

DECISION DOCUMENT

ANALYSIS OF THE CLEAN WATER ACT SECTION 301(h)

SECONDARY TREATMENT WAIVER RENEWAL APPLICATION

FOR THE AGUADILLA REGIONAL WASTEWATER TREATMENT PLANT

NPDES PERMIT NO. PR0023736

PUERTO RICO

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 2

NEW YORK, NEW YORK

JUNE 2024

TABLE OF CONTENTS

INTRODUCTION	1
DECISION CRITERIA	1
SUMMARY OF FINDINGS	4
CONCLUSION.....	5
RECOMMENDATION	5
DESCRIPTION OF THE TREATMENT FACILITY	6
DESCRIPTION OF THE RECEIVING WATER.....	6
RECEIVING WATER, EFFLUENT, AND BIOLOGICAL MONITORING	8
APPLICATION OF STATUTORY AND REGULATORY CRITERIA	10
1. Existence of and compliance with applicable water quality standards [Section 301(h)(1), 40 CFR § 125.61]	10
2. Attainment or maintenance of water quality which assures protection of public water supplies; assures the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife; and allows recreational activities [Section 301(h)(2), 40 CFR § 125.62].....	12
3. Establishment of a monitoring program [Section 301(h)(3), 40 CFR § 125.63]	32
4. Effect of the discharge on other point and nonpoint sources [Section 301(h)(4), 40 CFR § 125.64].....	35
5. Urban area pretreatment program [Section 301(h)(5) and (6), 40 CFR § 125.65].....	35
6. Toxics control program [Section 301(h)(5), 40 CFR §§ 125.66(a) through (c)]	37
7. Nonindustrial source control program [Section 301(h)(7), 40 CFR § 125.66(d)]	38
8. Increase in effluent volume or amount of pollutants discharged [Section 301(h)(8), 40 CFR § 125.67].....	40
9. Primary or equivalent treatment requirements [Section 301(h)(9), 40 CFR § 125.60].....	41
COMPLIANCE WITH APPLICABLE PROVISIONS OF COMMONWEALTH, LOCAL, OR OTHER FEDERAL LAW OR EXECUTIVE ORDERS	41
1. Coastal Zone Management Act	42
2. Marine Protection, Research and Sanctuaries Act	42
3. Endangered Species Act.....	42
4. Magnuson-Stevens Fishery Conservation and Management Act	42
5. Executive Order on Coral Reef Protection.....	43
COMMONWEALTH CONCURRENCE OF SECTION 301(h) MODIFICATION	43
REFERENCES	44

LIST OF TABLES

Table 1. Proposed 301(h) modified effluent limitations and mass loadings.....	5
Table 2. Oceanographic parameters.....	12
Table 3. Annual 301(h) parameters.	12
Table 4. Supplemental 301(h) parameters, measured once every 5 years.	13
Table 5. Oceanographic parameters in Aguadilla RWWTP receiving waters.....	14
Table 6. Undetected parameters for which the laboratory reporting limits exceeded the applicable standards.	18
Table 7. Organic constituents with PDLs above the respective PRWQS.....	19
Table 8. Concentrations (in mg/kg) of inorganics in sediment during the 2017-2021 period.....	27
Table 9. 301(h) monitoring program requirements for the Aguadilla RWWTP.	34
Table 10. Local limits for the Aguadilla RWWTP.	36

LIST OF FIGURES

Figure 1. Receiving water station locations.....	9
Figure 2. Receiving water, benthic/sediment, and coral monitoring station locations.	10
Figure 3. Chl- <i>a</i> concentrations during the 2017-2021 monitoring period at different stations and depths.	24

INTRODUCTION

The Puerto Rico Aqueduct and Sewer Authority (PRASA or the applicant) has requested a renewal of its waiver, under Section 301(h) of the Clean Water Act (CWA or the Act), 33 U.S.C. § 1311(h), from the secondary treatment requirements contained in Section 301(b)(1)(B) of the Act, 33 U.S.C. § 1311(b)(1)(B), for the Aguadilla Regional Wastewater Treatment Plant (RWWTP). The Aguadilla RWWTP is a publicly owned treatment works (POTW) located on the island of Puerto Rico. [National Pollutant Discharge Elimination System (NPDES) Permit No. PR0023736]

The applicant is seeking a 301(h) waiver to discharge wastewater receiving less-than-secondary treatment from the Aguadilla RWWTP to the Atlantic Ocean. The original application for a 301(h) modification of secondary treatment requirements at the Aguadilla RWWTP was submitted to the U.S. Environmental Protection Agency Region 2 (EPA) in 1979 and was tentatively approved by EPA in 1988. In 2000, after a thorough review of updated information, EPA approved PRASA's first application for a 301(h) modified permit ("modified permit") for the Aguadilla RWWTP, and subsequently issued a modified permit that became effective in 2003. Prior to the conclusion of the 5-year permit term, PRASA applied for a renewal of the modified permit and pursuant to 40 CFR § 122.21, the terms and conditions of the modified permit were administratively extended. In 2012, PRASA submitted an updated application that modified dilution estimates and the mixing zone size based on more recent receiving water data and modeling. EPA issued a modified permit to PRASA in 2015. On June 26, 2020, PRASA once again applied for a renewal of its modified permit. PRASA again updated the mixing zone size and dilution estimates based on a new model and additional data.

This Decision Document presents EPA Region 2's findings, conclusions, and recommendations as to whether the applicant's modified discharge will comply with the criteria set forth in Section 301(h) of the Act, as implemented by regulations contained in 40 CFR Part 125, Subpart G and the Puerto Rico Water Quality Standards Regulation (PRWQSR), as amended (Regulation Number 7837).

DECISION CRITERIA

Under Section 301(b)(1)(B) of the Act, 33 U.S.C. § 1311(b)(1)(B), POTWs in existence on July 1, 1977 were required to meet effluent limitations based upon secondary treatment as defined by the Administrator of the EPA (the Administrator). Secondary treatment is defined in federal regulations at Title 40 of the Code of Federal Regulations (CFR) Part 133 in terms of effluent quality for total suspended solids (TSS), five-day measure of biochemical oxygen demand (BOD₅) and pH. Uniform national effluent limitations for these pollutants were promulgated (see 40 CFR Part 133) and included in NPDES permits for POTWs issued under Section 402 of the Act. POTWs were required to comply with these limitations, in most circumstances, by July 1, 1977.

Congress subsequently amended the Act, adding Section 301(h), which authorized the Administrator, with State¹ concurrence, to issue NPDES permits which modify the secondary treatment requirements of the Act [P.L. 95-217, 91 Stat. 1566, as amended by P.L. 97-117, 95 Stat. 1623; and Section 303 of the Water Quality Act (WQA) of 1987]. Section 301(h) provides that the Administrator, with the concurrence of the State, may issue a permit under Section 402 of the Act which modifies the requirements of subsection (b)(1)(B) with respect to the discharge of any pollutant from a POTW into marine waters, if the applicant demonstrates to the satisfaction of the Administrator that:

1. there is an applicable water quality standard specific to the pollutant for which the modification is requested, which has been identified under Section 304(a)(6) of the CWA;
2. the discharge of pollutants in accordance with such modified requirements will not interfere, alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife, and allows recreational activities, in and on the water;
3. the applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable, and the scope of such monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;
4. such modified requirements will not result in any additional requirements on any other point or nonpoint source;
5. all applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;
6. in the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;
7. to the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

¹ CWA Section 502(3) defines "State" to include the Commonwealth of Puerto Rico. 33 U.S.C. § 1362(3).

8. there will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;
9. the applicant at the time such modification becomes effective will be discharging effluent which has received at least primary, or equivalent, treatment and which meets the criteria established under Section 304(a)(1) of this Act after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged . . .”

For this subsection, the phrase “the discharge of any pollutant into marine waters” refers to a discharge into deep waters of the territorial sea or the waters of the contiguous zone, or into saline estuarine waters where there is strong tidal movement and other hydrological and geological characteristics which the Administrator determines necessary to comply with the requirements of Sections 301(h)(2) and 101(a)(2) of the Act. For the purposes of Section 301(h)(9), “primary or equivalent treatment” means treatment by screening, sedimentation and skimming adequate to remove at least 30 percent of the BOD₅ and TSS in the treatment works influent, and disinfection where appropriate. A municipality which applies for a modification from secondary treatment requirements shall be eligible to receive a permit pursuant to this subsection which modifies the requirements of subsection (b)(1)(B) of this section with respect to the discharge of any pollutant from any treatment works owned by such municipality into marine waters. No permit issued shall authorize the discharge of sewage sludge into marine waters. For a permit to be issued for the discharge of a pollutant into marine waters, such marine waters must exhibit characteristics assuring that water providing dilution does not contain significant amounts of previously discharged effluent from such treatment works. No permit issued shall authorize the discharge of any pollutant into marine or estuarine waters which at the time of application does not support a balanced, indigenous population of shellfish, fish and wildlife, or allow recreation in and on the waters or which exhibit ambient water quality below applicable water quality standards adopted for the protection of public water supplies, shellfish and wildlife, or recreational activities or such other standards necessary to assure support and protection of such uses. The prohibition contained in the preceding sentence shall apply without regard to the presence or absence of a causal relationship between such characteristics and the applicant’s current or proposed discharge.

On August 9, 1994, EPA promulgated final regulations implementing these statutory criteria in 40 CFR Part 125, Subpart G. These regulations provide that a modified permit may not be issued in violation of 40 CFR § 125.59(b), which requires, among other things, compliance with provisions of the Coastal Zone Management Act (16 U.S.C. 1451 *et seq.*), the Endangered Species Act (16 U.S.C. 1531 *et seq.*), Title III of the Marine Protection, Research and Sanctuaries Act (16 U.S.C. 1431 *et seq.*), and other applicable provisions of State or Federal laws or Executive Orders. Other provisions or Executive Orders currently include essential fish habitat requirements of the Magnuson-Stevens Fishery Conservation and Management Act and the President’s Executive Order on Coral Reef Protection dated June 11, 1998. Furthermore, the decision to grant or deny a 301(h) modification shall be made by the Administrator and shall be based on the applicant’s demonstration that it has met all the requirements of 40 CFR §§ 125.59 through 125.68.

EPA has reviewed data submitted by the applicant in the context of applicable statutory and regulatory criteria and presents its findings and conclusions in this Decision Document. This document summarizes EPA’s review of effluent and receiving water monitoring data collected

since issuance of the September 2015 modified permit in addition to other relevant information to evaluate the potential impact of the modified discharge on water quality and the marine environment and to support its determination regarding re-issuance of the existing modified permit.

SUMMARY OF FINDINGS

Based upon review of information provided by the applicant and other supporting documents, EPA makes the following findings regarding the modified discharge's compliance with statutory and regulatory criteria:

1. The modified discharge will not cause violations of Puerto Rico water quality standards (PRWQS) for the constituents (dissolved oxygen, color and turbidity) that inform the condition of pollutants for which the modification is requested, BOD₅ and TSS. [Section 301(h)(1), 40 CFR § 125.61]
2. The applicant has demonstrated that it can consistently achieve PRWQS at and beyond the zone of initial dilution, with some exceptions. The applicant's modified discharge, alone or in combination with pollutants from other sources, will not impact public water supplies. The modified discharge will not interfere with the protection and propagation of a balanced indigenous population of fish, shellfish, and wildlife, and will not affect recreational activities. [Section 301(h)(2), 40 CFR § 125.62]
3. The applicant has proposed an adequate monitoring program to assess the impact of the modified discharge; however, the QAPP must be updated for the next permit term as described in the Monitoring Program section of this document. The terms of this program will become enforceable conditions of the modified permit to be issued to the applicant. [Section 301(h)(3), 40 CFR § 125.63]
4. The applicant's modified discharge will not result in additional treatment requirements on any other point or nonpoint sources. [Section 301(h)(4), 40 CFR § 125.64]
5. The applicant has an industrial pretreatment program, and the program continues to be implemented on an island-wide basis. [Section 301(h)(5), 40 CFR §§ 125.66 and 125.68]
6. The applicant has demonstrated that it has met the urban area pretreatment requirements. [Section 301(h)(6), 40 CFR § 125.65]
7. The applicant has proposed a toxics control program to limit the entrance of toxic pollutants from nonindustrial sources into the treatment works. [Section 301(h)(7), 40 CFR § 125.66]
8. There will be no new or substantially increased discharges from point sources of pollutants to which the waiver applies above those specified in the modified permit. [Section 301(h)(8), 40 CFR § 125.67]
9. The applicant has demonstrated the modified discharge will receive at least primary or equivalent treatment and meet the requirements established under Section 304(a)(1) of the Act after initial mixing. [Section 301(h)(9), 40 CFR § 125.60]

CONCLUSION

EPA has concluded that, absent any significant change to plant operations, the modified discharge from the Aguadilla RWWTP will not adversely impact the marine environment and beneficial uses of the receiving water, and will comply with the requirements of Section 301(h) of the Act and 40 CFR Part 125, Subpart G.

RECOMMENDATION

It is recommended that the applicant be granted a 301(h)-modified permit in accordance with the above findings, and that a public notice of intent to issue the modified permits be prepared in accordance with all applicable provisions of 40 CFR Parts 122 and 124. In accordance with 40 CFR § 125.68, the Aguadilla RWWTP 301(h) modified permit (NPDES Permit No. PR0023736) shall contain, in addition to all applicable terms and conditions required by 40 CFR Part 122, the following special conditions:

1. All requirements determined necessary by the Puerto Rico Department of Natural and Environmental Resources (DNER) as part of its final Water Quality Certificate to ensure that the modified discharge will comply with all applicable provisions of Commonwealth law, including water quality standards. [Section 401, 40 CFR § 124.54]
2. Proposed 301(h) modified effluent limitations and mass loadings shown in Table 1, in accordance with 40 CFR Parts 122 and 125;

Table 1. Proposed 301(h) modified effluent limitations and mass loadings. No changes to the limitations and mass loadings presented in the previous permit are proposed.

Parameter	Monthly Average	Average Weekly	Daily Maximum	Percent Removal
Flow, MGD	--	--	16	--
BOD ₅ , mg/l	106	--	--	--
BOD ₅ , kg/day	3213.07	6426.14	--	30
TSS, mg/l	70	--	--	--
TSS, kg/day	2119.32	4243.68	--	50

3. Requirements for the use of chemical addition (e.g., polymer) to increase solids removal to achieve a 50 percent removal rate, on a monthly average basis, for TSS;
4. Monitoring requirements for establishing and implementing the Aguadilla RWWTP 301(h) Waiver Demonstration Studies that include, but are not limited to, biological, effluent, and water quality monitoring (including a revised QAPP and the requirement to

resample and reanalyze for constituents with insufficient data quality) that are consistent with 40 CFR §§ 125.60, 125.62, 125.63, and 125.68(c);

5. Reporting requirements for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies, in accordance with 40 CFR § 125.68(d);
6. Requirements to modify, as necessary, and implement a toxics control program upon the effective date of each modified permit to limit the entrance of toxic pollutants from nonindustrial sources into the treatment works; and
7. Requirements for implementing a pretreatment program and nonindustrial control program in accordance with 40 CFR §§ 125.65, 125.66, and 125.68(b).

