National Institute of
Environmental Health Sciences

NIH Disaster Research Response Workshop Participant Manual

Boston, Massachusetts
July 19, 2016

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1. Introduction

Progress in disaster preparedness, response, and recovery is often hampered by the relative absence of scientific data that can help guide systems development, protocols and procedures, citizen action, and use of medical countermeasures. Short and long term health consequences to a variety of exposures often go unknown. Behavioral health consequences have been identified, but preventive and mitigating measures are not yet fully understood. While there are many reasons for the overall lack of disaster science, a major contributor is the inability to conduct disaster research in the immediate post-disaster period when critical information is most perishable. Public health and medical responders have recognized the need to conduct disaster research for years. While research grants have been awarded to study the aftermath of disasters, such as the BP Deepwater Horizon Oil Spill and Hurricane Sandy, research efforts came to fruition only after long periods in which protocols were developed and approved by Institutional Review Boards (IRB) and after funding became available. In these instances, local responders were well into the recovery period when research activity began. To date there is no systematic research infrastructure to support public health and medical investigations following disasters.

In response to recent disasters and the research conducted in their wake, NIH has committed to fund the NIH Disaster Research Response Program (DR2). This program, developed by the National Institute of Environmental Health Sciences (NIEHS) in collaboration with the National Library of Medicine (NLM), aims to create a disaster research system consisting of coordinated environmental health disaster research data collection tools and a network of trained research responders. Elements of the system include epidemiologic questionnaires and clinical protocols, specially trained disaster researchers, environmental health disaster research networks, a reach-back roster of subject matter experts, and a support infrastructure that can be activated and deployed during public health emergencies and declared disasters. NIEHS is building on its extensive program capabilities, research networks, and field experience in leading this pilot.

NIEHS and its partners held the first DR2 Tabletop Exercise on April 7, 2014 in the Port of Long Beach, California. The goals of the first exercise were to test and gather feedback on the concept of operations (ConOps) and to facilitate DR2 integration with state, local, private, and federal stakeholders. The exercise served to bring together these stakeholders to discuss the process of integrating research responders into the response system. NIEHS used the resulting feedback to revise the key components of the ConOps. The Major Findings Report can be found on the NIEHS website: https://tools.niehs.nih.gov/wetp/public/hasl_get_blob.cfm?ID=10101.

NIEHS and its partners held the second DR2 Tabletop Exercise in Houston, Texas on February 16, 2015. Like the 2014 exercise, the format for the second exercise was also a facilitated discussion to consider potential procedures for including a research component

in the larger response following a disaster. The exercise was comprised of two sessions: The morning session consisted of a facilitated discussion with all stakeholders to assess and evaluate research capabilities and capacities, identify mechanisms to engage federal partners, and explore future partnerships between all stakeholders. The afternoon session involved an interactive activity where participants had an opportunity to learn about and provide input to a NIEHS Rapid Acquisition of Pre- and Post-Incident Disaster Data (RAPIDD) research protocol designed for the rapid collection of baseline information from responders and disaster workers. The format for this session simulated enrollment of participants into a comprehensive post-disaster research study and the goal was to allow the exchange of ideas among government officials, academia and community stakeholders on best practices for study operations.

This third workshop is being held on July 19, 2016 in Boston, Massachusetts at the Thomas P. O'Neill, Jr. Federal Building. This workshop brings together local, state, and federal public health and emergency response offices, community members, worker organizations, private industries, and other stakeholders to better understand how long-term, large scale research is requested at the local and state level, and the process in which outside assistance research requests are managed. Participants will also assess how a process, working off of the current infrastructure, might facilitate collaborations between the differing groups to come together to develop and implement needed research.

