

Environmental Information



# EN2015

# The Delaware Valley Early Warning System

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Supporting the Business of Environmental Protection

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Philadelphia, Pennsylvania

<http://www.exchangenetwork.net/en2015>

# ABSTRACT

Philadelphia Water's Source Water Protection Program (SWPP) encompasses a wide range of projects to address source water concerns, including research, on-the-ground implementation, and partnership work that extends well beyond Philadelphia's boundaries. A component of Philadelphia Water's robust SWPP is the Delaware Valley Early Warning System (EWS). The EWS is an integrated monitoring, notification, and communication system designed to provide advanced warning of surface water contamination events to subscribing water suppliers, industrial surface water users and partner government agencies in the Schuylkill and Delaware River Watersheds. The EWS is recognized as a national model for planning and responding to spills and accidents impacting a major water supply source.

# Presentation Overview

- Philadelphia Water Department's Source Water Protection Program
- Objectives, Components, and Partnership of Delaware Valley Early Warning System
- Demonstration and Overview of Early Warning System website

# Philadelphia Water Department (PWD) Source Watersheds



## Schuylkill Watershed

- 1,911 sq. miles
- 1.36 million people\*
- ~40% of PWD's water supply



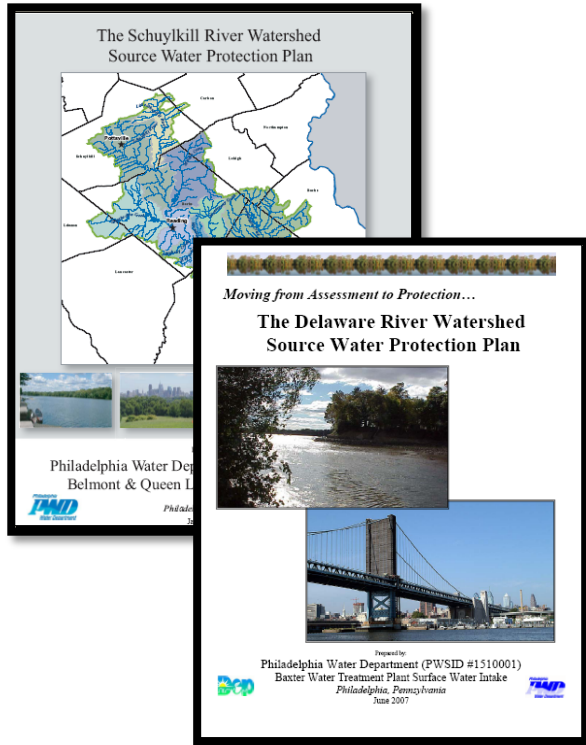
## Delaware Watershed

- 8,108 sq. miles
- 2.72 million people\*
- ~60% of PWD's water supply



**PWD provides drinking water to  
~1.6 million people every day!**

# Philadelphia's Source Water Protection Program



## Goal

***Protect and improve the quality and quantity of our rivers to support drinking water, ecology, and recreation.***

## Approach

- Develop Philadelphia as a model for source water protection for upstream communities
- Create mechanisms for regional coordination across geographic, regulatory, and jurisdictional boundaries
- Use science to identify and advance policies that sustainably protect Philadelphia's water supply

