Southern Puerto Rico Drinking Water Well Sampling Report

September – 2023

United States Environmental Protection Agency
Region 2

Introduction

There has been historic concern expressed by community groups and environmental organizations in southern Puerto Rico, that public drinking water may have been impacted by the leaching of metals from suspected or known Historical Agremax Placement Sites (HAPS). This concern was highlighted as part of the Administrator's 2022 Journey to Justice tour in Puerto Rico. A sampling plan to address these concerns was developed jointly between multiple divisions within EPA Region 2 and then shared with and further refined with input by PRASA, PRDNER, and PRDOH. A synoptic round of Puerto Rico Aqueduct and Sewer Authority (PRASA) drinking water well sampling was proposed by EPA.

EPA held a community meeting on December 14, 2022 to present the proposed water sampling plan. The plan initially intended to sample all active PRASA groundwater wells serving communities in Santa Isabel, Salinas, Guayama and Arroyo. The community members/environmental groups had several requests including the sampling of:

- Specific wells of interest to the community
- PRASA Guayama Water Treatment Plant

In addition, several PRASA standby wells were added for sampling.

This report summarizes the groundwater data collected by EPA in April and May 2023 from all active and several standby wells in the Arroyo, Guayama, Salinas, and Santa Isabel regions of southern Puerto Rico, and influent and effluent water for the PRASA Guayama Water Treatment Plant (WTP). The PRASA Guayama WTP draws water from the Patillas irrigation surface water channel that directs water from Lake Patillas to the pump station (in Rexmanor) that then pumps the raw water to the treatment plant. Additional water from two PRASA groundwater wells is used by the Guayama WTP during dry seasons or when turbidity readings of the influent surface water exceed 400 NTU. At the Guayama WTP, raw surface water is treated with coagulation/filtration and chlorination before being placed in a storage tank prior to distribution. A main distribution line draws water from the storage tank into the public water distribution system lines.

Historical Groundwater Results

Prior to conducting the synoptic round of sampling in April and May 2023, EPA reviewed historical results from sampling of drinking water wells conducted by PRASA between April 2015 and August 2022. Total metals concentration results for all active PRASA wells sampled from April 2015 to August 2022 are presented in Appendix A and compared to applicable drinking water criteria (Maximum Contamination Limits – MCLs). Individual wells appear to be sampled on a three-year cycle – consequently, not all wells are sampled in the service area at the same time. During the past 8-year period, no drinking water criteria for metals were exceeded for any of the well sampling events. Note, however, that not all metals regulated under EPA's Coal Combustion Residuals (CCR) Rule were analyzed for (eight of the metals identified in Appendix 4 of the CCR rule were analyzed for).

Sampling and Analysis

During the 2023 synoptic sampling, EPA sampled PRASA wells by direct fill of pre-preserved sample containers from pre-treatment sampling ports prior to treatment of the groundwater and preserved with acid (HNO_3) to pH<2 as per the approved Quality Assurance Project Plan (QAPP). The QAPP was approved on April 11, 2023.

Sample collection occurred from April 18 through April 26, 2023, at 30 wells, including four QA/QC duplicates, for a total of 35 water samples. At each PRASA well location, two main faucets (sampling ports) are present: one for raw untreated water, and one for water after treatment with chlorine. All grab water samples were taken from the raw water faucet. None of the water samples collected from wells had an odor or noticeable turbidity.

EPA collected samples at the Guayama WTP on April 26, 2023. Initially, only a raw unfiltered sample of the influent water was obtained. The sample was obtained from a faucet at the laboratory that brings water from the irrigation channel from Patillas Lake. This unfiltered sample was collected in a preserved (and acidified) container. However, this sample was brownish in color and extremely cloudy from suspended sediment and fine plant debris resulting from 41.9 mm of rain the day prior to sampling (see sampling report in Appendix C). As a result of the sample turbidity, color, and appearance, a second sampling event of the Guayama WTP was scheduled and occurred on May 18, 2023. For the second event, both filtered and unfiltered intake water and unfiltered effluent water (after treatment) were collected. Further details are provided below.

The PRASA Guayama WTP samples collected on May 18, 2023, were obtained from both intake and effluent locations. For this second event, the intake raw surface water samples were taken directly from the irrigation channel that directs water via the Patillas irrigation canal from Patillas Lake to the pump station for the treatment plant. The effluent samples were taken from the faucet at the laboratory that brings water from the outlet of the storage tank and the beginning of the distribution line. Note there are 3 faucets at the laboratory. There is an intake faucet, and effluent faucet, and a regular tap water faucet (please see attached photographs within the sampling trip report).

Samples were containerized under chain of custody procedures specified in the QAPP and shipped to the USEPA analytical laboratory in Edison, New Jersey. Samples to be filtered in the laboratory were unpreserved (not acidified). Guayama filtered influent water was filtered with a 0.45 µm filter prior to analysis. All samples were analyzed for 23 Target Analyte List (TAL) metals plus Boron, Lithium and Molybdenum using EPA Method 200.7. Surface water samples were also analyzed for hardness (as $CaCO_3$) using EPA 200.7. All results were validated by EPA personnel. The sampling reports detailing all sampling activities, including sample Chain-of-Custody forms and photographic documentation, are presented in Appendix C and D.

Results

Total metals concentration results for all active and five standby PRASA wells sampled from April 18 through 26, 2023 and compared to applicable drinking water criteria (Maximum Contaminant Levels – MCLs) are presented in Appendix B – Table 1. No drinking water criteria for metals were exceeded for any of the PRASA wells.

Metals results for the Guayama WTP are presented in Appendix B – Table 2. No drinking water criteria for metals were exceeded in the raw influent and treated effluent water collected on May 18, 2023.

The initial raw water sample collected on April 26, 2023, at the Guayama WTP, while odorless, was brownish, and extremely cloudy from suspended sediment and plant debris due to a recent rainfall event. It rained the day before the sampling event and approximately 41.9 mm of rain fell. All samples collected on April 26, 2023, were acidified to a pH<2. The acidification resulted in several of the minerals/natural elements present in the suspended plant material and sediment (e.g., Aluminum, Lead, Manganese, Nickel, Barium, Cobalt, Copper, Vanadium, Zinc, Iron, etc.) leaching into the sample water. Cobalt was the only compound above its MCL. When

compared to the filtered and unfiltered samples collected on May 18, 2023, the sample collected on April 26, 2023, contained higher levels of these minerals/metals, with cobalt being the only result above its MCL. The photos of the samples collected on April 26, 2023, after acidification show much of the suspended and plant detrital material at the bottom of the sample container and can be viewed in the appendices. The acidification process resulted in the leaching of these elements into the water sample after sample collection and are not representative of dissolved metals in the sampled surface water. Further, the results of the WTP samples of the untreated and treated water collected on May 18, 2023, were all well below drinking water criteria for metals.