Important Notices:

- **Please be aware that notes from this workshop will not attribute comments to individuals or agencies.**

- **There will be a videographer on site filming the event.**

2. Agenda

July 19, 2016

8:30 a.m.	**Sign-in and Registration** *Thomas "Tip" O'Neill Jr. Federal Building* *10 Causeway Street. Boston, MA 02222*
9:00 - 9:50 a.m.	**Pre-deployment Safety and Health and Incident Command Training** David Coffey *University of Massachusetts Lowell* Robert Zalewski *University of Massachusetts Lowell*
10:00 - 10:05 a.m.	**Welcome and Opening Remarks** Linda Birnbaum, Ph.D. *Director, NIEHS & NTP*
10:05 - 10:25 a.m.	**Participant Introductions**
10:25 - 10:30 a.m.	**Overview of the Disaster Research Response Program** Aubrey Miller, M.D. *Senior Medical Advisor, NIEHS*
10:30 – 11:05 a.m.	**Workshop Objectives, Scenario Introduction, Charge** Kevin Yeskey, M.D. *MDB, Inc.*
11:05 – 11:15 a.m.	**Break**
11:15 a.m. – 12:30 p.m.	**Facilitated Discussion**
12:30 - 1:30 p.m.	**Lunch**
1:30 - 2:35 p.m.	**Facilitated Discussion**
2:35 - 2:45 p.m.	**Break**
2:45 - 4:15 p.m.	**Facilitated Discussion**
4:15 - 4:25 p.m.	**Final Remarks** Linda Birnbaum, Ph.D. Aubrey Miller, M.D. Joseph "Chip" Hughes *Director, Worker Training Program, NIEHS*
4:25 – 4:30 p.m.	**Evaluation Forms** **Conclusion of DR2 Workshop**

3. Logistics

3.1 Transportation and Parking

If you are using the subway (the T), the O'Neill Federal Building is adjacent to North Station. For subway maps, commuter rail fares, and schedules, visit the Massachusetts Bay Transportation Authority website at: http://www.mbta.com/.

There are several public parking garages within walking distance of the building. Parking garages cost roughly $20 per day.

3.2 Security

You must use the public entrance located in the front of the building at 10 Causeway Street. This is a federal building and you will be required to pass through a security check point (weapons are prohibited). You will need to walk through a metal detector and any bags you bring will be run through an x-ray scanner. We suggest you treat it like an airport and bring as little with you as possible. It could be a slow process, your patience is appreciated. **Please arrive early to allow enough time to pass through security.**

3.3 Registration and Sign-in

Registration is free, but required for this workshop.

The workshop sign-in desk at the Federal Building will open at 8:30 a.m. Please sign-in and collect your nametag and a folder containing materials for the workshop. Staff members can be identified by their nametags.

The pre-deployment safety and health training begins at 9:00a.m. and the workshop will being promptly at 10:00 a.m.

4. Overall Concepts

4.1 Objectives

Workshop Objectives

- Provide a scenario-based forum for all stakeholders to participate in the discussion related to conducting post-disaster research
- Discuss the decision-making process by which post-disaster research is initiated and conducted

- Assess the process by which research resources are identified, trained, coordinated, and deployed
- Describe how research protocols are developed, approved, and implemented
- Examine how data is managed and results shared with stakeholders
- Identify opportunities for integrating research into the emergency response infrastructure
- Enhance relationship building and knowledge sharing between local, state, and federal stakeholders

4.2 Guidelines

Format

Participants of the workshop will be engaging in a facilitated discussion about their organization's response to disaster research. The discussion is organized in two phases, and in each phase, there will be five breakout groups. Each breakout group is composed of various affinity groups, such as local, state, and federal local public health and emergency management organizations, academic institutions, worker organizations, community members, and others. Facilitators in each breakout group will introduce injects, answer questions, and maintain the flow of the scenario. At the end of each phase, all groups will report out main findings in the auditorium.

Breakout group assignments for both phases will be provided on the cover of your meeting folder. Please sit with your designated group. Please do not change groups without first discussing that with one of the exercise facilitators. The first number represents the Phase I breakout group number and the second number represents Phase II breakout group number. Staff members will be available to usher participants to their breakout groups or to answer any questions.

Following the discussion on the two phases, participants will engage in a facilitated discussion regarding the path forward to performing disaster research.

