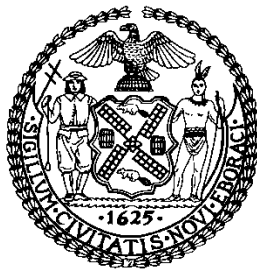


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THE NEW YORK CITY COUNCIL

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February 28, 2013

Oversight - Recovery: Post-Storm Cleanup and the Effects on the City's Health and Infrastructure

I. Introduction

On February 28, 2013, the Committee on Health, chaired by Maria del Carmen Arroyo, the Committee on Environmental Protection, chaired by James F. Gennaro, the Committee on Sanitation and Solid Waste Management, chaired by Letitia James, and the Committee on Parks and Recreation, chaired by Melissa Mark-Viverito (collectively, “the Committees”) will hold an oversight hearing entitled, “Recovery: Post-Storm Cleanup and the Effects on the City’s Health and Infrastructure.”

II. Background

When Superstorm Sandy hit on Monday, October 29, 2012, it caused severe flooding, and fallen trees, aided in the spread of a massive fire that laid waste to dozens of homes, and caused wide-spread power outages and lost phone service for weeks, and in some cases, months. The damage left in the aftermath of the storm was overwhelming. Contaminated water flooded into streets and homes causing property damage, compromised sewage treatment plants poured raw sewage into the waterways, and restaurants that lost power had to discard thousands of dollars’ worth of food. Within a few days, mold started growing in areas still damp from the floods. Mountains of trash formed on curbs as residents emptied their homes and businesses gutted their establishments. Some of these conditions may have fostered the proliferation of vermin. Thousands of trees were knocked down by the storm or had to be cut down creating some four hundred thousand cubic yards of wood waste.

This hearing will focus on the impact these conditions had on the health and safety of residents, businesses and the thousands of volunteers who poured into affected areas to help remove debris, scrub walls, shovel sand, and bring water and supplies to those who needed

assistance. This hearing will also consider the actions taken by relevant City agencies to address the cleanup following the storm.

III. Responsibilities of Primary Agencies Involved in Storm Cleanup

a. Department of Health and Mental Hygiene

The Department of Health and Mental Hygiene (“DOHMH”) protects and promotes the health and mental wellbeing of all New Yorkers. DOHMH has a number of responsibilities, including preventing and controlling chronic diseases such as heart disease, diabetes, asthma and cancer; protecting public safety through immediate response to emergent public health threats and conducting health and safety inspections to enforce the City Health Code. In the aftermath of Superstorm Sandy, DOHMH was responsible for educating volunteers and residents about mold remediation and providing guidance to affected food service establishments. DOHMH also tracks rodent activity and halted the issuance of violations for rodents in storm-ravaged areas.

b. Department of Environmental Protection

The Department of Environmental Protection (“DEP”) is responsible for addressing adverse environmental impacts to all environmental media in New York City. For example, DEP is required to assure the provision of a pure, wholesome and adequate supply of water, the proper disposal of sewage, as well as the prevention of air, water and noise pollution. In addition, DEP is responsible for responding to emergencies caused by the release or threatened release of hazardous substances and the collection of information with respect to the amount, location and nature of hazardous substances. The agency is also responsible for brownfields remediation and development of energy policy. Due to its responsibility for managing environmental pollution and environmental quality impacts, in response to Superstorm Sandy DEP tested air quality for potential air pollutants and coordinated with state and federal

environmental agencies regarding hazardous substances. In addition, the agency provided guidance to impacted communities concerning cleanup, provided some water-removal services for basements, and repaired and restored major sewer and other water-related infrastructure.

c. Department of Sanitation

The Department of Sanitation (“DSNY”) provides waste and recycling collection services for residential and non-profit institutional buildings in New York. In addition, the City puts DSNY’s collection infrastructure to use following significant natural disasters to provide collection of waste and debris generated on public property. Following Superstorm Sandy, DSNY mobilized collection trucks, front-end loaders and dumpsters to address the significant amounts of waste generated as result of the storm. DSNY conducted extended collection in the impacted zones for some four months following the storm, providing daily service to affected homes.

d. Department of Parks and Recreation

The New York City Department of Parks and Recreation (“DPR”) maintains one of the oldest and largest municipal park systems in the country. DPR maintains about 28,700 acres of parkland, including almost 4,000 facilities that encompass nearly 1,000 playgrounds, 800 athletic fields, 550 tennis courts, 63 swimming pools, 35 recreation centers and 14 miles of beaches. All trees growing in the public right-of-way, along streets and in parks and playgrounds, are under the jurisdiction of DPR¹ and DPR, in conjunction with the borough forestry offices, provides a number of basic services for the roughly half million street trees.² These include removing dead trees, pruning trees, responding to storms and other emergencies, and assisting with the control

¹ New York City Charter Section 533(a)(4); Admin. Code Sections 18-104 and 18-105

² See, New York City Department of Parks and Recreation,
http://www.nycgovparks.org/sub_your_park/trees_greenstreets.html

of invasive pests. Superstorm Sandy damaged significant portions of property maintained by DPR including beaches, boardwalks, parks – particularly trees located therein, and playgrounds. Since the storm, DPR has been primarily responsible for addressing the damage that occurred in these locations.