APPENDIX A

PRASA Wells Historical Metal Results
PRASA Sampling Results from April 2015 to August 2022

See Microsoft Excel File: "Appendix A – Table 1 – Historical PRASA Data"

Appendix A – Table 1

See Microsoft Excel File: “Appendix A – Table 1 – Historical PRASA Data”

APPENDIX B

PRASA Wells and Guayama DWTP Influent and Effluent Water Sample Results
April 18 through April 26, 2023
and
May 18, 2023

See Microsoft Excel File:
"Appendix B – Tables 1 and 2 – PRASA Wells and Guayama DWTP Sample Results"

Appendix B – Table 1
PRASA Wells Sample Results
April 18 through April 26, 2023

See Microsoft Excel File: “Appendix B – Tables 1 and 2 – PRASA Wells and Guayama DWTP Sample Results”

Appendix B – Table 2
PRASA Guayama DWTP Influent and Effluent Water Sample Results
April 26, 2023, and May 18, 2023

See Microsoft Excel File: “Appendix B – Tables 1 and 2 – PRASA Wells and Guayama DWTP Sample Results”

APPENDIX C

April 18 through 26, 2023 Sampling Trip Report

Weston Solutions, Inc.
1090 King Georges Post Road, Suite 201 Edison,
New Jersey 08837-3703
Phone: 732-585-4400
www.westonsolutions.com

SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V EPA
CONTRACT NO.: 68HE0319D0004

May 5, 2023

Mr. Carlos Huertas, On-Scene Coordinator
U.S. Environmental Protection Agency, Region II Caribbean
Environmental Protection Division, Region II City View
Plaza Tower 2, Suite 7000
48 State Rd. 165, km 1.2, Guaynabo, Puerto Rico 00968-8069

EPA CONTRACT No: 68HE0319D0004 TD
No.: TO-0031-0113
DC No.: STARTV-04-D-0139
SUBJECT: TECHNICAL ASSISTANCE SAMPLING REPORT PRASA SOUTHERN FACILITIES GUAYAMA, SALINAS, ARROYO, AND SANTA ISABEL, PUERTO RICO

Dear Mr. Huertas,

Enclosed please find the Technical Assistance Sampling Report which summarizes the sampling activities conducted by the U.S. Environmental Protection Agency, Region II (EPA) with the support of Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V) at 31 Puerto Rico Aqueduct and Sewer Authority (PRASA) Southern Facilities located in the municipalities of Guayama, Salinas, Arroyo, and Santa Isabel, Puerto Rico. This report summarizes the sampling activities conducted at the facilities on April 18 through 26, 2023.

If you have any questions or comments, please do not hesitate to contact me at (787) 602-8424.

Sincerely,

WESTON SOLUTIONS, INC.

Hector Rodríguez Cesaní START V Site Project Manager

Enclosure
cc: TD File: TO-0031-0113

TECHNICAL ASSISTANCE SAMPLING REPORT

PRASA SOUTHERN FACILITIES

Guayama, Salinas, Arroyo, and Santa Isabel, Puerto Rico

Site Code: Not Applicable CERCLIS Code: Not Applicable

Prepared by:

Superfund Technical Assessment & Response Team V Weston Solutions, Inc.
Federal East Division Edison, New Jersey 08837

Prepared for:

U.S. Environmental Protection Agency, Region II Superfund and Emergency Management Division
2890 Woodbridge Avenue Edison, New Jersey 08837

DC No: STARTV-04-D-0139 TD No: TO-0031-0113
EPA CONTRACT No: 68HE0319D0004

May 2023

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LIST OF ATTACHMENTS

1.0 Introduction

On April 18 through 26, 2023, the U.S. Environmental Protection Agency, Region II (EPA) and Weston Solutions Inc., Superfund Technical Assessment & Response Team V (START V) conducted a drinking water sampling event as part of Technical Assistance activities at the Puerto Rico Aqueduct and Sewer Authority (PRASA) Southern Facilities Site (the Site), which includes 31 southern PRASA facilities located in the municipalities of Guayama, Salinas, Arroyo, and Santa Isabel, Puerto Rico. The Scope of Work (SOW) included the collection of 35 drinking water samples, including quality assurance/quality control (QA/QC) samples.

1.1 Site Location and Description

The Site is comprised of four Municipalities (Santa Isabel, Salinas, Guayama, and Arroyo) along southern Puerto Rico. These municipalities use the southern aquifer wells as their main potable water source.

1.2 Site History and Background

Southern Puerto Rico has been highlighted as part of Administrator Reagan's Journey to Justice tour to spotlight longstanding environmental justice concerns. Concern was expressed by community groups and environmental organizations in the municipalities of Guayama, Salinas, Arroyo, and Santa Isabel that public drinking water may have been impacted by the leaching of Coal Combustion Residuals (CCR) metals from suspected or known Historical Agremax Placement Sites (HAPS). Region 2 is coordinating with PRASA, the Puerto Rico Department of Health, and the Puerto Rico Department of Natural and Environmental Resources (DNER) to evaluate groundwater collected from drinking water wells within the southern aquifer currently used by PRASA for the presence of metals.

2.0 Scope of Work

As part of the SOW for the Technical Assistance at the Site, START V was tasked by EPA with providing two Core Response Team (CRT) members to collect drinking water samples at 30 groundwater wells and one drinking water treatment plant. Samples were collected directly from the taps associated with the PRASA wells. All samples were submitted to the EPA Laboratory Services and Applied Sciences Division (LSASD) laboratory for target analyte list (TAL) metals plus boron, lithium, and molybdenum (TAL metals + B, Li, Mo) analysis via EPA Method 200.7 and mercury (Hg) analysis via EPA Method 245.1. In addition, START V completed photographic documentation, notation in the Site logbook of all Site activities, entered sampling information into the Site-Specific EPA SCRIBE data management system, and documented sampling locations using global positioning system (GPS) technology. All field activities were performed in Level D personal protective equipment (PPE).

3.0 On-Site Personnel

Name	Affiliation	Duties On-site
Jose Lugo	EPA, Region II	EPA Representative
Hector Rodríguez	Weston Solutions, Inc., START V	Site Project Manager, Site Health & Safety, Sample Collection and Management, GPS Locational Data Collection
Gabriela Rodríguez	Weston Solutions, Inc., START V	Sample Collection and Management
Sean Quinn	Weston Solutions, Inc., START V	Sample Collection and Management

EPA: U.S. Environmental Protection Agency START V: Superfund Technical Assessment & Response Team V GPS: Global Positioning System

4.0 Site Activities and Observations

On April 18, 2023, EPA and START V mobilized to the Site to conduct the sampling event, which consisted of 30 wells and one drinking water treatment plant located along southern Puerto Rico. The samples activities performed from April 18 through 26 included collecting a total of 35 water samples, including four QA/QC samples. All samples were submitted for TAL metals + B, Li, Mo and Hg analysis. At each PRASA well location, two main faucets were present: one with raw water, and one with water treated with chlorine. All grab water samples were taken from the raw water faucet. None of the water samples collected from wells had an odor or noticeable turbidity. The samples from the Guayama Drinking Water Treatment Plant were from a river and had a brownish color with no odor.

Refer to Attachment A, Figure 1: Site Location Map, Figure 2: Sampling Locations, and Attachment B: Photographic Documentation Log.

5.0 Sampling Methodology

All sampling activities were conducted in accordance with EPA's Environmental Response Team (ERT) Standard Operating Procedure (SOP) Number (No.) 2001: *General Field Sampling Guideline*. A total of 35 water samples, including QA/QC samples consisting of field duplicate samples and additional sample volumes designated as matrix spike/matrix spike duplicate (MS/MSD) were collected as part of the Technical Assistance sampling event at the Site. Prior to sampling the wells, it was necessary to evacuate the standing water from the well, storage tank, and/or plumbing. This was accomplished by opening the cold water tap and purging the system for approximately 10 minutes and listening for the pump to turn on. This served as a good indicator that the wellhead, tank, and the plumbing had been evacuated. Any aerators, strainers and/or hose attachments present on the spigot were removed prior to purging. Grab drinking water samples were collected with 1 liter poly sample containers preserved with nitric acid to pH below 2 and stored immediately following collection to maintain a temperature of 4 degrees Celsius (°C). All samples were submitted for analysis of TAL metals + B, Li, Mo via EPA Method 200.7 and mercury via EPA Method 245.1. START V also completed photographic documentation, notation in the Site logbook of all Site activities, entered sampling information into the Site-Specific EPA SCRIBE data management system, and documented sampling locations using GPS technology.

Refer to Attachment B: Photographic Documentation Log.