Participants' Roles and Responsibilities

Participants will represent their organization. For instance, employees of the local department of public health will assume their roles as public health officials, and they will participate as representatives of that department. Participants may be asked questions that relate to their role in their organization, and they will be expected to contribute to the discussion as such. Participants will interact with other participants from other organizations to discuss processes, ask questions, clarify information, or share ideas.

Facilitated Discussion

Participants are strongly encouraged to come prepared by reviewing the materials prior to attending the workshop. Please thoughtfully consider the objectives, injects, and questions. Also, keep in mind that the discussions may vary from the printed questions. The questions provided in this document serve to initiate discussion with the hope of sparking a robust dialogue that helps define processes and enhance key relationships across organizations, disciplines, and jurisdictions.

It is important to remember that the objective of the workshop is not to focus on finding a single answer to the questions. Rather, we are interested in talking through the process of identifying procedures, resources and relationships that can be used to respond to and recover from disasters and we expect that discussions may lead to further questions.

Evaluation Survey and After Action Report

In your packet, you will find an evaluation survey. At the conclusion of the workshop, please complete the survey and turn it in to any staff member or leave it at the sign-in desk. NIEHS will use your input to enhance DR2 as well as future workshops. A few weeks following the workshop, NIEHS will prepare and distribute an after action report.

5. Pre-deployment Training

The Pre-deployment Safety and Health and Incident Command Training is aimed for those who may be working in the field following a disaster. It will provide a brief orientation on the emergency operations center at the federal and local level, as well as highlight some key safety and health precautions that one should take while working in disaster areas. Participation for this event is optional but recommended for those who have not had previous experience working in disaster situations. The objectives are to:

- Provide a mock health & safety briefing for the participants based on the workshop scenario.
- Provide an orientation to the emergency operations center (EOC)
- Outline the Incident Command System (ICS) system
- Provide resources for ICS training
- Provide a situational update highlighting safety information
- Discuss necessary equipment for safely working in a disaster environment

The training will begin promptly at 9:00 am.

6. Workshop

6.1 Assumptions

Participants should take into account the following assumptions as they engage in the dialogue:

- Funding is not an issue
- Each agency has capacity/capability limits that are based on this moment in time plus the constraints of maintaining their actual operations plus the considerations of the impact of this disaster on the personal lives of their workforce
- Decisions/ actions will reflect current plans

6.2 Scenario

The scenario has been selected to represent a plausible local event. It is purposefully vague so as to not limit discussion topics. The artificialities in the scenario should be used to generate discussion. If you have any questions about scenario specifics, please ask your facilitator to provide additional explanation.

Main Event

The scenario for this workshop is based on a 2013 report written by the Boston Harbor Association called "Preparing for the Rising Tide," which describes flooding to Boston and its surrounding communities. In our scenario, a Nor'easter makes landfall in Boston at high tide, bringing rain, strong winds and a 5-foot storm surge. The summer storm has caused widespread damage and flooding. Winds have also damaged the infrastructures in Boston. Oil storage tanks and numerous chemical storage containers located along the Mystic River and inland were damaged and leaked into the Mystic and Chelsea Rivers and flood waters. This has been compounded by releases from heating oil tanks in homes and businesses. Flooding has moved into nearby communities, carrying debris, oil and chemical residue, and sediments into the homes of the community. Additionally, during the disaster several large-scale fires broke out releasing noxious smoke plumes and caustic ash into the community. Two of the most affected neighborhoods are located in Chelsea and East Boston (See Annex 1 for map of affected communities and a brief description on community demographics).

The workshop's scenario begins 14 days following the event after the immediate response has been completed and recovery is started.

The following events have occurred:

- FEMA has a major disaster declaration for the city.
- Evacuated citizens have been returning to their residences to begin the clean-up and repairs.
- As with other disasters, many did not evacuate and continue to live in their homes and apartments, etc.
- Private businesses and manufacturing are working to clean-up and reopen.
- For most areas, power and public water services have been restored.
- Local workers are being hired to assist with the cleanup. Out of area workers and volunteers, including groups of day laborers, unskilled workers, and faith-based organizations have also shown up wanting to help with the recovery.