IV. Health and Environmental Concerns and Agency Response

a. Health Concerns

1. Mold

i. Mold Growth and Health Risks

Water damage to buildings caused by flooding can lead to mold contamination, posing adverse health risks.³ Mold, a fungi that can produce toxins, needs moisture to grow.⁴ Mold can grow on the surface of indoor spaces, like walls, but can also grow in subsurface areas within the building envelope, for example, in a building's sheetrock, when such areas are exposed to moisture and not immediately dried.⁵ Buildings that experience indoor water damage and remain wet after 48 hours will generally support visible and extensive mold growth.⁶ The experience of New Orleans and surrounding areas in the aftermath of hurricanes Katrina and Rita in 2005 is instructive: according to the Centers for Disease Control and Prevention ("CDC"), flooding in

³ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, "Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods," June 8, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

⁴ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, "Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods," June 8, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

⁵ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, "Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods," June 8, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

⁶ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, "Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods," June 9, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

New Orleans caused serious and significant mold contamination.⁷ An assessment of homes in New Orleans and several parishes surrounding the city revealed that an estimated 46% of homes had some mold contamination and approximately 17% of homes had heavy mold contamination.⁸

As floodwaters dry, some contaminants become airborne particles. In buildings with standing water, mold particles can get into the HVAC systems and cause widespread issues,⁹ such as allergic reactions; toxic effects and irritation; and infections.¹⁰ While not everyone exposed to mold experiences adverse health effects, exposure to mold can exacerbate underlying conditions, especially for individuals with conditions such as asthma, compromised immune systems or allergies.¹¹ Those with compromised immunity are considerably more susceptible to complications from indoor mold exposure.¹² Furthermore, prolonged exposure to high concentrations of mold can produce immune-related disease.¹³

⁷ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, “Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods,” June 9, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

⁸ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, “Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods,” June 9, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

⁹ Constantine Valhouli, “Mold News: Sandy Leaves Toxic Trouble,” N.Y. OBSERVER, Nov. 7, 2012, <http://observer.com/2012/11/youre-soaking-in-it-sandy-leaves-toxic-trouble/>.

¹⁰ New York City Department of Health and Mental Hygiene, “Guidelines on Assessment and Remediation of Fungi in Indoor Environments,” November 2008, *available at* <http://www.nyc.gov/html/doh/downloads/pdf/epi/epi-mold-guidelines.pdf>.

¹¹ New York City Department of Health and Mental Hygiene, “Guidelines on Assessment and Remediation of Fungi in Indoor Environments,” November 2008, *available at* <http://www.nyc.gov/html/doh/downloads/pdf/epi/epi-mold-guidelines.pdf>.

¹² Constantine Valhouli, “Mold News: Sandy Leaves Toxic Trouble,” N.Y. OBSERVER, Nov. 7, 2012, <http://observer.com/2012/11/youre-soaking-in-it-sandy-leaves-toxic-trouble/>.

¹³ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, “Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods,” June 9, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

ii. Public Education & Guidance on Possible Mold Contamination and Programs for Mold Remediation

Generally, various levels of government offer little guidance as to whether the presence of mold contamination—or what level or degree of contamination—is a basis for evacuating a building. Neither the CDC nor the United States Department of Health and Human Services has guidelines as to how severe the contamination must be before considering an evacuation.¹⁴ Nor is there guidance as to when it might be safe to reoccupy a building damaged by flooding where there is a likelihood of mold contamination. The CDC states that any structure which is flooded “should be presumed to contain materials contaminated with mold if those materials were not thoroughly dried within 48 hours.”¹⁵ The CDC also states that building interiors should be assumed to have substantial mold contamination if visible mold growth is extensive and excess of that present before, and signs of water damage are visible or mildew orders are strong.¹⁶ However, DOHMH states that it “is not possible to determine ‘safe’ or ‘unsafe’ levels of exposure for the general public because of variation of individual susceptibility, lack of standardized and validated environmental exposure sampling methods, and lack of reliable biological markers.”¹⁷ This lack of guidance on evacuating and reoccupying buildings affected by mold can leave residents unclear as to how to proceed.

¹⁴ “Sandy Volunteers Facing Same Risks as 9/11 First Responders,” RT.COM, Dec. 7, 2012, *available at* <http://rt.com/usa/news/volunteers-workers-mold-cleanup-463/>.

¹⁵ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, “Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods,” June 9, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

¹⁶ Mary Brandt et. al, Center for Disease Control, Morbidity and Mortality Weekly Report, “Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods,” June 9, 2006, *available at* <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5508a1.htm>.

¹⁷ New York City Department of Health and Mental Hygiene, “Guidelines on Assessment and Remediation of Fungi in Indoor Environments,” Nov. 2008, *available at* <http://www.nyc.gov/html/doh/downloads/pdf/epi/epi-mold-guidelines.pdf>.

