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18 UNITED STATES DISTRICT COURT  
19 TERRITORY OF GUAM

20 UNITED STATES OF AMERICA,  
21 Plaintiff,  
22 vs.  
23 GUAM WATERWORKS AUTHORITY  
24 and the GOVERNMENT OF GUAM,  
25 Defendants.

Civil Case No. 02-00035

JOINT STATUS REPORT

Date: January 13, 2010

Time: 9 a.m.

Chief Judge Tydingco-Gatewood

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1 On September 21, 2009, this Court issued an Order regarding the Magistrate Judge's  
2 Report and Recommendation. Court Docket Number ("DN") 91. In that Order, the Court set a  
3 quarterly status hearing for December 10, 2009, which was rescheduled pursuant to the parties'  
4 request to January 13, 2010. DN 93. The United States and Guam Waterworks Authority  
5 ("GWA") submit this joint status report pursuant to the Court's Order.

6 **I. BACKGROUND**

7 A. The Complaint and the Stipulated Order for Preliminary Relief

8 GWA operates a Publicly Owned Treatment Works ("POTW") to collect and treat  
9 sewage, including five sewage treatment plants ("STP") subject to National Pollutant Discharge  
10 Elimination System ("NPDES") permits under the Clean Water Act ("CWA"). Complaint, DN  
11 1, ¶49. It also operates three public water systems that provide drinking water. *Id.*, ¶¶65, 67, 70,  
12 71. In its Complaint, the United States alleged the following:

- 13 • Between November 1999 and December 1, 2002, GWA discharged or spilled more than  
14 500 million gallons of raw sewage from its POTW, causing violations of Guam's Water  
15 Quality Standards and weekly health advisories at Guam's public beaches, and resulting  
16 in fecal contamination in GWA's drinking water wells. *Id.*, ¶¶92, 105, 108 - 111, Att. B,  
17 C.
- 18 • In addition, GWA repeatedly violated the Maximum Contaminant Level ("MCL") for  
19 total coliforms and the treatment technique for turbidity in drinking water. *Id.*, ¶¶119,  
20 124, Att. E, F. The MCL violations led to the issuance of "boil water" notices for  
21 extended periods. *Id.*, ¶148.
- 22 • GWA's dilapidated public water systems experienced frequent breakdowns of essential  
23 equipment such as well pumps and chlorinators. *Id.*, ¶¶141, 145. Due to these  
24 breakdowns, the system frequently provided either low or no water pressure, and often  
25 provided water without adequate disinfection. *Id.*, ¶¶142, 145.
- 26 • In sum, both GWA's raw sewage discharges and its inadequately treated drinking water  
27

1 posed a serious threat to human health on Guam. Id., ¶¶115, 132, 137, 143, 147.

2 The United States filed its complaint in this action on December 20, 2002, seeking  
3 injunctive relief and civil penalties against GWA under the CWA, 33 U.S.C. §§ 1251 - 1387, and  
4 the Safe Drinking Water Act, 42 U.S.C. §§ 300f - 300j-26 (the "SDWA"). In the complaint, the  
5 United States sought to address the imminent and substantial endangerment to human health  
6 presented by: (1) discharges of inadequately treated wastewater and raw sewage from GWA's  
7 POTW, resulting in elevated levels of fecal coliform bacteria in both surface waters and wells on  
8 Guam; and (2) serious deficiencies in GWA's public water systems, causing contaminated water  
9 to be served to the public. Id., Fifth, Eighth Claims for Relief; 33 U.S.C. § 1364; 42 U.S.C.  
10 § 300i(a).<sup>1</sup>

11 After negotiations, the parties agreed on the terms of the Stipulated Order that the Court  
12 entered on June 5, 2003. DN 17.<sup>2</sup> Entry of the Stipulated Order was viewed as the most  
13 appropriate way to require GWA to immediately implement short-term projects to address  
14 GWA's compliance with both the CWA and the SDWA. Id. at 3. Accordingly, the Stipulated  
15 Order contained a comprehensive set of short-term construction and rehabilitation projects. For  
16 example, the following priority projects were intended to address GWA's CWA violations:  
17 (1) construct new ocean outfalls for the Agana and Northern District STPs (id., ¶¶35, 36);  
18 (2) construct improvements to the Chaot main pump station to stop daily sewage discharges into  
19 wells (id. at ¶37); and (3) renovate the Northern District and Agana STPs to restore primary  
20 treatment of sewage (id. at ¶¶39, 42). Regarding GWA's public water systems that provide  
21 drinking water, GWA is required to rehabilitate one surface water treatment plant (id. at ¶41),  
22 and rehabilitate or replace drinking water wells that have been frequently contaminated with raw  
23

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24 <sup>1</sup> The United States joined the Government of Guam as a statutory defendant in this action  
25 pursuant to CWA section 309(e), 33 U.S.C. § 1319(e). DN 1, ¶¶99, 100.

26 <sup>2</sup> The parties agreed to two modifications of the Stipulated Order. The second amended  
27 Stipulated Order was entered by the Court on October 25, 2006. DN 40, Exh. 1; DN 41.

sewage (id. at ¶45). Pursuant to the Stipulated Order, GWA also undertook critical planning measures such as the development of a Master Plan to identify and prioritize future needs (id. at ¶10), the preparation of a financial plan to pay for the improvements (id. at ¶¶26-31), the development of a disinfection program for its drinking water systems (id. at ¶11), and the preparation of a parts inventory, operation and maintenance manuals, and a preventative maintenance program for its physical plants (id. at ¶¶15, 16, 20, 21). The Stipulated Order included stipulated penalties designed to ensure GWA's compliance with specified deadlines established for the compliance measures. Id. at ¶53.