EPA has found that the applicant's receiving water monitoring data does not fully demonstrate compliance with the Puerto Rico Water Quality Standards as required by 40 CFR § 125.62(a). However, EPA is providing recommendation for the renewal of the 301(h) modification because the applicant has sufficiently demonstrated that the discharge does not impact public water supplies, the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife, and recreational activities in and on the water. To assure that monitoring data are representative of the site-specific areas, EPA will require improvements to the monitoring program during the next permit term. Furthermore, EPA recommends that the applicant begin to consider and assess the feasibility of secondary treatment for the wastewater treatment plant and if feasible, begin a study and planning for the upgrade.

DESCRIPTION OF THE TREATMENT FACILITY

The Aguadilla RWWTP is located on the western coast of the island of Puerto Rico in the municipality of Aguadilla and provides wastewater treatment services to the municipalities of Aguadilla, Aguada, Moca, and Rincón. The Aguadilla RWWTP first began operations in 1986 and is designed to provide advanced primary treatment of wastewater through screening, grit removal, and sedimentation, disinfection (chlorination), and sludge dewatering. The plant disinfects effluent with chlorine before discharging it into the Atlantic Ocean. Aguadilla RWWTP sludge is dewatered and disposed of in an approved landfill. The facility is designed for an average monthly flow of 8 million gallons per day (MGD) and a design maximum daily flow of 16 MGD. Based on flow-monitoring data from 2017 to 2021, the facility routinely operates below these flows, with actual average monthly flows ranging between 0.488 MGD (January 2017) and 6.4 MGD (August 2018) and actual maximum daily flows ranging between 4.97 MGD (February 2018) and 10.80 MGD (August 2018).

DESCRIPTION OF THE RECEIVING WATER

The receiving water in the vicinity of the Aguadilla RWWTP discharge is classified as a Class SB water. Class SB waters are defined in Rule 1302.1(B) of the PRWQS Regulation as coastal waters subject to the ebb and flow of tides (mean sea level) out to a maximum of 10.35 miles (16,656.71 meters) offshore. The Commonwealth of Puerto Rico has adopted water quality standards for Class SB waters to protect the designated uses of these waters: primary and secondary contact recreation; and the propagation and maintenance of desirable species,

including threatened and endangered species. For the 301(h) evaluation, EPA has assessed attainment of water quality standards for Class SB waters to ensure that the modified discharge from the Aguadilla RWWTP does not impact designated uses in the area. EPA's evaluation of receiving waters is based on the implementation of the most recent PRWQSR, as amended in 2022.

PRASA has conducted ambient monitoring in accordance with 301(h) requirements since 1999. Based on this monitoring, PRASA has determined that there is little seasonal variation in the water column with respect to temperature and salinity. Density profiles taken near the outfall during wet and dry seasons indicate that pycnoclines do not form, which supports constant mixing of the water column throughout the year. Local winds do not significantly affect the general hydrological flow patterns near the outfall, although they may influence surface currents. In the renewal application, PRASA indicated that, based on available data from the 1987 waiver application and subsequent monitoring studies, net drift of surface currents near the Aguadilla diffuser is generally toward the south and west along the shore. The overall circulation pattern is a consequence of the North Equatorial Current along the north coast of Puerto Rico, the Caribbean Current along the south coast, and the tidal and wind-driven exchanges through the Mona Passage on the west coast. Data obtained between October 1999 and October 2019 indicate that current speeds vary from nearly zero to approximately 45 centimeters per second (cm/s). Tides in the vicinity of the Aguadilla RWWTP outfall are semi-diurnal, with an overall mean tide of 0.8 feet (0.24 meters) and a maximum spring tide range of 2.0 feet (0.61 meters).

At the time a 301(h) modification becomes effective, 40 CFR § 125.62 requires that the Aguadilla RWWTP's outfall and diffuser be located and designed to provide adequate initial dilution, dispersion, and transport of wastewater such that the discharge does not exceed any water quality standard, at and beyond the Zone of Initial Dilution (ZID). Dilution is defined as the ratio of the total volume of the sample (ambient water plus effluent) to the volume of effluent in the sample. The ZID is defined as a region of mixing surrounding, or adjacent to, the end of the outfall or diffuser, provided that the ZID is not larger than allowed by mixing zone restrictions in applicable water quality standards. 40 CFR § 125.58(dd). Rule 1305 of the PRWQSR authorizes the use of mixing zones through a mixing zone approval process. Upon approval by DNER, an interim authorization for a mixing zone is granted based on the applicant's demonstration that water quality standards are met at the boundary of the proposed mixing zone, after consideration of the lowest (i.e., critical) initial dilution determined for open coastal waters.

In general, the mixing zone is considered a ZID that is geometrically sized to include the seafloor and the water column above it. The Aguadilla RWWTP discharges wastewater approximately 2,450 feet (747 meters) offshore into Class SB waters. The critical initial dilution (CID) was updated in the 2020 Mixing Zone Application (MZA) using the initial dilution model DKHW in Visual Plumes based on the most recent available 3 years of data from PRASA Discharge Monitoring Reports (DMRs), data from the 301(h) monitoring studies conducted over the past 5 years, and information and data collected during the mixing zone validation studies (MZVS) conducted in 2016. The new mixing zone is 33.14 m in mixing zone length, 132.13 m in total length, and 66.89 m in total width. On September 29, 2023, DNER issued a mixing zone approval of CID at 212:1.

RECEIVING WATER, EFFLUENT, AND BIOLOGICAL MONITORING

PRASA has implemented a 301(h)-monitoring program for the Aguadilla RWWTP since 1999 that consists of effluent and receiving water monitoring, assessment of benthic invertebrates and coral reefs, and analysis of toxic pollutants in sediment and fish tissue. A complete description of the 301(h)-monitoring program is provided in PRASA's 2012 *Quality Assurance Project Plan and Sampling and Analysis Protocols for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies* (CH2M HILL 2012).

During the 2017-2021 period, receiving waters were sampled five times annually at three different depths (10%, 50%, and 90% of the water column) at seven receiving water monitoring stations. The following seven receiving water stations were monitored in the vicinity of the Aguadilla RWWTP during the 2017-2021 period: Zone of Initial Dilution (ZID) - Station A6, Edge of Internal Mixing Zone (IMZ) - Stations A1 and A2, Far-field Locations – Stations A3 and A4, and Background Reference Locations -Stations A5 and A7 (see Figure 1 and the stations shown in blue on Figure 2). Effluent samples were also collected during each monitoring event.

During the 2017-2021 period, sediment and benthic organisms were collected annually at five stations around the Aguadilla RWWTP outfall: Edge of MZ - Station A2, Far-field Locations - Stations A3 and A4, and Background Reference Locations -Stations Alternate (Alt.) A5 and A7 (see the locations shown in orange on Figure 2). A single sediment sample was taken from the upper 2-centimeter layer at each station for analysis. Three replicate grab sediment samples were taken at each station and washed through a sieve to collect the benthic biota in those sediments.

In 2021, fish sampling for bioaccumulation analysis was conducted at four stations: ZID - Station A6, Far-field Location - Station A3, and Background Reference Locations -Stations A5 and A7.

In 2021, coral community monitoring was conducted at two locations: Station Alt. AGS2, located 3,050 feet (930 meters) northeast of the outfall at a water depth of 50 feet, and Station Alt. AGS3, located approximately 13,990 ft (4,264 meters) southwest of the outfall at a water depth of 36 feet (see the stations shown in yellow on Figure 2).

EPA evaluated receiving water data from PRASA's 301(h) *Waiver Demonstration Studies* documents (2017-2021), effluent monitoring data from PRASA's *Discharge Monitoring Reports* (2017- 2021), and other information to assess the impact of the modified discharge on the attainment of water quality standards.

The Aguadilla RWWTP compliance with the PRWQSR, as related to the receiving waters, was evaluated by EPA based on the Puerto Rico Water Quality Standards (PRWQS) adopted by DNER on August 8, 2022 (approved by EPA on November 23, 2022) and the following documents:

- Quality Assurance Project Plan and Sampling and Analysis Protocols for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies (CH2MHILL, October 2012)

- 2017 Dry Season Report for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies, February/March 2017 (CH2M HILL. 2017b)
- 2018 Wet Season Report for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies, October 2018 (Jacobs 2019a),
- 2019 Dry Season Report for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies, March 2019 (Jacobs 2019b)
- 2020 Wet Season Report for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies, October 2020 (Jacobs 2021a),
- 2021 Dry Season Report for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies, March 2021 (Jacobs 2021b)

Detailed information is provided in: EPA's *Aguadilla 301(h) Regional Wastewater Treatment Plant NPDES Permit PR0023736* (EPA 2015), PRASA's *2020 Renewal Application for 301(h) Waiver for the Aguadilla RWWTP* (Jacobs 2020c), PRASA's *Application for a Water Quality Certificate and Definition of a Mixing Zone for the Aguadilla RWWTP Outfall System* (Jacobs 2020a) and PRASA's *Quality Assurance Project Plan and Sampling and Analysis Protocols for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies* (CH2MHILL 2012).

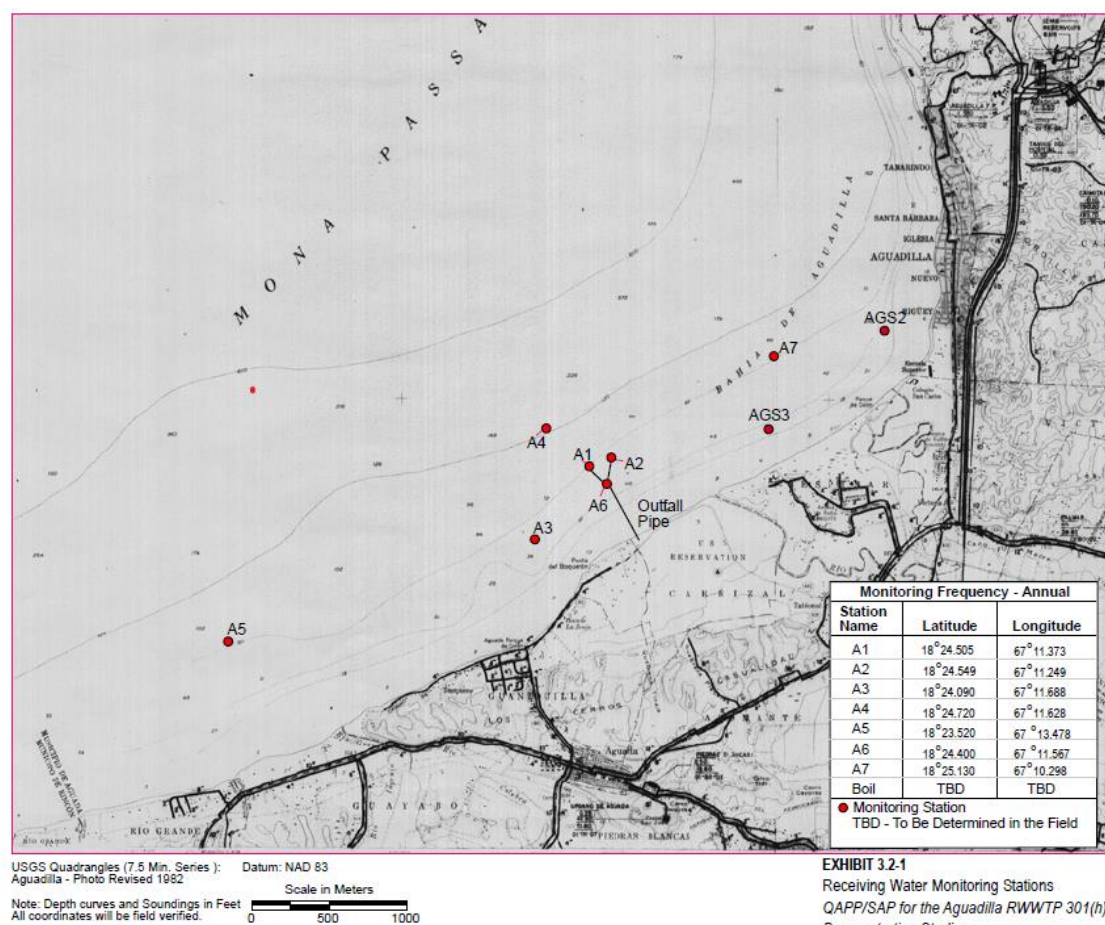


Figure 1. Receiving water station locations. Stations A1-A7 were sampled during each monitoring event. Stations AGS2 and AGS3 were not sampled.

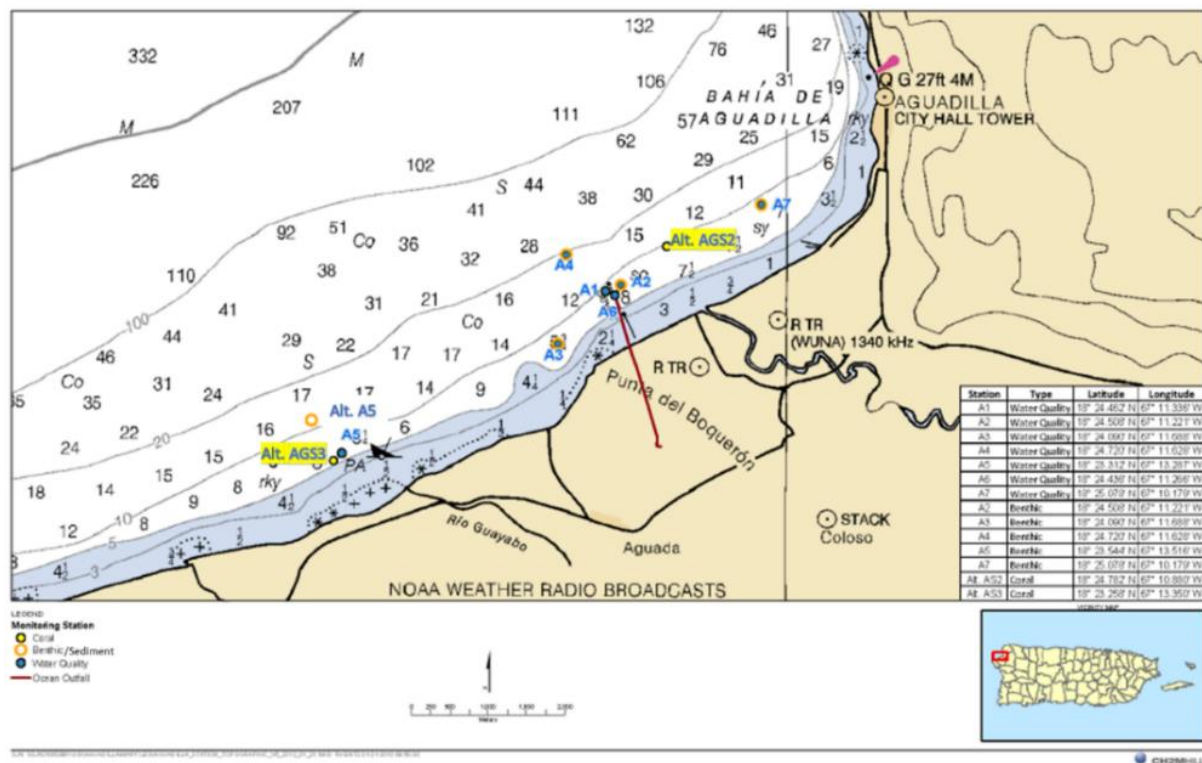


Figure 22. Receiving water, benthic/sediment, and coral monitoring station locations. Receiving water stations are shown in blue (Stations A1-A7), benthic/sediment stations are shown in orange (A2-A4, Alt. A5, and A7), and coral stations are shown in yellow (Alt. AGS2 and Alt. AGS3).

