.S. EPA grant.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		\$600,000
2012		\$1,624,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$2,224,000</b>

**GWA Capital Improvements Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the U.S.EPA grant and System Development Charge.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012		
2013		
2014	Construction	\$6,751,000
2015		
<b>Project Total</b>		<b>\$6,751,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the U.S.EPA grant.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012		
2013		
2014	Planning/Design/Construction	\$2,500,000
2015		
<b>Project Total</b>		<b>\$2,500,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 Talofofu 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 source of funding for this project will be the 2011 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		
2011	Planning/Design/Construction	\$650,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$650,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 source of funding for this project will be the 2011 bond, 2013 bond and System Development Charge.

**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		
2011		
2012	Construction	
2013	Construction	\$3,567,000
2014	Construction	\$6,267,000
2015		\$12,078,000
<b>Project Total</b>		<b>\$21,912,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012		
2013		
2014	Planning/Design	
2015		\$140,000
<b>Project Total</b>		<b>\$140,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 Department of Defense.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012		
2013	Planning/Design	\$1,900,000
2014		
2015		
<b>Project Total</b>		<b>\$1,900,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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. Reducing the amount of grit that gets into the clarifier and digester will improve performance and reduce 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 Department of Defense.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012		
2013	Construction	\$2,000,000
2014		
2015		
<b>Project Total</b>		<b>\$2,000,000</b>



## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 Department of Defense.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012	Construction	\$2,500,000
2013	Construction	\$2,500,000
2014		
2015		
<b>Project Total</b>		<b>\$5,000,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP WW 11-08

**Name of Project:** Agat/Santa Rita STP Replacement

**Reference Documents:**

**Project Description:**

Construction of new wastewater treatment facilities that will meet secondary treatment limits. 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.

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond, 2013 bond and U.S. EPA grant.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012		
2013	Construction	\$14,289,000
2014		
2015		
<b>Project Total</b>		<b>\$14,289,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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-existent 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:**

The source of funding for this project will be the 2005 bond and 2011 bond.

**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		\$66,000
2011		\$134,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$200,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP EE 05-02

**Name of Project:** SCADA Pilot Project

**Reference Documents:**

**Project Description:**

This pilot project will 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:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design/Construction	\$300,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$300,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 will 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:**

It is necessary to improve the electrical reliability at each wastewater pump station and minimize overflows by implementing the recommendations of the GWA Master Plan. Stations that are critical to operations are priority and will be completed first.

**Financing Options & Grants:**

The source of funding for this project will be the 2013 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		
2011		
2012		
2013	Construction	\$614,000
2014		
2015		
<b>Project Total</b>		<b>\$614,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 will upgrade the electrical system at each of the water wells as recommended in the Electrical Assessment of the GWA Master Plan. First, a standard electrical checklist and guideline will be developed followed by an assessment of the electrical system at each station. Goals are 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, and interlock with well flush controls.

**Project Justification:**

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

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond and 2013 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		
2011	Construction	\$500,000
2012	Construction	\$500,000
2013	Construction	\$2,000,000
2014		\$500,000
2015		
<b>Project Total</b>		<b>\$3,500,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 boards and motor controls have reached their useful lives, 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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012		
2013	Construction	\$650,000
2014		
2015		
<b>Project Total</b>		<b>\$650,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 have reached their useful lives, have signs of corrosion, and are 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 source of funding for this project will be the 2011 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		
2011		
2012		
2013	Planning/Design/Construction	\$350,000
2014		
2015		
<b>Project Total</b>		<b>\$350,000</b>



**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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' original distribution board and motor controls have reached their useful life, have signs of corrosion, and are 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 source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012		
2013	Planning/Design/Construction	\$250,000
2014		
2015		
<b>Project Total</b>		<b>\$250,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP EE 09-06

**Name of Project:** SCADA Improvements – Phase 1

**Reference Documents:**

- a) MASTER PLAN, VOLUME 3, TABLE 9-44
- b) *GWA Engineering Division, Potable Water Production Enhancement Plan*, June 10, 2010.

**Project Description:**

Phase 1 of this project involves the development of a SCADA (Supervisory Control and Data Acquisition) 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 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 source of funding for this project will be the 2011 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		
2011	Planning/Design/Construction	\$250,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$250,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design/Construction	\$1,100,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$1,100,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 source of funding for this project will be the 2011 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		
2011	Planning/Design/Construction	\$1,500,000
2012		\$1,000,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$2,500,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 Phase 4 of this project, accounting information such as equipment and parts costs along with the condition data such as equipment operating time and preventive/predictive maintenance programs are to be incorporated into an asset management program. The SCADA system's role will be incorporated into the overall GWA asset management program and the SCADA equipment, hardware, and software will be updated.

**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 source of funding for this project will be the 2011 bond and 2013 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012	Planning/Design/Construction	\$850,000
2013		\$750,000
2014		\$1,250,000
2015		
<b>Project Total</b>		<b>\$2,850,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 was deferred 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. The renewed laboratory must be capable of maintaining Guam EPA certification.

**Financing Options & Grants:**

The source of funding for this project will be the 2011 bond.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		\$400,000
2012	Planning/Design/Construction	\$400,000
2013		\$400,000
2014		
2015		
<b>Project Total</b>		<b>\$1,200,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**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 and 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 source of funding for this project will be the 2005 bond, 2011 bond and 2013 bond.

**Project Staffing Implications:**

Contract Administration, Project Management, Major GIS Support.