**B. GWA's Compliance History with the Stipulated Order**

In addition to providing compliance assistance to GWA, EPA has also acted to enforce the terms of the Stipulated Order. Thus, to keep GWA's compliance efforts on track, EPA has repeatedly demanded stipulated penalties for GWA's violations of the Stipulated Order. As summarized below, GWA has paid a total of \$291,750 in stipulated penalties in response to thirteen separate demands from EPA.

Date	EPA's Demand	Stipulated Order Paragraph(s)
January 22, 2004	\$6,000	¶37 (Chaot pump station)
March 8, 2004	\$11,000	¶11 (disinfection program)
May 18, 2005	\$17,750	¶10 (master plan); ¶45 (drinking water well rehabilitation)
August 4, 2005	\$4,000	¶11 (disinfection program); ¶37 (Chaot pump station)
August 31, 2005	\$2,000	¶17 (standby generators)
September 27, 2005	\$22,000	¶12 (chlorine monitoring)
December 6, 2005	\$32,000	¶10 (master plan); ¶15 (spare parts inventory); ¶21 (O&M manuals)
March 16, 2006	\$35,000	¶10 (master plan)
July 11, 2006	\$55,000	¶10 (master plan)
September 4, 2007	\$40,000	¶39 (Northern District STP); ¶42 (Agana STP)

January 14, 2008	\$39,000	¶14 (water meter improvements); ¶41 (Ugum WTP)
July 23, 2008	\$9,000	¶38.B (Sinajana water transmission line)
August 17, 2009	\$19,000	¶38.C (steel tank water reservoirs)

GWA asserts that it has now complied with almost all of the approximately 56 individual projects that were required under the Stipulated Order with a few notable exceptions set out below in Section II.A.

## II. CURRENT COMPLIANCE STATUS

### A. GWA's Current Compliance with the Stipulated Order

Recently, EPA has notified GWA about GWA's continuing noncompliance with multiple provisions of the Stipulated Order. On November 18, 2009, EPA notified GWA that it had failed to comply with Paragraphs 39 and 42 of the Stipulated Order, which required GWA to conduct operational performance evaluations at the Northern District and Agana STPs. See Exhibit 1. On November 19, 2009, EPA notified GWA that it was in violation of Paragraph 38.C, which required GWA to assess the condition of water storage tanks. See Exhibit 2. Finally, on December 21, 2009, EPA notified GWA that it was in violation of Paragraphs 12.C (chlorination system), 14 (water meter improvement), 38.B (Sinajana water transmission line), and 41 (Ugum surface water treatment plant). See Exhibit 3.

EPA has previously demanded and collected stipulated penalties for GWA's violations of provisions in Paragraphs 12, 14, 38.B, 38.C, 39, 41, and 42. The Stipulated Order required GWA to complete all of these projects between 2007 and 2009. However, EPA contends that GWA has not yet complied with these requirements of the Stipulated Order. In paragraphs 1 through 6 below, GWA submits a report on its efforts to comply with these provisions of the Stipulated Order.

#### 1. Paragraphs 39 and 42 - Operational Performance Evaluations

On November 18, 2009, EPA notified GWA that it has not yet fully complied with Paragraphs 39 and 42 of the Stipulated Order. Paragraphs 39 and 42 require GWA to rehabilitate

1 its Agana and Northern District STPs and to also perform an operational performance evaluation  
2 on each STP to determine whether advanced primary treatment is necessary to bring the plants  
3 into compliance with GWA's NPDES permits. GWA asserts that it has already rehabilitated the  
4 plants as required and continues to refurbish the Northern District STP. In March 2007, GWA  
5 submitted a report to EPA indicating that GWA had conducted an operational performance  
6 evaluation. EPA disagreed and fined GWA \$40,000 in September 2007. This Court resolved the  
7 dispute in EPA's favor on September 21, 2009. DN 91. In its letter, EPA indicated that it  
8 intended to assess stipulated penalties unless the performance evaluations are completed by  
9 January 31, 2010. See Exhibit 1. On December 24, 2009, GWA formally filed with the EPA an  
10 updated status report for the performance evaluations, stating that it expected to complete the  
11 performance evaluation by January 31, 2010. See Exhibit 4.

12 2. Paragraph 38.C - Water Storage Tank Assessment

13 On November 19, 2009, EPA notified GWA that it was in violation of Paragraph 38.C,  
14 which requires GWA to assess the condition of water storage tanks and to develop and implement  
15 a work plan to fix whatever problems were found to exist. On August 1, 2008, GWA entered into  
16 a contract with an engineering firm to conduct an initial assessment of the tanks (Phase I). Phase I  
17 work by the engineering firm included emergency welding repairs to GWA's Hyundai and Santa  
18 Rosa tanks to repair leaks, an assessment of the current status of the tanks, and development of a  
19 scope of work for Phase II to bring GWA into full compliance with Paragraph 38.C. The  
20 engineering firm issued a final report for Phase I on October 1, 2008, which was promptly  
21 transmitted to EPA. Phase II has been bid out and approved by the Consolidated Commission on  
22 Utilities. Phase II will include the following work:

- 23 i. Engineering firm - API-certified tank inspectors will perform internal inspections of tanks  
24 and will assist a construction firm to clean, assess, and repair the tanks in the order of  
25 severity per the Phase I report.  
26 ii. Construction firm - will clean the tanks prior to inspection, perform repairs as needed, and  
27



1 perform post-inspection disinfection (if necessary).

2 Once the tanks are assessed, cleaned, and repaired, GWA intends to routinely inspect and  
3 repair the tanks going forward. GWA notes that it has already built a completely new tank in  
4 Mangilao and performed repairs to the Ugum water tank.