On October 31, two days after Superstorm Sandy hit New York, Mayor Bloomberg advised New Yorkers that, “[a]fter a flood, it is important to clean and dry affected items as quickly as possible to prevent mold growth.”¹⁸ Prior to Sandy, DOHMH’s website contained a page “Mold”¹⁹ with safety tips and information about mold, which links to a 2008 document titled “Guidelines on Assessment and Remediation of Fungi in Indoor Environments.”²⁰ On November 13, DOHMH issued a press release regarding safety recommendations for cleaning up homes after Sandy,²¹ and later issued a document entitled “What to do about Mold in flood damaged homes.”²² DOHMH updated its website with basic information on detecting and removing mold, and created mold handouts which it distributed at town hall meetings, all restoration centers, and to all Council Members.²³

DOHMH’s safety information concerning home mold removal,²⁴ recommends mold removal as soon as possible. DOHMH’s “detailed instructions” call for inspecting the home for mold, including checking behind walls, under carpets and flooring and in other hidden areas.²⁵ DOHMH also advises using a N95 mask—which is designed to filter air-borne particulate matter—and safety goggles when removing or cleaning moldy materials or performing work that

¹⁸ Press Release, “Mayor Bloomberg Updates New Yorkers on City Response to Hurricane Sandy,” Oct. 31, 2012, *available at* www.nyc.gov/html/om/html/2012b/pr384-12.html.

¹⁹ New York City Department of Health and Mental Hygiene, “Mold,” May 24, 2012, *available at* <http://www.nyc.gov/html/doh/html/environmental/mold.shtml> (last visited Feb. 24, 2012).

²⁰ See New York City Department of Health and Mental Hygiene, “Guidelines on Assessment and Remediation of Fungi in Indoor Environments,” Nov. 2008, *available at* <http://www.nyc.gov/html/doh/html/environmental/moldrpt1.shtml> (last visited Feb. 24, 2012).

²¹ See New York City Department of Health and Mental Hygiene, “Health Department Issues Safety Recommendations for Cleaning Up Homes After Hurricane Sandy,” Nov. 13, 2012, *available at* <http://www.nyc.gov/html/doh/em/html/pr/pr034-12.shtml> (last visited Feb. 24, 2012).

²² See New York City Department of Health and Mental Hygiene, “Major Flood Damage and Mold: How to Make Repairs Safely and Effectively,” Nov. 29, 2012, *available at* <http://www.nyc.gov/html/doh/em/downloads/pdf/sandy/major-flood-damage-mold.pdf> (last visited Feb. 24, 2012).

²³ Verbal information provided by representatives of the Bloomberg Administration on Feb. 13, 2013 to staff representatives of the New York City Council.

²⁴ New York City Department of Health and Mental Hygiene, “Removing Mold,” *available at* <http://www.nyc.gov/html/doh/em/html/repairs/mold.shtml> (last visited February 24, 2013).

²⁵ New York City Department of Health and Mental Hygiene, “Removing Mold: Detailed Instructions,” *available at* <http://www.nyc.gov/html/doh/em/html/repairs/mold-inst.shtml> (last visited February 24, 2013).

disturbs mold.²⁶ DOHMH notes that these masks are available for free at the City's Restoration Centers, which were created to help New Yorkers in areas most affected by Sandy get access to information and services.²⁷

Additionally, the DOHMH guidelines also recommend hiring a contractor to do cleanup and repair if the home has extensive damage. Mold remediation does not require licensing in New York and the work is done by many general contractors.²⁸ DOHMH does not recommend specific contractors with expertise in mold remediation, but instead refers to lists of local contractors with experience in mold remediation maintained by several independent organizations.²⁹

Currently there is limited funding available for mold remediation, made available through a patchwork of sources. While homeowners can use Federal Emergency Management Agency ("FEMA") assistance to address mold, costs can be significant, and there is no direct federal funding available for mold remediation.³⁰ On January 31, Mayor Bloomberg and the Mayor's Office of Housing Recovery announced that the Mayor's Fund to Advance New York City (the "Mayor's Fund"), in partnership with the American Red Cross and administered by Neighborhood Revitalization NYC, an affiliate of the Local Initiatives Support Corporation ("LISC"), a non-profit mission-based lender, launched a \$15 million remediation program to

²⁶ New York City Department of Health and Mental Hygiene, "Removing Mold," *available at* <http://www.nyc.gov/html/doh/em/html/repairs/mold.shtml> (last visited February 24, 2013).

²⁷ The City of New York, "The City of New York Restoration Centers," <http://www.nyc.gov/html/misc/html/2012/dasc.html> (last visited February 24, 2013).

²⁸ New York City Department of Health and Mental Hygiene, "Removing Mold: Detailed Instructions," *available at* <http://www.nyc.gov/html/doh/em/html/repairs/mold-inst.shtml> (last visited February 24, 2013).

²⁹ New York City Department of Health and Mental Hygiene, "Removing Mold: Detailed Instructions," *available at* <http://www.nyc.gov/html/doh/em/html/repairs/mold-inst.shtml> (last visited February 24, 2013).

