



NEW JERSEY
AMERICAN WATER

Impact of Catastrophic Events *(Physical & Cyber events)* **Lessons Learned, Best Practices & Transformations**

(2) Case Studies – Irene, Super Storm Sandy

July 12th 2015

Kevin Kirwan

New Jersey American Water

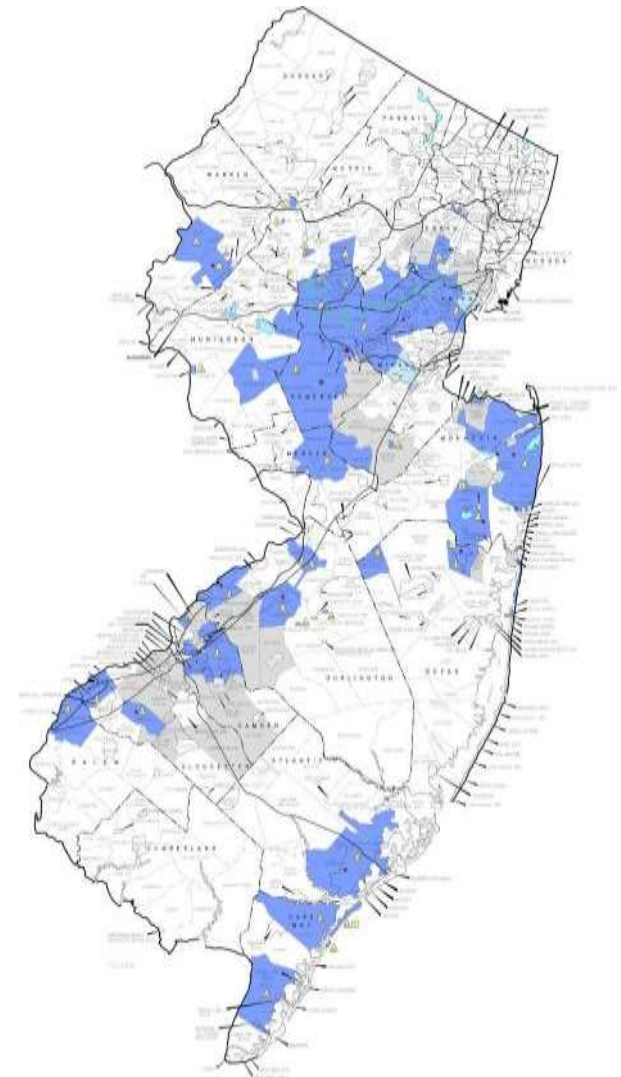
Sr Director Operations – Coastal Region

AMERICAN WATER OPERATIONS



New Jersey Operations Overview

No. of Water Systems	32
No. of Sewer Collection Systems	4
Average System Delivery	330 MGD
Customers	647,000 (90% residential)
Population Served	2.5 Million
Municipalities Served	189 Municipalities in 18 Counties
Bulk Water Customers	47
Surface Water Treatment Plants	7 (combined capacity of 350 MGD) 73% of supply
Reservoirs	5
Wells	170 (combined capacity of 110 MGD) 21% of supply
Tanks	241
Operating Centers	11
Water & Sewer Mains	8,600 Miles
Valves	170,000
Hydrants	45,000