5 3. Paragraph 12.C - Chlorination System

6 GWA asserts that it has substantially completed the work required under Paragraph 12.C,  
7 including the installation of vent fans, chlorine leak alarms, automatic chlorine shutoff systems at  
8 select wells, chlorine sampling points, emergency shower and eye wash stations; the replacement  
9 of electrical panel boxes at select wells; the construction of chlorine buildings to house the  
10 chlorine equipment at select wells; and other miscellaneous work. GWA is performing some of  
11 the work "in-house" by GWA staff and the majority of this work has been completed. The  
12 in-house work included the installation of automatic switchover systems (i.e., between two  
13 chlorine cylinders) to ensure continuous chlorination in the event one cylinder runs dry, the  
14 installation of chlorine scales to measure chlorine use, the installation of booster pump inlet  
15 valves, and other miscellaneous work. GWA still needs to install booster pump and wellhead  
16 switches at some wells and other miscellaneous items at some wells. GWA estimates that the  
17 remaining work will require another 8 months after GWA issues its 2010 bond series for \$118  
18 million. GWA currently lacks the funds to complete this project because the 2005 series bond  
19 funds have been expended on other Stipulated Order projects.

20 4. Paragraph 14 - Water Meter Improvements

21 GWA asserts that it has purchased all of the 38,000 meters necessary to complete the work  
22 under Paragraph 14. To date, GWA has installed approximately 28,000 meters out of the 38,000  
23 required. According to GWA, due to difficulties with the shoddy workmanship of its meter  
24 contractor, GWA was forced to cancel the installation contract in July 2008. Due to the lack of  
25 bond funds to complete this project and the other Stipulated Order projects, together with higher  
26 than expected energy and Navy water purchases, GWA lacked the funds to hire sufficient  
27

1 personnel to complete the program. To exacerbate matters, GWA discovered in June 2008 that it  
2 had significant problems with its new meters malfunctioning, which severely impacted GWA's  
3 cash flow. GWA and the manufacturer have spent a great deal of time to isolate the problem and  
4 GWA hired a consulting engineer to assist. Unfortunately, in order to maintain its revenue, GWA  
5 was forced to take approximately 8,000 of the meters that it had purchased for the replacement  
6 program to replace malfunctioning meters in the field. GWA has reached a tentative agreement  
7 with the manufacturer on how to move the project forward.

8           5.       Paragraph 38.B - Sinajana Water Transmission Line

9       According to GWA, this project has been separated into two phases. Phase I involved the  
10 installation of a portion of the water transmission line. Thus far, GWA has installed a water  
11 transmission line from McDonalds on Route 4 to Dero road in Ordot. All that remains is to pave  
12 the road and GWA is working with DPW to pave part of Route 4 to complete Phase I. Phase IIA  
13 involves the installation of a water line from McDonalds on Route 4 to the Agana Heights tank  
14 and the two wells in Agana heights. Phase IIA also includes the installation of a water  
15 transmission line from the intersection of Spring Lane and Route 4 to the Agana Springs well and  
16 a water transmission line from the corner of Afame Sinajana to GWA wells A-05 and A-06.  
17 Phase IIA is complete except for the paving of the road and one additional section of transmission,  
18 which should be completed in the next two months. Phase IIB relates to the construction of  
19 chlorination buildings at the Agana Heights and Agana Heights reservoirs along with the  
20 installation of a Supervisory Control and Data Acquisition ("SCADA") system to link the wells,  
21 reservoirs, and chlorination systems together. GWA will be able to monitor and control this  
22 system once complete. GWA anticipates that Phase IIB should be completed by September 2010.

23           6.       Paragraph 41 - Ugum Water Treatment Plant

24       The Ugum Water Treatment Plant Refurbishment Project includes the repair of the water  
25 tank located at the plant, upgrades to pumps at the source (the river), a new sludge handling  
26 system, the upgrade of the treatment filtration to membrane filtration (currently sand), upgrades of  
27

1 control system to automate the plant, installation of a SCADA system, upgrade of the chlorination  
2 system, upgrade of the various piping, valve and motor systems, and painting and refurbishment  
3 of the existing buildings. To date, GWA asserts that it has completed all these projects except for  
4 the following: (1) the membrane filter has not been installed due to the need to install the  
5 membrane filters during dry season to reduce the amount of service interruptions to GWA's  
6 customers; (2) one river pump has been refurbished and the second pump is currently being  
7 refurbished while the third pump will be refurbished after the second pump is complete to  
8 minimize service interruptions to GWA's customers; (3) the SCADA system is partially operable  
9 but the installation cannot be completed until the membrane system and accompanying control  
10 system are installed; (4) new sludge tanks and centrifuge have been installed and the thickening  
11 tank has been refurbished but the final piping modifications cannot be completed until the  
12 membrane system is installed; and (5) the same is true for the chlorination system upgrades.  
13 GWA anticipates that this project will be completed in April 2010.

14 In addition to the ongoing violations of the Stipulated Order, the United States asserts that  
15 GWA's wastewater collection system and sewage treatment plants continue to violate the CWA,  
16 and its drinking water system poses a continuing risk to public health. These issues are addressed  
17 in Section II.B. and II.C.

18 B. Wastewater System

19 1. Compliance with NPDES Permit Limits

20 Paragraphs 39 and 42 of the Stipulated Order required GWA to implement corrective  
21 actions to restore primary treatment operational capacity at the Northern District and Agana STPs.  
22 DN 40, Exh. 1, ¶¶39, 42.<sup>3</sup> After completing the corrective actions to restore primary treatment,  
23 GWA was required to conduct an operational performance evaluation to determine whether  
24

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25 <sup>3</sup> "Primary treatment" means "treatment by screening, sedimentation, and skimming adequate to  
26 remove at least 30 percent of the biological oxygen demanding material and of the suspended  
27 solids in the treatment works influent, and disinfection, where appropriate." 33 U.S.C.  
28 § 1311(h).