6.0 Laboratory Receiving Samples

The following laboratory was utilized for analysis of the samples collected during April 18th through the 26th, 2023 sampling event:

Laboratory	Sample Matrix	Analysis
EPA LSASD Laboratory 2890 Woodbridge Avenue Bldg. 209, MS-230 Edison, NJ 08837 Attn: Ness Tirol Phone: 732-906-6886 **Project #: P-2304019**	Aqueous	TAL Metals + B, Li, Mo and Hg

7.0 Sample Collection and Dispatch

From April 18 through 26, 2023, START V collected a total of 35 water samples, including four field duplicate samples, at 30 groundwater wells and one drinking water treatment plant. On April 20, 2023, 21 water samples, including two field duplicate samples, collected on April 18 and 19, 2023 were shipped under chain of custody (COC) Record No. 2-042023-124729-0001 and FedEx Airbill No. 7719-1284-2373 to the EPA LSASD laboratory located in Edison, New Jersey for TAL metals + B, Li, Mo and Hg analysis. On April 27, 2023, 14 water samples, including two field duplicate samples, collected on April 25 and 26, 2023 were shipped under COC Record No. 2- 042623-171213-0002 and FedEx Airbill No. 7719-8512-9177 to the EPA LSASD laboratory located in Edison, New Jersey for TAL metals + B, Li, Mo and Hg analysis.

Refer to Attachment A, Figure 2: Sampling Locations and Attachment C: Chains of Custody Records.

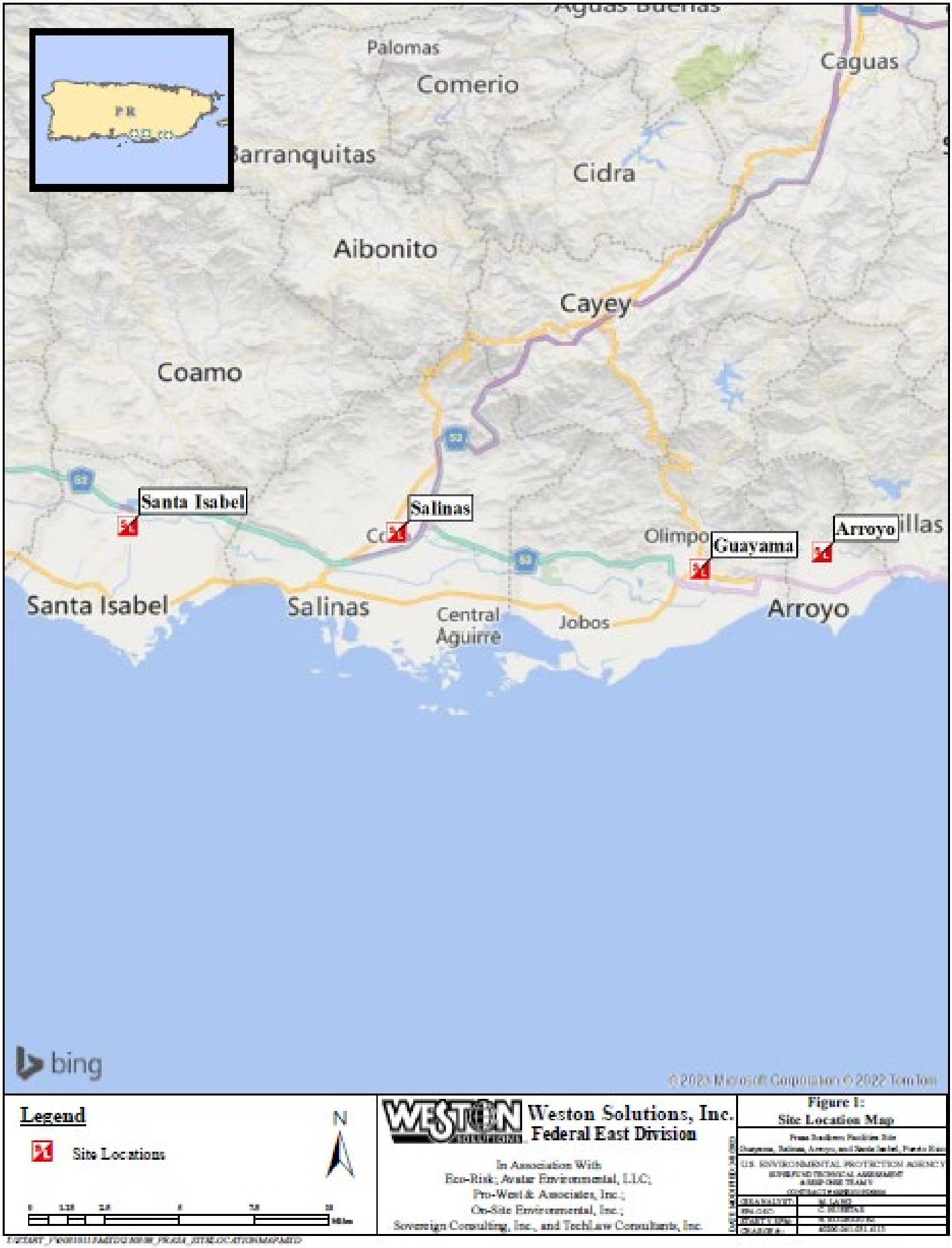
Report prepared by: _____ 05/05/2023
Hector Rodríguez Cesaní — Date START V Site
Project Manager

Report reviewed by: _____ 05/05/2023
Michael Lang — Date
START V Deputy Program Manager

Attachment A

Figure 1: Site Location Map

Figure 2: Sampling Locations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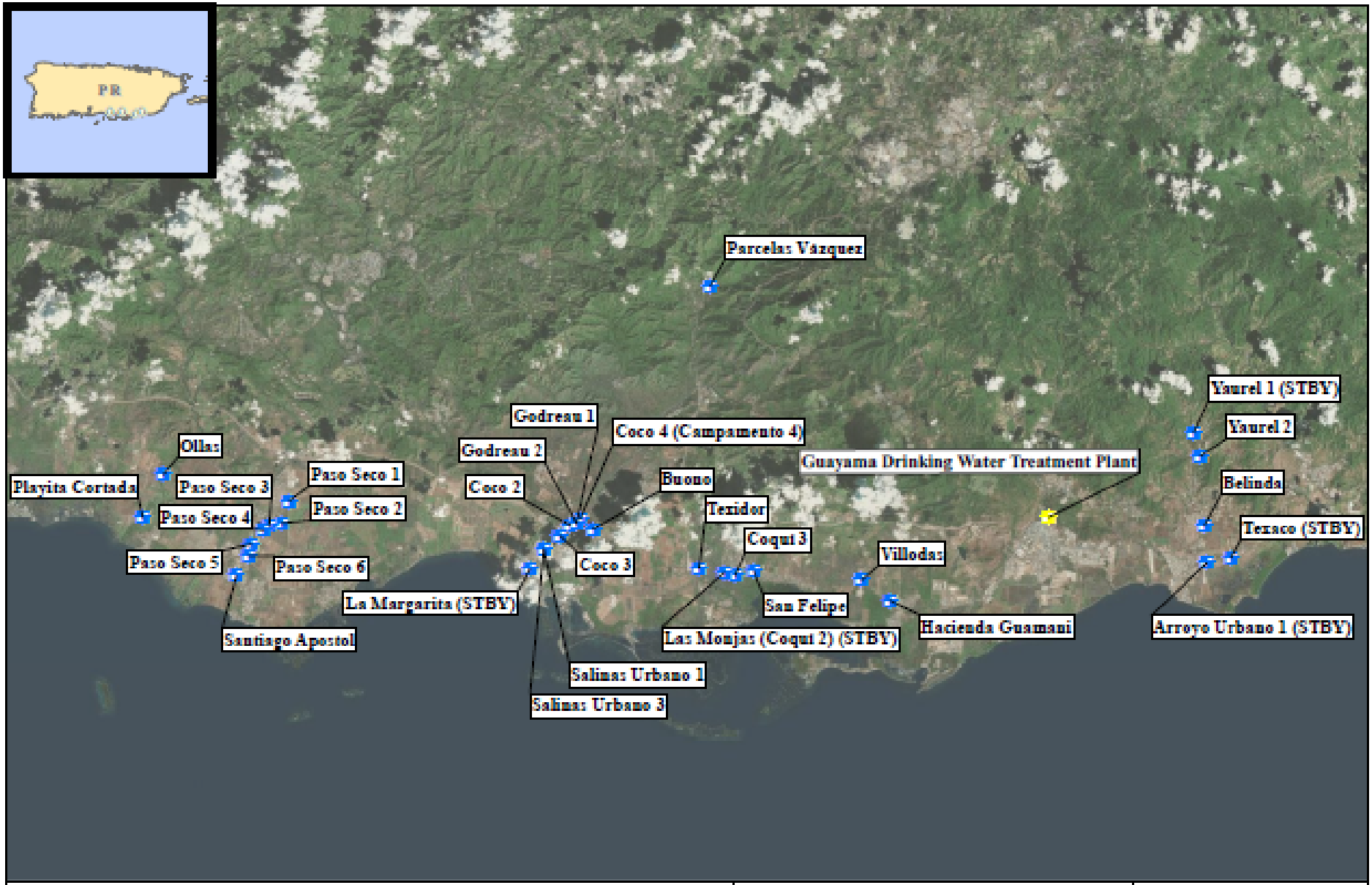
Barranquitas
Cidra
Aibonito
Cayey
Coamo
Santa Isabel
Salinas
Guayama
Arroyo
Olimpo
Central Aguirre
Jobos
bing
© 2021 Microsoft Corporation © 2022 TomTom
Legend
Site Locations
N
Weston Solutions, Inc.
Federal East Division
In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
Sovereign Consulting, Inc., and TechLaw Consultants, Inc.
Figure 1:
Site Location Map
U.S. ENVIRONMENTAL PROTECTION AGENCY

