Message

**From:** Kluesner, Dave [kluesner.dave@epa.gov]
**Sent:** 12/5/2017 10:07:46 PM
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**WALL STREET JOURNAL**

## Weak Building Code Enforcement Exacerbates Destruction in Puerto Rico

By Emily Nonko

December 5, 2017 at 10:52

Puerto Rico has adopted building codes that include some of the strictest standards in the world when it comes to hurricane resistance.

But there's a big problem: Bad enforcement. About 55% of all structures in Puerto Rico haven't been built to code partly because the government lacks an adequate process for code certification during the building process, according to Ricardo Alvarez-Diaz, president of the Puerto Rico Builders Association.

The result: About 250,000 housing units were damaged in the latest hurricane season, Mr. Alvarez-Diaz said. The number would have been much lower if they had all been built to code.

"The codes are great," he said. "But if they're not implemented, what's the point?"

Weak building regulations and enforcement are common throughout the Caribbean. The results aren't surprising when natural disasters hit.

For example, the death toll and destruction from the 2010 earthquake in Haiti was particularly severe because that country had no building code at the time, according to Vicente Moreno, the Caribbean region head for JLL, a commercial real-estate services firm.

Some of the hardest-hit islands in this year's hurricane season, like Barbuda, lost most of their infrastructure. As many as half the structures need to be completely rebuilt, experts say.

The challenge now for the region is to rebuild using the highest standards so infrastructure and buildings are more hurricane resistant. The Federal Emergency Management Agency, which is coordinating much of the U.S. government's recovery efforts in Puerto Rico and the U.S. Virgin Islands, says the new power system on those islands will be more resilient than the old one.

"I can replace all the wood poles with concrete poles. I can move substations that were built in the flood plain out of the flood plain," said Mike Byrne, FEMA's federal coordinating officer in Puerto Rico. "We're going to be investing in designing a system that will withstand the next event."

But it's less clear whether the country is going to adopt a better system for certifying that apartment buildings, homes and other structures have conformed with the country's building code.

Puerto Rico has adopted the strict International Building Code, which includes some of the highest standards in the world. But, unlike most cities in the continental U.S., local governments in Puerto Rico don't send inspectors to approve planning documents or visit construction sites, according to Mr. Alvarez-Diaz. Contractors aren't required to be licensed, he added.

Some structures, particularly in poorer communities outside San Juan, aren't certified at all, experts say. Other times, private building inspectors approve building plans not built to international building-code standards. "You see that a lot, particularly with the way roofs are anchored or the foundation of the home was built," Mr. Moreno said.

A spokeswoman for Ricardo Rossello, the governor of Puerto Rico, didn't immediately respond to a request for comment.

Many of the top developers in the region have made a point of adopting the highest building standards to ensure the safety of their residents. "The biggest challenge, for companies like us with big reputations, is to make sure the construction is done correctly," said Mr. Moreno.

Developers also are well aware that, especially after the horrible hurricane season of 2017, demand will increase for the strongest buildings. For example, the Dorado Beach master-planned community on Puerto Rico's north coast suffered landscaping damage from Hurricane Maria but very little structural damage, according to Kenneth Blatt, chief operating officer of the hospitality division of Caribbean Property Group LLC, which controls much of the property.

He predicted that will boost prices of Dorado Beach's condos and other homes. "We were built to Miami-Dade County hurricane standards," he said. "I can withstand a 200-mile-per-hour wind."

St. Louis-based housing developer McCormack Baron Salazar, which is becoming more active in the region, is considering adding solar power, micro-turbines and other backup sources of electricity to its projects to enhance their competitiveness. "Based on the conversations we've had with our equity investors, they may require it," said Vincent Bennett, the firm's president.

Other local architects see an opportunity to push for sustainable buildings that rely more on renewable energy. Such an initiative worked in Cuba, which has prioritized a more efficient use of power and greater availability of energy-efficient products. The country restored its power after Hurricane Irma in three days.