1 advanced primary treatment is necessary to comply with NPDES permit effluent limitations. Id.<sup>4</sup>

2 In March 2007, GWA reported to EPA that it had implemented the corrective actions to  
3 restore primary treatment operational capacity at the two STPs. However, EPA assessed a  
4 \$40,000 stipulated penalty against GWA in September 2007 for GWA's failure to conduct the  
5 required operational performance evaluations. In November 2009, EPA notified GWA that the  
6 violation was continuing. This issue is still relevant because GWA's Discharge Monitoring  
7 Reports demonstrate that GWA continues to violate permit effluent limits at both the Northern  
8 District and Agana STPs. See Exhibit 5.

9 2. GWA's Sanitary Sewer Overflows

10 The United States believes that a primary goal of the Stipulated Order was to curtail  
11 overflows and spills of raw or partially treated sewage from GWA's collection system and sewage  
12 treatment plants. The following chart summarizes GWA's five-year record for Sanitary Sewer  
13 Overflows ("SSOs"):

<u>Year</u>	<u>Number</u>	<u>Volume (gals)</u>
2005	23	1,477,485
2006	26	96,760
2007	46	1,016,770
2008	32	1,593,453
2009	70	4,774,090

20 EPA is concerned that both the number and the volume of GWA's sewage spills are  
21 increasing. During 2009, GWA reported 70 SSOs and estimated the total volume as  
22 approximately 4.78 million gallons of sewage.<sup>5</sup> See Exhibit 6. Two of these spills, one from the  
23 \_\_\_\_\_

24 <sup>4</sup> "Advanced primary treatment normally involves the addition of chemicals to enhance settling  
25 and coagulation of sewage matter and removes a higher percentage of BOD [biological oxygen  
26 demanding material] and SS [suspended solids] than primary treatment." Hawaii's Thousand  
Friends v. City and County of Honolulu, 821 F. Supp. 1368, 1373-74 (D. Hawaii 1993).

27 <sup>5</sup> For seven spills, GWA reported the volume of the spill as "unknown" or left it blank.

1 Southernlink Pump Station and a second from a pump station at the Umatac-Merizo STP,  
2 exceeded two million gallons. Several pump stations experienced repeated SSOs during 2009.  
3 GWA identified a number of causes for its SSOs, including, among other things, surcharges due  
4 to rainy weather, grease buildups, and equipment failures. GWA believes that this problem is  
5 exacerbated by the lack of adequate commercial pump repair facilities on Guam.

6 GWA claims that it is working on implementing a pretreatment program to address grease  
7 buildups. According to GWA, significant funds in the upcoming 2010 \$118 million bond  
8 issuance will go to addressing operational issues, which should significantly reduce SSOs. GWA  
9 notes that the apparent rise in SSOs may be attributable in part to the fact that GWA has become  
10 much more adept at reporting sewage spills.

### 11 3. GWA's Improvements to Wastewater System

12 GWA submits the following report on improvements to its wastewater system. In 2006,  
13 GWA hired Veolia Eau, the world's largest operator of water and wastewater systems, under a  
14 performance management contract to manage GWA's entire wastewater system. GWA believes  
15 that Veolia's presence has improved operations at GWA considerably. Veolia has engaged in the  
16 following improvements:

- 17 ● Developed a comprehensive training program for wastewater personnel, including, but not  
18 limited to, confined space, lockout/tagout, supervisory, operations, and operator  
19 certification.
- 20 ● Implemented a computerized maintenance management system that ensures routine  
21 maintenance is performed on equipment per the manufacturer's specifications, which has  
22 significantly reduced system failures and improved overall efficiency in operations.
- 23 ● Established a dedicated maintenance team.
- 24 ● Assisted with the purchase of equipment such as 2 new Vactor trucks, light vehicles, and a  
25 closed circuit television vehicle to survey the condition of GWA's wastewater system.
- 26 ● Created a complete inventory of equipment and supplies for the wastewater division to  
27

1 ensure that goods and equipment are available for use when needed.

- 2 ● Performed a survey to identify customers who are connected to GWA's system but are not
- 3 registered as customers.
- 4 ● Assisted with creation of a pretreatment program.
- 5 ● Assisted with development of apprentice program.
- 6 ● Evaluated and updated (or created) standard operating procedures for the entire wastewater
- 7 division.
- 8 ● Assisted with creation of safety handbook and training related to implementation.
- 9 ● Developed benchmarks and key performance indicators for GWA personnel.
- 10 ● Improved operations at GWA's wastewater and collection facilities. See Exhibit 7
- 11 (Veolia's report for Northern District STP).

12 C. Drinking Water System

13 1. Boil Water Notices

14 During 2009, GWA issued two "boil water" notices to the public, one in August 2009 for  
15 the Southern System and a second in November 2009 for the Agana Heights area of the Northern  
16 System. These incidents are summarized below.

17 a. Turbidity notice

18 GWA's Southern System Public Water System serves the southern part of Guam. The  
19 primary source is surface water from the Ugum River. GWA issued a boil water notice in late  
20 August 2009 for the GWA Southern Public Water System due to high turbidity levels measured in  
21 water coming from a finished water storage tank (located directly after the Ugum surface water  
22 treatment plant) before entering into the distribution system. See Exhibit 8. GWA considers  
23 sampling results from this storage tank to be representative of the "distribution system."  
24 According to GWA, the high turbidity levels were due to accumulated sediments in the tank,  
25 which had never been cleaned. The sediments and high turbidity in the tank appear to have been  
26 exacerbated by a turbidity excursion (turbidity breakthrough) event that occurred at the Ugum

1 treatment plant in late July. High turbidity in finished (treated) water can make disinfection less  
2 effective, and potentially pose a health threat to the consumers.<sup>6</sup>

3 After identifying the high turbidity in the distribution water, GWA issued the boil water  
4 notice, and shut down and cleaned the storage tank. During the time the tank was being cleaned,  
5 the entire Guam Southern Water System was under a boil water notice. However, during the time  
6 period from late July to late August, EPA believes that disinfection may not have been as effective  
7 in the Southern System due to the high levels of turbidity in the storage tank.