APPLICATION OF STATUTORY AND REGULATORY CRITERIA

1. Existence of and compliance with applicable water quality standards [Section 301(h)(1), 40 CFR § 125.61]

Under 40 CFR § 125.61, which implements Section 301(h)(1), water quality standards applicable to the pollutants for which the modification is requested must exist. Specifically, water quality standards must exist for biochemical oxygen demand (BOD₅) or dissolved oxygen (DO); suspended solids, turbidity, light transmission, light scattering, or maintenance of the euphotic zone; and pH, as applicable to the requested modification. The applicant must demonstrate that the modified discharge will comply with these standards and the State must provide a determination that the proposed modified discharge will comply with applicable provisions of State law including water quality standards.

On June 25, 2020, PRASA requested a renewal of modified secondary treatment requirements for BOD₅ and TSS. The PRWQSR include water quality standard for DO, color and turbidity. EPA's comparison of receiving water DO, color, and turbidity monitoring data to the PRWQS, to evaluate and determine compliance with the PRWQSR, is summarized below.

a. Dissolved Oxygen

Rule 1303.2 of the PRWQSR provides that dissolved oxygen in Class SB waters “shall not contain less than 5 mg/L, except when this value is depressed due to natural phenomena.”

The DO values reported for all seven receiving water stations obtained for the 2017-2021 monitoring events met the applicable water quality standard of 5 mg/L. Based on observed monitoring data in the vicinity of the Aguadilla RWWTP outfall, the applicant has demonstrated that the applicable DO standard for Class SB waters is being met in the receiving waters.

b. Color

Rule 1303.1 of the PRWQSR provides that “the waters of Puerto Rico shall be free from color...attributable to discharges in such a degree as to create a nuisance to the enjoyment of the existing or designated uses of the waterbody.” Specifically, for Class SB waters, Rule 1303.2 provides that color shall not be altered except by natural causes.

Color of receiving water was at or below the program detection limit of 5 Pt-Co (at all depths) for all seven monitoring stations from the 2017 through 2021 monitoring events.

c. Turbidity

Rule 1303.1 of PRWQSR provides that “the waters of Puerto Rico shall be free...from turbidity attributable to discharges in such a degree as to create a nuisance to the enjoyment of the existing or designated uses of the waterbody.” Specifically, Rule 1303.2 provides that turbidity in Class SB waters shall not exceed 10 nephelometric turbidity units (NTUs), except by natural causes.

Receiving water monitoring data indicates that the level of turbidity consistently met the applicable water quality criterion of 10 NTUs at all seven receiving waters stations monitored from 2017 through 2021.

In summary, the data submitted by the applicant for the 2017-2021 monitoring period demonstrates that the modified discharge complied with applicable water quality standards that exist for DO, color and turbidity. Because these parameters inform the condition of BOD₅ and TSS, EPA concludes that the applicant has demonstrated that the modified discharge will comply with the water quality standards for BOD₅ and TSS. On September 29, 2023, the DNER issued a WQC indicating that the modified discharge will comply with applicable provisions of State law including water quality standards for these pollutants. EPA concludes that, absent any significant change to plant operations, the Aguadilla RWWTP modified discharge will continue to comply with 40 CFR § 125.61 for these pollutants in the following permit term.

2. Attainment or maintenance of water quality which assures protection of public water supplies; assures the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife; and allows recreational activities [Section 301(h)(2), 40 CFR § 125.62]

Section 301(h)(2) of the Act provides that the Administrator may issue a permit which modifies the requirements of secondary treatment provided that the modified discharge protect human health and the environment. Specifically, Section 301(h)(2) requires that the applicant's discharge must not interfere with the attainment and maintenance of water quality which assures protection of public water supplies; assures protection and propagation of a balanced, indigenous population (BIP) of shellfish, fish and wildlife; and allows recreational activities.

a. Physical characteristics of the discharge [40 CFR § 125.62(a)]

Pursuant to 40 CFR § 125.62(a), the applicant's outfall and diffuser must be located and designed to provide adequate initial dilution, dispersion, and transport of wastewater such that the discharge does not exceed, at and beyond the ZID, any applicable water quality standards.

EPA reviewed all receiving water data provided by the applicant in the annual Aguadilla RWWTP 301(h) Waiver Demonstration Studies for the period from 2017 through 2021 and evaluated them based on the PRWQSR adopted in 2022. **Error! Reference source not found.**-4 s how the full list of parameters reviewed. The constituents were either not detected above the Program Detection Limits (PDLs) or were reported at concentrations below the applicable water quality standard at all depths and at all receiving water monitoring stations except for the highlighted constituents. The highlighted constituents are discussed in further detail in this section. Estimated concentrations were treated as measured concentrations in EPA's review.

Table 2. Oceanographic parameters.

Temperature
Dissolved Oxygen
pH
Conductivity

Table 3. Annual 301(h) parameters.

<i>General</i>	<i>Total Metals</i>	<i>Pesticides</i>	
Oil and grease	Antimony	Aldrin	Methoxychlor
Total suspended solids	Arsenic	Alpha-BHC	Toxaphene
Settleable solids	Beryllium	Beta-BHC	Mirex
Ammonia, N	Barium	Gamma-BHC (Lindane)	Perthane
Total Kjeldahl nitrogen, N	Boron	Delta-BHC	Azinphos methyl (Guthion)
Nitrate/nitrite, N	Cadmium	Chlordane	Chlorpyrifos
Color	Chromium	4,4'-DDT	Coumaphos
Turbidity	Copper	4,4'-DDE	Demeton

Surfactants (MBAS)	Hexavalent chromium	4,4'-DDD	Fenthion
Fecal coliform bacteria	Lead	Dieldrin	Malathion
Enterococcus bacteria	Manganese	Alpha-endosulfan	Naled
Sulfide	Mercury	Beta-endosulfan	Ethyl parathion
Sulfate	Nickel	Endosulfan sulfate	Methyl parathion
Chlorophyll <i>a</i>	Selenium	Endrin	
Fluoride	Silver	Endrin aldehyde	
Cyanide (free)	Thallium	Heptachlor	
	Zinc	Heptachlor epoxide	

Table 4. Supplemental 301(h) parameters, measured once every 5 years.

General	1,1,2-Trichloroethane	4-Chlorophenyl-phenyl-ether
Asbestos	Trichloroethene	Chrysene
Dioxin	Vinyl chloride	Dibenzo(a,h)anthracene
	2-Chlorophenol	1,2-Dichlorobenzene
Organics	2,4-Dichlorophenol	1,3-Dichlorobenzene
Acrolein	2,4-Dimethylphenol	1,4-Dichlorobenzene
Acrylonitrile	4,6-Dinitro-2-methylphenol	3,3-Dichlorobenzidene
Benzene	2,4-Dinitrophenol	Diethylphthalate
Bromoform	2-Nitrophenol	Dimethylphthalate
Carbon tetrachloride	4-Nitrophenol	Di-n-butylphthalate
Chlorobenzene	4-chloro-3-methylphenol	2,4-Dinitrotoluene
Dibromochloromethane	Pentachlorophenol	2,6-Dinitrotoluene
Chloroethane	Phenol	Di-n-octylphthalate
2-Chloroethylvinyl ether	2,4,6-Trichlorophenol	1,2-Diphenylhydrazine
Chloroform	Acenaphthene	Fluoranthene
Dichlorobromomethane	Acenaphthylene	Fluorene
1,1-Dichloroethane	Anthracene	Hexachlorobenzene
1,2-Dichloroethane	Benzidine	Hexachlorobutadiene
1,1-Dichloroethene	Benzo(a)anthracene	Hexachlorocyclopentadiene
1,2-Dichloropropane	Benzo(a)pyrene	Hexachloroethane
1,3-Dichloropropylene	Benzo(b)fluoranthene	Indeno(1,2,3-cd)pyrene
Ethylbenzene	Benzo(g,h,i)perylene	Isophorone naphthalene
Methyl bromide (Bromomethane)	Benzo(k)fluoranthene	Nitrobenzene
Methyl chloride (Chloromethane)	Bis(2-chloroethoxy)methane	N-Nitrosodimethylamine
Methylene chloride	Bis(2-chloroethyl)ether	N-Nitrosodi-N-propylamine
1,1,2,2-Tetrachloroethane	Bis(2-chloroisopropyl)ether	N-Nitrosodiphenylamine/diphenylamine
Tetrachloroethene	Bis(2-ethylhexyl)phthalate	Phenanthrene
Toluene	4-Bromophenyl-phenyl-ether	Pyrene

Trans-1,2-dichloroethene	Butylbenzylphthalate	1,2,4-Trichlorobenzene
1,1,1-Trichloroethane	2-Chloronaphthalene	

i Oceanographic parameters

Field measurements (vertical profiles) of temperature, pH, dissolved oxygen (DO), and conductivity were taken at each monitoring station. Measurements were made using a Sea-Bird conductivity/temperature/depth recorder with additional sensors to measure DO and pH. The applicable water quality standards for temperature, pH, and DO were met in all receiving waters around the Aguadilla RWWTP outfall during the 2017-2021 monitoring events (Table 5).

Table 5. Oceanographic parameters in Aguadilla RWWTP receiving waters (by monitoring year)

	Maximum Temperature (°C)	pH Range (SU)	Minimum Dissolved Oxygen (DO; mg/L)
PRWQS	30 °C	7.3 - 8.5	5.0
2017	26.8	8.09 – 8.14	5.67
2018	29.7	8.16 – 8.20	5.98
2019	26.9	8.24 – 8.31	6.48
2020	29.8	8.11 – 8.18	5.81
2021	26.6	8.25 – 8.30	6.08

ii General annual parameters

During the 2017-2021 period of interest, the general annual parameters that have numeric water standards (turbidity, methylene blue active substances [MBAS], undissociated sulfide [H₂S], sulfate, total nitrogen (sum of nitrate, nitrite and total Kjeldahl nitrogen [TKN]), cyanide [free], color and *Enterococcus* bacteria) were either not detected above the PDLs or were reported at concentrations below the applicable water quality standards at all depths and at all receiving water monitoring stations except for total nitrogen, free cyanide, *Enterococcus* bacteria and sulfate.

Total Nitrogen

The applicable water quality standard for total nitrogen (sum of nitrate, nitrite and total Kjeldahl nitrogen [TKN]) is 5 mg/L. (PDL 0.125 mg/L)

In 2017, total nitrogen concentrations exceeded the standard at 10% depth at the edge of the mixing zone station (A1, 5.5 mg/L) and at the ZID station (A6, 7 mg/L). Total nitrogen

concentrations were below the standard at all other receiving water stations and depths. The effluent total nitrogen concentration (31.4 mg/L, reported as estimated) exceeded the standard.

In 2018, the concentration of total nitrogen exceeded the standard at the edge of the mixing zone station (A1) at 50% depth (7.55 mg/L). Total nitrogen concentrations were below the standard at all other receiving water stations and depths. The effluent total nitrogen concentration (20.6 mg/L, reported as estimated) exceeded the standard.

During the 2019, 2020 and 2021 monitoring events, total nitrogen concentrations at all receiving water stations and depths were below the standard. All effluent total nitrogen concentrations (17.6 mg/L in 2019, 6.62 mg/L in 2020 and 14.1 mg/L in 2021, all reported as estimated) exceeded the standard.

In summary, the applicable standard for total nitrogen was exceeded in receiving waters three times during the 2017-2021 period (twice in 2017 and once in 2018). The exceedances were reported at the edge of the mixing zone station during both years and at the ZID station in 2017. During all five monitoring events, effluent total nitrogen concentrations exceeded the applicable standard. Total nitrogen has been included in the mixing zone definition for the next permit term.

Free Cyanide

The applicable standard for free cyanide, which must be met at the edge of the mixing zone, is 1 µg/L. (PDL 0.25 µg/L)

All free cyanide concentrations in receiving waters during the 2017, 2020, and 2021 monitoring events were reported either as undetected (at reporting limits below the standard) or as estimated values below the standard. Effluent free cyanide was undetected in 2017 and effluent free cyanide concentrations in 2020 and 2021 were estimated to be 2.68 µg/L and 2.64 µg/L, respectively.

During the 2018 monitoring event, free cyanide was undetected at all receiving water monitoring stations and depths with reporting limits of 1 µg/L, except at a reference location (Station A5) at 10% depth, at which free cyanide was undetected with a reporting limit of 10 µg/L. The effluent free cyanide concentration was 2.5 µg/L.

During the 2019 monitoring event, free cyanide was undetected at all receiving water monitoring stations and depths. However, reporting limits (5 µg/L) were above the standard. The effluent free cyanide concentration was 1 µg/L, reported as an estimated concentration.

In summary, all free cyanide concentrations in receiving waters during the 2017, 2020, and 2021 monitoring events were below the standard. Although all receiving water samples in 2018 and 2019 were reported as undetected, reporting limits were above the standard for one sample in 2018 and all samples in 2019. Therefore, EPA cannot determine that no exceedances occurred during this period.

Enterococci Bacteria

The applicable water quality standard for enterococci requires that the geometric mean of five consecutive samples not exceed 35 colonies/100 mL (col/100 mL) and that the 90th percentile of samples not exceed 130 col/100 mL. (PDL 10 col/100 mL)

During the 2017, 2019 and 2021 monitoring events, enterococci was undetected at all receiving water stations and depths.

In 2018, the geometric mean of enterococci concentrations at 10% depth at the edge of the mixing zone (Station A1, 177 col/100 mL) exceeded the geometric mean standard. Additionally, four of the five single-sample enterococci concentrations collected at this site (ranging from 170 to 240 col/100 mL) exceeded the standard, thus also exceeding the 90th percentile standard. Enterococci was not detected above the standard at the other depths at this station or at any depth at any of the other receiving water stations.