Health Impact

At area hospital emergency rooms, clinics, and physician offices, increased numbers of patients are being seen and include mostly those residing and working (e.g., response workers, clean-up workers, volunteers) in the two affected neighborhoods Chelsea and Boston. Reports from health care providers include nausea, vomiting, diarrhea, notable rashes ranging from mild to severe and upper and lower respiratory symptoms. Public health hospital surveillance system has identified a notably increased incidence of acute respiratory distress syndrome (ARDS) in several clean-up workers and community members, including pregnant women and children, from differing locations in Chelsea and East Boston. While the risk factors are unknown it felt to be associated unidentified chemical exposures (Acute respiratory distress syndrome. ARDS is a life-threatening lung condition that prevents enough oxygen from getting to the lungs and into the blood.

Research Request

There has been growing media attention and public awareness of large oil and chemical releases, strong chemical odors, and large numbers of people being seen at hospitals and clinics. One death is being explored, and the cases of ARDS are being investigated by State Health and CDC epidemiologists. Community and worker organizations have become increasingly alarmed about the potential for hazardous exposures due to ongoing contamination of homes, offices, playgrounds, and schools. Groups have voiced particular concern about exposures to pregnant women and children. They are requesting that the health commission investigate the affected populations and the affected neighborhoods for hazardous exposures that might be causing symptoms and health effects. They are also requesting information about exposure to contaminated water and debris and the potential for long term health affects for them or their children. Additionally, response workers, groups of clean-up workers, and unions are concerned about exposure to contaminated debris and want to be included in any health studies that are being provided to the affected populations.

6.3 Questions for Consideration

The following are questions that may be examined during the facilitated discussion. Facilitators will be around the room to help guide the discussion and insert injects into the discussion. Participants should review these questions prior to the attending the workshop. As a reminder, the objective of the workshop is not to focus on finding the "right" answers to the questions. Rather, we are interested in talking through the process of identifying procedures, resources and relationships that can be used to respond to and recover from disasters.

Phase I: Develop Disaster Research Plan

Format: In Phase I, participants will be pre-assigned into one of the five breakout groups to engage in a discussion to identify and assess organizational resource and capacity, understand research request process, identify efforts for collaboration and engagement, and develop a request for federal assistance. The questions below are listed to stimulate discussion, but do not represent an all-inclusive list of questions that can be discussed. Following this discussion, participants will gather in the auditorium to report back to the larger group.

Local Public Health

- What is the local health departments' capacity to conduct investigations of this magnitude (e.g., personnel resources, data collections, tool availability, ability to collect, analyze, and store bio-samples, etc.)?
- How do health departments from adjacent communities coordinate efforts and resources?
- Does routine hospital surveillance have the ability to detect this type of outbreak?
- Do health departments have the ability to conduct drop-in surveillance for environmental exposures?
- How do hospitals report their data and to whom? Are these data shared with any organizations?
- How are communities and workers engaged in determining research priorities and conduct research? How is communication handled?
- How will the local public health organizations coordinate efforts and resources with communities, academic, and state organizations to do the research?
- What are the triggers for requesting state assistance?
- How is environmental sampling coordinated with public health data?

Academic Institutions

- What role could academic institutions play in this type of research?
    - What resources can academic centers bring to this research?
    - What is needed for academic institutions to engage?
- How do you engage with public health institutions and communities?
- How do you communicate your interest to local public health?

Communities

- What roles do community organizations play?
    - How could community organizations support research/health impact investigations?
    - What are the community's requirements for supporting health impact research?

Worker Organizations

- What roles do worker organizations play?
- What are some possible concerns for workers?
- How can they be engaged?

Private Industry

- What roles do private industries play?
    - What if the employees are getting sick?
    - What are the private industries' concerns and limitations (e.g., legal, proprietary, reputation within the community, financial)?

State Public Health

- What resources are available from the Massachusetts Department of Public Health to support local efforts?
    - Can public health assets from other communities be utilized?
    - Are there existing arrangements with academic organizations for this? Are they formal arrangements?
- What is the state's role in supporting acute and long-term disaster research?
- How does research fit into your current public health response structure?