Richard Cuebas, a principal with the San Juan-based firm Integra Architecture PLLC, said "talk is loud" around sustainability measures like microgrids, localized energy grids that can disconnect from the traditional grid to operate autonomously. Nearly three months after the storm, many homes across the island still don't have power.

Architect Fernando Abruña advocates simple strategies, like affordable rooftop solar panels and rainwater harvesting, incorporated in all housing across the island. "Before Maria, this was something sort of strange," he said. "Now, I'm getting lots of calls from people interested in at least a very minimal system to take care of the refrigerator, a couple lights and a fan."

**INSIDE CLIMATE NEWS**

Plan to Burn Hurricane Debris Sparks Health Fears in U.S. Virgin Islands

**Lawmakers voted to block federal plans to incinerate trees and brush, citing health concerns in a population recovering from hurricanes. Now it's up to the governor.**

By Phil McKenna

December 5, 2017

As the U.S. Virgin Islands struggles to recover from Hurricanes Maria and Irma, a coalition of environmental groups and health experts have come out in strong opposition to a proposal to burn hundreds of thousands of cubic yards of downed trees and other vegetation in open air incinerators. The groups say it would further exacerbate health disparities in the predominantly black population where nearly one in four people lives below the federal poverty line.

The U.S. Virgin Islands Senate passed legislation to ban the proposed burn on Friday, and the Sierra Club and other environmental groups have threatened to sue the U.S. Army Corps of Engineers and the Federal Emergency Management Agency if they go ahead with the incineration plan.

Those opposed say the islands' 100,000 residents are already choking on exhaust from diesel generators that are now pervasive across the territory, where more than half the population lacks electricity. They are instead arguing for composting of the debris, some 400,000 cubic yards on the Island of St. Croix alone, and using the compost to enrich eroded soil depleted by the storms.

The decision on whether to burn or compost is up to the territory's governor, Kenneth Mapp, who must now decide whether to sign the legislation into law.

Incineration has been estimated to cost about $5.19 million, compared to $5.3 million for mulching and $7.1 million for composting, according to Harith Wickrema, president of the Island Green Living Association, which has threatened to sue over the incineration plan.

Opponents of burning say FEMA and the Army Corps advised the governor to burn the debris and offered financing that favors incineration over composting.

"If it was a community that was not of color, I think the factors for this decision would have been handled with much more sensitivity," said Marvin Jackson, president of the U.S. Virgin Islands Senate, who sponsored the bill to ban incineration.

**Past Problems with Incineration**

The Army Corps and FEMA have proposed using air curtain incinerators, large metal bins with blowers that facilitate hotter, more complete burning.

The Army Corps planned to use the same open-air incinerators for three to four months at Floyd Bennett Field in Brooklyn, New York, after Hurricane Sandy but aborted the effort after one month. The decision to stop burning was in part because the devices violated air quality standards, according to Judith Enck, a former Environmental Protection Agency Administrator for Region 2, which includes New York and the U.S. Virgin Islands.

"It's completely unnecessary to be burning in the U.S. Virgin Islands when we have a viable composting alternative and also when the operation of these air curtain incinerators will pose such an air quality risk," Enck said.

During the weeks the incinerators were used in New York, emissions exceeded air quality standards on days of relative high humidity, Enck said, adding that humidity would be significantly higher in the Virgin Islands.

A 2008 report by the EPA on dealing with natural disaster debris notes that, when properly configured, air curtain incineration does provide a "curtain effect" to hold smoke in. The report, however, classifies the technique as "open burning" and says it "often is subject to significant public concern."

**Mulching Faces Challenges in the Islands, Too**

Army Corps spokesperson George Stringham said the proposed incineration plan "is not 'open burning.' The ACI (air curtain incineration) method involves a mechanical blower, blowing air at a high velocity over and into the burn pit, both preventing the escape of emissions and adding oxygen to the fire and thereby raising the temperature. The result is vegetative debris burning hotter and trapped particulates burning longer, further reducing them and controlling emissions."