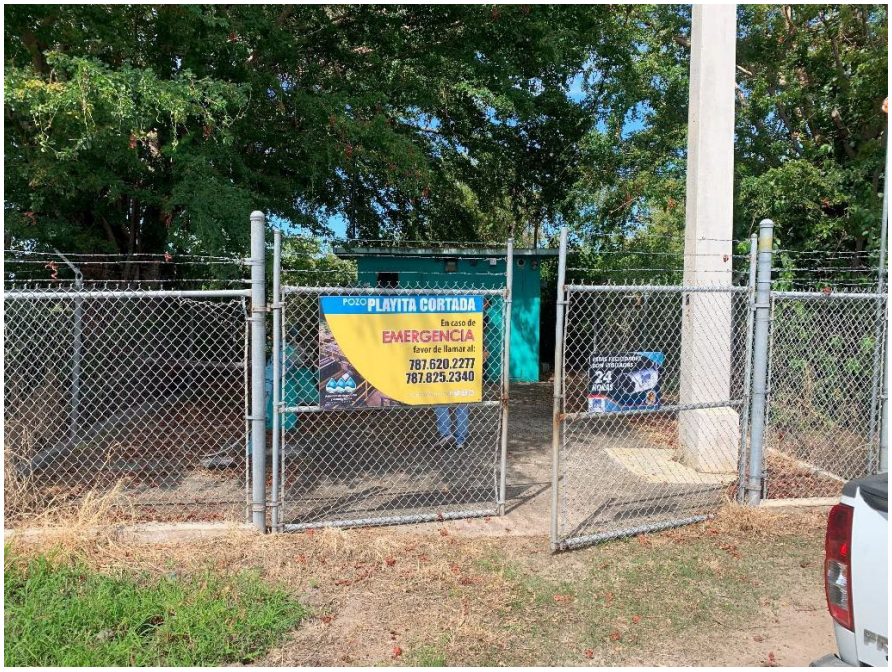


Y:\START_V\00310113\MXD\230502_PRASA_WellLocations_8.5x11_Landscape.mxd

Attachment B

Photographic Documentation Log

Photographic Documentation Log
PRASA Southern Facilities
Guayama, Salinas, Arroyo, and Santa Isabel, Puerto Rico
April 18 through April 26, 2023



Photograph 1: On April 18, 2023, Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V) and the U.S. Environmental Protection Agency, Region II (EPA) began the drinking water sampling event associated with the Puerto Rico Aqueduct and Sewer Authority (PRASA) Southern Facilities Site (the Site). This is a view of a typical PRASA well location.

Photograph 2: View of the Playita Cortada Well. This exterior layout was typical throughout the sampling event.

Photograph 3: View of START V team member collecting a drinking water sample at the Playita Cortada Well.

Photograph 4: View of the drinking water sample collected at the Playita Cortada Well.

Photograph 5: View of a START V team member preserving a drinking water sample with nitric acid.

Photograph 6: View of the Playita Coqui 2 (Las Monjas) Well. This exterior layout was typical throughout the sampling event.

Photograph 7: View of the Playita Coqui 2 (Las Monjas) Well. This interior layout was typical throughout the sampling event.

Photograph 8: View of PRASA personnel working at the Godreau 1 and 2 Wells.

Photograph 9: View of the Guayama DW Treatment Plant sampling location.

Photograph 10: View of START V team member collecting influent drinking water samples at the Guayama DW Treatment plant.

Photograph 11: View of influent drinking water samples collected from the Guayama DW Treatment Plant.

Attachment C

Chains of Custody Records

USEPA
DateShipped: 4/20/2023
CarrierName: FedEx
AirbillNo: 771912842373

CHAIN OF CUSTODY RECORD
PRASA Sampling/PR
Contact Name: Hector Rodriguez
Contact Phone: 787-602-8424

No: 2-042023-124729-0001
Cooler #: 3
Lab: LSASD
Lab Phone: 732-321-4431

Lab #	Sample #	Location	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	P001-Ollas-230418-01	Ollas	ICP TAL Metal + Mercury	Water	4/18/2023	10:03	1	1 L poly	HNO3 pH<2	N
	P002-Playita-230418-01	Playita Cortada	ICP TAL Metal + Mercury	Water	4/18/2023	12:38	1	1 L poly	HNO3 pH<2	N
	P003-Santiago-230418-01	Santiago Apostol	ICP TAL Metal + Mercury	Water	4/18/2023	10:41	1	1 L poly	HNO3 pH<2	N
	P004-Parcelas-230418-01	Parcelas Vazquez	ICP TAL Metal + Mercury	Water	4/18/2023	14:40	2	1 L poly	HNO3 pH<2	Y
	P004-Parcelas-230418-02	Parcelas Vazquez	ICP TAL Metal + Mercury	Water	4/18/2023	14:40	1	1 L poly	HNO3 pH<2	N
	P005-PasoSeco1-230418-01	Paso Seco 1	ICP TAL Metal + Mercury	Water	4/18/2023	12:14	1	1 L poly	HNO3 pH<2	N
	P006-PasoSeco2-230418-01	Paso Seco 2	ICP TAL Metal + Mercury	Water	4/18/2023	12:00	1	1 L poly	HNO3 pH<2	N
	P007-PasoSeco3-230418-01	Paso Seco 3	ICP TAL Metal + Mercury	Water	4/18/2023	11:43	1	1 L poly	HNO3 pH<2	N
	P008-PasoSeco4-230418-01	Paso Seco 4	ICP TAL Metal + Mercury	Water	4/18/2023	11:30	1	1 L poly	HNO3 pH<2	N
	P009-PasoSeco5-230418-01	Paso Seco 5	ICP TAL Metal + Mercury	Water	4/18/2023	11:15	1	1 L poly	HNO3 pH<2	N

Special Instructions:	**SAMPLES TRANSFERRED FROM**
	CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
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USEPA
DateShipped: 4/20/2023
CarrierName: FedEx
AirbillNo: 771912842373

CHAIN OF CUSTODY RECORD
PRASA Sampling/PR
Contact Name: Hector Rodriguez
Contact Phone: 787-602-8424

