

# AES Puerto Rico CCR Corrective Measures Assessment Public Meeting

To make a comment at this meeting, please be sure to sign up in the back and get a number.

Comments will be taken by number.

To make sure as many people as possible can comment, each comment is limited to 5 minutes.

December 12, 2019



# AES Puerto Rico CCR Corrective Measures Assessment Public Meeting

December 12, 2019

## **PUBLIC MEETING NOTICE AES PUERTO RICO, LP.**

This announcement is to notify that the company AES Puerto Rico, LP. (AES-PR) will be conducting a public meeting to explain and discuss the Corrective Measures Assessment, published on October 14, 2019 on the AES-PR CCR website (<http://aespuertorico.com/ccr/>) in conformance with the requirements of the U.S. Environmental Protection Agency's (USEPA) rule entitled Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities. 80 Fed. Reg. 21302. (April. 17 2015) (promulgating 40 CFR § 257.61); 83 Fed. Reg. 36435 (July 30, 2018) (amending 40 CFR §257.61) (CCR Rule).

The objective of this meeting is to discuss the findings presented in the Corrective Measures Assessment developed in accordance with all applicable environmental regulations to address the results of the groundwater monitoring performed at the AES-PR facility.

Following the presentation, comments will be received from the general public in attendance concerning the Corrective Measure Assessment. AES Puerto Rico will also accept comments on the Corrective Measures Assessment through the AES-PR CCR website (<http://aespuertorico.com/ccr/>) from December 13, 2019 through January 13, 2020.

### **Public Meeting Information:**

**Date and Time:** Thursday, December 12th, 2019 from 2:00pm – 5:00pm

**Location:** Centro de Usos Múltiples Comunidad Olimpo  
Barrio Olimpo, Calle 1, Guayama PR 00784

This meeting will be held in Spanish. Individuals requiring English translation services or reasonable accommodations for participation should notify us at [contactpuertorico@aes.com](mailto:contactpuertorico@aes.com). Requests should be made as soon as possible but at least 72 hours prior to the scheduled meeting. You may be contacted by someone from our staff to discuss your specific needs.

Any additional questions or comments concerning the Public Meeting can be directed to [contactpuertorico@aes.com](mailto:contactpuertorico@aes.com).



# Agenda

- 1 Meeting Format and Introductions
- 2 AES Puerto Rico
- 3 Site Investigation
- 4 Corrective Measures Assessment
- 5 Risk Evaluations for AES Puerto Rico
- 6 Community Comment Period

# Meeting Format

- Presentation by AES and their consultants on the Corrective Measures Assessment
  - Several of the technical presentations will be in English – we have an interpreter, and the presentation slides and poster boards are provided in Spanish
- The meeting will then open for public comment:
  - Please be sure to sign up to make a comment and get a number
  - Comments will be taken by number
  - To make sure as many people as possible can comment, each comment is limited to 5 minutes
  - There are two microphones – please move to the microphone when the person with the number prior to yours is speaking – this will allow more people to speak
  - Your comments are being transcribed
  - We also encourage you to submit your comments in written form via <http://aespuertorico.com/ccr/> through January 13, 2020.

# Representatives

- **Meeting Moderator:** Ydelfonso Lopez
- **Plant Representatives:**
  - Jesus Bolinaga
  - There are other representatives from the plant here, and some of them may be called on if needed to answer specific technical questions, as needed
- **Technical Experts:**
  - Lucy Fraiser, Ph.D., DABT – Risk Assessor and Toxicologist
  - Steven Putrich, P.E.; Haley & Aldrich – Engineer
  - Winston R. Esteves, P.E., BCEE, QEP, CHMM, CPESC; Engineer
  - Alberto Melendez; DNA-Environment
- **Interpreter:** Selena Nadal
- **Note Taker:** Ana M. Ortiz

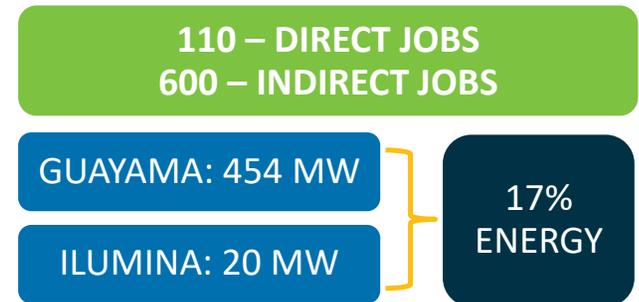
# AES Puerto Rico Operations



# AES Puerto Rico

- **1993:** AES Corp. starts to develop AES Puerto Rico
- **2002:** The AES-PR Guayama plant was inaugurated and started to generate and distribute electric energy to the Puerto Rico Electric Power Authority (PREPA) as part of a 25 year contract.
- **2012:** AES-PR inaugurated AES Ilumina, The largest solar energy plant to date, in the Caribbean, that generates energy for PREPA as part of a 20 year contract to the public corporation.