³⁰ See Press Release, "Mayor Bloomberg Announces New Program to Address Water Damage and Mold in Neighborhoods Hit Hardest by Hurricane Sandy," Jan. 31, 2013.

remove mold in approximately 2,000 homes in the hardest hit areas.³¹ Under the program, Neighborhood Revitalization NYC will coordinate mold treatment that will be performed at no cost to the homeowner by private contractors and not-for-profit organizations.³² LISC anticipates at least 200 units will be completed in each borough.³³ The program was anticipated to have begun in early February.³⁴

In addition to the program for mold treatment, a press release by the Mayor's office indicates that the City worked with the Environmental Contractors Association to provide homeowners and volunteers with the proper equipment to remove mold and distributed hundreds of dehumidifiers and heaters at relief centers in the most affected areas.³⁵ The Mayor's Fund is also sponsoring free awareness and safe practice trainings on mold treatment work. These trainings are stated to take place in many of the hardest hit communities to educate homeowners and volunteers on how to effectively treat mold, and thousands of mold supply kits will be distributed at no cost.³⁶ Trainings will be led by CUNY School of Public Health at Hunter College and the University of Medicine and Dentistry of New Jersey School of Public Health, in coordination with the City's Department of Health and Mental Hygiene.³⁷ The program anticipates holding 40 awareness sessions and 30 safe practices trainings.³⁸

³¹ Press Release, "Mayor Bloomberg Announces New Program to Address Water Damage and Mold in Neighborhoods Hit Hardest by Hurricane Sandy," Jan. 31, 2013.

³² *Id.*

³³ LISC, "LISC's Mold Treatment Program," (undated) (on file with author).

³⁴ *Id.*

³⁵ See Press Release, "Mayor Bloomberg Announces New Program to Address Water Damage and Mold in Neighborhoods Hit Hardest by Hurricane Sandy," Jan. 31, 2013.

³⁶ See Press Release, "Mayor Bloomberg Announces New Program to Address Water Damage and Mold in Neighborhoods Hit Hardest by Hurricane Sandy," Jan. 31, 2013.

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³⁸ See Press Release, "Mayor Bloomberg Announces New Program to Address Water Damage and Mold in Neighborhoods Hit Hardest by Hurricane Sandy," Jan. 31, 2013.

Beyond the sponsored mold remediation projects and awareness and training programs, it is unclear what steps the Mayor and/or the DOHMH are taking to ensure that buildings are safe to occupy. Furthermore, it is unclear whether more needs to be done to ensure that single and two-family homes, multiple dwellings and commercial buildings with potential mold contamination will all adequately be addressed and reached under these programs.

2. Rodents

There has been speculation about the impact Sandy had on rat populations in affected areas and throughout the City. Initially, some surmised that flooding had displaced thousands of rats, moving them further inland and providing them with a feast of trash and debris caused by the storm.³⁹ Some rodent specialists challenged this theory, instead predicting that rats would drown in submerged subway tunnels.⁴⁰ Shortly after the storm, a spokeswoman for DOHMH stated there was no evidence of an increase in rat activity.⁴¹ However, more recent reports suggest that predictions that rats in affected areas would drown may have been wrong. It is believed that the flooding combined with the cold weather and easy access to garbage has driven rodents into homes, schools and businesses that escaped Sandy's path.⁴² For example, exterminators are being inundated with calls from Dumbo, Brooklyn Heights and parts of Lower

³⁹ Johnna Rizzo, "After Sandy's New York Deluge, a Flood of Rats?," NATIONAL GEOGRAPHIC DAILY NEWS, Oct. 31, 2012, *available at* <http://news.nationalgeographic.com/news/2012/10/121031-hurricane-sandy-new-york-rats-flooded-subway-weather-nation-science/>.

⁴⁰ Cara Buckley, "Storm's Toll Creeps Inland, 4 Tiny Feet at a Time," N.Y. TIMES, February 6, 2013.

⁴¹ Andrew Mach & Maggie Fox, "Gritty New York faces grimy mess: Rotten meat, failing toilets," VITALS ON NBC NEWS, Nov. 1, 2012, *available at* http://vitals.nbcnews.com/_news/2012/11/01/14857750-gritty-new-york-faces-grimy-mess-rotten-meat-failing-toilets?lite (last visited Feb. 20, 2013).

⁴² Andrew Mach & Maggie Fox, "Gritty New York faces grimy mess: Rotten meat, failing toilets," VITALS ON NBC NEWS, Nov. 1, 2012, *available at* http://vitals.nbcnews.com/_news/2012/11/01/14857750-gritty-new-york-faces-grimy-mess-rotten-meat-failing-toilets?lite (last visited Feb. 20, 2013).

Manhattan.⁴³ Additionally, some reports indicate that rats may be thriving in Sandy affected areas too, feeding on the waste left in empty homes or by workers doing repairs.⁴⁴

The data that is available on rats after the storm provide an unclear picture. The total number of violations for rodents issued since Superstorm Sandy dropped to 1,996, compared to 2,750 for the same period the previous year.⁴⁵ However, as of November 1, DOHMH stopped issuing violations for rodents in Zone A, which includes areas most affected by the storm in all five boroughs, making it difficult to assess whether there has been a change in rodent populations in these areas.⁴⁶ While violations have gone down, complaints have gone up. In the period after Sandy, 70 more complaints were filed by residents in neighborhoods of the Lower East Side, Lower Manhattan, Greenpoint, Coney Island, and Carroll Gardens/Red Hook compared to the same time period last year.⁴⁷ Therefore, analysis of DOHMH statistics on rat complaints and violations represent an unclear and incomplete picture of Sandy's impact on rats.