No: 2-042023-124729-0001
Cooler #: 3
Lab: LSASD
Lab Phone: 732-321-4431

Lab #	Sample #	Location	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	P010-PasoSeco6-230418-01	Paso Seco 6	ICP TAL Metal + Mercury	Water	4/18/2023	11:04	1	1 L poly	HNO3 pH<2	N
	P011-Buono-230419-01	Buono	ICP TAL Metal + Mercury	Water	4/19/2023	11:04	1	1 L poly	HNO3 pH<2	N
	P012-Coco2-230419-01	Coco 2	ICP TAL Metal + Mercury	Water	4/19/2023	10:35	1	1 L poly	HNO3 pH<2	N
	P013-Coco3-230419-01	Coco 3	ICP TAL Metal + Mercury	Water	4/19/2023	10:20	1	1 L poly	HNO3 pH<2	N
	P014-Coco4-230419-01	Coco 4	ICP TAL Metal + Mercury	Water	4/19/2023	11:20	2	1 L poly	HNO3 pH<2	Y
	P014-Coco4-230419-02	Coco 4	ICP TAL Metal + Mercury	Water	4/19/2023	11:21	1	1 L poly	HNO3 pH<2	N
	P015-Godreau1-230419-01	Godreau 1	ICP TAL Metal + Mercury	Water	4/19/2023	10:50	1	1 L poly	HNO3 pH<2	N
	P016-Godreau2-230419-01	Godreau 2	ICP TAL Metal + Mercury	Water	4/19/2023	10:49	1	1 L poly	HNO3 pH<2	N
	P017-SalinasUrb1-230419-01	Salinas Urbano1	ICP TAL Metal + Mercury	Water	4/19/2023	11:49	1	1 L poly	HNO3 pH<2	N
	P018-SalinasUrb3-230419-01	Salinas Urbano 3	ICP TAL Metal + Mercury	Water	4/19/2023	12:02	1	1 L poly	HNO3 pH<2	Y

Special Instructions:	**SAMPLES TRANSFERRED FROM**
	CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
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USEPA
DateShipped: 4/20/2023
CarrierName: FedEx
AirbillNo: 771912842373

CHAIN OF CUSTODY RECORD
PRASA Sampling/PR
Contact Name: Hector Rodriguez
Contact Phone: 787-602-8424

No: 2-042023-124729-0001
Cooler #: 3
Lab: LSASD
Lab Phone: 732-321-4431

Lab #	Sample #	Location	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	P019-La Margarita-230419-01	La Margarita	ICP TAL Metal + Mercury	Water	4/19/2023	12:22	1	1 L poly	HNO3 pH<2	N

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

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USEPA
DateShipped: 4/27/2023
CarrierName: FedEx
AirbillNo: 771985129177

CHAIN OF CUSTODY RECORD
PRASA Sampling/PR
Contact Name: Hector Rodriguez
Contact Phone: 787-602-8424

No: 2-042623-171213-0002
Cooler #: 2
Lab: LSASD
Lab Phone: 732-321-4431

Lab #	Sample #	Location	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	P020-Las Monjas-230425-01	Las Monjas (Coqui 2)	ICP TAL Metal + Mercury	Water	4/25/2023	10:05	2	1 L poly	HNO3 pH<2	Y
	P020-Las Monjas-230425-02	Las Monjas (Coqui 2)	ICP TAL Metal + Mercury	Water	4/25/2023	10:06	1	1 L poly	HNO3 pH<2	N
	P021-Coqui3-230425-01	Coqui 3	ICP TAL Metal + Mercury	Water	4/25/2023	10:20	1	1 L poly	HNO3 pH<2	N
	P022-SanFelipe-230425-01	San Felipe	ICP TAL Metal + Mercury	Water	4/25/2023	10:33	1	1 L poly	HNO3 pH<2	N
	P023-Texidor-230425-01	Texidor	ICP TAL Metal + Mercury	Water	4/25/2023	09:50	1	1 L poly	HNO3 pH<2	N
	P024-Hacienda-230425-01	Hacienda Guamani	ICP TAL Metal + Mercury	Water	4/25/2023	11:05	1	1 L poly	HNO3 pH<2	N
	P025-Villodas-230425-01	Villodas	ICP TAL Metal + Mercury	Water	4/25/2023	10:50	1	1 L poly	HNO3 pH<2	N
	P026-GuayamaDWTP-230426-01	Guayama DW Treatment Plant	ICP TAL Metal + Mercury	Water	4/26/2023	9:32	2	1 L poly	HNO3 pH<2	Y
	P026-GuayamaDWTP-230426-02	Guayama DW Treatment Plant	ICP TAL Metal + Mercury	Water	4/26/2023	9:34	1	1 L poly	HNO3 pH<2	N

Special Instructions:	**SAMPLES TRANSFERRED FROM**
	CHAIN OF CUSTODY #

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USEPA
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CarrierName: FedEx
AirbillNo: 771985129177

CHAIN OF CUSTODY RECORD
PRASA Sampling/PR
Contact Name: Hector Rodriguez
Contact Phone: 787-602-8424

No: 2-042623-171213-0002
Cooler #: 2
Lab: LSASD
Lab Phone: 732-321-4431

Lab #	Sample #	Location	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	P027-Belinda-230426-01	Belinda	ICP TAL Metal + Mercury	Water	4/26/2023	10:50	1	1 L poly	HNO3 pH<2	N
	P028-Yaurel2-230426-01	Yaurel 2	ICP TAL Metal + Mercury	Water	4/26/2023	11:15	1	1 L poly	HNO3 pH<2	N
	P029-AU1-230426-01	Arroyo Urbano 1	ICP TAL Metal + Mercury	Water	4/26/2023	10:08	1	1 L poly	HNO3 pH<2	N
	P030-Texaco-230426-01	Texaco	ICP TAL Metal + Mercury	Water	4/26/2023	10:25	1	1 L poly	HNO3 pH<2	N
	P031-Yaurel 1-230426-01	Yaurel 1	ICP TAL Metal + Mercury	Water	4/26/2023	11:25	1	1 L poly	HNO3 pH<2	N

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Transfer	Weston Start V	04/27/2023 17:30			

APPENDIX D

May 18, 2023 Sampling Trip Report

Weston Solutions, Inc.
1090 King Georges Post Road, Suite 201 Edison,
New Jersey 08837-3703
Phone: 732-585-4400
www.westonsolutions.com

SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V EPA
CONTRACT NO.: 68HE0319D0004

June 9, 2023

Mr. Carlos Huertas, On-Scene Coordinator
U.S. Environmental Protection Agency, Region II Caribbean
Environmental Protection Division, Region II City View
Plaza Tower 2, Suite 7000
48 State Rd. 165, km 1.2, Guaynabo, Puerto Rico 00968-8069

EPA CONTRACT No: 68HE0319D0004 TD
No.: TO-0031-0113
DC No.: STARTV-04-D-0155
SUBJECT: TECHNICAL ASSISTANCE SUPPLEMENTAL SAMPLING REPORT PRASA SOUTHERN FACILITIES - GUAYAMA DRINKING WATER TREATMENT PLANT
GUAYAMA, PUERTO RICO

Dear Mr. Huertas,

Enclosed please find the Technical Assistance Supplemental Sampling Report which summarizes the sampling activities conducted by the U.S. Environmental Protection Agency, Region II (EPA) with the support of Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V) at the Guayama Drinking Water Treatment Plant of the Puerto Rico Aqueduct and Sewer Authority (PRASA) Southern Facilities Site (the Site) located in the municipality of Guayama, Puerto Rico. This report summarizes the sampling activities conducted at the facility on May 18, 2023.

If you have any questions or comments, please do not hesitate to contact me at (787) 602-8424.

Sincerely,

WESTON SOLUTIONS, INC.