In 2020, samples from two locations, the edge of the mixing zone (Station A2) at 10% depth ("site A2-10") and the same station at 90% depth ("site A2-90"), exceeded the 90th percentile standard. At site A2-10, a concentration of 140 col/100 mL was measured, while the remaining four samples collected were estimated (81, 63, 130 and 90 col/100 mL). At site A2-90, a concentration of 210 col/100 mL was measured, while the remaining four samples collected were estimated (290, 250 and two at 190 col/100 mL). The geometric mean of enterococci concentrations at both sites (96 col/100 mL at A2-10 and 223 col/100 mL at A2-90) exceeded the geometric mean standard. The geometric mean standard was also exceeded at the ZID (Station A6) at all depths (50 col/100 mL at 10% depth, 53 col/100 mL at 50% depth, and 42 col/100 mL, reported as estimated, at 90% depth).

In summary, the applicable standard for enterococci was exceeded at three stations: at the edge of the mixing zone (Station A1, geometric mean and four single-sample concentrations at 10% depth), at the edge of the mixing zone (Station A2, two single-sample concentrations at 10% and 90% depths) and at the ZID (Station A6, two geometric means at 10% and 50% depths). As described above, additional enterococcus concentrations were reported to exceed the applicable standard but were reported as estimated values.

The accuracy of estimated enterococci concentrations for these samples is uncertain and limits EPA's ability to adequately describe the distribution of enterococci concentrations in receiving waters and confidently determine compliance of the Aguadilla RWWTP with the PRWQSR. However, because many of the detected concentrations were estimated to be present at concentrations significantly above the 10 col/100 mL PDL, EPA determines that the geometric mean and 90th percentile enterococci concentrations at the ZID and edge of mixing zone stations during the monitoring events demonstrate that the Aguadilla RWWTP effluent discharge resulted in receiving water that did not meet the PRWQSR on those occasions.

Sulfate

The applicable standard for sulfate is 2800 mg/L.

During the 2018 monitoring event, the sulfate concentration at far-field Station A3 at 90% depth (2817 mg/L) exceeded the standard. Sulfate concentrations were well below the standard at all other receiving water stations and depths. The effluent sulfate concentration (2644 mg/L) was below the standard.

Sulfate was not detected above the standard at any receiving water station during the four remaining monitoring events.

In summary, the concentrations of sulfate in Aguadilla RWWTP effluent and at all receiving water stations and depths except for one far-field location in 2018 were well below the standard. EPA does not attribute the single exceedance of the standard at a far-field station to the discharge of modified effluent from the Aguadilla RWWTP outfall.

iii Additional annual parameters

Copper

The applicable standard for copper, which must be met at the edge of the mixing zone, is 3.73 µg/L. (PDL 0.025 µg/L)

Copper concentrations in all receiving water samples during the 2017-2020 monitoring events were below the standard. Copper effluent concentrations were 34.5 µg/L in 2017, 13.6 µg/L in 2018, 13.1 µg/L in 2019, and 6.31 µg/L in 2020.

During the 2021 monitoring event, 12 out of 21 receiving water concentrations (ranging from 3.91 to 7.63 µg/L, all reported as “R”, rejected due to matrix interference) exceeded the standard. According to the applicant, the analyses for copper reported in 2021 indicated significant major matrix inference for all stations and the results were rejected during data validation. The effluent copper concentration was 5.33 µg/L, reported as “R”.

In summary, the applicable standard for copper was not exceed during 2017-2020 monitoring events. EPA cannot determine that no exceedances occurred during the 2021 monitoring event.

Zinc

The applicable standard for zinc, which must be met at the edge of the mixing zone, is 85.62 µg/L. (PDL 5 µg/L)

Zinc concentrations in all receiving water and effluent samples during the 2017, 2018, 2020, and 2021 monitoring events were below the standard.

In 2019, zinc concentrations at the edge of the mixing zone (Station A2) at 90% depth (929 µg/L) and in the far-field (Station A4) at 50% depth (960 µg/L) exceeded the standard. All other zinc concentrations in the receiving water were either undetected at detection limits or reported at concentrations below the standard. The effluent zinc concentration was 36.4 µg/L.

In summary, zinc concentrations exceeded the standard at two locations in 2019 but were below the standard at all other locations and in the effluent. EPA does not attribute the two exceedances to the Aguadilla RWWTP discharge.

Beta-Endosulfan

The applicable standard for endosulfan (sum of alpha and beta endosulfan) is 0.0087 µg/L. (PDL 0.0002 µg/L)

During the 2017, 2018, 2019, and 2021 monitoring events, beta-endosulfan concentrations at all receiving water stations and all depths were below the standard. Effluent beta- endosulfan was undetected during the four monitoring events but had reporting limits above the standard in 2017, 2018, and 2021 (ranging from 0.0099 to 0.042 µg/L).

In 2020, the beta-endosulfan concentration of a single reference sample (Station A5) at 90% depth (0.011 µg/L, reported as estimated) exceeded the standard. All other beta-endosulfan concentrations in the receiving water were either undetected or were measured or estimated to be below the standard. Effluent beta-endosulfan was undetected but had a reporting limit (0.015 µg/L) above the standard.

In summary, one reference sample exceeded the applicable water quality standard. All other beta-endosulfan concentrations in the receiving water were below the standard. EPA does not attribute the reference exceedance to the Aguadilla RWWTP discharge.

iv **Constituents for which compliance cannot be demonstrated**

Error! Reference source not found. identifies constituents in Aguadilla RWWTP outfall receiving waters and effluent which were undetected, but for which the laboratory reporting limits exceeded PDLs in the QAPP and exceeded the applicable standards. EPA cannot determine that no exceedances occurred for these parameters.

Table 6. Undetected parameters for which the laboratory reporting limits exceeded the applicable standards.

Parameter	PRWQS (µg/L)	PDL (µg/L)	Receiving Water Reporting Limits (µg/L)	Effluent Reporting Limits (µg/L)
Hexachlorobenzene*	0.00079	0.0002	0.0005-0.0019	0.0015
Chlordane	0.0032	0.0002	0.005 - 0.01	0.015 - 0.1
4,4-DDT	0.0003	0.0002	0.0005 - 0.037	0.0026 - 0.015

*Analyzed in 2021 only.

Table 7 identifies all water quality parameters for which the concentrations defined as the applicable standard (per 2022 PRWQSR) are lower than the concentrations defined to be their PDL (per 2012 QAPP). For parameters listed below, EPA cannot make a determination whether or not the applicable standards are being met in the receiving waters.

Table 7. Organic constituents with PDLs above the respective PRWQS.

Parameter	2020 PRWQS (µg/L)	Program Detection Limit (2012 QAPP)
Aldrin	0.0000077 (HH)	0.0002
Dioxin	5.1 x 10 (-8) (HH)	5
4,4'-DDE	0.00018 (HH)	0.0002
Dieldrin	0.000012 (HH)	0.0002
Heptachlor	0.000059 (HH)	0.0002
Pentachlorophenol	0.4 (HH)	5
Toxaphene	0.0002 (AL)	0.05
Azinphos – methyl (Guthion)	0.01 (AL)	0.05
Chlorpyrifos	0.0056 (AL)	0.025
1,2-Diphenylhydrazine	2 (HH)	5
Benzidine	0.11 (HH)	10
Benzo(a)anthracene	0.013 (HH)	0.1
Benzo(a)pyrene	0.0013 (HH)	0.1
3,3-Dichlorobenzidine	1.5 (HH)	5
Benzo(b)fluoranthene	0.013 (HH)	0.1
Bis(2-ethylhexyl) phthalate	3.7 (HH)	5
Butylbenzyl phthalate ^w	1.0 (HH)	3
Dibenzo(a,h)anthracene	0.0013 (HH)	0.1
Hexachlorobutadiene	0.1 (HH)	5
Hexachlorocyclopentadiene	4.0 (HH)	5

Hexachloroethane	1.0 (HH)	5
Indeno(1,2,3-cd)pyrene	0.013 (HH)	0.1

Conclusion: Physical characteristics of the discharge (40 CFR § 125.62(a))

The applicable standard for total nitrogen was exceeded in receiving waters three times during the 2017-2021 period (twice in 2017 and once in 2018). The exceedances were reported at the edge of the mixing zone during both years and at the ZID in 2017. the applicable standard for enterococci was exceeded at three stations: at the edge of the mixing zone (Station A1, geometric mean and four single-sample concentrations at 10% depth), at the edge of the mixing zone (Station A2, two single-sample concentrations at 10% and 90% depths) and at the ZID (Station A6, two geometric means at 10% and 50% depths). As described above, additional enterococcus concentrations were reported to exceed the applicable standard but were reported as estimated values.

Data for chlordane, 4, 4-DDT, hexachlorobenzene and several free cyanide samples could not be used to demonstrate that the Aguadilla RWWTP effluent discharge did not result in exceedance of applicable water quality standards because. laboratory reporting limits for these contaminants did not adhere to the QAPP and exceeded both the specified PDLs and the applicable standards. Data for copper from 2021 could not be used due to matrix interference. Furthermore, many parameters (listed in Table 7) could not be used to demonstrate compliance.

The 2017-2021 monitoring results show that exceedances of water quality standards occurred during the monitoring period. Furthermore, many results could not be used to demonstrate compliance due to high reporting limits. EPA cannot conclude, therefore, that adequate initial dilution, dispersion, and transport of wastewater is provided such that the discharge does not exceed, at and beyond the ZID, all applicable water quality standards [40 CFR § 125.62(a)]. However, these exceedances did not result in adverse impacts to public water supplies, balanced indigenous populations, or recreation. The data supporting this conclusion are presented and discussed in Sections 2 b-d, below.

b. Impact of discharge on public water supplies [40 CFR § 125.62(b)]

Pursuant to 40 CFR § 125.62(b), which implements Section 301(h)(2) of the Act, the applicant's modified discharge must allow for the attainment or maintenance of water quality that assures the protection of public water supplies. The applicant's modified discharge also must not interfere with the use of planned or existing public water supplies or have the effect of requiring treatment over and above that which would be necessary in the absence of such discharge.

As specified in Rule 1303.2 of the PRWQSR, drinking water (for human consumption) has not been established as a designated use for the Class SB waters of Puerto Rico. Drinking water supplies in Puerto Rico are derived from inland surface and groundwater sources. The outfall is located 2,450 feet offshore in marine waters approximately 52 feet deep. The effluent is discharged to coastal ocean waters and, therefore, poses no risk to any current or proposed public

water supply systems. Accordingly, EPA has concluded that the modified discharge would not affect public water supplies.

c. Biological impact of discharge [40 CFR § 125.62(c)(1) and (2)]

Pursuant to 40 CFR § 125.62(c)(1) and (2), the applicant must demonstrate that its modified discharge will allow for the attainment or maintenance of water quality which assures protection and propagation of a balanced indigenous population (BIP) of shellfish, fish, and wildlife, and that a BIP of shellfish, fish, and wildlife will exist immediately beyond and in all other areas beyond the ZID where marine life is actually or potentially affected by the applicant's modified discharge. Conditions within the ZID must not contribute to extreme adverse biological impacts, including, but not limited to, the destruction of distinctive habitats of limited distribution, the presence of disease epicenter, or the stimulation of phytoplankton blooms which have adverse effects beyond the ZID. Furthermore, benthic populations within the ZID must not differ substantially from the BIPs which exist immediately beyond the boundary of the ZID and the discharge must not result in the accumulation of toxic pollutants or pesticides at levels which exert adverse effects on the biota within the zone of initial dilution.

PRASA has been conducting extensive surveys to obtain biological data as part of the 301(h)-waiver monitoring program since 1999. The biological surveys address the biological integrity of key communities: 1) phytoplankton, 2) infaunal benthic invertebrates (those living within soft-bottomed sediments), and 3) coral. These community-level evaluations, along with sediment quality and fish tissue bioaccumulation evaluations, are described in detail in each of PRASA's 301(h) monitoring reports. The results for the 301(h)-waiver monitoring and reporting conducted at the Aguadilla RWWTP for the reporting period (2017–2021) are summarized below.

i Whole Effluent Toxicity

EPA defines Whole Effluent Toxicity (WET) as “the aggregate toxic effect of an effluent measured directly by a toxicity test” (54 FR 23868, June 2, 1989). Rule 1303.1 (J) of the PRWQSR provides that all waters of Puerto Rico shall not contain any substance at such concentration which, either alone or as result of synergistic effects with other substances, is toxic or produces undesirable physiological responses in human, fish or other fauna or flora. Under section 101(a)(3) of the Act, this is referred to as the general narrative standard of "no toxics in toxic amounts." The numeric interpretation of this narrative standard for toxicity as defined by the PRWQS is 0.3 Acute Toxic Units (TUa) and 1.0 Chronic Toxic Units (TUc). As part of the NPDES permitting program, WET testing is routinely used to evaluate both the toxicity of wastewater discharges and compliance with narrative water quality standards that prohibit the discharge of toxic pollutants in toxic amounts, or otherwise provide for the maintenance and propagation of a balanced population of aquatic life.

Since effluent toxicity is inversely related to the effect concentration (the lower the effect concentration, the higher the toxicity in the effluent), concentration-based toxicity measurements are typically expressed as toxic units (TUs) to better illustrate the magnitude of potential toxicity. In EPA's Technical Support Document (TSD) for Water Quality-based Toxics Control, EPA recommends that in the absence of a numeric criterion for the parameter toxicity, a criterion maximum concentration (CMC) of 0.3 Toxic Units Acute (TUa) and criterion continuous

concentration (CCC) of 1.0 Toxic Units Chronic (TUC) be used to ensure aquatic life protection against acute and chronic toxicity in the receiving water (EPA 1991). Rule 1301 of the PRWQSR provides that TUA and TUC be defined by the Lethal Concentration (LC50) of the tested effluent at which 50 percent of the test organisms die, where $TUA = 100 \div LC50$, and the No Observed Effect Concentration (NOEC), where $TUC = 100 \div NOEC$. The NOEC is the highest tested effluent concentration (in percent effluent) that does not cause an adverse effect on the test organism (i.e., the highest effluent concentration at which the values for the observed responses are not statistically different from the control).

For the 301(h) evaluation, EPA evaluated receiving water toxicity with consideration of a CID of 212:1. EPA applied the CID to acute and chronic water quality criteria of 0.3 TUA and 1.0 TUC to determine the maximum allowable level of effluent toxicity or wasteload allocation (WLA) that would still ensure attainment of water quality criteria for toxicity at the edge of the mixing zone. EPA calculated acute and chronic WLAs of 63.6 TUA and 212 TUC, respectively, and then compared the WLAs to effluent WET data.

Pursuant to the current modified permit, PRASA is required to conduct acute and chronic WET testing on flow-weighted 24-hour composite effluent samples using the mysid shrimp (*Americamysis bahia*, formerly *Mysidopsis bahia*), the sea urchin (*Arbacia punctulata*) and the sheepshead minnow (*Cyprinodon variegatus*). These aquatic tests are laboratory tests designed to measure the biological effect i.e., acute lethality and chronic effects such as impairment of growth and reproduction) of the effluent on the aquatic organism.