3. Food Service Establishments

As a result of the power outages, many of the City 24,000 restaurants were forced to dispose of large quantities of food that spoiled or were at risk of spoiling.⁴⁸ In the storm's immediate aftermath, some restaurants provided free impromptu sidewalk buffets to make use of food before it spoiled.⁴⁹ However, as the loss of power persisted in the ensuing days, food

⁴³ Cara Buckley, "Storm's Toll Creeps Inland, 4 Tiny Feet at a Time," N.Y. TIMES, February 6, 2013.

⁴⁴ Cara Buckley, "Storm's Toll Creeps Inland, 4 Tiny Feet at a Time," N.Y. TIMES, February 6, 2013.

⁴⁵ Cara Buckley, "Storm's Toll Creeps Inland, 4 Tiny Feet at a Time," N.Y. TIMES, February 6, 2013.

⁴⁶ *See id.*

⁴⁷ Kia Gregory, "Rise in Complaints About Rats Prompts Call for New Eradication Program," N.Y. TIMES, Feb. 19, 2013.

⁴⁸ Andrew Mach & Maggie Fox, "Gritty New York faces grimy mess: Rotten meat, failing toilets," VITALS ON NBC NEWS, Nov. 1, 2012, http://vitals.nbcnews.com/_news/2012/11/01/14857750-gritty-new-york-faces-grimy-mess-rotten-meat-failing-toilets?lite (last visited Feb. 20, 2013).

⁴⁹ Max Falkowitz, How Hurricane Sandy is Affecting Restaurants in NYC, SERIOUS EATS, Nov. 2, 2012, *available at* <http://newyork.seriousseats.com/2012/11/hurricane-sandy-restaurants-nyc-damages.html> (last visited Feb. 24, 2013).

service establishments (“FSEs”) found it difficult to prepare food without electricity and service the growing demand.⁵⁰

DOHMH discouraged FSEs from conducting business without electrical power, but realized that many provided a critical community service by doing so in neighborhoods ravaged by Sandy.⁵¹ To that end—rather than requiring inspections of FSEs before they could reopen after the storm—DOHMH instead suspended regular restaurant inspections until Tuesday, November 12, 2013,⁵² and issued food safety and water guidelines to help the City stay healthy and safe as power was restored.⁵³ According to a press release, DOHMH stated that it would also dispatch inspectors to visit restaurants that suffered power and water outages to provide guidance on discarding food, cleaning, and disinfecting, as well as other procedures for protecting the public.⁵⁴ DOHMH guidelines specifically directed FSEs to discard food held above 41 degrees Fahrenheit for more than two hours.⁵⁵ The Mayor also issued precautions, encouraging the disposal of food, including packaged food that was touched by flood water.⁵⁶ DOHMH also offered to do consultations with FSEs at the owner’s request.

⁵⁰ Max Falkowitz, How Hurricane Sandy is Affecting Restaurants in NYC, *SERIOUS EATS*, Nov. 2, 2012, *available at* <http://newyork.serious eats.com/2012/11/hurricane-sandy-restaurants-nyc-damages.html> (last visited Feb. 24, 2013).

⁵² *See id.*

⁵³ *See* Press Release, “Health Department Issues Food Safety and Water Guidelines for New Yorkers as Power is Restored in Some Areas,” Nov. 2, 2012, *available at* www.nyc.gov/html/doh/html/pr2012/pr033-12.shtml (last visited Feb. 20, 2013).

⁵⁴ *See* Press Release, “Health Department Issues Food Safety and Water Guidelines for New Yorkers as Power is Restored in Some Areas,” Nov. 2, 2012, *available at* www.nyc.gov/html/doh/html/pr2012/pr033-12.shtml (last visited Feb. 24, 2013).

⁵⁵ New York City Department of Health and Mental Hygiene, “Hurricane Sandy – Emergency Guidelines for Operating a Food Service Establishment Without Electrical Service,” *available at* <http://www.nyc.gov/html/doh/downloads/pdf/inspect/fse-power-out.pdf> (last visited Feb. 20, 2013).

⁵⁶ *See* Press Release, “Mayor Bloomberg Updates New Yorkers on City Response to Hurricane Sandy,” Oct. 31, 2012.

b. Environmental Concerns

1. Drinking Water and Sewage Disposal

Most people were able to obtain potable water from their faucets and flush their toilets. However in the beach community of Breezy Point, located on the western tip of Far Rockaway Island, their water mains collapsed due to pressure required to attempt to extinguish an electrical fire and the community is currently not sewered. Breezy Point uses septic tanks for waste disposal. Other communities reported sewage backups. This is unusual but not surprising as because of Sandy 10 of the 14 DEP wastewater treatment plants were damaged or completely failed with the most damage impacting the Rockaway Plant. The North River Sewage Treatment Plant in Harlem also lost all utility power due to flooding of the electrical substation at the lower level.