He said St. Croix already has a large stockpile of unused mulch, or chipped vegetative debris, that has been building up since before the hurricanes and is becoming a safety issue as it rots. "Composting the vegetative debris is generally an acceptable alternative if adequate space and maintenance is provided," he said.

Jackson concedes this is the case but says it's because the islands lack funding for management of the mulch, which he says would not be an issue if FEMA funded the composting program.
A proposed composting plan on Island Green Living's website includes commitments from roughly a dozen entities, including universities, parks, golf courses and the territory's commissioner of agriculture, to accept new compost if FEMA funds the program.

Donald Caetano, a spokesperson for FEMA, said the agency has been authorized to fund 100 percent of the cost of debris cleanup from hurricanes Irma and Maria, regardless of the method chosen, and has already provided grants of more than $21 million to the territory for debris removal.

Full funding for debris removal, however, expires six months after hurricanes Irma and Maria hit, meaning in March 2018. The deadline would likely provide sufficient time to complete incineration but may not provide enough time to complete chipping and composting, Enck said.

FEMA would cover only 90 percent of the cost for a second six months of debris removal, and after that would require a request for an extension, Caetano said.

**Environmental Groups Threaten to Sue**

If the Army Corps proceeds with plans to incinerate the waste, the Sierra Club, the Virgin Island Conservation Society and the Island Green Living Association intend to sue, according to a letter sent on Nov. 22 to the Army Corps and FEMA.

"Using air curtain incinerators presents an imminent and substantial endangerment to health and the environment in violation of Section 7002 of the Resource Conservation and Recovery Act," the letter says, citing the federal law governing the disposal of solid waste and hazardous waste.

A letter signed by 13 public health officials in the United States and Canada was included with the notice urging officials not to incinerate the waste.

"Burning of brush and wood on St. Croix, St. Thomas and St. John will increase air pollution and therefore the risk of associated health problems, including exacerbation of asthma in children and adults; increased severity of chronic obstructive pulmonary disease; and fatal myocardial infarction," the health officials write. "It would be irresponsible to intentionally introduce additional environmental exposures to the people of the Virgin Islands at this time, especially when non-polluting alternatives exist."

**Adding to the Islands' Struggle to Recover**

Jackson, who suffered asthma attacks as a child, echoed those concerns. The Virgin Islands is already airlifting patients with respiratory problems to the mainland because the territory's hospitals and health care facilities cannot provide adequate care with the island still recovering from the hurricane, he said.

More than 75 days after Maria ravaged the territory, 61 percent of residents lack electricity, cell service is unreliable, few schools are open and many people employed in tourism, the island's main industry, remain out of work.

Jackson said the current crisis builds on health disparities caused by the Hovensa refinery on St. Croix, one of the largest oil refineries in the world until it closed. The refinery was fined $5 million by the EPA for air emissions and was tasked with adding more than $700 million in air pollution controls in 2011 before ultimately closing in 2012.