8 EPA conducted a partial Sanitary Survey/Inspection in April 2009 and noted that GWA  
9 does not have a routine maintenance program for any of its water storage tanks. In that survey,  
10 EPA identified sanitary defects at the Ugum water storage tank that could also contribute to  
11 contamination of the tank. For example, the tank vent was completely open at the time of the  
12 survey, which could allow animals, birds, and debris to enter into the tank. EPA noted significant  
13 deficiencies (such as open or corroded roof hatches and vents, severe rust, lack of maintenance) at  
14 many of the other storage tanks it inspected.

15 As noted above, EPA contends that GWA also remains out of compliance with Paragraph  
16 38.C of the Stipulated Order, which required GWA to complete a structural assessment of all its  
17 storage tanks. EPA asserts that GWA has not completed a single full structural assessment of any  
18 of its tanks to date.

19 b. Fecal coliform/E. coli notice

20 From November 13-15, 2009, GWA issued a boil water notice for the Agana Heights area,  
21 a part of GWA's Northern Public Water System, due to the detection of fecal coliform (E. coli) in  
22 water samples collected from the distribution system as well as at the wellhead on November 12,  
23

24 \_\_\_\_\_  
25 <sup>6</sup> Turbidity, or "cloudiness," of water is caused by the presence of very fine, suspended particles  
26 in the water. These particles can harbor or "protect" microbial contaminants from the  
27 disinfecting effects of chlorination, rendering the chlorination disinfection less effective and  
28 exposing the public to increased risk of diseases caused by microbial pathogens.

1 2009.<sup>7</sup> See Exhibit 9. EPA believes that this boil water notice illustrates the ongoing risk that the  
2 population of Guam will be exposed to potentially disease-causing microorganisms due to the  
3 vulnerability of the water system. In this case, the failure of a chlorination system resulted in  
4 untreated, contaminated water entering into the distribution system.

5 According to GWA, on November 12, 2009, its distribution system operators discovered a  
6 cracked hose that was part of the chlorination system for Well A-31, which resulted in no chlorine  
7 being injected into the well water. In other words, the well was continuing to pump water into the  
8 distribution system, but no chlorine was being added to the water due to the cracked hose. As  
9 required under the Stipulated Order, due to the lack of adequate chlorination/disinfection at this  
10 well, GWA collected additional (supplemental) water samples in the distribution system and had  
11 them analyzed for bacteria (total coliform and E. coli). Three samples were collected in the  
12 distribution system, as well as a sample at the well head itself. One of the distribution samples  
13 (identified as "Agana Hghts - Cliff Hotel"), as well as the well head sample, came back positive  
14 for both total coliform and E. coli. The other 2 samples came back negative. GWA corrected the  
15 problem by replacing the hose and had the chlorinator back on-line adding chlorine to the water at  
16 some point later that day.

17 Due to the positive E. coli results, GWA issued a boil water notice on November 13, as  
18 soon as it received the results of the bacteriological tests, which take 24 hours to run. On  
19 November 13-14, GWA collected an additional nine samples in the distribution system each day.  
20 All of these samples indicated the presence of chlorine and were negative for both total coliform  
21 and E. coli. On November 15, GWA lifted the boil water notice. GWA continues to monitor all  
22 wells daily (high risk wells twice a day) as required under the Stipulated Order.

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24  
25 <sup>7</sup> Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be  
26 contaminated with human or animal wastes. Microbes in these wastes can cause short-term  
27 effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a  
special health risk for infants, young children, some of the elderly, and people with severely  
compromised immune systems.



1 Although GWA responded as required under the Stipulated Order and issued the boil  
2 water notice as soon as it had the results from the coliform testing, EPA notes that this incident  
3 demonstrates the continued fragility of the GWA water system. If GWA loses  
4 chlorination/disinfection for even a short time period, particularly on those wells with a history of  
5 bacteriological contamination, EPA believes that there is a high risk that bacteria, including fecal  
6 coliform/E. coli, will be released into the distribution system.

7 2. Sanitary System Deficiencies

8 EPA performed a partial sanitary survey and conducted inspections of GWA's water  
9 system in April 2009. The United States has summarized four of the most significant findings  
10 below.

11 a. GWA does not properly manage its water systems.

12 In general, EPA's sanitary survey noted that GWA did not appear to understand how the  
13 water distribution system functions and failed to properly manage the distribution system. Basic  
14 management and operations issues, such as a lack of a comprehensive training program and a  
15 preventive maintenance program, result in GWA's inefficient operation of the water system  
16 sources, treatment, and distribution system. For example, GWA does not have an adequate  
17 hydraulic model and consequently lacks a complete understanding of its distribution system. This  
18 failure of management not only results in day-to-day operational problems maintaining pressure  
19 and service, it also makes long-term planning and prioritization of capital improvement projects  
20 problematic. In addition, inadequate metering results in lower revenues obtained from GWA's  
21 customers, which impacts GWA's ability to raise bond revenues and function as a viable utility.

22 b. Distribution system deficiencies can result in low or no pressure in  
23 the distribution system, allowing contamination to enter the system.