The sewage treatment plant failures resulted in the discharge of 560 million gallons of waste water sewage and sea water. However, sewage treatment plants also receive wastewater from industrial (non-domestic) users. The General Pretreatment Regulations establish responsibilities of federal, state, and local government, industry and the public to implement Pretreatment Standards to control pollutants from the industrial users which may pass through or interfere with POTW treatment processes or which may contaminate sewage sludge. Since the sewage treatment plants also receive industrial wastewater, it is likely that this discharge contained hazardous materials that may or may not have been subject to industrial pretreatment. In response to this risk, DEP issued a Water Quality advisory to recreational water users. This discharge from the sewage treatment plants combined with the sea water storm surge resulted in many individuals reporting a strong smell of sewage. Septic tank users were also impacted by the storm surge as some septic tanks likely malfunctioned. Forty two of DEP's 96 pumping

stations were also damaged when the Manhattan Pumping Station located at 13th street and avenue D experienced damage. Due to power failures, many DEP facilities had to operate on emergency generators for upwards of two weeks. In some cases, DEP was chlorinating untreated effluent or providing disinfection for wastewaters that would otherwise have been released or backed up into homes or businesses. However by November 1, 2012 ninety-nine percent of the City's sewage was being treated according to DEP Commissioner Carter Strickland. For property owners with sewage backups in their home, DOHMH provided information on its website regarding how to clean such backups.⁵⁷

Flood waters contaminated with sewage typically contain a long list of pathogens including parasites such as Giardia, bacteria including E. Coli and Shignella and viruses including Hepatitis A. Contact with floodwaters contaminated with sewage may result in illnesses including gastrointestinal infections, wound infections, respiratory infections and upper respiratory symptoms. Respiratory and stomach conditions are reported more frequently than other health problems in studies of health impacts after Katrina. Floodwaters also result in respiratory problems due to moisture, dampness and mold according to the Environmental Protection Agency ("EPA").

Going forward, DEP will need to examine its relationship with private communities, like Breezy Point, where the community, by written agreement, has assumed responsibility for maintaining its drinking water and sewage infrastructure. DEP will also need to address the appropriate response and suitable parties for remediating sewage backups.

⁵⁷ See New York City Department of Health and Mental Hygiene, "Cleaning Sewage Backups," *available at* <http://www.nyc.gov/html/doh/em/html/repairs/sewage.shtml> (last visited Feb. 20, 2013).

2. Air Pollution

More than 400,000 cubic yards of wood waste was generated as a result of Superstorm Sandy, and over 300,000 cubic yards of the material has been ground and beneficially reused to date. For the remaining green waste, Environmental Chemical Corporation (“ECC”), the primary contractor for the United States Army Corps of Engineers leading the Superstorm Sandy Recovery, applied for a variance ⁵⁸from parts of the Air Pollution Control Code to allow open burning of this wood waste. City, State, and Federal agencies overseeing the disposal of this wood felt, among other things, that burning some of the wood would save significant amounts of money and would help insure that all wood waste would be disposed of prior to the hatch date of the Asian longhorned beetle (*Anoplophora glabripennis*) larva, on May 1, 2013, as required by United State Department of Agriculture rules. This beetle is a devastating invasive pest that the Department of Agriculture has spent over \$395 million combating since the mid-1990s; in New York City over 10,000 trees have been removed in efforts to contain this pest. In addition, chipping and trucking substantial amounts of wood also can cause air quality problems.

To burn the wood, ECC commenced use of the air curtain burners (“ACBs”) on December 27, 2012, and continuously operated at least one ACB unit until February 14, 2013, when burning was permanently ended. The burning was monitored by both EPA monitors located around the perimeter of the site and by DEC monitors operating in the nearby communities. There were exceedances of small particulate matter (PM_{2.5}) 24-hour air standards in Mill Basin on January 28 and in Mill Basin and the Rockaway community on January 29, but DEC and DEP determined that both exceedances were caused by meteorological conditions and

⁵⁸ See §70-0116 of the Environmental Conservation Law , 6 NYCRR §621.12 and from §§24-110, 118 and 119 of the New York City Administrative Code. ACB are also allowed to be used in disaster cleanups by the federal government (40 CFR 60.2969) under emergency declarations, and they have been so employed often.

not by the burning of wood. Again, on January 13, 2013, another air monitor recorded an apparent PM_{2.5} exceedance, but EPA later re-calculated the concentration and found it to be well below the regulatory threshold.

A coalition of environmental groups opposed the burning of this material and filed a petition seeking a declaratory ruling from the Department of Environmental Conservation that the use of air curtain burners fit the definition of an incinerator. On February 14, the Army Corps of Engineers issued a contract to a company capable of grinding the remaining 42,300 cubic yards of wood waste prior to the May 1 deadline, and the burners were deemed no longer necessary and were shut down.

3. Hazardous Substances

According to DEC, approximately 4,063 hazardous substance spills were reported to it. Although DEP did respond to some reports of oil spills, for the most part reports of spills were referred to DEC, as this agency has primary jurisdiction related to such occurrences. The agencies have joint responsibility over chemical or hazardous substance spills. Recognizing that many homes in Sandy impacted areas had oil tanks and other equipment in their basements, DEC developed and distributed a flyer advising homeowners that they would pump out their basements for free for thirty days after Sandy. The flyers were distributed in a numbers of impacted areas. DEC ultimately undertook pump out of oil contaminated water at 1,064 sites which consisted largely of pumping out basements. The contaminated wastewater was taken to a barge and from the barge to upstate landfills. However, there have been reports that not all impacted areas received these flyers. Consequently, homeowners in these areas could not avail themselves of this opportunity and likely undertook the cleanup of flooded basements and first floors that were contaminated with sewage and oil spills without the assistance of DEC.