The applicant provided the *Application for a Water Quality Certificate and Definition of a Mixing Zone for the Aguadilla RWWTP Outfall System* document (May 28, 2020) as part of the 301(h) waiver application. This document includes Chapter 4: Whole Effluent Toxicity Testing and tabulated WET results from January 2017 through January 2020. Based on available WET data included in the application, all TUA values were below the acute WLA and all TUC values were below the chronic WLA.

While the values reported were below the WLAs for acute and chronic toxicity, toxicity was observed in both acute and chronic tests at levels not expected to cause or contribute to an excursion of water quality standards at the edge of the mixing zone. EPA also evaluated whether these levels demonstrated the reasonable potential to cause or contribute to an excursion of the water quality standard for toxicity. Chronic toxicity is the more sensitive toxic effect observed. Using Table 3-1 of the ATSD (EPA1991), at a coefficient of variation of 0.6 and greater than 20 samples, EPA used a multiplier of 2.3 on the most critical chronic NOEC level of 1.41% which occurred in both *Americamysis bahia* and *Arbacia punctulata* tests. This percentage effect translates to 70.92 TUC at the discharge point based on the following calculation:

$$1/0.0141 = 70.92 \text{ TUC}$$

After dilution this equates to 0.335 TUC:

$$70.92 \text{ TUC} / 212 = 0.335 \text{ TUC}$$

Using the multiplier of 2.3 from Table 3-1 of the TSD at the 99th Percentile this exhibits a critical condition of 0.77 TUC:

$$0.335 \times 2.3 = 0.77 \text{ TUC}$$

This result, 0.77 TUC, is less than the 1.0 TUC recommended criterion. Therefore, EPA has determined that this discharge does not cause or contribute to or have the reasonable potential to cause or contribute to, an excursion of the narrative or recommended water quality standards for toxicity at the edge of the mixing zone.

ii **Phytoplankton assessment**

PRASA has conducted water quality monitoring for inorganic nitrogen constituents (NO_3 , NO_2 , NH_3 ; described as “Nitrogen” in the PRWQSR), and chlorophyll *a* (Chl-*a*), an indicator of phytoplankton abundance, to assess the potential nutrient impacts from the modified discharge. The PRWQSR provides a water quality standard for total nitrogen for Class SB waters; however, there are no PRWQS or EPA-recommended water quality standard for Chl-*a*. Instead, EPA’s Strategic Target for Chl-*a* (i.e., 0.35 mg/m^3) for nearshore and coastal waters within the Florida Keys National Marine Sanctuary was used in assessing phytoplankton productivity in Puerto Rico waters, which are similar to the tropic and sub-tropic Florida Keys marine system (Boyer and Briceño 2009).

Inorganic nitrogen constituents (NO_3 , NO_2 , NH_3) were undetected at all receiving water stations at all depths during the 2017-2021 monitoring period. As previously described, total nitrogen (TKN, NO_3 , NO_2) concentrations in receiving water exceeded the PRWQS of 5 mg/l in three samples (twice in 2017 and once in 2018). Since then, total nitrogen concentrations of all water samples have been below the PRWQS.

Chl-*a* concentrations were measured at three depths (10%, 50% and 90% of water column depth) at each receiving water monitoring station during the 2017-2021 monitoring period. Chl-*a* concentrations varied with no consistent pattern between sampling stations across sampling periods. Chl-*a* concentrations were comparable across all stations during all monitoring events, except during the 2018 monitoring event. In 2018, Chl-*a* concentrations were elevated at stations within the ZID (Station A6), at the edge of the mixing zone (Station A2) and the western far-field location (Station A3) relative to measurements at other far-field and reference stations, as shown in Figure 2. The average of the concentrations across all non-reference stations in 2018 is approximately double the averages of the concentrations at those same stations for each of the other years.

Chl-*a* concentrations in receiving waters around the Aguadilla outfall in 2017-2021 were also below the Strategic Target Chl-*a* value of 0.35 mg/m^3 during each 2017-2021 monitoring event, except one. Monitoring data showed concentrations of Chl-*a* above the Strategic Target during the October 2018 event at all three depths at three stations: the ZID station, an Edge of MZ station, and the western far-field station. The eastern reference station (A7) also had Chl-*a* concentration above the Strategic Target in October 2020 at 50% depth.

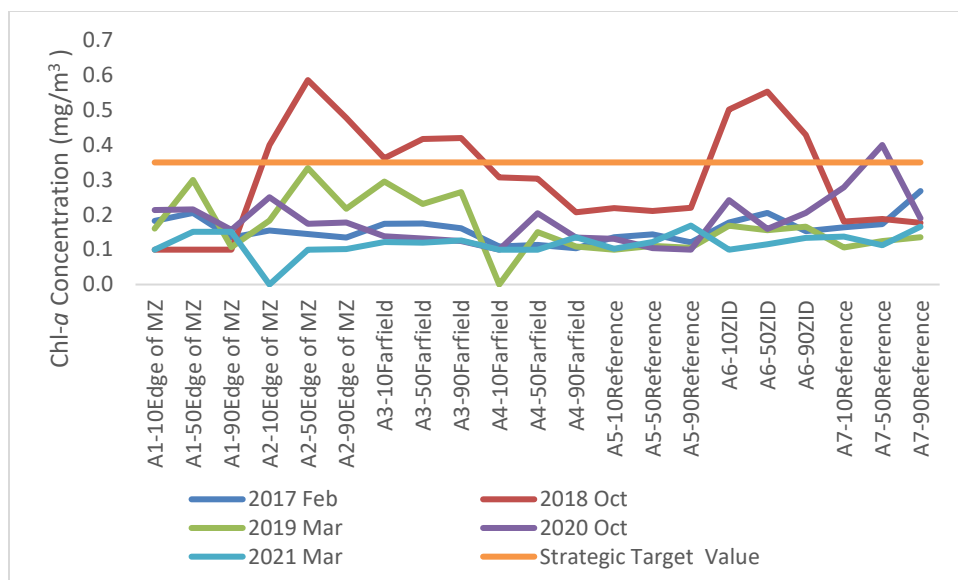


Figure 33. Chl-*a* concentrations during the 2017-2021 monitoring period at different stations and depths.

The lack of consistent spatial or depth-based patterns or differences in Chl-*a* concentrations related to the Aguadilla RWWTP outfall suggests a lack of significant biotic response to effluent discharges. The data does not suggest that nutrient discharges created conditions associated with nuisance phytoplankton blooms in the vicinity of the outfall at the times of monitoring. EPA has not received any reports of blooms during the five-year monitoring period. Because concentrations of nitrogen and Chl-*a* at stations nearest to the outfall are comparable to those levels observed at the far field and reference stations, Aguadilla RWWTP's discharge of nutrients is not likely to result in excessive phytoplankton growth at or beyond the edge of the mixing zone during the next permit term.

iii Benthic invertebrate communities

During each 301(h)-monitoring event, sediment and benthic organisms were collected at five stations around the Aguadilla RWWTP outfall (shown in orange on Figure 2; Stations A2 through A4, Alt. A5, and A7). A single sediment sample was taken at each station and analyzed for physical (grain size) and chemical parameters. Three replicate grab sediment samples were taken at each station and washed through a sieve to collect the benthic biota in those sediments. Organisms collected from each replicate were taxonomically identified, counted, and weighed. Number of individuals (estimated density), number of taxa, Shannon-Wiener diversity index (H'), species evenness (J), and species richness (D), and presence or absence of pollution-tolerant species were reported for each benthic sample.

Number of Individuals/Density

Samples taken at the eastern reference (A7) and far-field stations (Alt. A4) yielded the highest average number of individuals per sampling event (740 and 691 individuals, respectively) over

the 2017-2021 monitoring period. Samples taken at the western far-field (A3) and reference stations (Alt. A5) yielded the lowest average number of individuals per sampling event (334 and 506 individuals, respectively).

Species Richness

On average, the greatest species richness values were found in samples taken at the edge of MZ (Station A2), followed by the eastern reference and far-field stations (A7 and A4). The lowest average species richness index values were found at the western far-field and reference stations (A3 and Alt. A5).

Number of Taxa

The average number of taxa composing the benthic communities over the five-year monitoring period (2017-2021) ranged from 48 (western far-field station, i.e., A3) to 68 (eastern reference station, i.e., A7). The highest number of taxa (97) observed at a single station over the five-year monitoring period was observed in 2019 at the eastern far-field station (A4). Samples taken at the edge of MZ (Station A2) over the 2017-2021 monitoring period were composed of an average of 66 taxa.

Shannon-Wiener Diversity Index (H')

The benthic community at the edge of MZ (Station A2) was demonstrated to have the highest average diversity of the stations monitored over the five-year monitoring period. Benthic communities in the eastern far field and reference stations were lower than elsewhere in the study area, with the lowest average diversity associated with benthic communities at the eastern far-field station (A4).

Species Evenness (Pielou's Evenness J)

Overall, species evenness was similar in benthic communities across all stations, including at the edge of MZ. Average species evenness values were somewhat higher in benthic communities at the western far-field (A3) and reference (Alt. A5) stations and at the edge of MZ Station (A2). The lowest average evenness was associated with benthic communities at the eastern far-field and reference stations (A5 and A7, respectively).

Presence or Absence of Pollution-Tolerant Benthic Species

Thirteen polychaete genera (*Capitella* sp., *Cirriformia* sp., *Glycinde* sp., *Goniada* sp., *Lumbrineris* sp., *Marphysa* sp., *Mediomastus* sp., *Nephtys* sp., *Nereis* sp., *Notomastus* sp., *Polydora* sp., *Prionospio* sp., and *Scoloplos* sp.) and three families (Capitellidae, Lumbrineridae, and Spionidae) have been identified in the scientific literature as having species that may be indicators of organically enriched or disturbed areas. There are variations within the species habitat preferences in these genera, and there is no indication that all species in a particular genus are tolerant of pollution or other environmental stresses.

Five of the polychaete genera that have been identified in the scientific literature as possible indicators of organically enriched or disturbed areas (*Mediomastus*, *Notomastus*, *Lumbrineris*,

Prionospio, and *Streblospio*) were present, mostly at low relative abundances, in benthic samples during the monitoring period. *Mediomastus* sp. was found at less than 1 percent of individuals reported at Stations A2, A4, and A7; *Notomastus* sp. at less than 2 percent at Stations A4 and A7; *Lumbrineris* sp. at 0.15 percent at Station A7; and *Streblospio* sp. at 0.28 percent at Station Alt. A5. *Prionospio* sp. were found at all stations at relatively high abundances at Stations A2 and A3, 15.79 and 29.38 percent, respectively, and were found in lower numbers of 5.29 percent at Station Alt. A5 and less than 1 percent at Stations A4 and A7. These organisms were not able to be identified to the species level. Two pollution-tolerant polychaete species classified as pollution-tolerant in the scientific literature (*Mediomastus ambiseta* and *Prionospio heterobranchia*) were confirmed to be present at low numbers (<1 percent of individuals reported at each station) at the eastern far-field and reference stations. The presence of these species and genera at mostly low relative abundances and their distribution across all stations do not indicate a polluted environment.

Benthic Invertebrate Summary

2017-2021 monitoring demonstrated benthic communities around the Aguadilla RWWTP outfall to be diverse and stable. Species richness, diversity, and evenness scores for the benthic communities at western stations were higher than the benthic communities at the easternmost monitoring sites. Benthic communities at stations within the mixing zone are composed of high numbers of individual organisms and taxa; high diversity and evenness index scores suggest that benthic communities are diverse and stable. Pollution-tolerant polychaetes were only confirmed to be present (at low densities) in benthic samples obtained in the easternmost monitoring areas. Out of five genera identified as possible indicators of organically enriched or disturbed areas, one genus was found at higher relative abundance at the mixing zone and the western far-field station and the remaining four genera were found at low densities across stations.

EPA concludes that the 2017-2021 benthic community sampling demonstrates that the discharge of modified effluent from the Aguadilla RWWTP has not adversely impacted balanced indigenous benthic populations in areas around the outfall.

Sediment Quality

Sediment samples were collected at the ZID and at far field and reference stations (shown in orange on Figure 2; Stations A2 through A4, Alt. A5, and A7) and analyzed for EPA priority pollutant organic compounds, pesticides, metals, and several other inorganic constituents.

Organic Constituents (EPA Priority Pollutants and Pesticides)

Except for coumaphos, no organic constituents were detected in sediment from any 2017-2021 monitoring sample location or event. Coumaphos (23 µg/kg, reported as estimated) was detected in sediment at the Edge of MZ Station (A2) in March 2021. Coumaphos is highly toxic to aquatic organisms, however, no applicable ecological benchmark is available for this analyte. The

presence of coumaphos could not be analytically confirmed by the laboratory (qualified as a J, or estimated, value).

Metals and Inorganic Constituents

Fifteen (15) inorganic constituents (As, Ba, Be, Bo, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Th, Zn, Cyanide) were detected in sediment collected from at least one 2017-2021 monitoring sample location or event. Concentrations of all inorganic constituents measured in sediment samples collected from within the mixing zone were comparable to or lower than concentrations measured in sediments from far-field and/or reference stations (see Table 8).

Table 8. Concentrations (in mg/kg) of inorganics in sediment during the 2017-2021 period.

Station	Edge of MZ (A2)	Far-field (A3 & A4)	Reference (A5 & A7)
Antimony	0.061-0.13	0.011-0.24	0.064-0.133
Arsenic	12.7-14.2	14.6-21.9	16.5-43.6
Beryllium	0.28-0.31	ND-0.4	ND-0.36
Barium	12.2-17	8.75-14.3	5.72-10.4
Boron	15-18	14-29	16-25
Cadmium	0.05-0.07	0.035-0.09	0.027-0.065
Chromium	32.2-41.7	28.3-36.8	19.6-41.2
Copper	18.4-25.1	16.3-32.5	6.39-31.2
Lead	5.95-6.63	5.06-8.33	2.19-6.66
Manganese	742-941	548-869	587-1140
Mercury	0.0168-0.0386	0.015-0.0561	0.0067-0.0365
Nickel	24.3-30.6	24.2-32	8.31-25.8
Selenium	ND	ND	ND
Silver	ND	ND	ND
Thallium	0.038-0.07	0.032-0.08	0.036-0.068
Zinc	70-100	56.7-82	28.8-118
Cyanide	ND-0.32	ND-0.74	ND-0.11

Based on 2017-2021 monitoring data, EPA concludes that the discharge of modified effluent from the Aguadilla RWWTP has not resulted in accumulation of organic and inorganic contaminants in sediments around the outfall. Sediment contaminant levels within the mixing

zone were comparable to far field and reference sediment concentrations and any detectable concentrations were below ecotoxicological screening levels. The presence of apparently healthy benthic communities in the area around the Aguadilla outfall further support that concentrations of organic and inorganic constituents in sediments around the Aguadilla RWWTP outfall are not causing toxicity or other deleterious effects that preclude maintenance of a BIP of benthic organisms in its vicinity.

iv Fish bioaccumulation assessment

Tissues of fish collected from three monitoring stations around the Aguadilla RWWTP outfall were analyzed for metals. Metals concentrations in fish were compared to available tissue screening concentration (TSC) benchmarks published by Dyer *et al.* (2000).