# Partnerships and Watershed Management



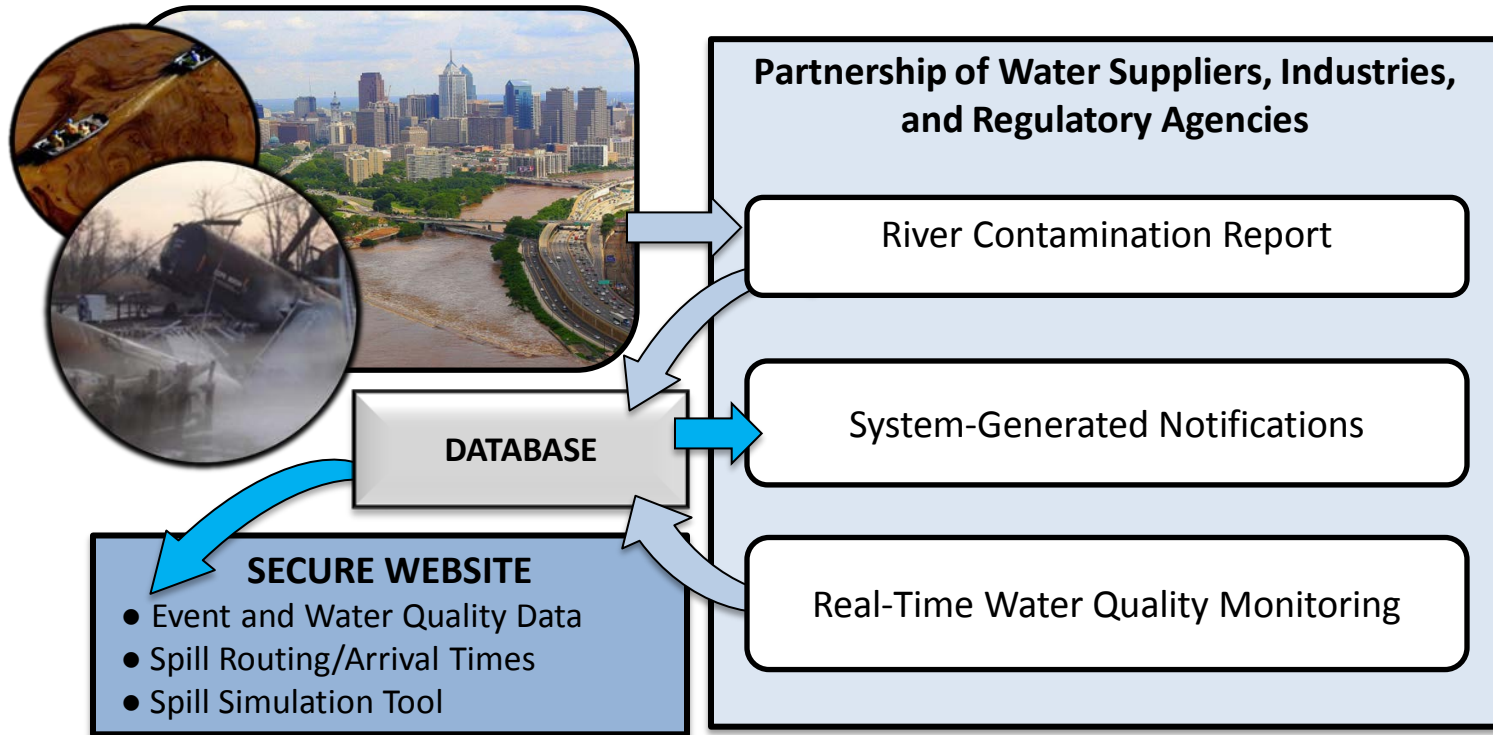
PWD embraces a collaborative approach with regulatory agencies, city agencies, and watershed partners in our continuous efforts to exceed water quality goals for our rivers and streams



# Delaware Valley Early Warning System (EWS)

- An integrated **communication** network
- Analysis tools designed to aid planning and event **response decisions**
- A secure **data center** and **monitoring system**
- A **partnership** of those that protect and rely on region's water resources

# EWS System Overview





# Existing Early Warning System Networks

In the United States:

- Ohio River (ORSANCO)
- Lower Mississippi River
- Upper Mississippi River
- New York City
- Schuylkill and Delaware Rivers
- Susquehanna River
- Potomac River
- Allegheny River



# History of the Delaware Valley EWS

1998	<ul style="list-style-type: none"><li>• PWD first applied for funding</li></ul>
2002	<ul style="list-style-type: none"><li>• SWAPs complete-funding made available</li></ul>
2002-04	<ul style="list-style-type: none"><li>• Development and optimization of EWS</li></ul>
2005	<ul style="list-style-type: none"><li>• Fully operational; optimization and upgrades continue</li></ul>
2007	<ul style="list-style-type: none"><li>• Deployment of new enhanced EWS website</li></ul>
2008	<ul style="list-style-type: none"><li>• Integration of CodeRED mass notification telephony system with DHS funding</li></ul>
2009	<ul style="list-style-type: none"><li>• Additional user tools/Industrial users</li></ul>
2010/2011	<ul style="list-style-type: none"><li>• Development of 5 yr Strategic Plan</li></ul>
2013	<ul style="list-style-type: none"><li>• ArcGIS mapping tool upgrade</li></ul>
Summer 2014	<ul style="list-style-type: none"><li>• Tidal spill model</li></ul>