Superfund sites, and particularly the Gowanus Canal and Newtown Creek, were impacted by the storm, and the Gowanus Canal flooded in places. It is possible that such flooding could have exposed surrounding neighborhoods to toxic materials, although testing from the EPA so far has indicated no such impacts. With respect to hazardous substances generated, treated or stored, DEP visited 400 Right-To-Know sites. Right to Know sites generate, treat or store hazardous materials and are required by law to reported releases of hazardous materials. Of these sites, seven reported that hazardous materials were washed away.

c. Clean Up

1. Trash and Debris Removal

To date, DSNY has collected a total of 418,000 tons of debris generated by Superstorm Sandy and an additional 27,000 tons of wood debris from throughout the city. This amount of waste is equal to almost one-quarter of the total residential and institutional waste generated by the City in an entire year. In addition to the increase in waste generated, the storm caused significant disruptions in the DSNY waste export network that included rail disruptions, lost rail cars and fuel shortages. The Covanta Waste to Energy facility in Essex County, New Jersey, which accepts a significant amount of Manhattan's residential and institutional waste, closed due to flooding. In the days immediately following the storm, the influx of waste caused back-ups at transfer stations where DSNY trucks tip material, and DSNY was limited from distributing trucks to impacted zones while they were waiting to tip waste.

In order to address this significant influx of waste and the residual problems, DSNY implemented a series of emergency measures. Immediately following the storm, DSNY suspended recycling collection throughout the City for approximately two weeks in order to reallocate resources to the impacted regions of the City. The agency sought and obtained from

the DEC permits to establish temporary waste sites in close proximity to the impacted zones. Specifically, DSNY established seven different sites in or near the impacted zones, the list of which had been prepared in advance by OEM, DPR, the City's Economic Development Corporation and DEC. The locations were the following: Jacob Riis Park; Beach 52 Street; Wolf's Pond Park; Cedar Grove Park; Fresh Kills Plants one and two; and Father Capodano Blvd. DSNY managed these sites until November 19th, at which time the Army Corps of Engineers took over control of the sites. At this time, only two of the seven temporary waste sites remain open, Jacob Riis Park and Father Capodano Blvd. DSNY continues delivering waste to the two sites that remain open.

In addition to the temporary waste sites, DSNY entered into five different emergency contracts for the transfer and export of the additional waste, two for construction and demolition waste and three for putrescible waste. Although DSNY did not require residents in the impacted zone to source separate recyclables, DSNY conducted post-collection separation of metal material at the temporary waste sites. The agency also provided removal of Chlorofluorocarbon (commonly referred to as "CFC") and other types of refrigerant from household appliances that were to be discarded. All of the waste generated from the storm was delivered to the normal landfills where DSNY waste is delivered – there was no need for special waste landfills or incinerators.

At this time, DSNY continues to provide additional collection in the impacted zones and plans to continue doing so through March 18. The Essex County Incinerator resumed acceptance of City waste on November 12. DSNY is no longer making use of the emergency waste contracts.

2. Parks

i. Trees and Playgrounds

Superstorm Sandy caused severe damage to trees located in City parks including numerous fallen trees and downed and hanging tree limbs. As a result of the storm, City parks and playgrounds were closed for almost a week and approximately 8,577 fallen street trees, 3,365 fallen limbs and 1,297 hanging branches were recorded throughout the City by DPR.⁵⁹

In a severe storm, clearing roads and securing all damaged trees is DPR's first priority.⁶⁰ Days before the storm, DPR's forestry division instructed its private contractors to assemble additional tree crews. Typically, DPR advises that if a tree has fallen or sustained storm damage, City residents should call 311, however, if a tree emergency has put lives in immediate danger, DPR advises residents to call 911.⁶¹ Superstorm Sandy, however, required a more involved response. The United States Forest Service wildland firefighters and interagency crews, who specialize in wildland firefighting and removal of dangerous limbs and trees affected by high wind storms, were mobilized immediately after the storm to clear downed trees, assist at FEMA facilities and provide communications support to local emergency response agencies.⁶² Ten incident management teams and 41 wildfire suppression crews totaling approximately 1,100 personnel, of which 950 were Forest Service employees, worked in impacted areas including New York, New Jersey, Connecticut and West Virginia.⁶³

⁵⁹ Lisa W. Foderaro, "Storm Inflicted a Beating on City Trees," *The New York Times*, November 11, 2012.

⁶⁰ *See*, New York City Department of Parks and Recreation Website, Storm Response, <http://www.nycgovparks.org/services/forestry/storm-response>.

⁶¹ *See*, New York City Department of Parks and Recreation, Storm Response, <http://www.nycgovparks.org/services/forestry/storm-response>.

⁶² Press Release of the United States Forest Service, "US Forest Service Wildland Firefighters and Interagency Crews Mobilized to Assist With Hurricane Sandy Response," November 1, 2012.