The Guayama plant is characterized as a zero discharge plant for process wastewater, given that it recycles up to six million gallons of effluent from the Guayama Regional Wastewater treatment plant, which is then evaporated as part of the cooling process.



SO<sub>2</sub> AND NO<sub>x</sub> EMISSIONS  
6 times below the  
federal technology-  
based standard





# CCR Groundwater Monitoring and Characterization

Alberto Melendez  
DNA-Environment, LLC

**HALEY**  
**ALDRICH**

# CCR Groundwater Monitoring Program (40 CFR 257)

## **Detection** (App III)

- 8 Initial Events
- Twice per Year

## **Assessment** (App IV)

- Twice per Year

## **Corrective Measures**

- Assessment
- Selection of Remedy
- Implementation

# AES Puerto Rico Location



# CCR Groundwater Monitoring System



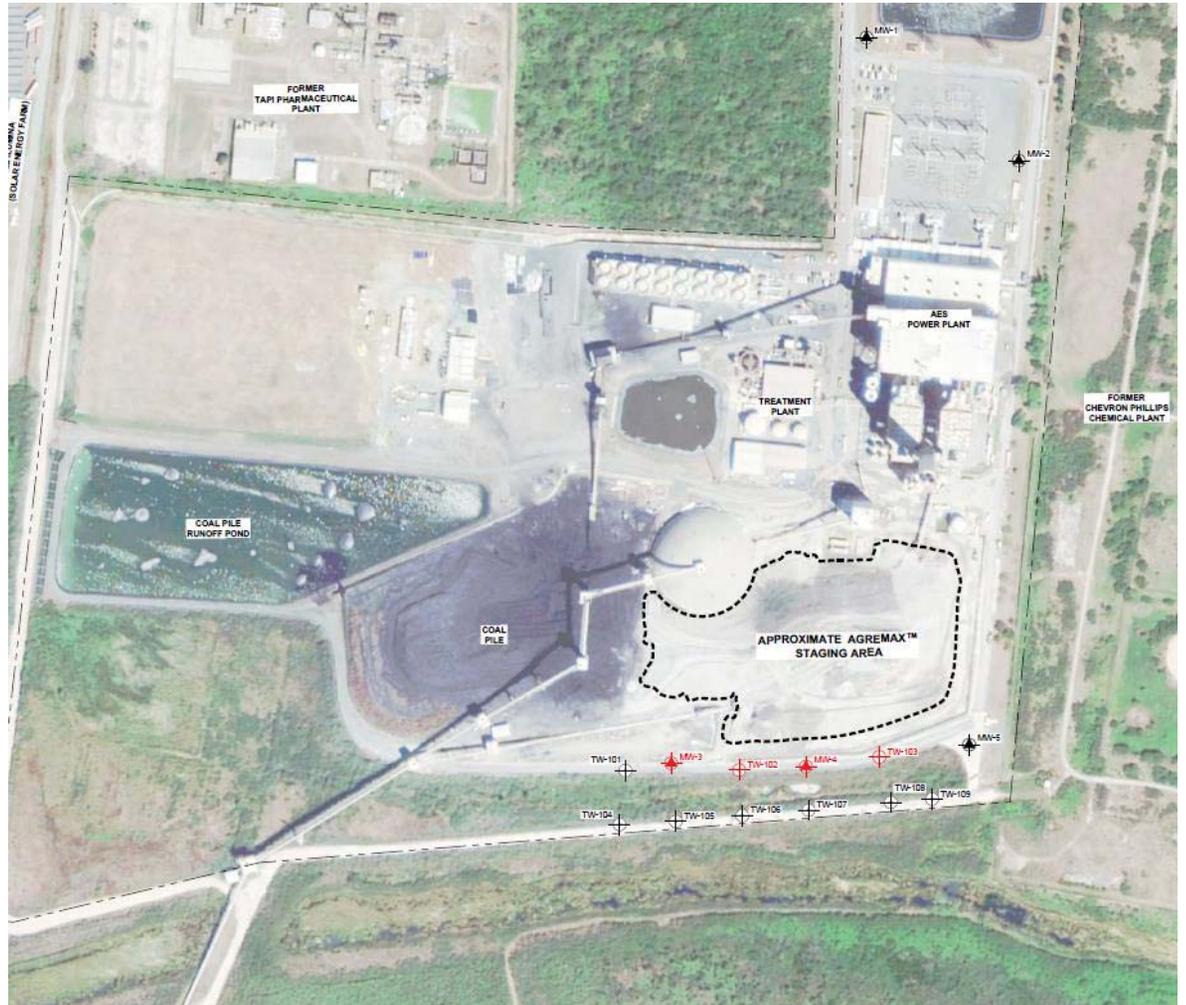
# CCR Groundwater Monitoring System



# Characterization of Nature and Extent



# CCR Constituents above GWPS do NOT Leave AES Property Limits





# Corrective Measures Assessment

Steven F. Putrich, P.E.

**HALEY**  
**ALDRICH**

# Corrective Measures Options

## AES Puerto Rico – Agremax Staging Area

Alternative Number	Remedial Alternative Description	Groundwater Remedy Components		
		A. Groundwater Remedy Approach	B. Groundwater Remedy Implementation Method	C. On-Going / Long-Term Actions
1	Prevent AGREMAX™ Contact with the Ground by Installation of a Synthetic Liner and Employ Monitored Natural Attenuation (MNA)	<b>Natural Attenuation with Monitoring</b> Mitigate downgradient migration of CCR-derived constituents present in groundwater at concentrations above Groundwater Protection Standards (GWPS) through process of natural attenuation	<b>Passive Treatment</b> Natural geochemical processes will be used to reduce concentrations of CCR-derived constituents in groundwater	<b>Monitored Natural Attenuation</b> Long-term groundwater monitoring will be used to confirm reduction of CCR-derived constituent concentrations
2	Hydraulic Containment of Groundwater via Groundwater Pumping with Treatment	<b>Hydraulic Containment</b> Mitigate downgradient migration of CCR-derived constituents present in groundwater at concentrations above GWPS using shallow extraction wells installed downgradient/side-gradient of the Staging Area	<b>Pump &amp; Treat</b> Treat extracted water using existing reverse osmosis (RO) system and discharge to the coal pile runoff pond or reuse for dust control; operate for duration of Staging Area activity	<b>Pump Long-Term</b> Continue to operate hydraulic containment system to maintain reduction of CCR-derived constituents in groundwater