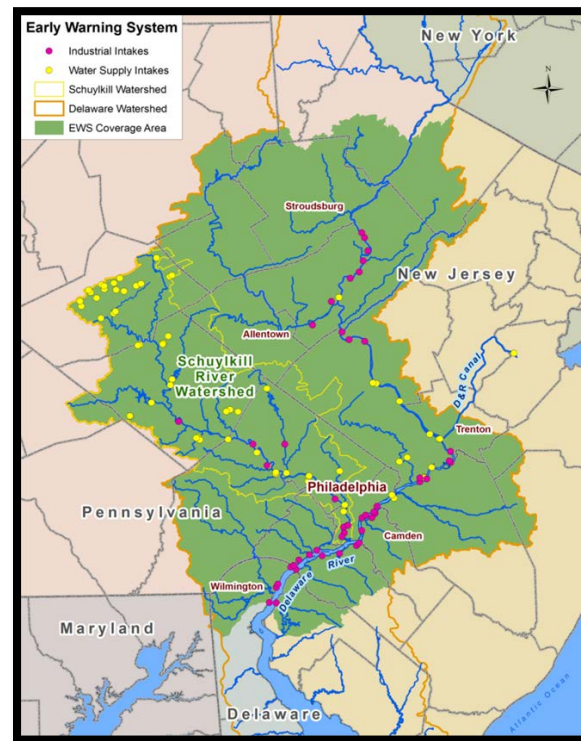
# EWS Coverage Area

## Watersheds:

- Schuylkill River Watershed
- Delaware Watershed except:
  - Tributaries downstream of Philadelphia
  - NYC water supply

## Total of:

- 120 intakes
- 280 miles of river
- Over 7,400 stream miles



# PWD and EWS

**Philadelphia Water Department is leading the development of the Delaware Valley Early Warning System.**

- Why PWD?
  - Operates the 3 most downstream WTPs in the Basin
  - Provides drinking water to 1.5 million residents
  - Has experienced “close calls” (Athos I, Bridgeport industrial fire, transportation accidents)
  - Recognizes the benefit of better information about upstream water quality and events
  - Understands need for a partnership approach

# EWS Objectives

- Support existing notification protocols
- Protect the water supply for over 3 million people
- Establish a secure forum for communication & information sharing
- Provide analytical tools for event response
- Build a framework that can be expanded in the future

# EWS Components

## **Partnership**

- Includes representatives from public and private drinking water supply and treatment facilities, industries, and government agencies

## **Detection/Notification System**

- Includes automated telephone and web-based notification capabilities

## **Monitoring Network**

- Consists of online WQ and flow monitoring stations located at USGS sites and water treatment plant intakes

## **Website and Database Portal**

- Secure communications and information sharing
- Both systems fully integrated with notification system and monitoring network
- Website includes Spill Model Analysis Tool

# Partnership Approach

- **Business model requires partner buy-in & support for success**
- **EWS design based on input and needs of the stakeholder community**
  - Water supplier and Emergency Responder Surveys
  - Stakeholder meetings
  - Steering Committee meetings
  - Strategic Planning Discussion
- **EWS Steering Committee**