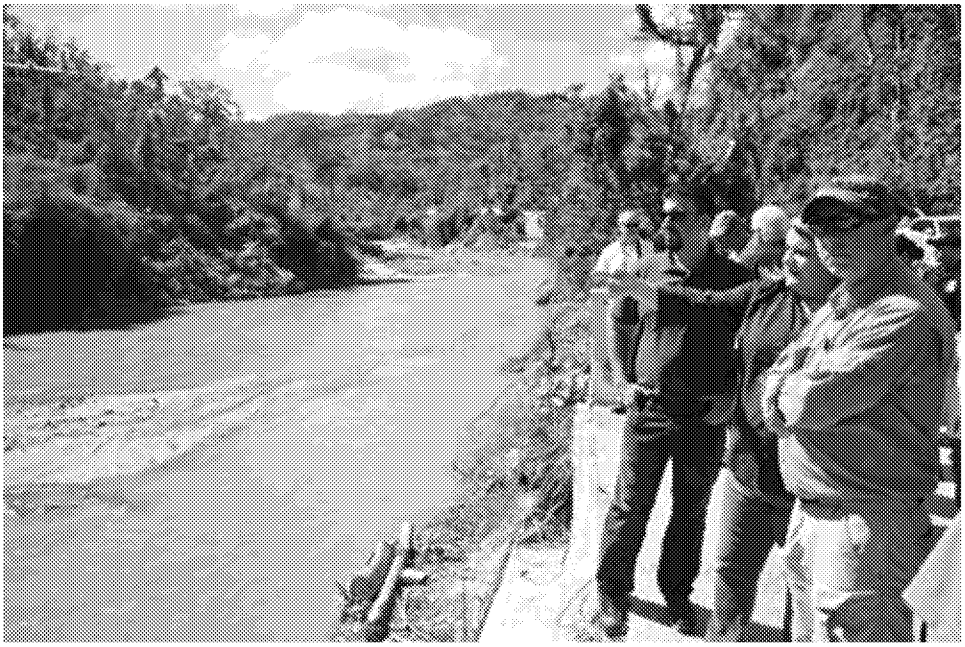
"How much more do you want us to consider in terms of health disparities?" Jackson said.

**HERALD PALLADIUM**

Upton tours Puerto Rico, U.S. Virgin Islands

By LOUISE WREGE

December 5, 2017



Congressman Fred Upton surveys hurricane damage that swept away a bridge, alongside Rep. Jenniffer Gonzalez-Colon of Puerto Rico. They were part of a congressional delegation looking at the damage over the weekend.

Photo submitted / U.S. House Committee on Energy and Commerce

“Devastating” was one of the words U.S. Rep. Fred Upton used to describe the hurricane damage he saw over the weekend while visiting Puerto Rico and the U.S. Virgin Islands.

“Here we are three months after the storm and there’s still much hardship,” he said. “... Remember, these are Americans.”

Category 5 Hurricane Maria hit Puerto Rico on Sept. 20.

Upton said many people are still without electricity and safe water.

“San Juan (the capital), for the most part, has power,” the St. Joseph Republican said when contacted by phone Monday. “But, much of the rest of the island does not.”

Upton joined fellow members of the House Energy and Commerce Committee and other federal officials on the tour.

Even in San Juan, he said the devastating effects are apparent.

“On the interstate, there was debris, trees, signs, metal sheeting on the side of the road that all needed to be picked up.”

Even concrete power poles reinforced with rebar were bent over and broken during the hurricane.

Upton said Puerto Rico is coming back slowly, but wounds remain.

“We ate at a restaurant (in San Juan),” he said. “They were very cheery that we were there. I talked to the waitress. She broke down in tears talking about her father losing his home. She was glad for people to be down there.”

He said they also visited Utuado, the second largest city in Puerto Rico, and that only about 30 percent of that city has power.

Traveling also is difficult, he said, because even if a gas station has fuel, power is needed to pump it into the vehicles.

Upton said many pharmaceutical companies have factories in Puerto Rico because in the 1970s and 1980s, there were tax incentives to build them there.

“We are experiencing shortages now in a number of products because those operations have been greatly reduced,” he said.

One of the shortages is of IV bags and fluids, which has hit hospitals all over the country, including Lakeland Health.

Upton said it’s important to get the manufacturing plants up and running not only for the benefit of Puerto Ricans who work in them, but for Americans who rely on the supplies the factories produce.

“There are 250,000 Puerto Ricans that work in the pharmaceutical industry making products for the U.S. and all over the world,” he said.

Also on the tour was Jenniffer Gonzalez-Colon, Puerto Rico’s delagate in Congress. She said about 2,000 people are leaving Puerto Rico every day for the U.S. mainland.

“We don’t know how many of them are going to return,” she said.

She said there are 14 medical devices and drugs that are only produced in Puerto Rico.

Gonzalez-Colon said she is happy that Upton was among the people visiting the islands. “He’s a leader. People know him,” she said. “He was there. He was very caring with the people.”