3	Hydraulic Containment of Groundwater via Groundwater Pumping with Recirculation		<b>Pump with Recirculation</b> Pump water to coal pile runoff pond or re-use for dust control without treatment; operate for duration of Staging Area activity	
4	Hydraulic Containment of Groundwater via Groundwater Pumping with Barrier Wall and Treatment	<b>Hydraulic Containment with Barrier Wall</b> Install 30-ft barrier wall downgradient from Staging Area, install extraction wells to reduce groundwater flow and mitigate downgradient migration of CCR-derived constituents present in groundwater at concentrations above GWPS	<b>Pump &amp; Treat</b> Treat extracted water using existing RO system and discharge to the coal pile runoff pond or reuse for dust control; operate for duration of Staging Area activity	
5	Hydraulic Containment of Groundwater via Groundwater Pumping with Barrier Wall and Recirculation		<b>Pump with Recirculation</b> Pump water to coal pile runoff pond or re-use for dust control without treatment; operate for duration of Staging Area activity	

# Summary of Corrective Measures – Threshold Criteria

Alternative Number	Remedial Alternative Description	THRESHOLD CRITERIA				
		Be protective of human health and the environment	Attain the groundwater protective standard	Control the source of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of Appendix IV constituents into the environment	Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems	Management of waste to comply with all applicable RCRA requirements
1	Prevent AGREMAX™ Contact with the Ground by Installation of a Synthetic Liner and Employ Monitored Natural Attenuation (MNA)	✓	✓	✓	✓	✓
2	Hydraulic Containment of Groundwater via Groundwater Pumping with Treatment	✓	✓	✓	✓	✓
3	Hydraulic Containment of Groundwater via Groundwater Pumping with Recirculation	✓	✓	✓	✓	✓
4	Hydraulic Containment of Groundwater via Groundwater Pumping with Barrier Wall and Treatment	✓	✓	✓	✓	✓
5	Hydraulic Containment of Groundwater via Groundwater Pumping with Barrier Wall and Recirculation	✓	✓	✓	✓	✓

