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January 31, 2021
Project No. DNA-200186
Revised on February 25, 2021

Mr. David M. Heger
Senior Counsel
AES US Services, LLC
One Monument Circle, Suite 701A
Indianapolis, Indiana 46204-2901

2020 CCR Annual Groundwater Monitoring and Corrective Action Report
AES Puerto Rico LP, Guayama, Puerto Rico

Dear Mr. Heger:

DNA-Environment, LLC (DNA) has prepared this 2020 CCR Annual Groundwater Monitoring and Corrective Action Report for the temporary staging area of manufactured aggregate (AGREMAX^{TM}) at AES Puerto Rico LP (AES-PR) in Guayama, Puerto Rico. This report has been prepared to comply with the reporting requirements described in the United States Environmental Protection Agency (USEPA) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 CFR Part 257, Subpart D (CCR Rule), as required by §257.90(e)(1) through §257.90(e)(6).

Overview of Current Status of Groundwater Monitoring and Corrective Action Program [40 CFR 257.90(e)(6)]:

At the beginning and the end of the 2020 reporting period, the CCR unit operated under the assessment monitoring program per §257.95. Pursuant to 40 CFR 257.94(e) and 257.95, the facility had established an assessment monitoring program on July 16, 2018. Therefore, statistical evaluation of the constituents listed in Appendix IV to 40 CFR Part 257 was performed as required under assessment monitoring, and evaluation of statistically significant increase over background levels for one or more constituents listed in Appendix III pursuant to 40 CFR 257.94(e) was not performed. At the end of the 2020 reporting period, the most current statistical evaluation of groundwater monitoring data, completed in January 2020, determined statistically significant levels above the associated groundwater protection standards of selenium and molybdenum in groundwater samples collected from Monitoring Well MW-3, and lithium and molybdenum from Monitoring Well MW-4.

The assessment of corrective measures was initiated for the CCR unit on April 15, 2019, completed on September 13, 2019, and the public meeting was held on December 12, 2019. A remedy was selected pursuant to 40 CFR 257.97 during this reporting period on June 1, 2020. Remedial actions were ongoing during this reporting period.

Section 257.90(e) of the CCR Rule specifies the following:

> *For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by §257.105(h)(1).*

The following key actions were completed in 2020 to comply with the CCR Rule:

- Assessment-monitoring sampling events were conducted in May and October 2020 in accordance with 40 CFR §257.95.
- A statistical evaluation was completed in January 2020 per 40 CFR §257.93(h) and §257.95(h). This evaluation resulted in statistically significant levels above the groundwater protection standards (GWPS) of lithium, molybdenum, and selenium in groundwater samples collected from certain monitoring wells at AES-PR (see below).
- On March 13, 2020, AES-PR completed a Semiannual Progress Report covering the period of September 13, 2019 through March 13, 2020.
- On June 1, 2020, AES-PR selected its groundwater remedy. The selected remedy is to prevent AGREMAX™ contact with the ground by installing a synthetic liner and employing Monitored Natural Attenuation (MNA). On July 1, 2020, AES-PR published its Selection of Remedy Report to its public CCR website.
- On October 1, 2020, AES-PR submitted the Recommendation of Environmental Assessment for the liner installation to the Puerto Rico Office of General Permits, which was approved on December 16, 2020.
- On December 16, 2020, AES-PR submitted the application for the Environmental Assessment Determination for the liner installation to the Puerto Rico Office of General Permits, which was approved on January 12, 2021.
- In 2020, AES-PR continued to remove AGREMAX™ from the staging area to allow for liner installation.

To report on the activities conducted during the prior calendar year and document compliance with the CCR Rule, the specific requirements listed in §257.90(e)(1) through §257.90(e)(5) are provided below in bold/italic type, followed by a narrative addressing how that specific requirement has been met.

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

§257.90(e)(1): A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

AES-PR is located in the municipality of Guayama on the south coast of Puerto Rico (Site). The Site is bordered to the north and west by an inactive pharmaceutical facility (formerly TAPI Puerto Rico) and by an undeveloped parcel of land, to the south by land owned by the Puerto Rico Ports Authority and Las Mareas Harbor, to the east by an inactive petroleum refinery (formerly Chevron Phillips Chemical Puerto Rico Core), and to the west by AES Ilumina (solar energy farm). Figure 1 shows a Site Location Map. Figure 2 shows the manufactured aggregate (AGREMAX^{TM}) temporary staging area and associated upgradient and downgradient CCR monitoring wells. Figure 3 shows the locations of temporary wells TW-101 through TW-109 that were installed during the 2019 nature and extent groundwater characterization study pursuant to §257.95(g)(1).