State Emergency Management

- What resources can you provide for this effort?
- How would this effort be coordinated?
- How do you craft a mission assignment for this effort?
- Who makes decision to engage?

State Department of Environmental Protection

- How do you relate to the environmental health component of the state health department?
- Do you share exposure data?

Federal Agencies

- How do you maintain situational awareness?
- How does the federal government coordinate its research activities?
- How can Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), Agency for Toxic Substance and Disease Registry (ATSDR), National Toxicology Program (NTP) support the research effort?
- If not, what are the obstacles? What are some strategies for FEMA and the federal agencies to work through to develop a national research response capacity?

NIEHS

- How does NIEHS organize, coordinate, and make determinations to provide support in response to the situation initially and in response to formal requests?
- How does NIEHS include its grantees in situational awareness and preparation for engagement? Who provides the training for them?
- What is the NIEHS Concept of Operations for engaging in disaster research (e.g., considerations for engagement, IRB, RAPIDD protocol, National Library of Medicine (NLM) resources)?
- Can research be funded by the Stafford Act?

Phase II: Disaster Research Plan Implementation

Format: The objectives of Phase II are to identify collaborative efforts between federal, state, and local organizations, assess how data can be shared, and understand the process in which a research response can be implemented. Participants will gather in their second pre-assigned breakout group number for the discussion. Following this discussion, participants will gather together in the auditorium to jointly address issues and to deliver report outs.

Local Public Health

- How can state and federal assets be integrated into local efforts?
- What support can you provide to the academic researchers?
- How is information being communicated to local stakeholders?

State Public Health

- How can state efforts be coordinated with local and federal efforts?
- How is information being communicated to local stakeholders?
- What support can you provide to the academic researchers?

State Emergency Management

- What resources can you provide for this effort?

Academic Institutions

- What formal contracts, agreements, and other arrangements might be required by private partners and academia?
- How can academic institutions be engaged?
    - Would researchers require training for the disaster environment? If so, who would provide the training?
    - Are there any formal agreements between public health institutions and academic centers to augment or conduct research?
    - Do academic researchers need an invitation/request from public health to conduct research in the affected area?
- Can researchers from outside the area be brought in to support the efforts? If so, how is that done? If not, why not?
- Is IRB approval needed for this study? If so, what is that process?
    - How long does it take to get research protocols approved?
    - Do you have pre-written research protocols? If so, are they conditionally approved by an IRB?
    - Is there an expedited process?
    - Is there a mechanism to provide care if abnormal health results are detected?
- How is information being communicated to local stakeholders?

Worker Organizations

- What roles do worker organizations play during the implementation of a research plan?
- How can they help with research?
- How can they help to reach out to communities?

Community

- How could community organizations support research/health impact investigations?
- What are the community's communication expectations regarding research results?
- What are the barriers to reach communities (e.g., language barriers, immigrant populations, etc.)?

Private Industries

- How can you engage in a research response if your employees are sick?
- What are the private industries' concerns and limitations (e.g., legal, proprietary, reputation within the community, financial)?

State Organizations

- How do you maintain situational awareness?
- How does the Massachusetts Department of Environmental Protection relate to the environmental health component of the state health department?
    - Do you collect baseline environmental data? Can any of those data be used in this research study?
    - Can the collected exposure data be shared? If so, how is that done?
- What resources can the Massachusetts Emergency Management Agency provide for this effort?
    - How would this effort be coordinated at the state level?
    - Are there plans for this type of activity?