Hector Rodríguez Cesaní START V Site Project Manager

Enclosure
cc: TD File: TO-0031-0113

TECHNICAL ASSISTANCE SUPPLEMENTAL SAMPLING REPORT

PRASA SOUTHERN FACILITIES

Guayama Drinking Water Treatment Plant Guayama, Puerto Rico

Site Code: Not Applicable CERCLIS Code: Not Applicable

Prepared by:

Superfund Technical Assessment & Response Team V Weston Solutions, Inc.
Federal East Division Edison, New Jersey 08837

Prepared for:

U.S. Environmental Protection Agency, Region II Superfund and Emergency Management Division
2890 Woodbridge Avenue Edison, New Jersey 08837

DC No: STARTV-04-D-0155 TD No: TO-0031-0113
EPA CONTRACT No: 68HE0319D0004

June 2023

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LIST OF ATTACHMENTS

1.0 Introduction

On May 18, 2023, the U.S. Environmental Protection Agency, Region II (EPA) and Weston Solutions Inc., Superfund Technical Assessment & Response Team V (START V) conducted a water sampling event as part of Technical Assistance activities at the Guayama Drinking Water Treatment Plant (GDWTP), located in Guayama, Puerto Rico. The GDWTP is part of the Puerto Rico Aqueduct and Sewer Authority (PRASA) Southern Facilities Site (the Site). The Scope of Work (SOW) included the collection of six water samples, including quality assurance/quality control (QA/QC) samples.

1.1 Site Location and Description

The GDWTP is located in the Municipality of Guayama, Puerto Rico. The GDWTP is fed by raw water pumped at the Rexmanor pumping station from Patillas Lake irrigation channels to the GDWTP, which is then treated and distributed.

Refer to Attachment A, Figure 1: Site Location Map.

1.2 Site History and Background

Southern Puerto Rico has been highlighted as part of Administrator Reagan's Journey to Justice tour to spotlight longstanding environmental justice concerns. Concern was expressed by community groups and environmental organizations in the municipalities of Guayama, Salinas, Arroyo, and Santa Isabel that public drinking water may have been impacted by the leaching of Coal Combustion Residuals (CCR) metals from suspected or known Historical Agremax Placement Sites (HAPS). Region 2 is coordinating with PRASA, the Puerto Rico Department of Health, and the Puerto Rico Department of Natural and Environmental Resources (DNER) to evaluate groundwater collected from drinking water wells within the southern aquifer currently used by PRASA for the presence of metals.

From April 18 through 26, 2023, START V collected a total of 35 water samples, including four field duplicate samples, at 30 groundwater wells and the GDWTP associated with the Site. All samples were submitted for target analyte list metals plus boron, lithium, and molybdenum (TAL metals + B, Li, Mo) analysis via EPA Method 200.7 and mercury analysis via EPA method 245.1. At each PRASA well location, two main faucets were present: one with raw water, and one with water treated with chlorine. All grab water samples were taken from the raw water faucet. None of the water samples collected from wells had an odor or noticeable turbidity. The samples collected from the GDWTP had a brownish color with no odor. Following the sampling event, it was determined that supplemental sampling would be required at the GDWTP.

2.0 Scope of Work

As part of the SOW for the Technical Assistance at the Site, START V was tasked by EPA with providing one Core Response Team (CRT) member to collect influent and effluent water samples, including quality assurance/quality control (QA/QC) samples, at the GDWTP. Three influent water samples and three effluent water samples, including one field duplicate, were collected. One influent water sample was collected and preserved in the field with nitric acid for TAL metals + B, Li, Mo and mercury analyses, one influent water sample was collected and left unpreserved to be filtered at

the EPA Laboratory Services and Applied Sciences Division (LSASD) laboratory before acidifying for TAL metals + B, Li, Mo and mercury analyses, and one influent water sample was collected and preserved in the field with nitric acid for total hardness (as calcium carbonate [$CaCO_3$]) analysis. Two effluent water samples, including one QA/QC sample, were collected and preserved in the field with nitric acid for TAL metals + B, Li, Mo and mercury analyses, and one effluent water sample was collected and preserved in the field with nitric acid for total hardness (as $CaCO_3$) analysis. All samples were submitted to the EPA LSASD laboratory for analysis.

In addition, START V completed photographic documentation, notation in the Site logbook of all Site activities, entered sampling information into the Site-Specific EPA SCRIBE data management system, and documented sampling locations using global positioning system (GPS) technology. All field activities were performed in Level D personal protective equipment (PPE).

3.0 On-Site Personnel

Name	Affiliation	Duties On-site
Jose Lugo	EPA, Region II	EPA Representative
Gabriela Rodriguez	Weston Solutions, Inc., START V	Site Field Lead, Site Health & Safety, Sample Collection and Management, GPS Locational Data Collection

EPA: U.S. Environmental Protection Agency START V: Superfund Technical Assessment & Response Team V GPS: Global Positioning System

4.0 Site Activities and Observations

On May 18, 2023, EPA and START V mobilized to the Site to conduct the sampling event, which consisted of collecting three influent water samples and three effluent water samples (including one QA/QC sample) at the GDWTP. Both the influent and effluent locations were sampled for TAL metals + B, Li, Mo and mercury (preserved in the field with nitric acid) and total hardness analyses. The influent location was additionally sampled for TAL metals + B, Li, Mo and mercury (unpreserved to be filtered at the EPA LSASD laboratory before acidifying) analysis. The influent location of the GDWTP is at latitude 17.98077º, longitude -66.10087º and the effluent faucet located inside the GDWTP are at latitude 17.990080º, longitude -66.11123º.

Refer to Attachment A, Figure 2: Sampling Locations and Attachment B: Photographic Documentation Log.

5.0 Sampling Methodology

All sampling activities were conducted in accordance with EPA's Environmental Response Team (ERT) Standard Operating Procedure (SOP) Number (No.) 2001: *General Field Sampling Guideline*. A total of six water samples, including one QA/QC sample consisting of a field duplicate sample and additional sample volume designated as matrix spike/matrix spike duplicate (MS/MSD) were collected as part of the Technical Assistance sampling event at the Site. The influent water samples were collected directly from the irrigation channel of Patillas Lake with dedicated equipment and the effluent water samples were collected from a faucet at the GDWTP. Prior to collecting the samples at the faucet, it was necessary to evacuate the standing water from the plumbing. This was accomplished by opening the water tap and purging the system for approximately 10 minutes. Any aerators, strainers and/or hose attachments present on the spigot were removed prior to purging. Grab water samples

were collected with 1 liter poly sample containers and stored on ice immediately following collection to maintain a temperature of 4 degrees Celsius (ºC). Both the influent and effluent locations were sampled for TAL metals + B, Li, Mo and mercury (preserved in the field with nitric acid) and total hardness analyses. The influent location was additionally sampled for TAL metals + B, Li, Mo and mercury (unpreserved to be filtered at the EPA LSASD laboratory before acidifying) analysis. All preserved samples were preserved in the field with nitric acid to pH below 2. TAL metals + B, Li, Mo and total hardness (as $CaCO_3$) analyses were conducted via EPA Method 200.7 and mercury analysis was conducted via EPA Method 245.1. START V also completed photographic documentation, notation in the Site logbook of all Site activities, entered sampling information into the Site-Specific EPA SCRIBE data management system, and documented sampling locations using GPS technology.

Refer to Attachment B: Photographic Documentation Log.

6.0 Laboratory Receiving Samples

The following laboratory was utilized for analysis of the samples collected during the May 18th, 2023 sampling event:

Laboratory	Sample Matrix	Analysis
EPA LSASD Laboratory 2890 Woodbridge Avenue Bldg. 209, MS-230 Edison, NJ 08837 Attn: Ness Tirol Phone: 732-906-6886 **Project #: P-2305033**	Aqueous	TAL Metals + B, Li, Mo, Mercury, Total Hardness as $CaCO_3$

7.0 Sample Collection and Dispatch

On May 18, 2023, START V collected a total of 6 water samples, including one field duplicate sample, at the GDWTP. On May 18, 2023, all six water samples were shipped under chain of custody (COC) Record No. 2-051823-155638-0004 and FedEx Airbill No. 7721-9018-1017 to the EPA LSASD laboratory located in Edison, New Jersey. Three samples, including one field duplicate, were analyzed for TAL metals + B, Li, Mo and mercury (preserved in the field with nitric acid), one water sample was analyzed for total hardness, and two water samples were analyzed for TAL metals + B, Li, Mo and mercury (unpreserved to be filtered at the EPA LSASD laboratory before acidifying).