§257.90(e)(2): Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

No permanent CCR monitoring wells were installed or decommissioned during this reporting period.

§257.90(e)(3): In addition to all the monitoring data obtained under §257.90 through §257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Table 1 summarizes the number of samples collected at each monitoring well, sampling dates, and designation of whether the samples were required by detection or assessment monitoring program.

Groundwater analytical results and field monitoring data for the samples collected during the 2020 CCR monitoring events are summarized in Table 2 and Table 3.

§257.90(e)(4): A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

AES-PR remained in the assessment monitoring program during 2020.

A statistical evaluation was completed in January 2020 in accordance with 40 CFR §257.93(h) and §257.95(h). This evaluation resulted in statistically significant levels above the groundwater protection standards (GWPS) of selenium and molybdenum in groundwater samples collected from Monitoring Well MW-3, and lithium and molybdenum from Monitoring Well MW-4 (see Table 4).

§257.90(e)(5): Other information required to be included in the annual report as specified in §257.90 through §257.98.

Assessment monitoring events were completed in May and October 2020 per §257.95(b) and §257.95(d). Tables 2 and 3 summarize the groundwater analytical results and field monitoring data for these events. Table 4 summarizes the groundwater protection standards and site background levels established in accordance with §257.95(d)(2) and §257.95(h). Analytical data used in the computation of background levels have been provided in the CCR Annual Groundwater Monitoring Reports of 2017 through 2019.

Projected key activities to be completed during the 2021 calendar year include the following:

- Statistical evaluation inclusive of 2020 analytical results.
- Annual and semiannual assessment monitoring sampling events in accordance with §257.95.

AES-PR expects that the key activities listed below will occur in 2021. However, the timing of these activities may vary depending on factors including, but not limited to, the timing of regulatory agency approvals and permits, potential issues related to COVID-19 global pandemic, contractor availability, AGREMAX™ shipment schedules, and other logistical considerations.

- Receive all applicable permits and approvals;
- Initiate installation of the liner;
- Complete installation of the liner; and
- Establish and implement the Corrective Action Groundwater Monitoring Program.

We appreciate the opportunity to assist with the CCR Rule groundwater monitoring program at AES-PR.

Sincerely,

Alberto Meléndez
Principal Environmental Consultant

Enclosure

c.: Ms. Angelique Collier, AES US Services, LLC – w/enclosure
Mr. Héctor Ávila, AES Puerto Rico, LP - w/enclosure

TABLES

Table 1. Summary of 2020 CCR Groundwater Sampling Program, AES Puerto Rico LP, Guayama, Puerto Rico

Monitoring Well ID	Upgradient or Downgradient Well	Number of Samples Collected in 2020 *	Sample Collection Date	Monitoring Phase
MW-1	Upgradient	2	18-May-20 27-Oct-20	Assessment
MW-2	Upgradient	2	18-May-20 27-Oct-20	Assessment
MW-3	Downgradient	2	18-May-20 27-Oct-20	Assessment
MW-4	Downgradient	4	18-May-20 27-Oct-20	Assessment
MW-5	Downgradient	2	18-May-20 27-Oct-20	Assessment

Notes:

* One groundwater sample was collected per sampling event at Monitoring Wells MW-1, MW-2, MW-3 and MW-5, whereas two groundwater samples were collected per sampling event at MW-4 (these consisted of one sample and one field duplicate sample per event).

Table 2. Analytical Results and Monitoring Data for Groundwater Samples Collected in May 2020
AES Puerto Rico, LP in Guayama, Puerto Rico