24 GWA's failure to properly manage the distribution system results in low pressure (or no  
25 pressure, i.e., water outages) in certain areas of the distribution system on a regular or intermittent  
26 basis. Low or no pressure in the water lines poses a significant health risk. When there is no  
27

1 pressure in the distribution system, contamination can enter the water lines through tiny openings  
2 in the pipes or pipe connections by back-siphonage. Heavy rains, sewer overflows, or other  
3 sources of contamination can also enter into the water system. In addition, lack of adequate water  
4 supply can result in basic sanitation problems -- not enough water for bathing, cleaning or food  
5 preparation. These types of intermittent contamination events are difficult to monitor and may not  
6 be identified by the routine, bacteriological testing that takes place every month in the distribution  
7 system.

8 c. GWA's Ugum treatment plant lacks full operational monitoring and  
9 operational control capability.

10 The Ugum treatment plant did not have the capability to perform all the operational  
11 monitoring required by the SDWA regulations. For example, it lacked the required continuous  
12 chlorine monitoring. Turbidity meters did not appear to be calibrated adequately. GWA lacked  
13 certain types of specific operational controls such as rate of flow controllers, flow meters, and  
14 limitations on the amount of time backwashing could take place due to limited space for backflow  
15 water. This lack of capacity makes it more difficult for GWA to operate the Ugum treatment  
16 plant effectively and to meet all the required water quality performance standards on a regular  
17 basis.

18 d. GWA fails to regularly clean or maintain its water storage tanks.

19 During its inspection, EPA noted numerous openings in finished water storage tanks  
20 through corroded roof vents, open or missing hatches, or other openings, which allow  
21 contamination to enter into the distribution system. Lack of routine maintenance and cleaning  
22 also result in increased potential for contamination. Sediments accumulating in the tanks can  
23 result in turbidity entering the distribution system pipes, which makes it more difficult for GWA  
24 to maintain the required level of chlorine residual in the distribution system. Thus, sediment  
25 accumulation in storage tanks can potentially result in bacteriological contamination in the  
26 distribution system.

1                   3.       GWA's Public Water System Improvements

2           GWA submits the following report on improvements to its drinking water system.

3   a.       Leak detection - GWA has hired a leak detection firm to survey all 450 miles of GWA's  
4   water system to identify leaks, provide training to GWA personnel on leak detection techniques,  
5   provide GWA with state-of-the-art leak detection equipment, perform a comprehensive survey of  
6   all of GWA's water lines to identify size, type and location, identify illegal connections, and  
7   improve GWA's hydraulic model.

8   b.       Vehicle Purchases - GWA has purchased numerous vehicles and heavy equipment since  
9   the implementation of the Stipulated Order to replace its aging vehicle fleet including: 1 crane, 2  
10   full-size backhoes, a tractor (semi) to haul equipment, 3 mini-backhoes and trailers for leak repair,  
11   approximately 30 light duty vehicles, 4 heavy duty trucks, and 2 vans.

12   c.       Equipment Purchases - GWA has purchased equipment such as a well video camera  
13   system, hand-held, computerized meter reading devices, and shoring equipment for trenching  
14   (safety).

15   d.       GWA has improved its collections, metering, and data collection and processing.

16   e.       GWA went from being a utility that lost \$80 million over a six-year period and unable to  
17   secure financing of any sort prior to 2003 to a company that is now able to issue hundreds of  
18   millions in bonds.

19   f.       GWA spent \$677,000 in Agat to replace seriously leaking lines and to install a new water  
20   distribution line for some residential customers previously served by an old Navy line. Prior to  
21   2003, this project had been left uncompleted and abandoned by GWA.

22   g.       GWA has refurbished or replaced numerous valves, fire hydrants, pressure relief valves,  
23   and other problematic water lines.

24   h.       GWA is working on surveying all of its property to ensure that nothing interferes with its  
25   operations.

26   i.       GWA has fixed some low pressure areas such as Chalan Coda.  
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1 j. GWA has provided training on safety, operations, certification training, and other areas.

2 k. GWA has developed a water apprentice program in conjunction with the U.S. Department  
3 of Labor and Guam Department of Labor.

4 l. GWA has greatly improved the data monitoring and operational analysis of its system and  
5 knows more about its system than ever.

6 **III. CURRENT CHALLENGES**

7 The United States contends that GWA still has not complied with several provisions of the  
8 current Stipulated Order. Both the United States and GWA agree that there is still much work to  
9 be done to bring GWA into compliance with federal law and to meet GWA's strategic goal of  
10 being a world class utility. At this point, the parties need to proceed to incorporate those unmet  
11 provisions of the Stipulated Order, together with additional compliance and planning measures,  
12 into a new settlement agreement. As explained below, however, the parties face a number of  
13 significant uncertainties that have delayed the negotiation process.

14 A. Master Plan and Planning Tools

15 When the United States and GWA entered into the Stipulated Order in June 2003, it was  
16 intended to require the immediate implementation of short-term projects and initial planning  
17 measures by GWA. DN 40, Exh. 1 at 3. The parties specifically contemplated "entering into a  
18 further stipulation to address additional compliance issues after Defendants' completion of the  
19 initial planning measures set out in this Stipulated Order." Id. The planning measures required by  
20 the Stipulated Order included GWA's preparation of a Water Resources Master Plan to provide a  
21 comprehensive analysis of GWA's wastewater and drinking water system needs for the next 20  
22 years. Id., ¶10. This Master Plan was required to encompass a financial plan, a leak detection  
23 study, the development of a GIS system, and the development of a hydraulic model for the  
24 drinking water system. Id. Thus, the Master Plan was intended to develop planning tools and  
25 serve as a planning document for GWA. After its completion, the parties contemplated that it  
26 could serve as a blueprint for prioritizing additional compliance measures. In fact, GWA  
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1 developed a list of projects for its 2010-14 Capital Improvement Plan ("CIP") based on a list  
2 included in the Master Plan.