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		\$192,812
2011	Survey	\$743,000
2012	Survey	\$500,000
2013	Survey	\$500,000
2014		\$493,000
2015		
<b>Project Total</b>		<b>\$2,428,812</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**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 various 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 source of funding for this project will be the 2011 bond, 2013 bond and Internally Funded CIP.

**Project Staffing Implications:**

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

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011	Planning/Design/Construction	\$7,070,000
2012	Planning/Design/Construction	\$6,800,000
2013	Planning/Design/Construction	\$7,500,000
2014	Planning/Design/Construction	\$3,342,000
2015		\$997,000
<b>Project Total</b>		<b>\$25,709,000</b>



## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP DoD-01

**Name of Project:** NDWWTP Interim Capacity 8-9MGD

**Reference Documents:**

Pre-Final Northern District Wastewater Treatment Plant (WWTP) Interim Improvements  
Preliminary Design Report Guam, November 2010

**Project Description:**

This project will increase capacity at NDWWTP to 8-9 MGD. The project will use advanced primary treatment in order for GWA to meet USEPA APP discharge requirements.

**Project Justification:**

This project is a requirement in order to accelerate the Military Build-up. The Department of Navy has committed to this project.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		\$10,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$10,000,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP DoD-02

**Name of Project:** NDWWTP Phase 1: Primary Capacity 12 MGD

**Reference Documents:**

Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010.

**Project Description:**

This project will increase NDWWTP Primary Capacity 12 MGD for GWA to meet USEPA APP discharge requirements. This project will utilize much of the existing plan structures and add major upgrades and modifications.

**Project Justification:**

This project is a requirement of the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

A Program management office will be required for GWA to manage this project

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		\$60,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$60,000,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP DoD-03

**Name of Project:** NDWWTP Phase 2: Secondary Capacity 12MGD

**Reference Documents:**

- a. Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010.
- b. CIP WW 05-03 and CIP WW 11-07
- c. Evaluation of Northern District Wastewater Treatment Plant Capacity, December 2009

**Project Description:**

This project will increase NDWWTP Primary Capacity 12 MGD for GWA to meet USEPA APP discharge requirements. This project will utilize much of the existing plan structures and add major upgrades and modifications.

**Project Justification:**

This project is a requirement of the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

A Program management office will be required for GWA to manage this project

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		\$100,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$100,000,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP DoD-04

**Name of Project:** NDWWTP Phase 3: Final Capacity 16 MGD

**Reference Documents:**

Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010.

**Project Description:**

This project will increase NDWWTP Primary Capacity 16 MGD for GWA to meet USEPA secondary treatment requirements.

**Project Justification:**

This project is a requirement of the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

A Program management office will be required for GWA to manage this project

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		\$29,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$29,000,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP DoD-05

**Name of Project:** HWWTP Phase 1: Primary Capacity 12 MGD

**Reference Documents:**

- a. Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010.
- b. WW 11-05, WW 11-06

**Project Description:**

This project will upgrade HWWTP Primary Capacity to meet USEPA APP discharge requirements.

**Project Justification:**

This project is a requirement of the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

A Program management office will be required for GWA to manage this project

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		
2012		
2013		\$15,000,000
2014		
2015		
<b>Project Total</b>		<b>\$15,000,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP DoD-06

**Name of Project:** HWWTP Phase 2: Secondary Capacity 12MGD

**Reference Documents:**

Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010.

**Project Description:**

This project will upgrade HWWTP GWA to meet USEPA secondary treatment requirements.

**Project Justification:**

This project is a requirement of the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

A Program management office will be required for GWA to manage this project

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012		
2013		\$135,000,000
2014		
2015		
<b>Project Total</b>		<b>\$135,000,000</b>

**GWA Capital Improvement Plan  
Project Sheet FY 2011-2015**

**Project Number:** CIP DoD-07

**Name of Project:** Central and Northern Systems Wastewater System

**Reference Documents:**

- a. Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010.
- b. WW 05-02, WW 05-06, WW 09-0, WW 09-02, WW 09-04, WW 09-06, & W 09-09

**Project Description:**

This project will upgrade the sewer collection system and sewer lift stations in the Hagatna Sewer Basin and Northern District Sewer Basin.

**Project Justification:**

This project is a requirement of the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

A Program management office will be required for GWA to manage this project

**Project Time Table/Budget:**

<b>FISCAL YEAR</b>	<b>ACTIVITY</b>	<b>BUDGET</b>
Prior Activity		
2011		\$82,000,000
2012		
2013		
2014		
2015		
<b>Project Total</b>		<b>\$82,000,000</b>

## GWA Capital Improvement Plan Project Sheet FY 2011-2015

**Project Number:** CIP DoD-08

**Name of Project:** Water Transmission loop in Northern Guam

**Reference Documents:**

Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement July, 16, 2010.

**Project Description:**

Although this project upgrades the DoD Water System, GWA will have an important role in the design of these upgrades because many of these upgrades will be to supply GWA's water. These Water System Upgrades including new wells, Storage, Transmission, and Transmission loop in Northern Guam.

**Project Justification:**

This project is a requirement of the Record of Decision for the Mariana Island Range Complex Final Environmental Impact Statement.

**Financing Options & Grants:**

The Department of Navy is responsible for funding this project

**Project Staffing Implications:**

A Program management office may be required for GWA to manage this project

**Project Time Table/Budget:**

FISCAL YEAR	ACTIVITY	BUDGET
Prior Activity		
2011		
2012		\$159,000,000
2013		
2014		
2015		
<b>Project Total</b>		<b>\$159,000,000</b>