⁶³ *Id.*

Since the storm, DPR has responded to over 20,044 tree-service requests, resulting in more than 13,000 work orders at a cost to the City of over \$12 million so far.⁶⁴ Fallen and damaged trees have been placed in piles on sidewalks reaching over 20 feet high and in some cases running as long as two city blocks.⁶⁵ Most of the trees and tree limbs are grinded to wood chips which will be used as mulch on tree and flower beds throughout the City.⁶⁶

ii. Boardwalks and Beaches

Superstorm Sandy destroyed nearly five miles of the boardwalk at Rockaway Beach with substantial damage between Beach 80th Street and Beach 106th Street.⁶⁷ Although the concrete portions of the boardwalk remain, the wood portions were destroyed or washed away.⁶⁸ In addition, the skate park and handball courts along with playground equipment located between Beach 88th Street and Beach 109th Streets were also destroyed.⁶⁹

After the storm, DPR collected damaged pieces of the boardwalk including benches and placed them in storage.⁷⁰ DPR, along with FEMA and the Army Corps of Engineers have piled parts of the boardwalk on the beach and sent other debris to the temporary waste transfer station at Jacob Riis Park to determine, in coordination with DSNY, which parts can be reused.⁷¹

In order to have the beach open in the Rockaways by the summer, DPR intends to fence off areas of the boardwalk with substantial damage and allow beachgoers access to the beach

⁶⁴ Lisa W. Foderaro, “Storm Inflicted a Beating on City Trees,” The New York Times, November 11, 2012.

⁶⁵ Id.

⁶⁶ Id.

⁶⁷ Roger Clark, “Parks Department To Rebuild Sections of Rockaway Beach Boardwalk,” NY1.com, November 29, 2012, http://www.ny1.com/content/top_stories/173075/parks-department-to-rebuild-sections-of-rockaway-beach-boardwalk.

⁶⁸ Liz Robbins, “Clash Over Future of Wood From the Storm-Torn Rockaway Boardwalk,” The New York Times, November 15, 2012.

⁶⁹ Lisa L. Colangelo, “Rockaway Beaches to Open by Summer With Same Number of Lifeguards But A Lot Less Boardwalk,” New York Daily News, January 9, 2013.

⁷⁰ Liz Robbins, “Clash Over Future of Wood From the Storm-Torn Rockaway Boardwalk,” The New York Times, November 15, 2012.

⁷¹ Id.

through breezeways every few blocks.⁷² Areas of the boardwalk between Beach 9th Street and Beach 35th Street and between Beach 40th and Beach 60th Street did not sustain substantial damage and will be open this summer.⁷³ DPR plans to create boardwalk “islands” around three damaged buildings at Beach 86th Street, Beach 97th Street and Beach 106th Street.⁷⁴ In addition, DPR plans to add restrooms and lifeguard stands at Beach 116th Street.⁷⁵

Unlike the boardwalk at Rockaway Beach, the Coney Island boardwalk was not damaged, although floodwater damaged some electrical equipment, arcades and basements and ground floors of businesses along the boardwalk.⁷⁶

In addition to damaged boardwalks and businesses abutting the boardwalk, Sandy displaced significant amounts of sand from along the coast and into backyards, basements and City streets. Before the sand could be placed back on the beaches, it needed to be cleaned.⁷⁷ The Army Corps of Engineers has overseen the sand cleaning operation in Queens on behalf of DPR, operating seven days a week, 24 hours per day.⁷⁸ As of mid-January, the Army Corps has filtered some 94,000 cubic yards of sand.⁷⁹ The process includes loader trucks depositing the sand into the top of the cleaning equipment where giant vibrating screens shake the sand and extract debris and garbage while the cleaned sand is set aside to be transported by truck for reuse

⁷² Lisa L. Colangelo, “Rockaway Beaches to Open by Summer With Same Number of Lifeguards But A Lot Less Boardwalk,” New York Daily News, January 9, 2013.

⁷³ Id.

⁷⁴ Bob Hardt, “NY1 Blog: NY1’s Bob Hardt Reports On Sandy From Rockaway Beach,” NY1.com, January 25, 2013.

⁷⁵ Michael Herzenberg, “Parks Department Releases Plan To Rebuild Parts Of Rockaway Beach Boardwalk,” NY1.com, January 8, 2013.

⁷⁶ Lisa W. Foderaro, “Despite Battering, Most City Parks Will Reopen on Saturday,” The New York Times, November 1, 2012.

⁷⁷ Lisa W. Foderaro, “Before Rebuilding Beaches, Plucking Debris From Storm-Tossed Sand,” The New York Times, January 10, 2013.

⁷⁸ Id.

⁷⁹ Id.

on the City's beaches.⁸⁰ As a result of the cleaning process, approximately 10,800 truckloads of debris and garbage were sent to landfills in upstate New York and Pennsylvania.⁸¹

V. Conclusion

The Committees involved in this oversight hearing hope to use the hearing to determine what, if any, health risks resulted from the flooding and where these risks exist; what, if any, guidance was provided by DOHMH to food service establishments in the impacted zones of the City concerning cleanup and food safety guidelines; what protocols the City used to educate exposed residents and others about health risks associated with cleaning up in the aftermath of the storm; the impact the storm had on rodent and other pest populations; what steps the City is taking to ensure that buildings are safe to occupy with respect to the health of occupants; whether more needs to be done to ensure that all buildings with potential mold contamination will be adequately addressed and reached under current programs for mold remediation; how the City performed with respect to cleaning up contamination from the storm; and finally, the extent of damage to City property and what actions can and have been taken to address such damage.

⁸⁰ Id.

⁸¹ Id.