	Well ID	MW-1	MW-2	MW-3	MW-4	MW-4	MW-5
	Well Location	Upgradient	Upgradient	Downgradient	Downgradient	NA	Downgradient
	Sample ID	AES-MW1-051820	AES-MW2-051820	AES-MW3-051820	AES-MW4-051820	AES-MW4-DUP-051820	AES-MW5-051820
	Sampling Date	5/18/2020	5/18/2020	5/18/2020	5/18/2020	5/18/2020	5/18/2020
Static Water Elevation (ft MSL)		8.71	8.91	0.82	3.92	NA	1.19
Field Parameters	**Units**						
pH	SU	7.13	7.13	7.28	7.43	NA	7.07
Conductivity	mS/cm	3.502	1.540	14.99	57.47	NA	20.11
Redox Potential	mV	-68.5	-56.6	-102.9	-640.6	NA	-55.2
Dissolved Oxygen	mg/L	1.43	2.52	2.08	1.27	NA	3.59
Turbidity	NTU	12.12	8.66	12.03	19.78	NA	26.77
Temperature	°C	29.85	30.26	30.93	33.60	NA	29.37
Analytical Results							
Antimony	mg/L	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U
Arsenic	mg/L	0.00057 J	0.00046 J	0.0033	0.0035	0.0026	0.0057
Barium	mg/L	0.047	0.12	0.66	0.056	0.055	0.033
Beryllium	mg/L	0.00012 U	0.00012 U	0.00012 U	0.00012 U	0.00012 U	0.00012 U
Cadmium	mg/L	0.000080 U	0.000080 U	0.000080 U	0.00018 J	0.00020 J	0.000091 J
Chromium	mg/L	0.00062 U	0.00062 U	0.00062 U	0.00062 U	0.00062 U	0.00062 U
Cobalt	mg/L	0.00046 J	0.00033 J	0.00085 J	0.0011	0.0010	0.0027
Fluoride	mg/L	0.40	0.58	0.87	0.23	0.24	0.041 U
Lead	mg/L	0.000070 U	0.000070 U	0.000070 U	0.000070 U	0.000070 U	0.000070 U
Lithium	mg/L	0.00049 U	0.00049 U	0.0014	0.96	0.94	0.0040
Mercury	mg/L	0.000064 U	0.000064 U	0.000064 U	0.000064 U	0.000064 U	0.000064 U
Molybdenum	mg/L	0.00076 J	0.0020 J	0.064	0.37	0.37	0.0025 J
Selenium	mg/L	0.0014	0.00037 U	0.026	0.0028	0.0065	0.0020
Thallium	mg/L	0.000080 U	0.000080 U	0.000080 U	0.000080 U	0.000080 U	0.000080 U
Radium 226 and 228 combined	pCi/L	0.250 U	0.519 U	0.253 U	0.723 U	0.200 U	0.522 U
Boron	mg/L	0.32	0.22	0.80	3.0	2.8	0.44
Calcium	mg/L	172	112	255	673	661	657
Chloride	mg/L	539	64.5	3730	8340	9260	4410
pH (field)	SU	7.13	7.13	7.28	7.43	NA	7.07
Sulfate	mg/L	403	3.2	633	12800	13800	2560
Total Dissolved Solids	mg/L	1740	545	6190	34900	31900	10400

Notes:
mg/L - milligrams per Liter
SU - Standard Units
pCi/L - picocuries per Liter
ft MSL - Feet above Mean Sea Level
mS/cm - millisiemens per centimeter
mV - millivolts
NTU - Nephelometric Turbidity Units
°C - degrees Celsius
Analytical results of metal elements are "Total Recoverable".
Sample ID format is: "Site_Name-MW_ID-Sampling_Date" (Sampling Date format is mmddyy).
Sample AES-MW4-DUP-051820 is the field duplicate sample of AES-MW4-051820.
NA - Not Applicable to the field duplicate sample.
U - Not detected at the indicated Method Detection Limit (MDL). For Radium 226 and 228 combined, 'U' indicates that the result shown is below the Minimum Detectable Concentration (MDC).
J - Result is less than the Reporting Limit, but greater than or equal to the MDL; concentration is an approximate value.
Static water elevations were calculated from depth to water measurements conducted on 18-May-2020, using land survey data of September 2020.

Table 3. Analytical Results and Monitoring Data for Groundwater Samples Collected in October 2020
AES Puerto Rico, LP in Guayama, Puerto Rico