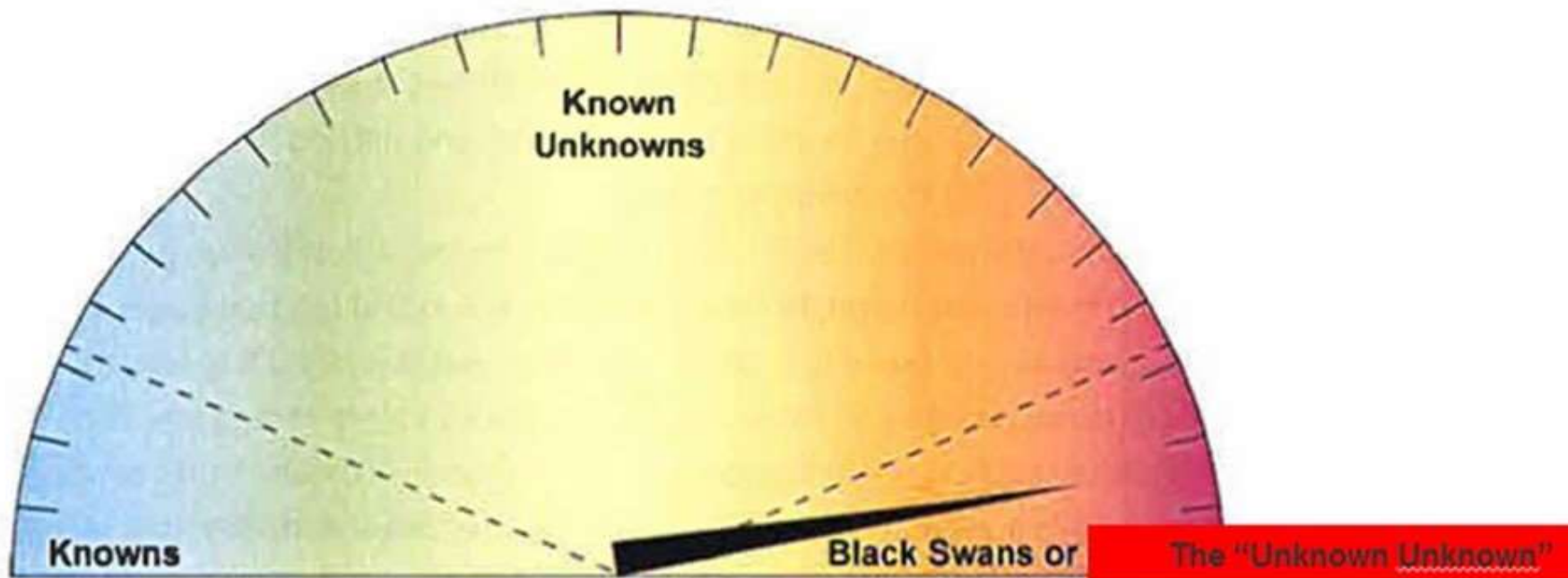


Impact of Catastrophic Events

(Physical & Cyber events)

- **Lessons Learned from Hurricane's Irene & Sandy**
- **Best Practices & Transformations**
- **Assuring resiliency**
- **Improvements in communications & utility coordination to responding to events. (GIS)**

Impact of Catastrophic “Black Swan Events”



Lessons Learned: Invaluable Items

GIS
Modeling
EAM



IT



Planning &
Communication

Floodwalls
& Training
Social Media

Valve
Inspection
& Easement
Maintenance



System
Maintenance
& Investment



Consolidation &
Shared
Resources

Supply Chain
Resources
Asset Sharing



Resilient Assets

- GPS Assets
- Raise Critical Equipment & Floodwalls
- Expand Standby Power & Fuel Storage
- Establish a High Risk Asset Register



Prepared Business

- Conduct After Action Reviews “AAR”
- Train Employees on “NIMS”
 - Conduct Drills
- “Interdependent” Utility Drills
- Inspect all Crossings
- Know your Customers