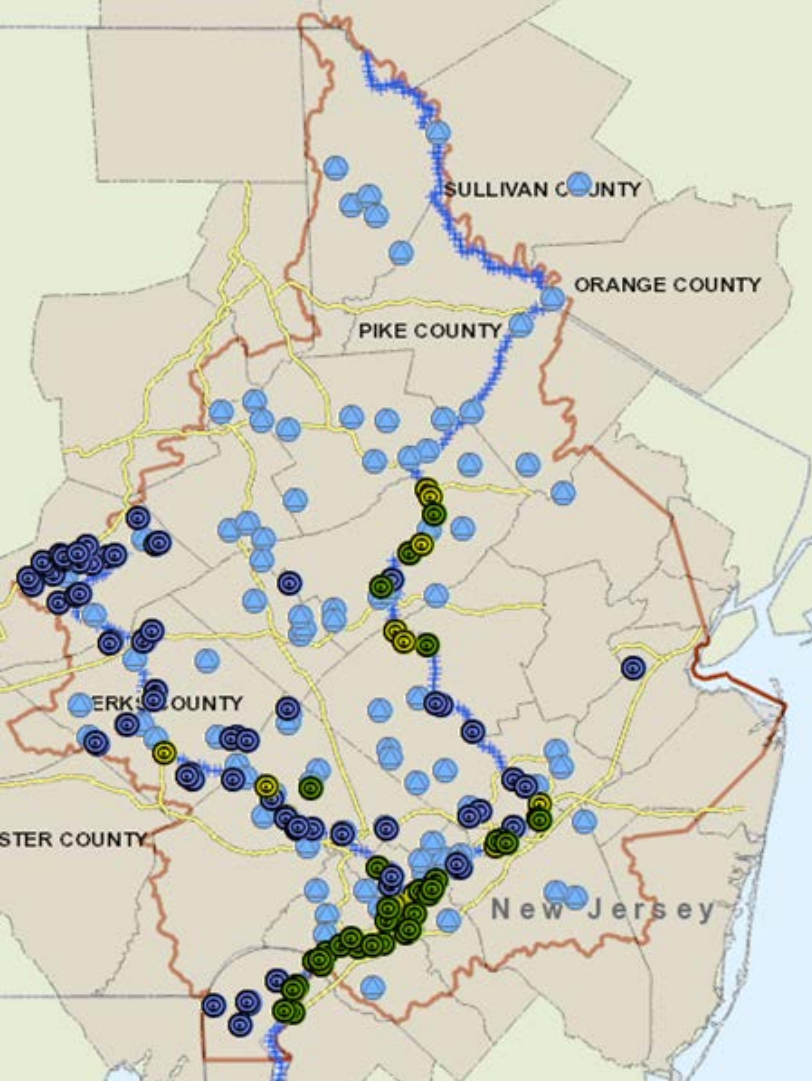
# Delaware Valley EWS Partnership

- 300 users in 50 organizations
- Water Suppliers
  - PA Water Suppliers - 13 utilities, 21 Drinking Water Intakes
  - NJ Water Suppliers - 4 utilities, 4 Drinking Water Intakes
- Industry
  - 14 Industries, 24 Industrial Intakes (PA, NJ and DE)
- PADEP / NJDEP
- Delaware River Basin Commission
- USEPA
- USGS
- US Coast Guard
- County Offices of Emergency Management and Health Departments








# Intakes and Stations in Coverage Area

- 121 Total Intakes
- 88 Water Quality Monitoring Gages



## Map Legend

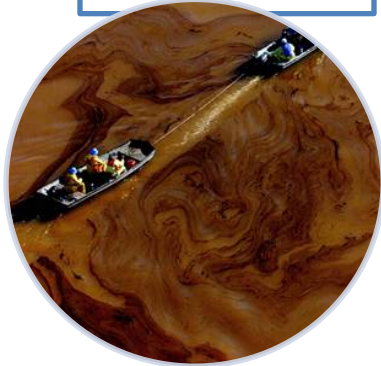
-  Intake-Industrial
-  Intake-Power
-  Intake-Water Supplier
-  WQ Monitoring Station
-  EWS Boundaries

# Major EWS Events

11/26/2004

## Athos I Oil Spill

- 275,000 gallons of crude oil
- Delaware at Paulsboro NJ



DAVID SWANSON/PHILADELPHIA INQUIRER

8/23/2005

## Fly Ash Spill

- 100 million gallons
- Delaware from PP&L lagoon



DEMETRA STAMUS/ALLENTOWN MORNING CALL

6/14/2006

## Cyanide Discharge

- Through WWTP
- 1000+ fish killed



PHILADELPHIA WATER DEPARTMENT

11/30/2012

## Vinyl Chloride

- 4 rail car derailment
- ~25,000 gallons into Mantua Creek



RAE LYN STEVENSON/SOUTH JERSEY TIMES

# Event Notifications

- Delaware Valley EWS process:
  - First responder, water supplier or other member reports event
  - Automated telephone & email notifications
  - Suppliers connect to secure website for information
- Support (not replace) existing emergency notification protocols
- Provide redundancy to avoid loss of information or break in communications
- Increase reach/reliability of notification agencies

# EWS Home Page

You may also report a water quality event by calling the **EWS Hotline at 1-866-844-0850**