3 The Department of Defense ("DOD") has announced an anticipated military buildup that  
4 could increase Guam's population substantially and impact GWA's wastewater and drinking  
5 water systems. To assess this impact, EPA contracted with PG Environmental, LLC, to evaluate  
6 GWA's CIP program. Based on PG Environmental's preliminary analysis, however, EPA has  
7 significant concerns with GWA's use of the Master Plan to support additional compliance  
8 measures. First, EPA believes that GWA based its water and wastewater planning efforts on  
9 models and a GIS database that are limited, incomplete, and insufficiently calibrated or field-  
10 checked. Second, EPA asserts that GWA does not follow a typical utility's financial planning  
11 methodology to estimate costs for projects and for operation and maintenance. Consequently,  
12 EPA is concerned that GWA's list of CIP projects does not have a sound engineering or financial  
13 basis and does not accurately address the needs of its wastewater and drinking water systems.

14 B. CWA Section 301(h) Process

15 CWA Section 301(b)(1)(B) requires a POTW to achieve effluent limitations based upon  
16 "secondary treatment" of the effluent. 33 U.S.C. § 1311(b)(1)(B); see also 40 C.F.R. Part 133  
17 (Secondary Treatment Regulation); Hawaii's Thousand Friends, 821 F. Supp. at 1377 (secondary  
18 treatment requires 85 percent removal of suspended solids and biochemical oxygen demand  
19 ("BOD") materials).<sup>8</sup> Pursuant to CWA Section 301(h), EPA has the authority, with the  
20 concurrence of the State, to issue a permit that modifies the secondary treatment requirements for  
21 a POTW's discharge to marine waters if the POTW demonstrates that it meets statutory criteria.  
22 33 U.S.C. § 1311(h). This authority is known as a "Section 301(h) waiver."

23 GWA's Northern District and Agana STPs are currently operating under NPDES permits  
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25 <sup>8</sup> As the court explained, "Suspended solids are solid particulates contained in wastewater  
26 effluent" and "BOD materials are organic substances in wastewater effluent that bind oxygen,  
27 thereby depleting oxygen in water and degrading water quality." Hawaii's Thousand Friends,  
821 F. Supp. at 1377.

1 that EPA originally issued in June 1986, which have been administratively extended since their  
2 expiration in June 1991. These permits contained a 301(h) waiver allowing for less than  
3 secondary treatment. However, on September 30, 2009, EPA determined that GWA did not meet  
4 the criteria for an extension of the Section 301(h) waiver for the two STPs, and issued a denial of  
5 GWA's waiver applications. GWA is currently appealing EPA Region 9's decision to EPA's  
6 Environmental Appeals Board. If EPA Region 9's determination is upheld on appeal, GWA will  
7 be required to meet secondary treatment requirements at the Northern District and Agana STPs.

8 C. Military Buildup on Guam

9 The military relocation from Okinawa, Japan to Guam and the Commonwealth of the  
10 Northern Marianas Islands ("CNMI") involves moving approximately 17,000 Marines and  
11 dependents to Guam by 2014. GWA notes that the timing and extent of this relocation is still  
12 uncertain. The overall permanent increase in Guam's population, including the military, their  
13 dependents, civilians, and the construction work force, is estimated at 45,000, resulting in a  
14 potential 25 percent increase in population from the current level of approximately 180,000. (In  
15 fact, the buildup is estimated to increase the population by 79,000 in 2014 if the number includes  
16 construction workers temporarily on island.) This projected increase in population within a very  
17 short time frame will place additional burdens on GWA's existing water and wastewater systems.  
18 Currently, GWA's water and wastewater systems are out of compliance with federal requirements  
19 and its infrastructure is in very poor condition. In response to the Stipulated Order, GWA has  
20 hired new managers and staff. However, basic planning, improved operation and management,  
21 and infrastructure repairs and improvements are still needed. For example, GWA's Master Plan  
22 does not take into account the impacts of the projected military buildup. According to GWA, its  
23 planning woes are further exacerbated by the fact that the Government of Guam does not have a  
24 comprehensive master plan or zoning plan. GWA indicates that the Guam Legislature routinely  
25 engages in "spot zoning" without using sound planning criteria and does not consult critical  
26 agencies when doing so.

1 DOD issued a draft Environmental Impact Statement ("EIS") for the Guam/CNMI military  
2 relocation on November 20, 2009. Five public meetings are scheduled in January 2010 and public  
3 comments on the draft EIS are due on February 17, 2010. DOD expects to issue the final EIS in  
4 June 2010 and the final Record of Decision in July 2010. Construction is expected to begin in  
5 2011. GWA states that until the EIS and DOD's plans are finalized, effective planning by GWA  
6 is almost impossible since GWA still has no idea whether or not the buildup is in fact occurring or  
7 where the demands will be needed.

8 Based on EPA's preliminary review of the draft EIS, EPA believes that the military  
9 buildup may have the following impacts on GWA's drinking water and wastewater systems:

- 10 ● projected shortfalls in water supply;
- 11 ● the need for comprehensive management of the Northern Guam Lens Aquifer, which is a  
12 federally designated sole-source aquifer that provides the majority of Guam's drinking  
13 water;
- 14 ● exacerbated problems with GWA's existing water and wastewater infrastructure;
- 15 ● significant levels of funding needed to meet current requirements and to upgrade facilities  
16 to meet increased demand and to comply with federal requirements; and
- 17 ● the need to further develop GWA's capacity to plan, implement, and manage the utility.