	Well ID	MW-1	MW-2	MW-3	MW-4	MW-4	MW-5
	Well Location	Upgradient	Upgradient	Downgradient	Downgradient	NA	Downgradient
	Sample ID	AES-MW1-102720	AES-MW2-102720	AES-MW3-102720	AES-MW4-102720	AES-MW4-DUP-102720	AES-MW5-102720[1]
	Sampling Date	10/27/2020	10/27/2020	10/27/2020	10/27/2020	10/27/2020	10/27/2020
Static Water Elevation (ft MSL)		7.96	8.06	2.40	4.37	NA	2.83
Field Parameters	**Units**						
pH	SU	7.36	7.08	7.45	7.61	NA	6.90
Conductivity	mS/cm	2.501	0.830	13.63	41.71	NA	14.39
Redox Potential	mV	161	179	-43	-81	NA	-53
Dissolved Oxygen	mg/L	1.84	1.50	0.48	0.20	NA	0.38
Turbidity	NTU	7.74	5.10	12.1	47.4	NA	10.7
Temperature	°C	29.59	30.32	31.68	33.22	NA	29.82
Analytical Results							
Antimony	mg/L	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.063 U
Arsenic	mg/L	0.0018	0.00083 J	0.0015	0.0021	0.0019	0.022 J
Barium	mg/L	0.046	0.097	0.27	0.046	0.047	0.036 U
Beryllium	mg/L	0.00012 U	0.00012 U	0.00029 J	0.0017	0.0020	0.012 U
Cadmium	mg/L	0.000080 U	0.000080 U	0.00027 J	0.00061 J	0.00068 J	0.0080 U
Chromium	mg/L	0.00070 J	0.00062 U	0.00062 U	0.00062 U	0.00062 U	0.062 U
Cobalt	mg/L	0.00086 J	0.00028 J	0.0017	0.0011	0.0012	0.0060 U
Fluoride	mg/L	0.910 J	0.728	1.27 J	5.00 U*	5.00 U*	1.00 U
Lead	mg/L	0.000070 U	0.000070 U	0.000070 U	0.000070 U	0.000070 U	0.0070 U
Lithium	mg/L	0.00065 J	0.00049 U	0.0031	1.1	1.0	0.049 U
Mercury	mg/L	0.000064 U	0.000064 U	0.000064 U	0.000064 U	0.000064 U	0.000064 U
Molybdenum	mg/L	0.00061 U	0.00085 J	0.12	0.47	0.47	0.061 U
Selenium	mg/L	0.0064	0.0025	0.065	0.0061	0.018	0.037 U
Thallium	mg/L	0.000080 U	0.000080 U	0.000080 U	0.000080 U	0.000080 U	0.0080 U
Radium 226 and 228 combined	pCi/L	0.437 U	0.839 U	1.49 U	1.12 U	0.629 U	0.182 U
Boron	mg/L	0.24	0.15	0.97	2.9	2.9	0.49 U
Calcium	mg/L	219	79.4	370	514	497	644
Chloride	mg/L	392	48.0	3960	9340	9220	3810
pH (field)	SU	7.36	7.08	7.45	7.61	NA	6.90
Sulfate	mg/L	361	17.9	1420	12100	11900	2380
Total Dissolved Solids	mg/L	1500	250	8660	36200	34600	10200

Notes:

[1] Dilution of sample AES-MW5-102720 (Lab Sample ID 20177741006) resulted in elevated reporting and detection limits for the metal constituents. Based on the instrument's readings included in the analytical data package report from Pace Analytical Services, the estimated concentrations of the metals flagged with a 'U' qualifier are lower than the reported method detection limits indicated in the above table (See Appendix A).

mg/L - milligrams per Liter
SU - Standard Units
pCi/L - picocuries per Liter
ft MSL - Feet above Mean Sea Level
mS/cm - millisiemens per centimeter
mV - millivolts
NTU - Nephelometric Turbidity Units
°C - degrees Celsius
Analytical results of metal elements are "Total Recoverable".
Sample ID format is: "Site_Name-MW_ID-Sampling_Date" (Sampling Date format is mmddyy).
Sample AES-MW4-DUP-102720 is the field duplicate sample of AES-MW4-102720.
NA - Not Applicable to the field duplicate sample.
U - Not detected at the indicated Method Detection Limit (MDL). For Radium 226 and 228 combined, 'U' indicates that the result shown is below the Minimum Detectable Concentration (MDC).
J - Result is less than the Reporting Limit, but greater than or equal to the MDL; concentration is an approximate value.
* Original fluoride result. Sample was reanalyzed due to elevated MDL. Reanalysis result was 2.50U mg/L. Reanalysis performed past sample holding time.
Static water elevations were calculated from depth to water measurements conducted on 27-Oct-2020, using land survey data of September 2020.