She said Puerto Rico has joined with delegations from other areas that were hit hard by hurricanes, including the Virgin Islands, Texas and Florida, to ask Congress for more money and supplies to rebuild with.

Upton said the U.S. Virgin Islands are in even worse shape.

He said they visited a hospital where they had to wear masks because the mold is so bad. Yet there are patients there because they have no other hospital.

In one spot, he said people are living on an old cruise ship because so many homes had been destroyed.

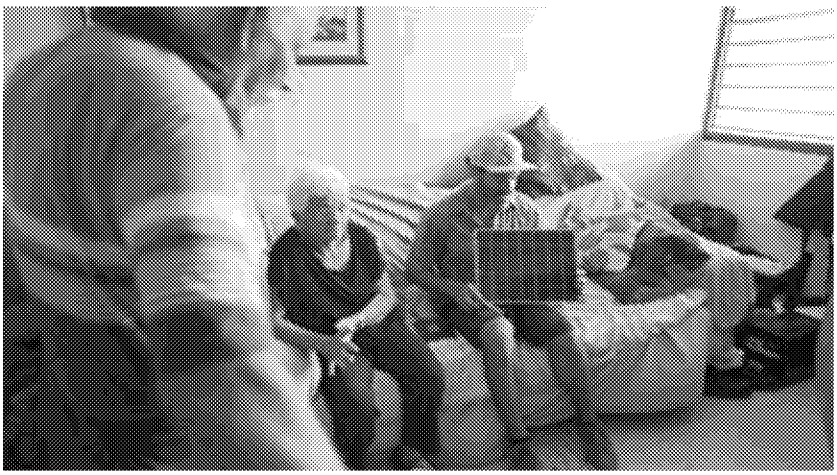
Of the homes that remain, he said many on both islands lost their roofs. He said blue tarps have been handed out by federal aid workers to serve as roofs until they can be replaced.

**IEEE SPECTRUM**

# 7 Things About Life in Puerto Rico with No Electricity

By John Humphrey

December 4, 2017



More than two months after Hurricane Maria devastated Puerto Rico, large sections of the island have yet to have electricity restored. The state of the power grid is still so unstable that even those areas that have been re-electrified can't really count on around-the-clock power.

As many observers have noted, this is an untenable situation. I've worked for much of my adult life as a solar engineer, installing solar microgrids in remote parts of the world that previously had no access to electricity. But Puerto Rico is different. All over the island, people have relied for decades on steady, abundant electricity and the modern conveniences that come with it. And so to suddenly not have electricity presents all kinds of hardships—some obvious and some less so.

For me personally, this ongoing hardship is especially wrenching. I grew up in Puerto Rico, in the rainforest of El Yunque and on the beaches of Luquillo, and much of my family is still there. Immediately after the storm, I couldn't reach any of them because of course they had neither power nor phone service. When officials announced that power wouldn't be restored for months, I booked the earliest flight to San Juan that I could find. I spent a week in Puerto Rico in early October, checking on relatives and friends and helping where I could.

My time there veered from the absurd to the devastating. Several times a day, I'd manage to walk into a room, flick on the light switch, and then laugh at myself for having forgotten—again. There were emergencies happening seemingly everywhere I turned—people needing medical help they couldn't get, others unable to work or go to school, businesses unable to stay open. Since my return to New York, I've been working hard to get the word out about conditions on the ground there. Here are seven facts about living in Puerto Rico right now.

## 1. Stoplights don't work

Driving around after the storm was chaotic. Every intersection became a test of wills—the bold and reckless forged ahead, heedless of cross traffic, the meek waited for a break in traffic to make their move. Although a few of the busier intersections had traffic cops, the vast majority didn't. And the

cops who had to stand out in the sun and the heat all day serving as stoplight replacements clearly were having a rough time. Did I mention there was a heatwave right after the storm?