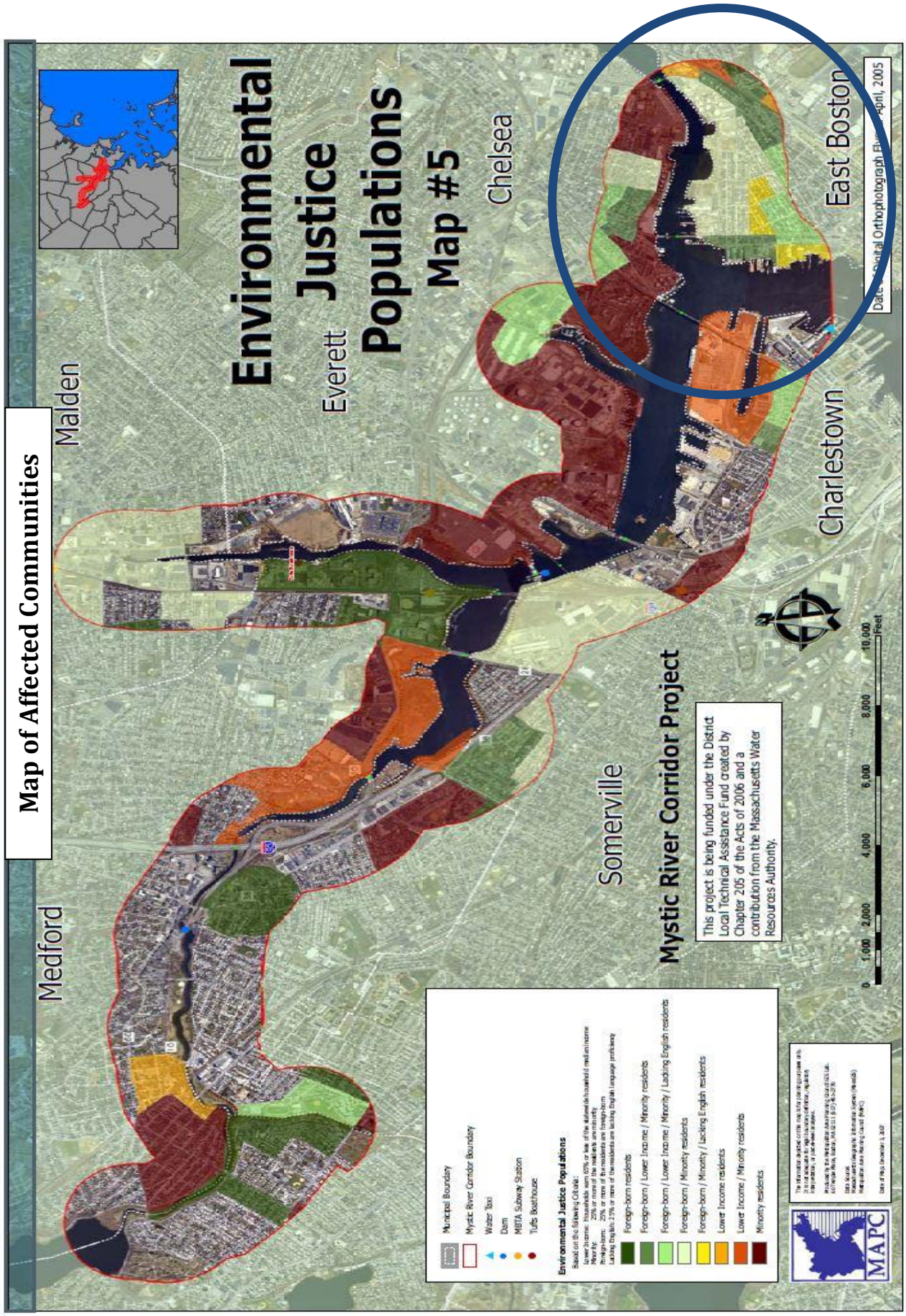
Federal Organizations

- Who coordinates the federal effort?
    - Who coordinates the HHS effort?
- Can NIEHS sponsored academic institutions from outside the area become engaged and if so, how?
- Can state and locals use the Public Health Emergency Research Review Board (PHERRB), the federal emergency Institutional Review Board? If so, how is this process done?
- Can state and locals work off the RAPIDD protocol? If so, how?
- What funding sources could be used to support the State and local researchers?
    - If so, how is this done?
    - What is the timeline?
    - Can state and locals use the PHERRB? If so, how is that process done?
    - Can state and locals work off the RAPIDD protocol? If so, how?
- How long will it take for HHS resources to be mobilized?
- How will data be stored and shared?
- What resources can federal organizations bring to the research effort?
- Do federal researchers require training for the disaster environment? If so, who would conduct the training?