Table 4. Statistical Evaluation through 2019 Data: Comparison of Lower Confidence Limits to Groundwater Protection Standards
CCR Groundwater Monitoring Program, AES Puerto Rico LP, Guayama, Puerto Rico

	Comparison Criteria	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Fluoride (mg/L)	Lead (mg/L)	Lithium (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Thallium (mg/L)	Radium 226 + 228 Combined (pCi/L)
	GWPS (greater of MCL, USEPA Amendments Level, or Site Background)	**0.006**	**0.010**	**2**	**0.004**	**0.005**	**0.1**	**0.006**	**4.0**	**0.015**	**0.040**	**0.002**	**0.100**	**0.05**	**0.002**	**5**
	MCL	0.006	0.010	2	0.004	0.005	0.1	-	4.0	-	-	0.002	-	0.05	0.002	5
	USEPA Amendments to the National Minimum Criteria*	-	-	-	-	-	-	0.006	-	0.015	0.040	-	0.100	-	-	-
	Site Background Level**	0.0025	0.0014	0.1678	0.0025	0.0025	0.0039	0.0025	0.8187	0.0013	0.005	0.0002	0.015	0.02144	0.0005	0.8099
Monitoring Well ID[1]	**Through Monitoring Date[2]**	**Lower Confidence Limit[3]**														
MW-3	23-Sep-2019	0.0017	0.002295	0.2043	0.0025	0.00054	0.0025	0.002261	1.752	0.0013	0.006282	0.0002	**0.187**	**0.1357**	0.0005	0.2274
MW-4	23-Sep-2019	0.0019	0.002937	0.04682	0.0025	0.00034	0.0025	0.0016	0.63	0.00047	**0.5787**	0.0002	**0.4222**	0.005239	0.0005	0.1414
MW-5	23-Sep-2019	0.0025	0.004015	0.03373	0.0025	0.0025	0.0025	0.003019	0.4266	0.0013	0.003366	0.0002	0.004213	0.003137	0.0005	0.2379

Notes:

mg/L = milligrams per Liter

pCi/L = picocuries per Liter

GWPS = Groundwater Protection Standard

MCL = USEPA Maximum Contaminant Level

*USEPA Amendments to the National Minimum Criteria (Phase One, Part One), Disposal of Coal Combustion Residuals from Electric Utilities; effective August 29, 2018.

** Site background levels for each constituent were computed based on the Upper Tolerance Limit (UTL), with 95% Coverage and 95% Confidence, of the pooled groundwater data from upgradient wells MW-1 and MW-2.

[1]Downgradient Monitoring Well Identification

[2]Statistical evaluation of groundwater analytical results from all groundwater monitoring events through September 23, 2019.

[3]Lower Confidence Limit (LCL): 95% Parametric LCL for normal or transformed-normal distributions. Otherwise, for Nonparametric LCL, the confidence level was set based on the number of available observations.

Values in bold font and gray shading indicate a Lower Confidence Limit exceeding the corresponding GWPS.