Delaware Valley  
Early Warning System

Home | Events | Intakes/Stations | WQ & Flow Data | Administration | Contact Info | My Profile | Spill Model Tool | Links | Logout

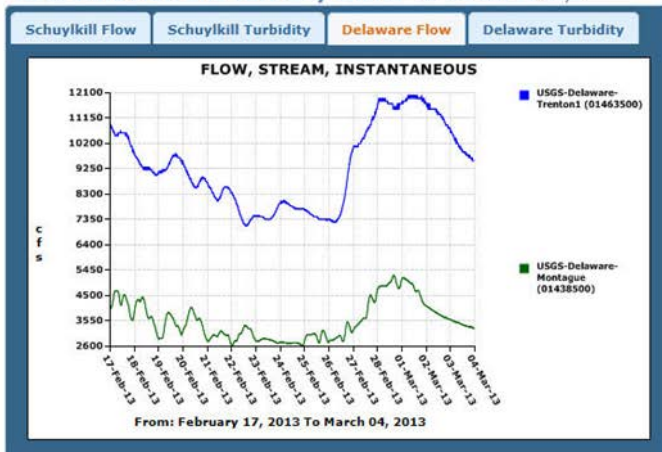
**Report a New  
Water Quality  
Event**

## Last 5 Events

[View All Recent Events](#)

Id	Action	Risk Level	Description	Date Occurred	Last Updated
359	Play Audio <a href="#">View Details</a>	Low	Approximately 75 gallons of heating oil was released into the creek in the area of Chestnut and Walnut Streets in Pottstown Boro, the exact volume that reached the creek is unknown. The Fire Dept. and...	2/14/2013 5:00 PM	2/14/2013 6:16 PM
358	Play Audio <a href="#">View Details</a>	Low	An event occurred at Upper Gwynedd Twp, Montgomery County PA. Event reported by telephone.	12/21/2012 5:00 AM	12/21/2012 7:05 AM
	<a href="#">View</a>		Power outage to Slatington Borough STP has resulted in an average of 1.5 MGD of partially	10/29/2012	10/31/2012

## Real-Time Flow and Turbidity Charts for the last 15 days



## EWS Happenings

### EWS User Guides

The comprehensive User Guide is available [here](#).

The User Guide for read-only access is available [here](#).

# EWS List of Events

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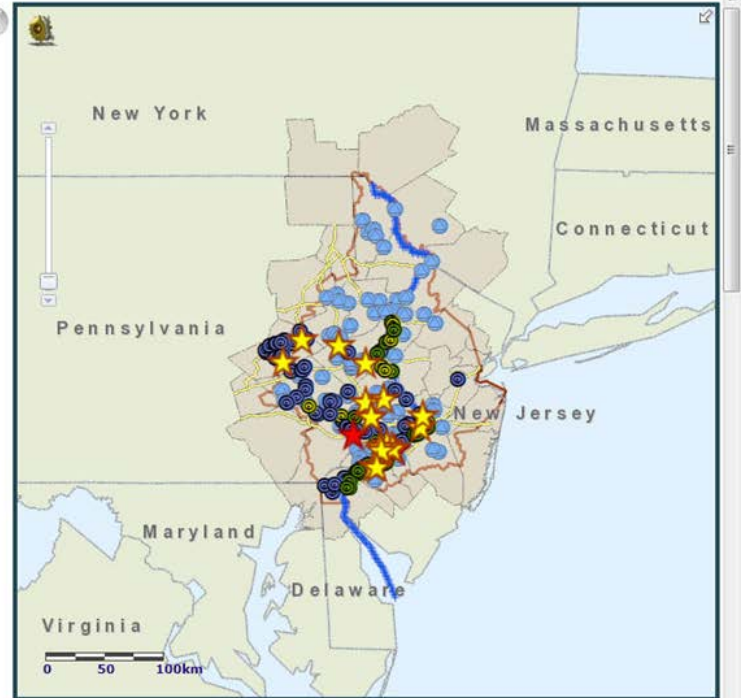


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## List of Events Recent Events | [All Events](#)