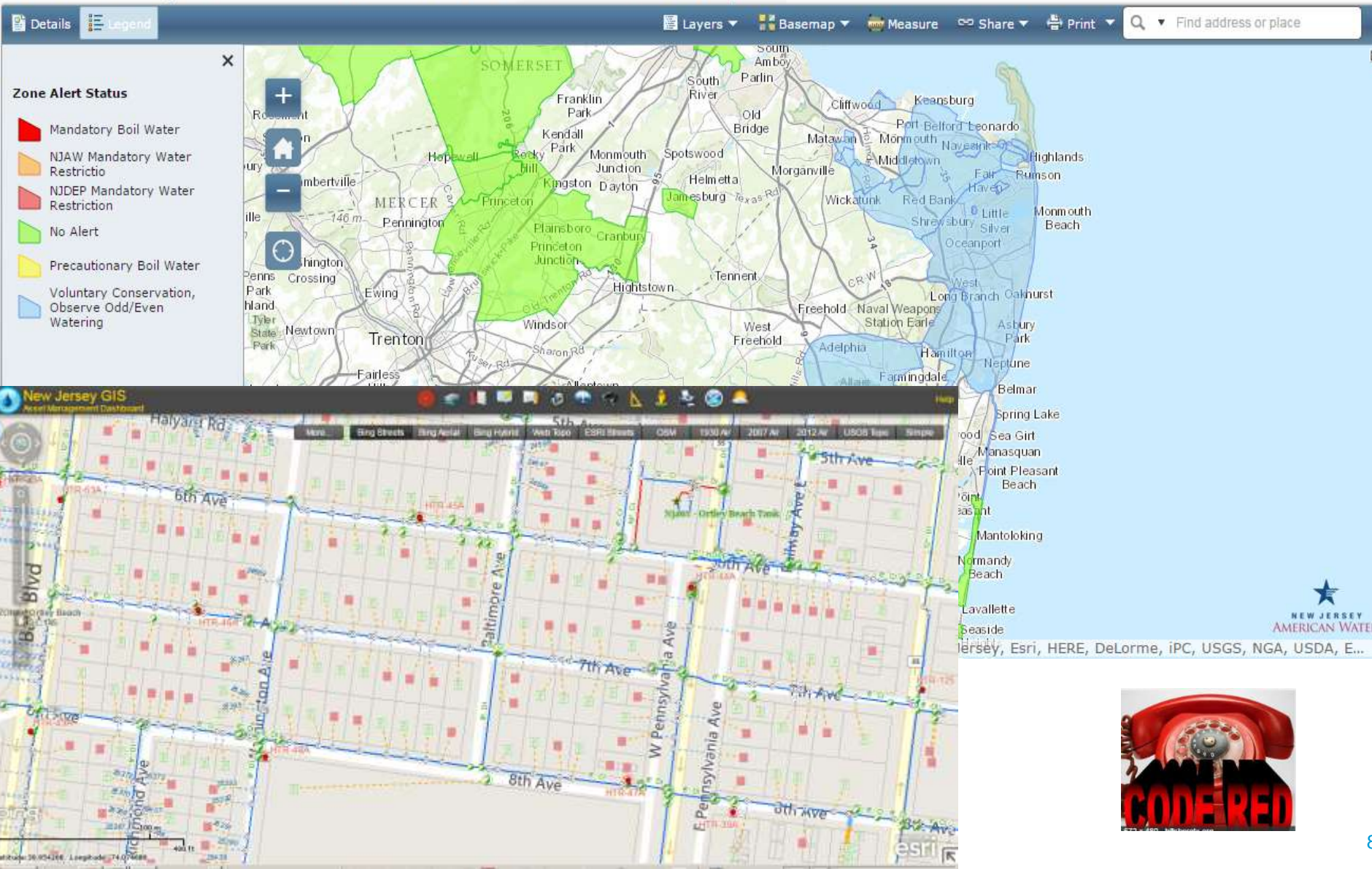


Enhanced Partnerships

- Enhance Relationship with Regulators, OEM’s, Utilities, & Purveyors
 - Keep Lines of Communication Open (**Social Media**)

Improvements in communications & utility coordination

New Jersey American Water Customer Alert Map



- 1. Maintain an Accurate Inventory of Control System Devices and Eliminate Any Exposure of this Equipment to External Networks**
- 2. Implement Network Segmentation and Apply Firewalls**
- 3. Use Secure Remote Access Methods**
- 4. Establish Role-Based Access Controls and Implement System Logging**
- 5. Use Only Strong Passwords, Change Default Passwords, and Consider Other Access Controls**
- 6. Maintain Awareness of Vulnerabilities and Implement Necessary Patches and Updates**
- 7. Develop and Enforce Policies on Mobile Devices**
- 8. Implement an Employee Cybersecurity Training Program**
- 9. Involve Executives in Cybersecurity**
- 10. Implement Measures for Detecting Compromises and Develop a Cybersecurity Incident Response Plan**



Recognize IT
Investment &
Expenses
GIS / EAM

Stimulate
Resiliency
Planning &
Investment

Encourage Aging
Infrastructure
Replacement &
System
Maintenance

Support System
Consolidation &
Shared Services

Thank You

Check Us Out at:

www.NJamwater.com

Like Us at:

www.facebook.com/NJamwater



Follow Us at:

www.twitter.com/NJamwater



Watch Us at:

www.youtube.com/NJamwater