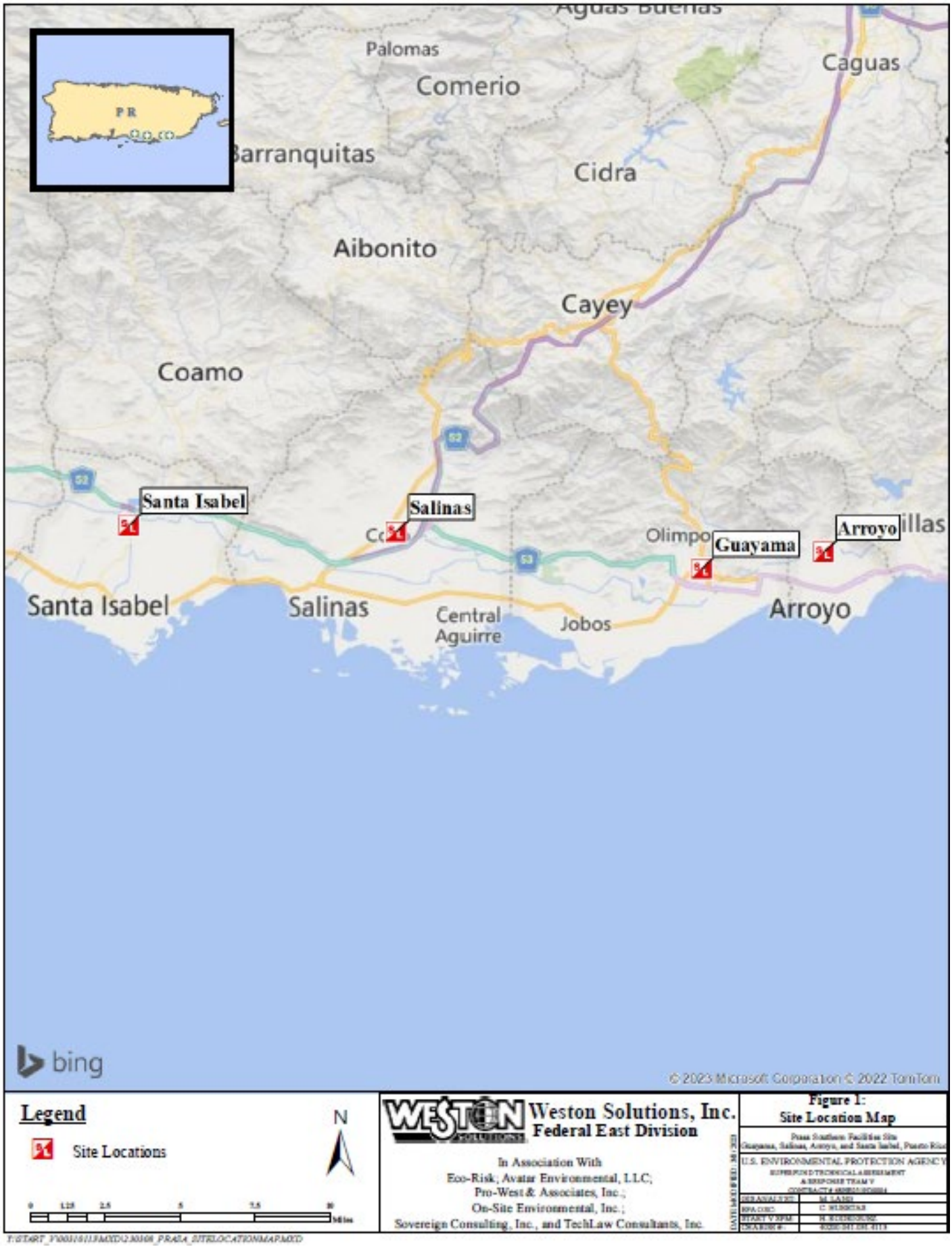
Refer to Attachment A, Figure 2: Sampling Locations and Attachment C: Chain of Custody Record.

Report prepared by: _____ 06/09/2023
Hector Rodríguez Cesaní — Date START V Site
Project Manager

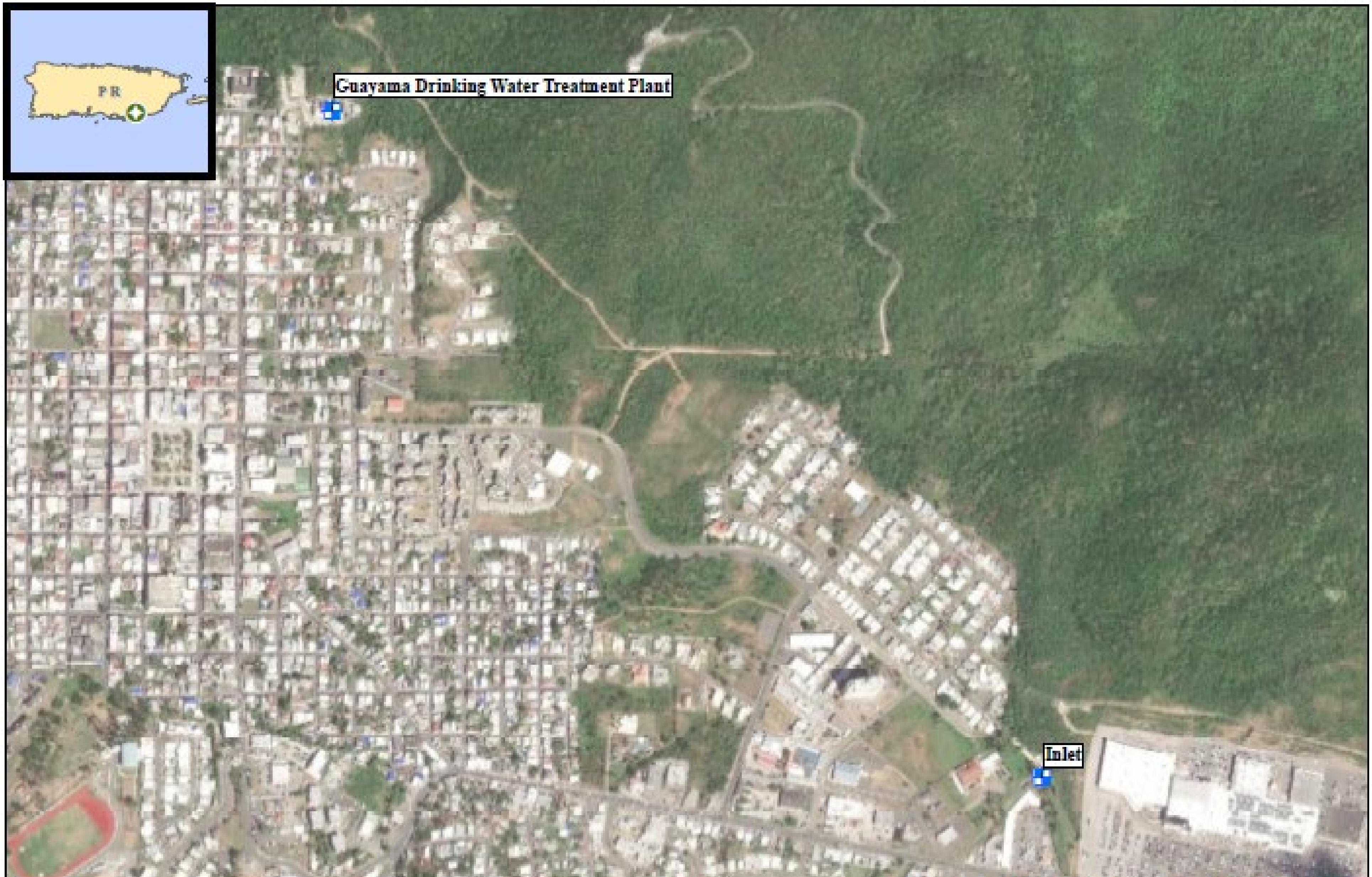
Report reviewed by: _____ 06/09/2023
Michael Lang — Date
START V Deputy Program Manager

Attachment A

Figure 1: Site Location Map Figure 2: Sampling Locations



T:\START_FY00\1611\MXD\230308_PRASA_SITELOCATIONMAP.MXD



Legend

Water Sampling Location

0 0.05 0.1 0.2 0.3 0.4 Miles

N

WESTON SOLUTIONS Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.; On-Site Environmental, Inc.;
Sovereign Consulting, Inc.; and TechLaw Consultants, Inc.