18 D. Ground Water Under the Direct Influence of Surface Water

19 GWA has at least 111 drinking water wells in the northern aquifer of Guam and obtains  
20 approximately 85 percent of its source water from those wells. Moreover, GWA obtains 100  
21 percent of the source water for its Northern System, which serves most of the population in  
22 northern Guam, from the northern aquifer of Guam.

23 Guam EPA has the primary enforcement authority to implement the regulations  
24 promulgated under the SDWA. See 42 U.S.C. § 300g-2 (State primary enforcement  
25 responsibility); 40 C.F.R. §§ 141.1 - 141.723 (National Primary Drinking Water Regulations).  
26 Based on existing data available in 2007, Guam EPA provisionally classified the northern aquifer  
27

1 as Ground Water under the Direct Influence of Surface Water ("GWUDI").<sup>9</sup>

2 A final GWUDI determination for GWA's wells or well fields would significantly impact  
3 the treatment, monitoring, and operation of drinking water wells on Guam. According to  
4 estimates in the 2007 Master Plan, the cost for complete GWUDI compliance could be as high as  
5 \$145 million. Currently, most wells on Guam are treated only with chlorination disinfection at  
6 the wellhead and then pumped directly into the distribution system. A GWUDI determination for  
7 wells would subject them to regulation under the more rigorous treatment, operation, and  
8 monitoring requirements of the Surface Water Treatment Rule, 40 C.F.R. §§ 141.70-141.76,  
9 Subpart H (Filtration and Disinfection), and the requirements of the Long-Term 1 and Long-Term  
10 2 Enhanced Surface Water Treatment Rules, 40 C.F.R. §§ 141.170-141.175, Subpart P (Enhanced  
11 Filtration and Disinfection - Systems Serving 10,000 or More People), and all other applicable  
12 SDWA regulations. Consequently, GWA would either have to meet filtration avoidance criteria  
13 or install and operate filtration systems, which could also require the installation of additional  
14 water transmission lines to centralized water treatment plants. In addition, the wells would be  
15 required to do additional Cryptosporidium and E. coli sampling, as well as turbidity and other  
16 monitoring.

17 Guam EPA allowed GWA (and the other water purveyors on Guam) to develop additional  
18 data through the collection of water samples obtained from production wells to show that its  
19 drinking water wells were adequately protected from surface water influences. GWA completed  
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21 <sup>9</sup> 40 C.F.R. § 141.2 defines "Ground Water under the Direct Influence of Surface Water" as  
22 "any water beneath the surface of the ground with significant occurrence of insects or other  
23 macroorganisms, algae, or large-diameter pathogens such as Giardia lamblia or Cryptosporidium,  
24 or significant and relatively rapid shifts in water characteristics such as turbidity, temperature,  
25 conductivity, or pH which closely correlate to climatological or surface water conditions. Direct  
26 influence must be determined for individual sources in accordance with criteria established by  
27 the State. The State determination of direct influence may be based on site-specific  
28 measurements of water quality and/or documentation of well construction characteristics and  
geology with field evaluation."



1 installation of a set of 17 monitoring wells in August 2009 and will collect one year's worth of  
2 data. Results of this study, which is scheduled to be completed in July 2010, will show whether a  
3 GWUDI determination is warranted for some or all of the northern aquifer wells included in the  
4 pilot study. Depending on the findings, the results may be applicable for some or all other wells  
5 not included in the pilot study.

6 If the data supports a final finding of GWUDI for some or all wells, GWA will have to  
7 meet all the disinfection, filtration, treatment, and monitoring requirements required in the  
8 regulations for those wells. 40 C.F.R. §§ 141.70-141.76, and 141.170-141.175. The regulations  
9 require compliance beginning no later than 18 months after the GWUDI determination is made.  
10 40 C.F.R. § 141.71. GWA may apply for filtration avoidance if Guam EPA allows that option; in  
11 that case, GWA would have to meet all the criteria and requirements (including extensive source  
12 water monitoring) of 40 C.F.R. § 141.71 (criteria for avoiding filtration).

#### 13 **IV. NEXT STEPS**

14 This status report summarized current compliance issues at GWA and some of the  
15 significant planning obstacles facing GWA. As we stated, the United States and GWA agree that  
16 GWA's current Master Plan does not provide an adequate blueprint for mid- and long-range  
17 planning purposes. In addition, the uncertainty created by the confluence of the Section 301(h)  
18 waiver appeals, the proposed military buildup, and the potential GWUDI determination makes it  
19 very difficult to determine the appropriate long-range fixes for GWA's wastewater and drinking  
20 water systems.

21 In order to ensure that GWA's compliance efforts stay on track, EPA continues to monitor  
22 GWA's compliance with the Stipulated Order. To further these efforts, EPA has also contracted  
23 with PG Environmental to conduct an extensive assessment of GWA's CIP program, which is  
24 expected to be completed by the end of January 2010. EPA intends to provide the assessment to  
25 GWA and to discuss its findings with GWA's management.

26 Accordingly, after a discussion with GWA about PG Environmental's assessment, EPA  
27  
28

1 plans to draft -- and will seek to negotiate with GWA -- a partial consent decree as the means to  
2 require necessary compliance projects for the next three- to five-year period and to establish a  
3 sound footing for long-range planning. EPA and GWA plan to closely coordinate with DOD to  
4 ensure that the draft partial consent decree takes into account the proposed military buildup.  
5 However, GWA notes that the extent of DOD's assistance is still uncertain and remains a point of  
6 concern.

7 RESPECTFULLY SUBMITTED:

8 LEONARDO M. RAPADAS  
9 United States Attorney  
Districts of Guam and NMI

10  
11 Dated: January 5, 2010

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GUAM WATERWORKS AUTHORITY

Dated: Jan 4<sup>th</sup>, 2010

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