Fish were collected using fish traps and hook-and-line methods. Two species, coney (*Cephalopholis fulva*) and lane snapper (*Lutjanus synagris*), were analyzed. Four fish samples were obtained from the ZID Station (A6), one sample was obtained from the West Far-field Station (A3), and four samples were obtained from the East Reference Station (A7). One coney was analyzed (from the ZID station), and all other analyzed samples were lane snapper.

Arsenic, barium, chromium, and mercury concentrations exceeded TSC benchmarks in fish collected from the ZID station, the west far-field station, and the eastern reference station.

Concentrations of antimony and selenium in fish collected at the ZID station were slightly above TSC benchmarks (antimony: 0.044 and 0.046 mg/kg, TSC 0.03 mg/kg; selenium concentrations of 0.6 mg/kg; TSC benchmark at 0.56 mg/kg). Antimony concentration in one fish sample from the eastern reference station also exceeded (0.54 mg/kg) the concentrations measured in the ZID station fish samples.

In general, concentrations of metals in fish tissues collected from the ZID were comparable to concentrations in fish collected from the eastern reference and western far-field locations. Furthermore, most metal concentrations were below available tissue screening concentration (TSC) benchmarks for bioaccumulation (Dyer *et al.* 2000) and do not indicate potential risk of harm to marine environments.

Concentrations of antimony, arsenic, barium, chromium, mercury, nickel, and selenium exceeded benchmarks in individual fish throughout the study area or only in single fish specimens. There was no clear pattern of increasing concentration or incidence of exceeding the TSC within the ZID. For example, nickel concentrations in fish collected at the ZID were below the TSC benchmark, but the nickel concentrations of fish sampled from the west far-field station and eastern reference site either exceeded or were estimated to exceed the nickel benchmark concentration.

EPA concludes that due to the inconsistent pattern of observed concentrations in fish sampled around the outfall, estimated/detected concentrations for the seven constituents in fish sampled from within the ZID cannot be confidently attributed to exposure to the Aguadilla RWWTP effluent.

v Coral reef communities as distinctive habitats of limited distribution

According to EPA's Amended Section 301(h) Technical Support Document (ATSD), distinctive habitats of limited distribution are defined as habitats in which protection is of special concern because of their ecological significance, such as coral reefs, or their value to humans, such as for subsistence fishing (EPA 1994). Because of the unique faunal components of these marine communities, distinctive habitats of limited distribution may be highly susceptible to the potential effects of discharged suspended solids, nutrients, and other pollutants.

Coral community monitoring was conducted in March 2021 at two stations on “hard-ground reef” habitats (see the stations shown in yellow on Figure 2). Monitoring was conducted at a hard-ground coral habitat located at a water depth of 50 feet, 3,050 feet (930 meters) northeast of the outfall (Station Alt. AGS2) and at a patch coral reef of the type that develops on top of rocky promontories located at a water depth of 36 feet approximately 13,990 ft (4,264 meters) southwest of the outfall (Station Alt. AGS3). Both stations are located near rivers, however the northeast station is located near Rio Culebrinas which has a large watershed with a high sediment load while the southwest station is near Rio Guayabo which has a smaller watershed. This riverine impact and the greater water depth result in less light penetrating to the seafloor at the northeast station.

Monitoring data indicate that an algal complex dominates the sessile-benthic component of the substrate at both monitoring locations. At the location northeast of the outfall (Station Alt. AGS2), biotic turf and macroalgae were the dominant components of the algal complex. At the station southwest of the outfall (Station Alt. AGS3), biotic turf dominated the algal complex, with minor macroalgae contributions.

Coral cover was less than one percent (<1 %) at the station northeast of the outfall. Seven (7) stony coral species were observed. Coral cover at the location southwest of the outfall was less than five percent (<5 %) and ten (10) stony coral species were observed. Similar levels of stony coral paling or bleaching (up to 25 %) were observed at both locations. Paling and bleaching were primarily observed on colonies of *Siderastrea sidera*. Average coral species diversity was lower at the station northeast of the outfall than at the station southwest of the outfall (0.37 vs 1.37, respectively). Species evenness was similar at the two stations (0.80 and 0.84). Low percent coral coverage, diversity and evenness suggest that corals are sparse and poorly developed and are a minor component of the benthic community.

During the 2010 to 2021 period, coral cover declined at the location northeast of the outfall. Total algal coverage increased at both locations. Lower coral diversity at the northeast location has been previously observed and adds to evidence that coral reefs are poorly developed in the area east of the RWWTP outfall. EPA judges that the coral coverage declines and lower diversity at the northeast station is more likely due to the proximity and influence of the Río Culebrinas plume than to effects associated with the modified effluent discharged from the Aguadilla RWWTP.

Based on coral community monitoring, PRASA determined that listed coral reef communities are not likely to be adversely impacted by the modified discharge from the Aguadilla RWWTP. On June 1, 2020, the National Oceanic and Atmospheric Administration (NOAA) National Marine

Fisheries Service (NMFS) formally concurred with this determination in consultation under Section 7 of the Endangered Species Act (NOAA 2020). Accordingly, EPA concludes that changes in the coral community at the monitoring stations are not attributable to the modified discharge of Aguadilla RWWTP effluent.

d. Absence of extreme adverse impacts within the ZID [40 CFR § 125.62(c)(3)]

Pursuant to 40 CFR § 125.62(c)(3), conditions within the ZID must not contribute to extreme adverse biological impacts, including, but not limited to, the destruction of distinctive habitats of limited distribution, the presence of disease epicenters, or the stimulation of phytoplankton blooms that have severe adverse effects beyond the ZID. Effluent and receiving water monitoring data reported in *Renewal Application for 301(h) Waiver for the Aguadilla RWWTP* (Jacobs 2020) indicate that the modified discharge from the Aguadilla RWWTP will provide for the attainment of water quality standard for DO, turbidity, and toxicity, and maintenance of a BIP. Section 2a of this document (Compliance with applicable water quality standards) details the toxic pollutants for which laboratory detection limits and/or measured concentrations exceed corresponding water quality standard. EPA is not aware of any phytoplankton blooms, fish kills, or other adverse impacts in the vicinity of the outfall. The modified outfall discharges to open coastal waters that provide a dynamic mixing zone, are unstratified in nature, and are influenced by large-scale, wind-driven ocean currents and are not prone to conditions within the ZID that would contribute to extreme adverse effects. EPA concludes that conditions within the ZID do not contribute to extreme adverse biological impacts, including, but not limited to, the destruction of distinctive habitats of limited distribution, the presence of disease epicenter, or the stimulation of phytoplankton blooms which have adverse effects beyond the zone of initial dilution and that the requirements of 40 CFR § 125.62(c)(3) have been met.

Conclusion: Biological Impact of discharge (40 CFR § 125.62 (c))

Monitoring data demonstrates that the modified discharge of Aguadilla RWWTP effluent does not sufficiently impair water or sediment quality to cause toxicity to marine organisms or accumulation of metals in fish; does not result in nutrient conditions that are associated with eutrophication or phytoplankton blooms; or adversely impact benthic communities or distinct habitats of limited distribution (coral communities) in receiving waters around the outfall. Therefore, EPA concludes that the modified discharge will allow for the maintenance of water quality which assures protection and propagation of a BIP of shellfish, fish, and wildlife, that a BIP of shellfish, fish, and wildlife will exist immediately beyond the ZID and in all other areas beyond the ZID where marine life is actually or potentially affected by the modified discharge and the discharge is not expected to cause extreme adverse impacts within the ZID. The applicant has met the requirements of 40 CFR § 125.62(c).

e. Impact of discharge on recreational activities [40 CFR §§ 125.62(d)]

Under 40 CFR § 125.62(d), the Aguadilla RWWTP's discharge must allow for the attainment or maintenance of water quality which allows for recreational activities beyond the ZID, including, without limitation, swimming, diving, boating, fishing, picnicking, and sports activities along shorelines and beaches. There must also be no federal, territorial, or local restrictions on recreational activities within the vicinity of the outfall unless such restrictions are routinely

imposed around sewage outfalls, as long as the routine restrictions would not be lifted or modified if the applicant were discharging a secondary treatment effluent.

The Aguadilla-Aguada shoreline is a center for recreational activity. Recreational activities in the general vicinity of the Aguadilla regional outfall include both primary contact activities, such as swimming, and secondary contact activities, such as fishing, boating, and picnicking. A resort is located at Punta Borinquen about 8 km (5 mi) northeast of the discharge site. Nearby beaches include Las Playuelas and Boqueron Beach. The nearest beach is about a mile from the Aguadilla RWWTP outfall. PRASA reports little recreational fishing or boating near the outfall, and little to no recreational diving.

As described earlier in this document, the applicable water quality criterion for enterococci was exceeded at three sampling locations during the 2017-2021 monitoring period. Based on the distance to the nearest beach and the overall currents that were reported (generally alongshore, not towards the shore), these events are unlikely to adversely impact recreation. EPA concludes that the Aguadilla RWWTP's discharge allows for the maintenance of water quality which allows for unrestricted recreational activities beyond the ZID.

On August 23, 2023, the Puerto Rico Planning Board granted a Coastal Zone Management Act (CZMA) consistency certification for the modified discharge from the Aguadilla RWWTP (Puerto Rico Planning Board 2023).

Therefore, EPA concludes that the applicant has met the requirements of 40 CFR § 125.62(d).

f. Stressed waters [40 CFR § 125.62(f)]

Under 40 CFR § 125.62(f), the applicant must demonstrate that the modified discharge will not contribute to, increase, or perpetuate stressed conditions, contribute to further degradation if pollution from other sources increases, or retard the recovery of the biota and water quality if the level of human perturbation from other sources decreases. As defined in 40 CFR § 125.58(z), stressed waters are those ocean waters for which an applicant can demonstrate that the absence of a balanced indigenous population is caused solely by human perturbations other than the applicant's modified discharge.

The Aguadilla RWWTP does not discharge into stressed waters, as defined in 40 CFR § 125.58(z). Based on available data, EPA has determined that a BIP exists in the vicinity of the Aguadilla RWWTP outfall and that the modified discharge will provide for the attainment of water quality standards and criteria at and beyond the ZID. Therefore, EPA concludes that the applicant has met the requirements of 40 CFR § 125.62(f).

Conclusion: Attainment or maintenance of water quality which assures protection of public water supplies; assures the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife; and allows recreational activities (40 CFR § 125.62)

In conclusion, although exceedances of the PRWQS occurred in the receiving waters for several parameters as described in section 2a of this document, the remainder of section 2 of this document demonstrates that the Aguadilla RWWTP's discharge does not interfere with the maintenance of water quality which assures protection of public water supplies, assures

protection and propagation of a BIP of shellfish, fish and wildlife; and allows for recreational activities. Therefore, EPA concludes that the Aguadilla RWWTP discharge does not demonstrate compliance with 40 CFR § 125.62(a) with respect to all pollutants, but does comply with § 125.62(b) through (e).

3. Establishment of a monitoring program [Section 301(h)(3), 40 CFR § 125.63]

Under 40 CFR § 125.63, which implements Section 301(h)(3) of the Act, the applicant must have a monitoring program designed to evaluate the impact of the modified discharge on the receiving environment, demonstrate compliance with applicable water quality standards, and measure toxic substances in the discharge. In addition, the applicant must also demonstrate that it has the resources necessary to implement the monitoring program upon issuance of a 301(h) modified permit and to carry it out for the life of the permit (40 CFR § 125.63(a)(1)(iii)). The frequency and extent of the monitoring program are to be determined by taking into consideration the Aguadilla RWWTP's rate of discharge, quantities of toxic pollutants discharged, and the potential for significant impacts in the receiving water (40 CFR § 125.63(a)(1)(iv)).

a. Biological monitoring program [40 CFR § 125.63(b)]

Pursuant to 40 CFR § 125.63(b), the applicant must have a biological monitoring program that provides adequate data to evaluate the impact of the discharge on the marine biota. Under 40 CFR § 125.63(b)(1), the applicant's biological monitoring program must include periodic surveys of control sites and biological communities most likely to be affected by the discharge; periodic bioaccumulation studies and examination of possible adverse effects of effluent-related toxic substances; periodic sampling of sediments for toxic pollutants and pesticides; and periodic assessment of fisheries.

Table 7 lists several water quality parameters for which compliance with applicable water quality standards cannot be demonstrated due to applicable standards being lower than program detection limits. EPA will require that these parameters be included in the fish tissue analyte list for the bioaccumulation analysis.

EPA is also requiring that the applicant develop a plan for a toxicity reduction evaluation (TRE) within the first three months of the permit term. This plan may be an update of the plan developed for the previous NPDES permit cycle. EPA has included action levels based on the recommended criteria of 0.3 TUa and 1.0 TUC, which would be 63.6 TUa after dilution (212 TUC before dilution). Should the observed toxicity levels exceed either action level, accelerated monitoring would be required for twelve weeks. During the accelerated monitoring period, an additional exceedance of the action level would require activation of the TRE workplan and implementation of the applicant's strategy to identify and abate the source of toxicity.

b. Water quality monitoring program [40 CFR § 125.63(c)]

Pursuant to 40 CFR § 125.63(c), the applicant must have a receiving water monitoring program that provides adequate data for evaluating compliance with water quality standards or criteria

and measures the presence of toxic pollutants which have been identified or are expected to be in the Aguadilla RWWTP effluent discharged to the receiving water.

EPA remains concerned with the overall ongoing data quality provided by the applicant for receiving water. Although the applicant typically monitored for the required water quality parameters, the concentrations provided for various parameters were reported as undetected or estimated concentrations at reporting limits well above the PDLs specified in the QAPP. These undetected or estimated values often also significantly exceeded the applicable water quality standards. EPA cannot consider ‘undetected’ values above the standard for making compliance determinations. In addition, analytical results for some parameters were rejected due to the matrix interferences, resulting in the entire sets of data for a given year to be unusable (e.g., copper in 2021).

These data quality issues and the unavailability of analytical methods to detect and quantify pesticides and other organic contaminants at the low concentrations necessary to demonstrate compliance with the PRWQSR limits EPA’s ability to make a confident determination whether PRWQSR for these compounds will be met in Aguadilla RWWTP receiving waters during the next permit term. To address this situation, the applicant must update its QAPP document to revise (and subsequently implement) appropriate EPA-approved testing methods to achieve lower quantification limits wherever possible and address matrix interferences during the next permit term. The applicant will be required to resample and reanalyze samples for which data quality is insufficient to support a compliance determination.

EPA relies solely on one dataset per year (and in the case of organic parameters, one dataset for the entire 5-year period), therefore the limited data submitted to EPA must be of sufficient quality to allow for appropriate decision-making in the future.