Id	Action	Risk Level	Description	Date Occurred	Last Updated
358	<a href="#">Play Audio</a> <a href="#">View Details</a>	Low	An event occurred at Upper Gwynedd Twp, Montgomery County PA. Event reported by telephone.	12/21/2012 5:00 AM	12/21/2012 7:05 AM
357	<a href="#">View Details</a>	Low	NRC#1031908: Collapse of rail bridge over Mantua Creek which leads to Delaware River. Several rail cars entered the creek and at least one tank car holding 1086 Vinyl Chloride has been compromised.	11/30/2012 7:00 AM	11/30/2012 12:35 PM
356	<a href="#">View Details</a>	Low	Power outage to Slatington Borough STP has resulted in an average of 1.5 MGD of partially treated sewage discharged to the Lehigh River. Treatment consisting of trickling filtration, settling and disinfection is occurring as a result of gravity flow thru the plant. No estimate has been given as to...	10/29/2012 10:10 PM	10/31/2012 2:53 PM
355	<a href="#">View Details</a>	Low	Power outages to both feed lines of the City of Bethlehem's STP has resulted in an average of 12 MGD of raw sewage being discharged to the Lehigh River. PPL is attempting to find the location of the outages. PPL has not provided an estimate of when power will be restored.	10/31/2012 1:35 PM	10/31/2012 1:55 PM



# EWS Event Summary



**Delaware Valley Early Warning System**

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## Event Summary

[Show Recent Events](#)

**Event ID:** 358 Play Audio  
**Entered:** 12/21/2012 7:05 AM  
**By:** Reported by telephone  
**Event Date:** 12/21/2012  
**Time:** 5:00 AM  
**Risk:** Low  
**Status:** Initial Report  
**Description:** This event was reported by telephone. The description is in the voice message.

### Location:

**Latitude:** 40.21427307 **Municipality:** Upper Gwynedd Twp **State:** PA  
**Longitude:** -75.28906745 **County:** Montgomery County **Watershed:** Schuylkill  
**Receiving Waterway:** n/a

### Hazard:

No information available

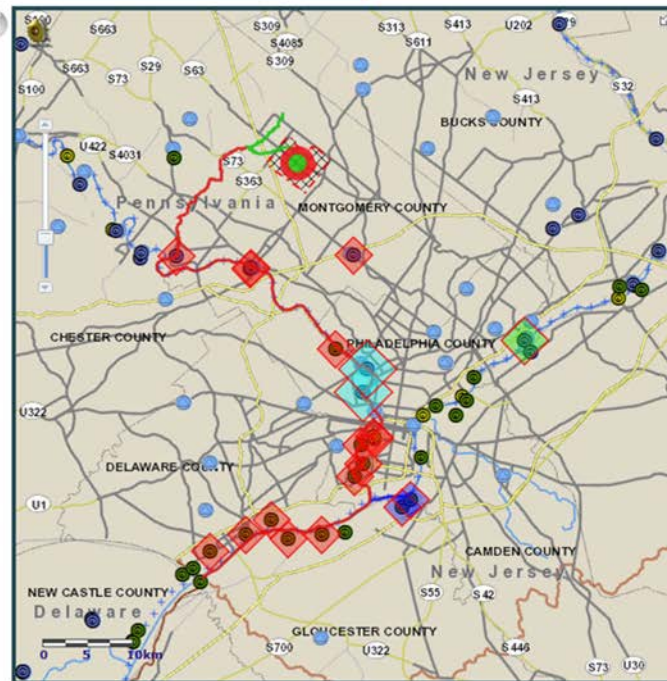
### Affected Intakes for your Organization:

Name	Arrival Time with current flow	Arrival Time with historic max flow
<a href="#">PWD-Queen Lane</a>	12/22/2012 06:07	12/22/2012 06:55
<a href="#">PWD-Belmont</a>	12/22/2012 07:17	12/22/2012 07:54