FIGURES

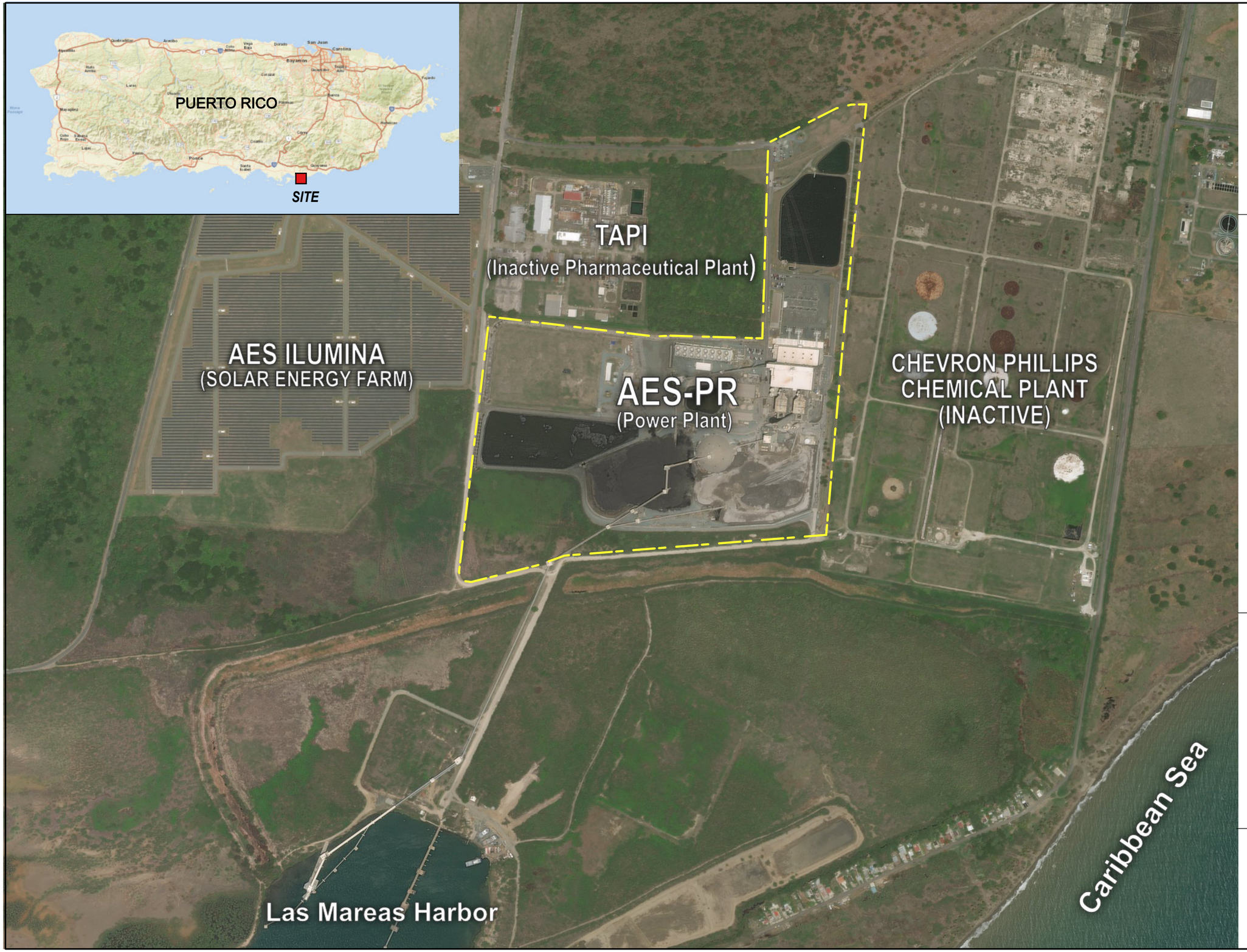

Figure 1

Site Location Map

AES Puerto Rico, LP
Guayama, Puerto Rico

Legend

AES Puerto Rico
Approximate Property Boundary

N

0 250 500 750 1000 1250 ft

DNA-ENVIRONMENT, LLC

Figure 2

CCR Groundwater Monitoring System

AES Puerto Rico, LP
Guayama, Puerto Rico

N

0 200 400 600 ft

DNA-ENVIRONMENT, LLC

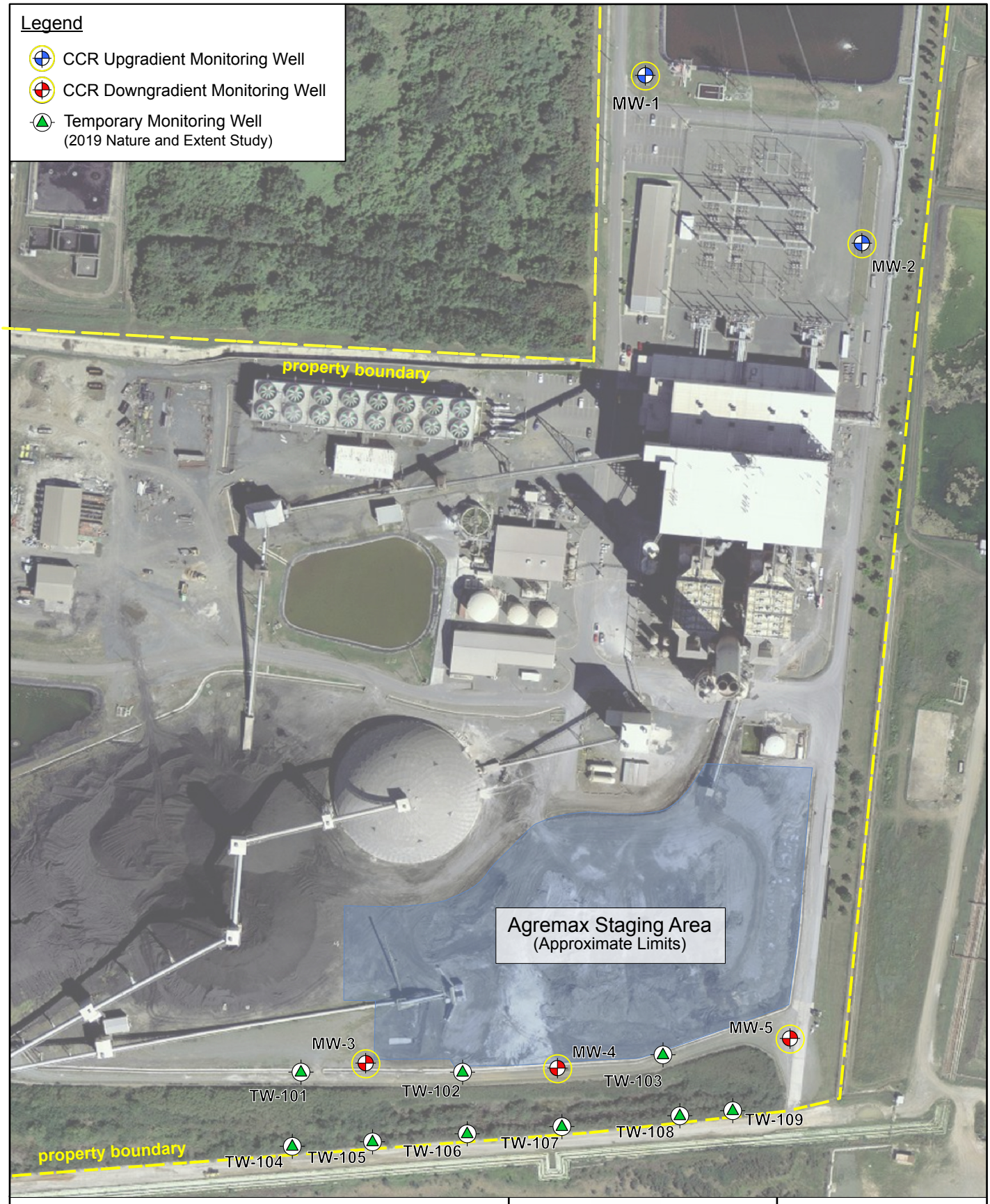

Figure 3

CCR Groundwater Monitoring System and Nature and Extent Temporary Wells

AES Puerto Rico, LP in Guayama, PR

N

0 100 200 300 ft

DNA-ENVIRONMENT, LLC

APPENDIX A

(Added on February 25, 2021)

Mr. Alberto Melendez
President/Principal Env. Consultant
DNA-Environment, LLC

February 24, 2021

Re: Error in Results for 20177741006 by EPA 6020.

Dear Mr. Melendez,

Pace Analytical is committed to providing high quality results and exemplary customer service to our clients. I am writing to explain a recent change in results reported on WO#20177741 identified as CCR GW MONITORING AES-PR for EPA 6020.

As requested, additional quality review of the abovementioned workorder was performed which resulted in a revision to results reported for sample 20177741006 identified as AES-MW5-102720. Due to an autosampler error noted at analysis, EPA 6020 results previously reported for 20177741006 have been revised to report a 1:100 dilution resulting in elevated reporting limits. A usable 1:1 analysis is not available due to the error and subsequent sample disposal. Batch and instrument quality control are within acceptable limits, indicating no other anomalies associated with the revised results of sample 20177741006. In response to this error, the laboratory will proceed with corrective action to prevent future recurrence.

The laboratory instrument calibration range for ICPMS is 0 - 10,000 ppb. Laboratory detection limits for EPA 6020 and definitions of data qualifiers are included in the validation package. The laboratory 'J' qualifier indicates the estimated concentration is above the adjusted method detection limit and below the adjusted reporting limit. The laboratory 'U' qualifier indicates the compound was analyzed for but not detected. Sample 20177741006 includes U qualifiers for multiple targets indicating the sample concentration for those targets is below the reported method detection limit.

Pace Analytical Services, LLC. is committed to identifying and correcting non-conformances, performing internal critical reviews, and providing accurately reported results. We apologize for the inconvenience this reporting error has caused. We will also provide you with any support or documentation necessary to work through this nonconformance with the regulatory agency.

If you have any questions or concerns or need additional information, please contact me or Juan Redondo.

Sincerely,

Gabrielle Jones Davis

Gabrielle Jones Davis
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