To rectify EPA’s concerns with the overall ongoing quality of receiving water data provided by the applicant, as described earlier in this document, EPA will now require that the applicant implement the following changes to the water quality monitoring:

- Update the QAPP document to address the adequate assessment of the most recent water quality standard as adopted by DNER and revise (and implement during the next permit term) appropriate EPA-approved testing methods with adequate detection and quantification limits. The applicant must follow the procedures described in the QAPP document to minimize the need for reporting data as estimated values and the rejection of data due to matrix interferences.
- Submit each individual annual 301(h) Waiver Demonstration Study Report for the Aguadilla RWWTP to EPA as soon as data is available. If any QA/QC issues are identified by EPA, the applicant will be required to address these issues before the next annual monitoring event is initiated.
- Complete the supplemental monitoring event for organic compounds during one of the first three years of the permit cycle. If receiving water data for any parameter is rejected during the validation process due to matrix interference or a concentration flagged as “estimated” due to a concentration above the program detection limit, as identified in the QAPP, the applicant will be required to resample this parameter before the next annual monitoring event is initiated .

c. Effluent monitoring program [40 CFR § 125.63(d)]

Pursuant to 40 CFR § 125.63(d), the applicant must have an effluent monitoring program that provides quantitative and qualitative data that measures toxic substances and pesticides in the effluent, and data for evaluating compliance with the percent removal efficiency requirements under 40 CFR § 125.60. As described in EPA's ATSD, the major objectives of effluent monitoring are to provide data for determining compliance with permit effluent limitations and section 304(a) water quality criteria, measure the effectiveness of the toxic substances control programs, and relate effluent characteristics to the receiving water biological and water quality conditions (EPA 1994). In addition, influent and effluent monitoring provides data for assessment of treatment plant performance with primary treatment requirements for BOD₅ and TSS.

d. Monitoring program

PRASA is required to design a monitoring program to evaluate the impact of the Aguadilla discharge on the marine environment and must also demonstrate the capability to implement this program after the issuance of the 301(h) modified permit. PRASA has designed and implemented a comprehensive marine monitoring program that was approved by EPA, and at the time of submitting the renewal application, has submitted 36 individual monitoring reports to EPA.

The 2012 Quality Assurance Project Plan (QAPP) and Sampling and Analysis Protocols (SAP) outlines the marine monitoring plan. Sampling frequencies for the 301(h) Monitoring Program requirements at the Aguadilla RWWTI are listed in Table 9.

Table 9. 301(h) monitoring program requirements for the Aguadilla RWWTP.

Component	Frequency
Annual Effluent	Once a year per permit period (alternating wet and dry seasons)
Supplemental Effluent	Once every 5 years (year before permit is due for renewal)
Annual Receiving Water	Once a year per permit period (alternating wet and dry seasons)
Supplemental Receiving Water	Once every 5 years (year before permit is due for renewal)
Benthic Invertebrates	Once a year per permit period (alternating wet and dry seasons)
Annual Sediment	Once a year per permit period (alternating wet and dry seasons)
Supplemental Sediment	Once every 5 years (year before permit is due for renewal)
Fish Tissue	Once every 5 years (year before permit is due for renewal)

Component	Frequency
Coral Communities	Once every 5 years (year before permit is due for renewal)

Since its approval, there have been several EPA-approved revisions to the QAPP, and the monitoring continues per the required procedures and schedules outlined in the 2012 QAPP. Therefore, EPA has concluded that the applicant has met the requirements of 40 CFR §§ 125.63(a) through (d) for the permit term.

4. Effect of the discharge on other point and nonpoint sources [Section 301(h)(4), 40 CFR § 125.64]

In accordance with Section 301(h)(4) of the Act, EPA may not issue a modified permit unless such modified discharge will not result in any additional pollution control requirements on any other point or nonpoint source. In May 2020, PRASA requested a determination from the DNER indicating whether the modified discharge from the Aguadilla RWWTP will result in an additional treatment, pollution control, or other requirement on any other point or nonpoint sources, as required by 40 CFR§ 125.64(b). On September 29, 2023, the DNER issued a WQC indicating that the modified discharge will not cause violations to the applicable water quality standards in the receiving water. Based on this determination, EPA concludes that the discharge from the Aguadilla RWWTP will not result in any additional requirements on any other point or nonpoint sources; therefore, the applicant has met the requirements of Section 301(h)(4), 40 CFR § 125.64.

5. Urban area pretreatment program [Section 301(h)(5) and (6), 40 CFR § 125.65]

In accordance with Section 301(h)(5) and (6) of the Act, EPA may not issue a 301(h) modified permit unless the applicant demonstrates that all applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced. As part of an Industrial Pretreatment Program, POTWs that seek a 301(h) modified permit must assess the need for local limits and set local limits in accordance with 40 CFR Part 403 based on an analysis of toxic pollutants known or suspected of being introduced by industrial sources. Local limits are developed for pollutants that may cause interference, pass through, sludge contamination, and/or worker health and safety problems, if discharged in excess of the receiving POTW's capabilities and/or receiving water quality standards.

In evaluating the need for local limit development, a POTW must identify industries that might be subject to the pretreatment program and determine the character and volume of pollutants that the industries contribute to the POTW. The POTW must then determine which pollutants have a reasonable potential for pass through, interference, or sludge contamination. To calculate the maximum allowable POTW influent loading for a pollutant of concern, treatment plant data and estimates of pollutant removal rates are used to calculate the total allowable pollutant load that would meet sludge requirements, permit limits, and water quality standards. After accounting for domestic sources, the remaining load is then evenly distributed among industries that contribute to the POTW.

PRASA has an Industrial Pretreatment Program that was approved by EPA on September 28, 1985, and an Enforcement Response Plan that was approved by EPA on May 30, 1995. EPA's approval of PRASA's pretreatment program in 1985 only contained general island-wide local limits for all of its wastewater treatment facilities. Since then, PRASA has assessed the need for facility-specific local limits for all facilities. For the Aguadilla RWWTP, PRASA has established facility-specific local limits, which are summarized below. PRASA has incorporated these limits into all applicable industrial pretreatment permits for industries that discharge to the Aguadilla RWWTP in accordance with 40 CFR Part 403.

Table 10. Local limits for the Aguadilla RWWTP.

Parameter	Local Limit (mg/l)
Arsenic	0.28
Beryllium	--
Biochemical Oxygen Demand	250 mg/l surcharge level
Cadmium	0.27
Chromium	1.0
Color	250 Pt/Co Units
Copper	1.0
Cyanide	0.16
Flammability	No two consecutive readings at $\geq 5\%$ LEL, and no reading of $\geq 10\%$ LEL allowed
Flow	NL
Fluoride	NL
Lead	1.8
Manganese	NL
Mercury	0.01
Molybdenum	0.85
Nickel	0.22
Nitrogen (NO ₃ , NO ₂ , NH ₃)	NL
Oil & Grease (O&G)	50 mg/l Total O&G
Phenols (phenolics substances) *	1.0
pH	6.5-9.0 SU
Selenium	1.6
Silver	0.27
Surfactants (as MBAS)	9.0
Thallium	--
Temperature	40°C (104°F) at POTW 60°C (140°F) from SIU
Total Suspended Solids (TSS)	250 mg/l surcharge level
Total Toxic Organics (TTO)	2.13
Zinc	0.5

* Total phenols minus unsubstituted phenol

NL For parameters where **no limit** has been adopted, PRASA reserves the right to establish limits on a case-by-case basis when an industry discharges in amounts that could cause interference or pass-through.

-- Dashes indicate there are no effluent data, no limitations, or no monitoring requirements for this parameter.

As explained in the preamble to the 1994 revision of the Section 301(h) Regulations (59 FR 40656, August 9, 1994), for urban area pretreatment programs with significant numbers of industrial users, at any given time, it is reasonable to expect that at least one or more of those users might be out of compliance (59 FR 40656, August 9, 1994). EPA determines a POTW's continuing eligibility for a 301(h) modified permit under Section 301(h)(6) by measuring industrial user compliance and POTW enforcement activities against existing criteria in EPA's National Pretreatment Program. A POTW's enforcement program is considered adequate if no more than fifteen percent of its industrial users meet the significant noncompliance (SNC) criteria in a single year. In situations where the POTW followed its procedures but the level of SNC among significant industrial users (SIUs) is fifteen percent or greater, the adequacy of the enforcement procedures should be reviewed. A total of two SIUs are monitored under the Pretreatment Program for the Aguadilla RWWTP, and both currently have discharge permits. According to PRASA's 2022 Industrial Pretreatment Program Annual Report covering the period from September 1, 2021 through August 31, 2022, the Aguadilla RWWTP service areas reported a SNC rate of one hundred percent (two of two SIUs). The SNC rate is greater than the SNC criteria of fifteen percent for determining the adequacy of the pretreatment program. PRASA issued Notices of Noncompliance to the facilities and the facilities returned to compliance. These enforcement actions indicate that PRASA's enforcement program has met the criteria for adequate enforcement of its pretreatment program for the Aguadilla RWWTP.

Since PRASA has established local limits to control toxic pollutants that may be introduced by industrial dischargers, and since PRASA has demonstrated that it is able to enforce these limits, EPA concludes that the applicant has met the requirements of 40 CFR 125.65 for an urban area pretreatment program.

6. Toxics control program [Section 301(h)(5), 40 CFR §§ 125.66(a) through (c)]

a. Chemical analysis

Pursuant to 40 CFR § 125.66(a), at the time of application, the applicant must submit a chemical analysis of its current discharge for all toxic pollutants and pesticides defined in 40 CFR §§ 125.58(p) and (aa). As specified in EPA's ATSD, the applicant must submit results of wet and dry season analyses of the effluent if known or suspected industrial sources of toxic pollutants or pesticides exist. The analysis shall be performed on a minimum of two 24-hour composite samples (one dry season and one wet season). Applicants may supplement or substitute chemical analyses if the composition of the supplemental or substitute samples typifies that which occurs during wet and dry weather conditions.

b. Toxic pollutant source identification

Under 40 CFR § 125.66(b), the applicant must submit an analysis of the known or suspected sources of toxic pollutants or pesticides identified in response to 40 CFR § 125.66(a). To the

extent practicable, the applicant must also categorize the sources according to industrial and nonindustrial types.

PRASA identified two industries permitted as SIUs that discharge to the Aguadilla RWWTP (Jacobs 2020b). The Aguadilla RWWTP generally provides service to the meat and poultry products point source industry and to the dairy product processing point source industry.

Based on PRASA's 2022 Industrial Pretreatment Program Annual Report, EPA has concluded that the applicant has met the requirements of 40 CFR § 125.66(b).

c. Industrial pretreatment program

Under 40 CFR § 125.66(c), an application for a 301(h) modification from secondary treatment requirements that has known or suspected industrial sources of toxic pollutants must have an approved pretreatment program as described in 40 CFR Part 403. The Aguadilla RWWTP currently has an EPA-approved industrial pretreatment program and has implemented the program throughout the island. EPA originally approved the applicant's industrial pretreatment program on September 28, 1985, and Enforcement Response Plan on May 30, 1995. The Puerto Rico Rules and Regulations for the Supply of Water and Sewer Supply (Rules and Regulations) were approved as part of the original program in 1985 and met the existing pretreatment requirements for legal authority at 40 CFR § 403.8. Effective October 3, 2003, PRASA revised its Rules and Regulations in accordance with changes made to the federal pretreatment regulations (e.g., additional federal prohibitions, revised definitions, and notification requirements). Since PRASA has an EPA-approved industrial pretreatment program for the Aguadilla RWWTP, EPA has concluded that the applicant has demonstrated that it has met the requirements of 40 CFR § 125.66(c).

PRASA is adequately enforcing its Industrial User Pretreatment Program. All SIUs are monitored once a year, and unannounced compliance inspections are performed at least twice a year. Non-compliance issues are addressed with escalated enforcement actions. A detailed report concerning the compliance status of the Aguadilla RWWTP SIUs is included in PRASA's Annual Pretreatment Report submitted to EPA. The report includes all non-compliance issues detected during the reporting period and the enforcement actions performed by PRASA.

Since PRASA has an approved pretreatment program and has demonstrated that it can enforce the program, EPA concludes that the applicant has met the requirements of 40 CFR § 125.66(c).

7. Nonindustrial source control program [Section 301(h)(7), 40 CFR § 125.66(d)]

Pursuant to 40 CFR § 125.66(d), which implements Section 301(h)(7) of the Act, the applicant must propose a public education program designed to minimize the entrance of nonindustrial toxic pollutants into the treatment system. The program must be implemented no later than 18 months after issuance of a modified permit. PRASA proposes to continue to implement its two nonindustrial source control educational programs during the next permit term: the "Aquamóvil" Education Program and the Fat, Oil and Grease (FOG) and Petroleum, Oils, and Grease (POGS) Program.

The “Aquamóvil” Education Program was created by PRASA’s Communications Office in 1988 and implemented in 1993. The island-wide program is designed to minimize toxic substances from nonindustrial sources through a mobile learning center that travels throughout the island providing literature, illustrations, and models of the wastewater treatment processes. The materials provide information to PRASA’s clients and the general public about:

- The history of PRASA, the services it provides, and PRASA’s rules and regulations
- Areas where drinking water and sanitary sewer services are provided
- Watershed protection and citizen participation
- Drinking water and wastewater treatment processes
- Water conservation, including promotion of responsible use of the resource, including responsible use of hydrants
- Infrastructure protection, including promoting prevention of contamination, vandalism, and illegal and toxic discharges to PRASA’s system
- New infrastructure and rehabilitation projects
- Resources to school and university science fairs
- Preventive measures to protect water bodies and avoid contamination

The program covers all municipalities, with particular emphasis on universities, public and private schools, housing developments, industrial and governmental agencies, community groups, health and service fairs, and religious groups. PRASA’s website provides information to the public about the availability of the educational program. PRASA also distributes information concerning the wastewater treatment process as well as household toxic substances disposal at major shopping centers throughout the island during its annual “Water Week.” During 2018 and 2019, ten and seven general educational activities were performed in the Aguadilla area, respectively.

PRASA’s FOG and POGS Program focuses on educating food service establishments that discharge to the Aguadilla RWWTP, including fast food providers, restaurants, and bakeries, as well as maintenance and repair service establishments, including gas stations, commercial garages, and car washes. PRASA began providing a “Best Manufacturing Program Manual” to food service establishments and courtesy inspections in 2006 to evaluate FOG management and disposal. PRASA will continue providing these inspections. PRASA also launched a public educational campaign in June 2019 called “Tuberías Limpias” to educate the citizens, establishments, and industries about the proper management and disposal of fats, oil, petroleum and grease. As part of the campaign, PRASA updated the FOG and POGS section of its website to include the following information:

- Vision, goals, and objectives of the program
- Main tasks performed by the program’s personnel: Education and Enforcement
- Environmental benefits of the program’s implementation
- Inspections’ objectives and the areas that are going to be reviewed during the inspections
- Legal basis
- Informative and educational brochures

If requested, personnel of the pretreatment program provide educational lectures on FOG management to food service establishment personnel and other interested groups. During 2019, six educational lectures were given throughout the island with excellent participation of representatives of the *Asociación de Restaurantes de Puerto Rico*. During 2018 and 2019, a total of 297 and 168 food service establishments, respectively, were inspected in the Aguada, Aguadilla, Moca, and Rincón areas, which are served by the Aguadilla RWWTP.