**2. ATMs and credit cards don't work**

Puerto Rico has a modern banking system, but after the storm hit, many ATMs didn't work at all for lack of power. Those that were still operating quickly ran out of money. Without money, consumers couldn't buy anything, and businesses couldn't sell anything. And of course credit cards didn't work because there was no way to process transactions. The economy basically ground to a halt.

Businesses that did manage to stay open relied on generators and cash. Even then, it was a struggle. One day, I and some friends were having lunch at my favorite restaurant, Toro Salao, when the manager informed us that we were eating the last of the *tostones*, a delicious alternative to French fries made from plantains. The storm had knocked down nearly all of the island's plantain trees.

**3. Cellphones don't work**

Before the hurricane, the island enjoyed decent cellphone coverage pretty much everywhere. The storm knocked out 95 percent of Puerto Rico's cell service [PDF], according to the U.S. Federal Communications Commission. Throughout my stay, phone service remained down across most of the island, with only limited service within San Juan and a few other spots. Restoring phone service will mean not just repairing cell towers that were damaged but also electrifying them.

For most people I met, lack of communication was the single biggest source of stress. Going days on end without knowing whether family members were okay is something that no one should have to go through.

I did manage to place a few calls either with a satellite phone or by calling when I happened to drive through an area that had reception. It's hard to describe that intense feeling of relief when you do finally hear from a loved one. I went through it myself when I got word that my parents and brothers were OK. I experienced an entirely different set of emotions when I learned that my favorite uncle had passed away right after the storm. By the time I found out, he had already been dead a week.

**4. Water doesn't work**

It takes electricity to run the pumps that move water through the system, and it takes electricity to filter and treat the water so that it's safe to drink. I visited some towns that had diesel-powered emergency generators to get the water flowing again. But much of the island's infrastructure was so badly damaged that even now, many places still lack clean running water. The water crisis has in turn prompted medical experts to warn of a looming health crisis in Puerto Rico.

**5. Refrigeration doesn't work**

No electricity means your fridge soon becomes just a big box with rotting food inside. As temperatures climb, food quickly goes bad, and so people are forced to shop for food every day. During my visit, supermarkets that were still open had long lines of people standing in the sun, waiting to shop for a very limited selection of goods. Ice is therefore in high demand, to keep food and drinks cool a little longer and maybe postpone another punishing trip to the store.

**6. It's dark**

No street lights or house lights or lights of any kind means the nights are really dark. I've camped in the desert before, but this was a different kind of dark. Trying to drive at night was surprisingly difficult—street signs were hard to read, buildings were indistinguishable from one another, and the usual landmarks weren't at all obvious.

Photo: Rumi Humphrey **People Power:** Portable solar chargers allow some residents of Vieques, Puerto Rico—including the mayor, Víctor Emeric [right]—to charge their cellphones and small LED lights. The power grid is still down on Vieques.

**7. Solar power works!**

Fortunately, my experience designing and installing solar microgrids for rural villages in Haiti, India, and sub-Saharan Africa, and urban rooftops in New York City came in handy. Before my trip, I'd collected money via a crowd-sourcing fundraiser, and I arrived in Puerto Rico with a suitcase full of portable solar panels designed by Voltaic Systems of Brooklyn, N.Y., suitable for charging cell phones and other small devices. I also brought LED lights, water filters by LifeStraw, and CampStoves by Biolite. As I traveled around the island, I gave the equipment to people I met. The recipients were invariably overwhelmed and grateful, and I felt lucky to be able to offer them the means to connect with their loved ones, drink clean water, and prepare a meal.

There is still so much work to do. I'm back home in Brooklyn but I can't rest. Having worked in the energy industry for a long time, I know that I can make a difference, helping to build a cleaner, more resilient power system for Puerto Rico. If you have a technical background, please consider using your expertise to help others who really need it.