# Balancing Criteria Summary

		BALANCING CRITERIA - with Sub-Categories																	
Alternative Number	Remedial Alternative Description	CATEGORY 1 Long- and Short-Term Effectiveness, Protectiveness, and Certainty of Success that the Remedy will Prove Successful	Sub-Category 1								CATEGORY 2 Effectiveness in Controlling the Source to Reduce Further Releases	Sub-Cat. 2		CATEGORY 3 The Ease or Difficulty of Implementation	Sub-Category 3				
			1	2	3	4	5	6	7	8		1	2		1	2	3	4	5
			Magnitude of reduction of existing risks	Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy	Type and degree of long-term management required, including monitoring, operation and maintenance	Short-term risk to community or environment during implementation of remedy	Time until full protection is achieved	Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment	Long-term reliability of engineering and institutional controls	Potential need for replacement of the remedy		Extent to which containment practices will reduce further releases	Extent to which treatment technologies may be used		Degree of difficulty associated with constructing the technology	Expected operational reliability of the technologies	Need to coordinate with and obtain necessary approvals and permits from other agencies	Availability of necessary equipment and specialists	Available capacity and location of needed treatment, storage, and disposal services
1	Prevent AGREMAX™ Contact with the Ground by Installation of a Synthetic Liner and Employ Monitored Natural Attenuation (MNA)																		
2	Hydraulic Containment of Groundwater via Groundwater Pumping with Treatment																		
3	Hydraulic Containment of Groundwater via Groundwater Pumping with Recirculation																		
4	Hydraulic Containment of Groundwater via Groundwater Pumping with Barrier Wall and Treatment																		
5	Hydraulic Containment of Groundwater via Groundwater Pumping with Barrier Wall and Recirculation																		

**COLOR LEGEND**

- Most favorable when compared to other alternatives
- Less favorable when compared to other alternatives
- Least favorable when compared to other alternatives



# Risk Evaluation

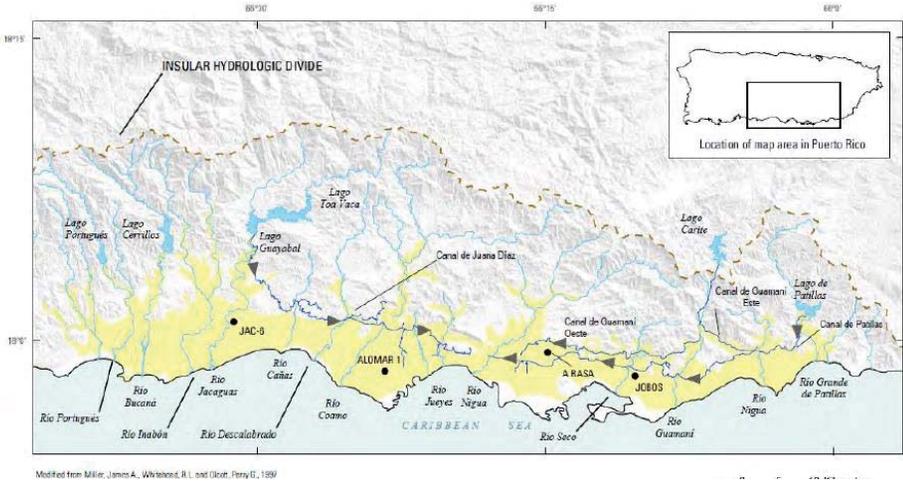
Lucy Fraiser, Ph.D., DABT



# Groundwater Impacts from AES do NOT Leave the Facility Property

## Southcoast Alluvial Aquifer

## Groundwater in the Subregion



## Risk Evaluation for Groundwater Demonstrates No Adverse Impact on Human Health and the Environment

- Groundwater impacts of the Staging Area are limited and do not extend beyond the AES-PR property boundary.
- There is no impact on drinking water or human health and there is no evidence of impact on the environment.
- Las Mareas Harbor does not show impacts.
- There is no exposure to CCR-derived constituents detected in groundwater at the AES-PR facility – either via groundwater use or surface water.
- Even for the very few results that may be above screening values for some of the groundwater sampling events, there is no drinking water exposure to groundwater.

## Summary

- Groundwater impacts have been detected at the edge of the Agremax Staging Area at our generating station in Guayama.
- These impacts do NOT leave AES property as confirmed by groundwater monitoring results.
- These impacts do NOT impact drinking water or human health.
- These impacts do NOT affect Las Mareas Harbor.
- The Corrective Measures Assessment report identifies potential remedies to address these onsite groundwater impacts.
- Today's meeting is to discuss these remedies and obtain your comments on them.

# The Fourth Balancing Criterion: Public Comments

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