The development and implementation of the “Aquamóvil” Education Program and the FOG and POGS Program demonstrates that PRASA has a nonindustrial source control program that is designed to minimize the entrance of nonindustrial toxic pollutants into the Aguadilla RWWTP. Therefore, EPA concludes that the applicant has satisfied the requirements under Section 301(h)(7), 40 CFR § 125.66(d).

8. Increase in effluent volume or amount of pollutants discharged [Section 301(h)(8), 40 CFR § 125.67]

Under 40 CFR § 125.67, which implements Section 301(h)(8) of the Act, EPA may not issue a modified permit unless the applicant demonstrates that there will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above the volume of discharge specified in the permit. Pursuant to 40 CFR § 125.67(b), where pollutant discharges are attributable to combined sewer overflows, the applicant shall minimize existing overflows and prevent increases in the amount of pollutants discharged. Since the Aguadilla RWWTP is not a combined sewer system, the applicant is exempt from the requirements of 40 CFR § 125.67(b). However, 40 CFR § 125.67(c) requires that the applicant provide projections of annual average effluent volume in m³/sec and mass loadings in metric tons/year for any pollutants to which the modification applies in five-year increments for the design life of its facility. The Aguadilla RWWTP first began operations in the late 1980s and the design life of the facility is considered to be 40 years.

PRASA has not requested an increase in the permitted effluent flow limitations for the Aguadilla RWWTP or a change in concentration-based BOD₅ and TSS effluent limitations that would affect permitted loadings. PRASA does not anticipate any changes in the service area or population which would result in increased flow over the term of the next permit. PRASA provided the following projected daily effluent volume and mass emissions in the Renewal Application, based on maximum daily flow and concentration limitations. Since no increase in permitted discharge is anticipated, these projections are anticipated for the foreseeable future:

Average flow conditions

Effluent flow: 8 mgd (used for calculation but not a permit limitation) = 0.3505 m³/sec

BOD₅ (monthly average): 3,213.07 kilograms per day (kg/day) = 1,772.77 metric tons per year (mt/yr)

TSS (monthly average): 2,121.84 kg/day = 774.47 mt/yr

Maximum flow conditions

Effluent flow: 16 mgd = 0.701 m³/sec

BOD₅ (Daily Maximum): 6,426.16 kg/day = 2,345.55 mt/yr

TSS (monthly average): 4,243.68 kg/day = 1,548.94 mt/yr

Since the modified discharge will not result in any new or substantially increased discharges of BOD₅ and TSS above the discharge specified in the 301(h) modified permit, and since the applicant provided projections of effluent volume and mass loadings for BOD₅ and TSS, EPA concludes that the applicant has met the requirements of 40 CFR§ 125.67.

9. Primary or equivalent treatment requirements [Section 301(h)(9), 40 CFR § 125.60]

Section 301(h)(9) of the Act was amended by Section 303(d)(1) and (2) of the WQA. Under Section 303(d)(1), the applicant's effluent must be receiving at least primary or equivalent treatment at the time its 301(h) modified permit becomes effective. Section 303(d)(2) defines primary or equivalent treatment as a means of treatment by screening, sedimentation, and skimming adequate to remove at least 30 percent of the BOD₅ and TSS in the POTW's influent and disinfection, where appropriate. To ensure that the effluent discharge has received primary or equivalent treatment, 40 CFR § 125.60 requires that the applicant perform monitoring of influent and effluent and assess BOD₅ and TSS removal rates based on a monthly average.

Since 2000, the Aguadilla RWWTP has demonstrated that it can achieve at least primary or equivalent treatment with 30 percent removal of BOD₅ and 50 percent removal of TSS, with some exceptions. The facility was compliant with their BOD₅ removal requirement of 30% but exceeded their TSS removal requirement of 50% three times: in June 2002 (46 percent), in January 2010 (41 percent), and in January 2019 (37 percent). In all cases of TSS exceedances, removal of at least 30% still occurred. Between August 2000 and December 2021, monthly average removal rates for BOD₅ ranged from 36 percent (January 2004) to 97 percent (January 2013) and removal rates for TSS ranged from 37 percent (January 2019) to 100 percent (October 2013). The proposed removal requirements for the next permit term reflect those established in the current modified permit for the Aguadilla RWWTP and are consistent with the requirements of Section 301(h) for primary treatment of influent based on a minimum of 30 percent removal of BOD₅ and TSS. Because the applicant has performed monitoring and ensured, based on the monthly average results of the monitoring, that the effluent it discharges has received primary or equivalent treatment, EPA concludes that the applicant has met the requirements of Section 301(h)(9), 40 CFR § 125.60.

COMPLIANCE WITH APPLICABLE PROVISIONS OF COMMONWEALTH, LOCAL, OR OTHER FEDERAL LAW OR EXECUTIVE ORDERS

Under 40 CFR § 125.59(b)(3), a modified permit may not be issued if such issuance would conflict with applicable provisions of Commonwealth, local, or other federal laws or Executive Orders. As part of the renewal application, the applicant must demonstrate compliance with all applicable Commonwealth and federal laws, regulations and Executive Orders which include the Coastal Zone Management Act, the Marine Protection Research and Sanctuaries Act, and the Endangered Species Act.

1. Coastal Zone Management Act

Under 40 CFR § 125.59(b)(3), a modified permit must comply with the Coastal Zone Management Act (CZMA) of 1972, as amended, 16 U.S.C. § 1451 *et seq.* In accordance with 16 U.S.C. § 1456(c)(3)(A), and its implementing regulations, a 301(h) modified permit may not be issued unless the proposed discharge is certified by the Commonwealth of Puerto Rico to be consistent with the Commonwealth's Coastal Zone Management Program. The Aguadilla RWWTP's outfall and diffuser are located in a coastal area managed by the Commonwealth's Coastal Zone Management Program. On May 30, 2023, the Puerto Rico Planning Board granted a CZMA consistency certification for the modified discharge from the Aguadilla RWWTP (Puerto Rico Planning Board 2023).

2. Marine Protection, Research and Sanctuaries Act

40 CFR § 125.59(b)(3) provides that issuance of a section 301(h) modified permit must comply with Title III of the Marine Protection, Research and Sanctuaries Act (MPRSA), 16 U.S.C. § 1431 *et seq.* In accordance with 16 U.S.C. § 1434(d), a 301(h) modified permit may not be issued for a discharge located in a marine sanctuary designated pursuant to Title III of the MPRSA if the regulations applicable to the sanctuary prohibit issuance of such a permit.

The Aguadilla RWWTP's outfall is not located in a marine or estuarine sanctuary designated under Title III of the MPRSA. This was confirmed in a June 4, 1987 letter from NOAA. Because the location of the outfall has not changed and a marine or estuarine sanctuary has not been designated under Title III of the MPRSA near the Aguadilla RWWTP outfall, NOAA's 1987 determination is sufficient to meet the requirements of 40 CFR § 125.59(b)(3).

3. Endangered Species Act

Under 40 CFR § 125.59(b)(3), a section 301(h) modified permit may not be issued if the proposed discharge will adversely impact threatened or endangered species or critical habitat listed pursuant to the Endangered Species Act (ESA), 16 U.S.C. § 1531 *et seq.* Because threatened or endangered species might occur in the vicinity of the Aguadilla RWWTP outfall, PRASA prepared a Biological Evaluation (BE) to evaluate the potential effects of the Aguadilla RWWTP discharge on threatened and endangered species and critical habitat (Jacobs 2020b). In a letter dated June 1, 2020, NMFS concluded that the effects of the 301(h) waiver are not likely to adversely affect the subject ESA-listed species (NOAA NMFS 2020). In a letter dated August 15, 2023, the US Fish and Wildlife Service (USFWS) concluded that the discharge may affect, but is not likely to adversely affect, the Antillean manatee, and no adverse impacts to designated critical habitat are anticipated (USFWS 2023).

4. Magnuson-Stevens Fishery Conservation and Management Act

Under 40 CFR § 125.59(b)(3), a modified permit must comply with applicable provisions of Federal laws including the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1976, 16 U.S.C. § 1801 *et seq.*, which protects against adverse impacts to Essential Fish Habitat (EFH). As required by MSFCMA, EPA must demonstrate that an approval of a 301(h) waiver for the Aguadilla RWWTP will not result in adverse impact to any EFH. In a letter dated June 6, 2024, NOAA NMFS concluded that no EFH Conservation Recommendations are required (NOAA NMFS 2024).

5. Executive Order on Coral Reef Protection

On June 11, 1998, the President issued an Executive Order on Coral Reef Protection directing federal agencies to expand research, preservation, and restoration activities for the protection of coral reef ecosystems. As described previously, there are no significant coral reefs in the vicinity of the outfall. In the letter dated June 1, 2020, NMFS noted that the previous August 13, 2013 concurrence considered all currently listed coral species. In the letter, NMFS concurred with PRASA's determination that the Aguadilla RWWTP discharge may affect, but is not likely to adversely affect, coral critical habitat and that the Aguadilla RWWTP discharge will have no effect on ESA-listed corals (NOAA NMFS 2020). Therefore, EPA has determined that the modified discharge is consistent with the Executive Order on Coral Reef Protection.

At this time, EPA is not aware any additional Commonwealth or local laws that need to be addressed prior to issuance of a final modified permit for the Aguadilla RWWTP.

COMMONWEALTH CONCURRENCE OF SECTION 301(h) MODIFICATION

Under 40 CFR §§ 125.61(b)(2) and 125.64(b), the applicant must provide a determination signed by the state or interstate agency authorized to provide certification under 40 CFR §§ 124.53 and 124.54 that the modified discharge will comply with applicable provisions of Commonwealth law including water quality standards. The state determination shall include a discussion of the basis for its conclusion. Furthermore, pursuant to 40 CFR §§ 124.53 and 124.54, the Commonwealth of Puerto Rico must either grant a certification pursuant to Section 401 of the Act or waive this certification before EPA may issue a modified permit.

In May 2020, PRASA requested a determination from the DNER that the modified discharge from the Aguadilla RWWTP will comply with all applicable provisions of Commonwealth law. On September 29, 2023, the DNER issued a WQC that certified that the modified discharge will comply with all applicable provisions of Commonwealth law including applicable water quality standards and will not result in any additional treatment requirements on any point or nonpoint sources (DNER 2023).

REFERENCES

- Boyer, J.N. and H.O. Briceño. 2009. 2009 Annual Report of the Water Quality Monitoring Report for the Water Quality Protection Program of the Florida Keys National Marine Sanctuary. Southeast Environmental Research Center, Florida International University, Miami, FL.
- CH2M HILL. 2012. Quality Assurance Project Plan and Sampling and Analysis Protocols for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies (QAPP/SAP). Revision No. 3. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Ft. Lauderdale, FL.
- CH2M HILL. 2017. 2017 Dry Season Report for the Aguadilla RWWTP 301(h) Waiver Monitoring Studies, February/March 2017. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.
- DNER (Department of Natural and Environmental Resources). 2022. Intent to Issue a Water Quality Certificate and Authorize an Interim Mixing Zone (IMZ), Aguadilla Regional Wastewater Treatment Plant. San Juan, PR.
- DNER. 2023. Water Quality Certificate and Authorize an Interim Mixing Zone (IMZ), Aguadilla Regional Wastewater Treatment Plant. San Juan, PR.
- Dyer, S.D., C.E. White-Hull and B.K. Shephard. 2000. Assessments of chemical mixtures via toxicity reference values over predict hazard to Ohio fish communities. *Environ. Sci. Technol.* 34:2518-2524.
- EPA (U.S. Environmental Protection Agency). 1994. Amended Section 301(h) Technical Support Document. EPA-842-B-94-007. U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds, Washington, DC.
- EPA (U.S. Environmental Protection Agency). 2015. Aguadilla 301(h) Regional Wastewater Treatment Plant NPDES Permit PR0023736. U.S. Environmental Protection Agency, Region 2, New York, NY.
- EPA (U.S. Environmental Protection Agency). 2023. Discharge Monitoring Report (DMR) Data for NPDES ID PR0023736, January 2017 – December 2021. Integrated Compliance Information System (ICIS). U.S. Environmental Protection Agency, Office of Compliance, Washington, DC. Accessed April 11, 2023.
- Jacobs. 2021a. 2021 Dry Season Report for the Aguadilla RWWTP 301(h) Waiver Monitoring Studies, March 2021. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.
- Jacobs. 2021b. 2020 Wet Season Report for the Aguadilla RWWTP 301(h) Waiver Monitoring Studies, October 2020. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.

- Jacobs, 2020a. Application for a Water Quality Certificate and Definition of a Mixing Zone for the Aguadilla RWWTP Outfall System. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.
- Jacobs, 2020b. Biological Evaluation of Potential Effects of the Aguadilla RWWTP Ocean Outfall Operation on Listed Marine Species. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.
- Jacobs, 2020c. Renewal Application for 301(h) Waiver for the Aguadilla RWWTP. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.
- Jacobs. 2019a. 2019 Dry Season Report for the Aguadilla RWWTP 301(h) Waiver Monitoring Studies, March 2019. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.
- Jacobs. 2019b. 2018 Wet Season Report for the Aguadilla RWWTP 301(h) Waiver Monitoring Studies, October 2018. Prepared for the Puerto Rico Aqueduct and Sewer Authority. Guaynabo, PR.
- NOAA (National Oceanic and Atmospheric Administration) NMFS (National Marine Fisheries Service). 2020. Concurrence Letter for the 301(h) Waiver Renewals for the Arecibo Regional Wastewater Treatment Plant (RWWTP) and Aguadilla RWWTP National Pollutant Discharge Elimination System Permits. Silver Springs, MD.
- NOAA (National Oceanic and Atmospheric Administration) NMFS (National Marine Fisheries Service). 2024. Aguadilla RWWTP and Arecibo RWWTP EFH Consultation Letter. St. Petersburg, FL.
- PRASA (Puerto Rico Aqueduct and Sewer Authority). 2023. PRASA Industrial Pretreatment Program Annual Report FY 2021-2022. San Juan, PR.
- PRASA (Puerto Rico Aqueduct and Sewer Authority). 2020. NPDES Permit Renewal Application for Aguadilla Wastewater Treatment Plant PR0023736. San Juan, Puerto Rico.
- Puerto Rico Planning Board. 2023. Certificación de Compatibilidad Federal No. CZ-2023-0427-076 NPDES No. 0023736. San Juan, Puerto Rico.
- USFWS (United States Fish and Wildlife Service). 2023. Biological Evaluation of Potential Effects of the Aguadilla Regional Wastewater Treatment Plant Ocean Outfall Operation on the Antillean Manatee. Boquerón, Puerto Rico.