**BLOOMBERG**

Things Are So Bad in Puerto Rico the Island's Bankruptcy Case Moved to NYC

By Steven Church

December 4, 2017

Destroyed chairs sit inside an empty pool at the damaged Marina de Salinas Hotel after Hurricane Maria in Salinas, Puerto Rico, on Friday, Oct. 6, 2017.

The lawyers always win.

So many of San Juan's swankiest hotels remain closed from hurricane damage that a federal judge canceled plans to bring Puerto Rico's historic, $74 billion bankruptcy case back to the island.

Before Hurricane Maria pummeled Puerto Rico in September, causing so much damage that electricity still isn't fully restored, San Juan's hottest hotels would fill up with highly paid bankruptcy advisers attending the regular, two-day hearings held by U.S. District Court Judge Laura Taylor Swain. After the hurricane, Swain suspended her visits to Puerto Rico, saying she would return to hold court there again in December, once the island had recovered.

On Friday, Swain decided against that, issuing a minor scheduling order that cited the difficulty lawyers and financial advisers were having getting hotel and airline reservations.

"The Court has reluctantly decided to conduct the December Omnibus Hearing in New York," Swain wrote. The hearing is now set to take place in Manhattan Dec. 20.

Dozens of lawyers and financial advisers sent by bondholders have been appearing at every court hearing, reflecting the high stakes in the record municipal bankruptcy.

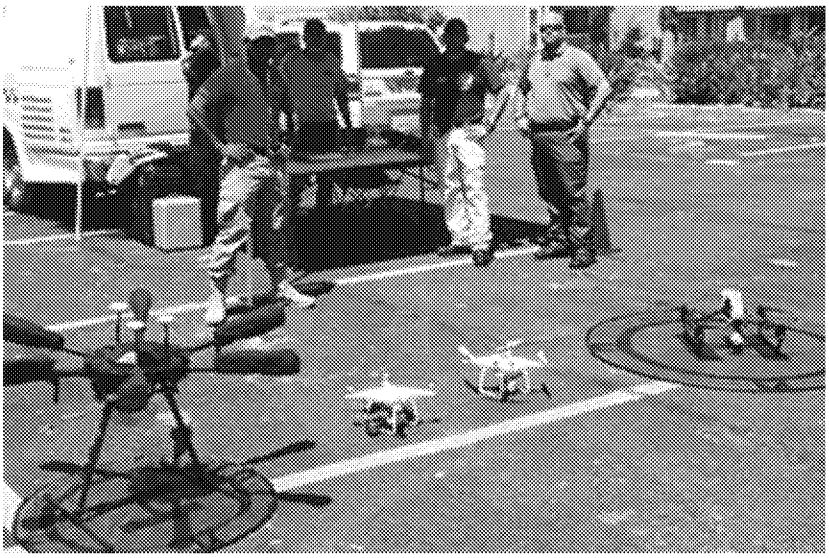
While some advisers, many of whom are based in New York, may have welcomed the Caribbean getaway, they will be much closer to home the week before Christmas than originally planned. As the old bankruptcy saw goes: sometimes the only winners in a case are the lawyers.

The case is In re Commonwealth of Puerto Rico, 17-03283, U.S. District Court, District of Puerto Rico (San Juan).

**MID-HUDSON NEWS**

**Middletown drone pilot provides help following hurricanes**

December 5, 2017



MIDDLETOWN – Tony Reid of Middletown is a corrections officer at Riker's Island and an Army reservist and when he is not engaged in either role, he is a drone pilot who has provided relief following Hurricane Harvey in Texas and Hurricane Maria in Puerto Rico.

In August, Reid and his partners aided state officials in Texas.

"We were utilizing our drones to inspect hazardous material for the Texas Commission for Environmental Quality," Reid said.

When Maria hit Puerto Rico, he hopped on a plane to aid in that relief effort with the American Red Cross and the military.

"Certain roads were so blocked so aerial drones were used to map out the areas where it needs to be cleared and then you get a team down there to cut up the trees."

Reid said using the drones during the hurricane relief missions was "a very valuable learning experience, especially for future natural disasters."

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