Evaluation

Before departing the workshop, please complete the evaluation form included in your participant's materials and return them to the registration desk.

Annex 1. Affected Communities Details



Environmental Justice Map developed by **Metropolitan Area Planning Council** (MAPC). Map shows environmental justice populations on the Mystic river Corridor. Communities located inside the blue circle are meant to represent the communities most affected by the main event in the scenario.

Basic Chelsea Demographics[1]

As of the 2010 United States Census, there were 35,080 people, 11,888 households, and 7,608 families residing in the city. The population density was 16,036.8 people per square mile (6,184.7/km^2), placing it among the highest in population density among U.S. cities.[18] There were 12,337 housing units at an average density of 5,639.9 per square mile (2,175.0/km^2). The racial makeup of the city was 48% White, 8.5% Black or African American, 3.1% Asian, 0.48% Native American, 0.09% Pacific Islander, 34% from other races, and 5.9% were multiracial. In addition, 62% of residents identified as Hispanic or Latino, of any race (18.2% Salvadoran, 12.7% Puerto Rican, 8.4% Honduran, 7.3% Guatemalan, 2.8% Mexican, 2.2% Dominican, 1.6% Colombian). In 2010, 38% of Chelsea residents had been born outside of the United States. This is the highest percentage of foreign-born residents in the Commonwealth of Massachusetts.

The median income for a household in the city was $30,161, and the median income for a family was $32,130. Males had a median income of $27,280 versus $26,010 for females. The per capita income for the city was $14,628. About 20.6% of families and 23.3% of the population were below the poverty line, including 28.8% of those under age 18 and 20.9% of those age 65 or over.

Basic East Boston Demographics[2]

In 2011, East Boston was estimated to have 41,128 residents living in 14,832 housing units. There are 1,258 empty units in the city. East Boston is a diverse city. In the city, the population was spread out into various of races. Hispanic/Latino people form the largest race in the city, making up 54.4% of the population followed by white making up 35.5% of population. The other races such as Asia makes up 4.4% of population, black or African American make up 2.9% of population, two or more races make up 1.9% of population and other make up 0.9% of population. 50.3% of population was native, 77.9% were born in Massachusetts, 15.2% were born in other state in the United States, and 6.9%were born outside of the US. East Boston has a very diverse Hispanic community. Unlike other Hispanic communities in the city, which on average are almost exclusively Puerto Rican or Dominican, East Boston's Latino community is mostly composed of immigrants from Central and South America. Immigrants have come from Brazil, Colombia, El Salvador, Guatemala, Honduras and Peru. Helpful sources can be found from the East Boston Immigration Station. Until the immigration of Spanish-speakers, East Boston had an Italian-American majority.

The median household income in East Boston was $45,849, while the median income for a family was $47,198. Full-time year-round white alone, not Hispanic or Latino workers had a median income of $49,063, black or African American workers had a median of $28,201, Hispanic or Latino workers had a median of $47,384, Asian workers had a median of $32,250, and other race workers had a median of $45,236. In the past 12 months, the per capita income for the city was $22,403. 16.5% of households and 13.8% of families were living in poverty.

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[1] https://en.wikipedia.org/wiki/Chelsea,_Massachusetts#cite_note-GR2-17

[2] https://en.wikipedia.org/wiki/East_Boston

Annex 2. List of Acronyms

ASPR	Assistant Secretary for Preparedness and Response, HHS
CDC	Centers for Disease Control and Prevention
ConOps	Concept of Operations
DR2	Disaster Research Response Program
HHS	US Department of Health and Human Services
IRB	Institutional Review Board
NIEHS	National Institute of Environmental Health Sciences
NIOSH	National Institute for Occupational Safety and Health
NIH	National Institute of Health
NLM	National Library of Medicine
NTP	National Toxicology Program
PHERRB	Public Health Emergency Research Review Board
RAPIDD	Rapid Acquisition of Pre- and Post-Incident Disaster Data Protocol
WTP	Worker Training Program, NIEHS