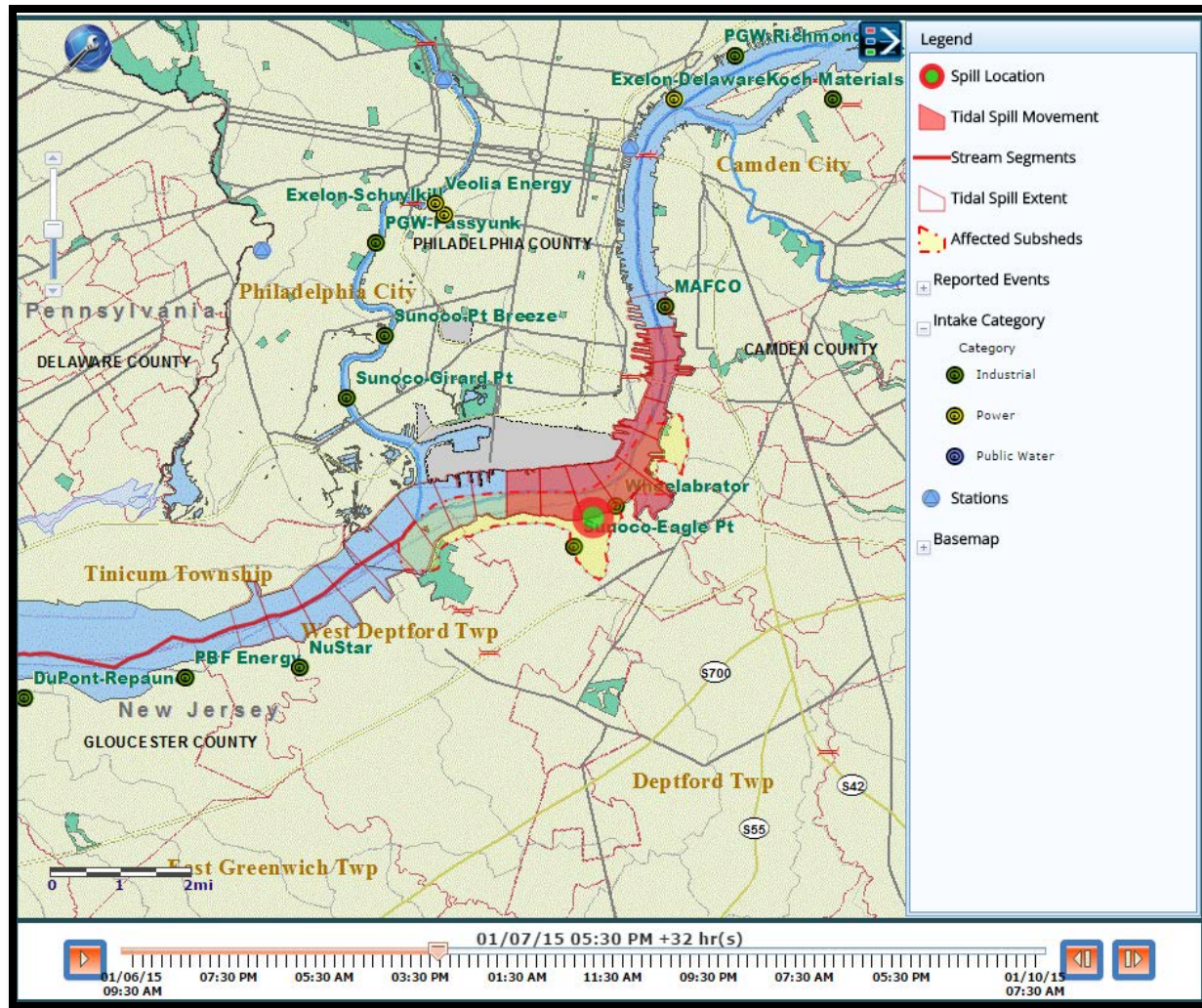
### All Affected Intakes:

Name	Arrival Time with current flow	Arrival Time with historic max flow
<a href="#">Ambler</a>	<a href="#">Not Calculated</a>	<a href="#">Not Calculated</a>
<a href="#">AQUA-Perkiomen</a>	12/21/2012 13:57	12/21/2012 16:20
<a href="#">PAWC-Norristown1</a>	12/21/2012 20:20	12/21/2012 22:43
<a href="#">PAWC-Norristown2</a>	12/21/2012 20:20	12/21/2012 22:43
<a href="#">Container Corp</a>	12/22/2012 03:52	12/22/2012 05:03

[Update](#)



# Delaware Valley EWS Tidal Model



# Future Expansion

## Monitoring

- Additional locations and/or parameters
  - Upgrading technology at RTUs
- 

## Users

- Public and industrial dischargers, county agencies, emergency response organizations, natural gas industry, chemical storage and freight facilities
- 

## Coverage

- Expand system geography
- 

## EWS web functions and telephone system

- Expand web mapping and spill route model



# Contact Information

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