Figure 2: Sampling Locations

PRASA Southern Facilities Site
Guayama, Salinas, Arroyo, and Santa Isabel, Puerto Rico

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT
& RESPONSE TEAM V

Y:\START_V\00310113\MXD\230609_PRASA_WTPWellLocations_8.5x11_Landscape.mxd

Attachment B

Photographic Documentation Log

Photographic Documentation Log
PRASA Southern Facilities – Guayama Drinking Water Treatment Plant Guayama, Puerto Rico
May 18, 2023

Photograph 1: View of Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V) collecting water samples at the laboratory effluent sampling location in the Guayama Drinking Water Treatment Plant (DWTP).

Photograph 2: View of effluent water samples collected at the Guayama DWTP, including field duplicate and additional sample volume designated as matrix spike/matrix spike duplicate (MS/MSD).

Photograph 3: View of the location from where the effluent sampling faucet receives treated water. Effluent samples came from the outlet of the storage tank and the beginning of the distribution line located at latitude 17.99053º, longitude -66.11182º.

Photograph 4: View of the Guayama DWTP 250,000-gallon tank for storage and distribution of treated water.

Photograph 5: View of the Rexmanor Pump Station entrance located at latitude 17.98132º, longitude -66.10133º. The Pump Station transports raw water from the intake location to the Guayama DWTP.

Photograph 6: View of the irrigation channel that conveys raw water from Patillas Lake, which is a reservoir.

Photograph 7: View of the irrigation channel after the intake location. Raw water comes from Patillas Lake located northeast and continues after the intake of the Rexmanor Pump Station to the west.

Photograph 8: View of the bar screen in the irrigation channel that screens raw water prior to its entrance into the pump station.

Photograph 9: View of START V collecting raw water samples. Samples were taken from the entrance of the irrigation channel to the Rexmanor Pump Station located at latitude 17.98077º, longitude -66.10087º.

Photograph 10: View of raw water samples.

Attachment C

Chain of Custody Record

USEPA
DateShipped: 5/18/2023
CarrierName: FedEx
AirbillNo: 772190181017

CHAIN OF CUSTODY RECORD
PRASA Sampling/PR
Contact Name: Hector Rodriguez
Contact Phone: 787-602-8424

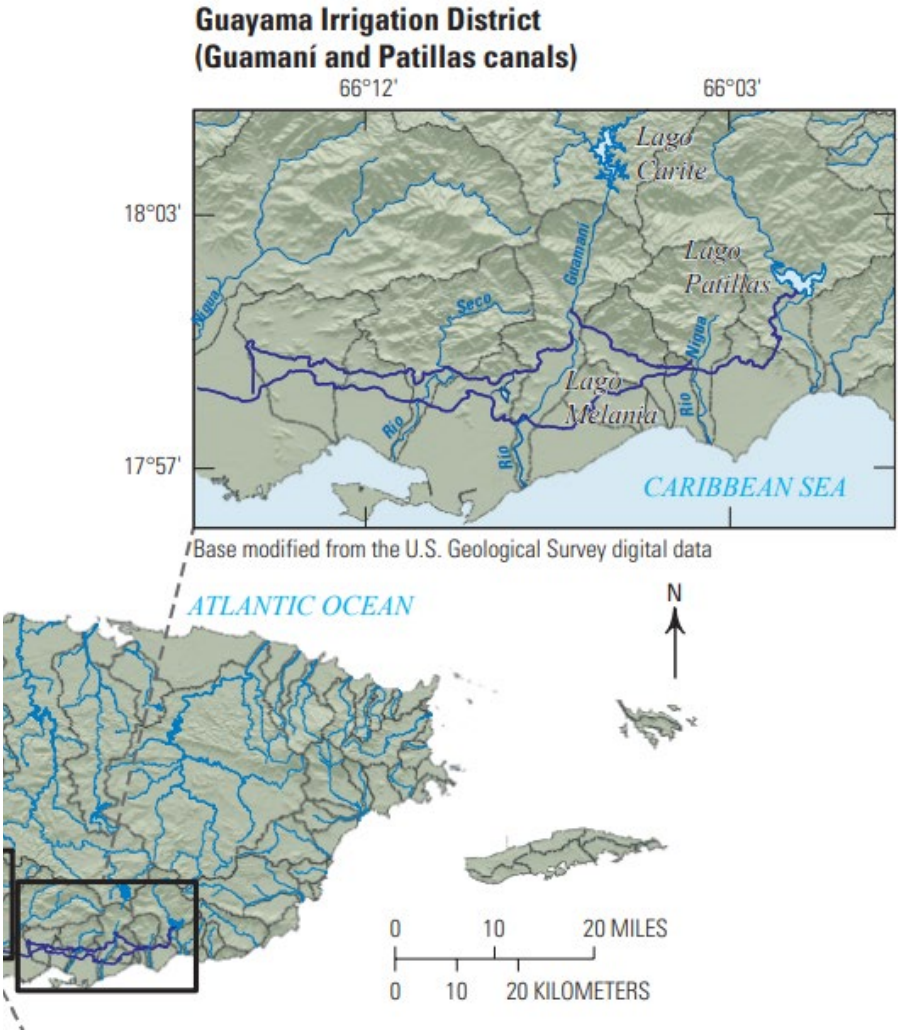
No: 2-051823-155638-0004
Cooler #: 1
Lab: LSASD
Lab Phone: 732-321-4431

Lab #	Sample #	Location	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	P026_GuayamaDWTP-RWI1-230516-01	Guayama DWTP	TAL Metals +B, Li, Mo	Water	5/18/2023	11:00	1	1 L poly	HNO3 pH<2	N
	P026-GuayamaDWTP-ETW1 230516 01	Guayama DWTP	TAL Metals +B, Li, Mo	Water	5/18/2023	9:52	1	1 L poly	HNO3 pH<2	N
	P026-GuayamaDWTP-ETW1-230516-02	Guayama DWTP	TAL Metals +B, Li, Mo	Water	5/18/2023	9:52	2	1 L poly	HNO3 pH<2	Y
	P026-GuayamaDWTP-ETW2-250516-01	Guayama DWTP	Total Hardness	Water	5/18/2023	9:52	1	1 L poly	HNO3 pH<2	N
	P026-GuayamaDWTP-RWI2-230516-01	Guayama DWTP	Total Hardness	Water	5/18/2023	11:00	1	1 L poly	HNO3 pH<2	N
	P026-GuayamaDWTP-RWI3-230516-01	Guayama DWTP	TAL Metals +B, Li, Mo	Water	5/18/2023	11:00	1	1 L poly		N

Special Instructions: P026-GuayamaDWTP-RWI3-23-0516-01 Unpreserved to be filtered in LSASD Lab before acidifying for metals analysis

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Transfers	Weston START V	5/19/2023 16:20			


Guayama Irrigation District
(Guamaní and Patillas canals)
66°12'
66°03'
18°03'
17°57'
Lago Carite
Lago Patillas
Lago Melania
Guamani
Seco
Rio Nigua
Rio
CARIBBEAN SEA
Base modified from the U.S. Geological Survey digital data
ATLANTIC OCEAN
N
0 10 20 MILES
0 10 20 KILOMETERS