



# Gas Spill Threatens Water System

Response Roadmap

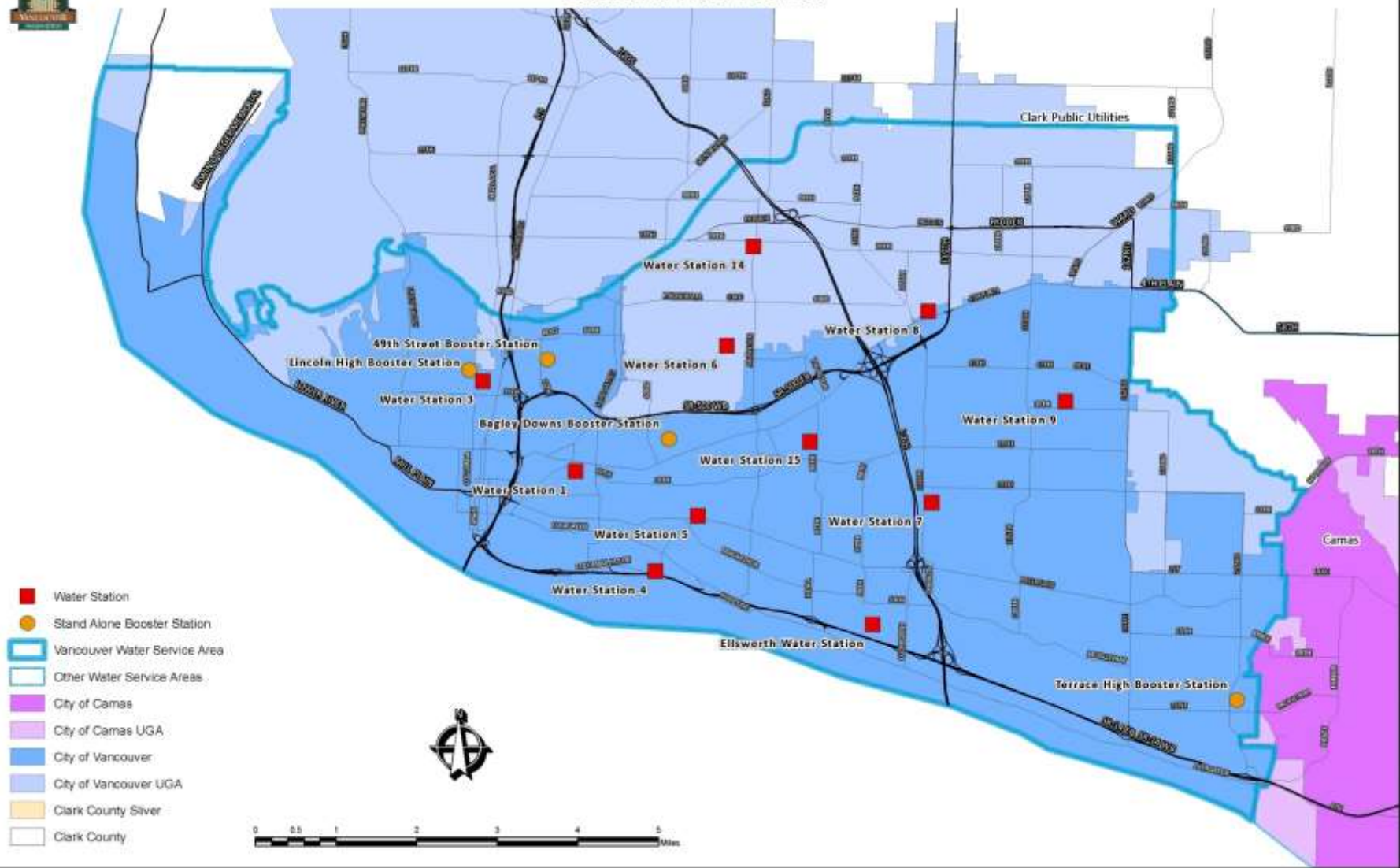
Patrick W. Craney, P.E.



# Water System

- 4<sup>th</sup> Largest Utility in Washington
- Service area of 72-square-miles
- Sources: 40 GW wells at 10 Water Stations
- 36 of 40 unconfined wells
- 987 miles of water distribution pipe
- Over 9 billion gallons per year
- 70,000 customers; approx. 230,000 people

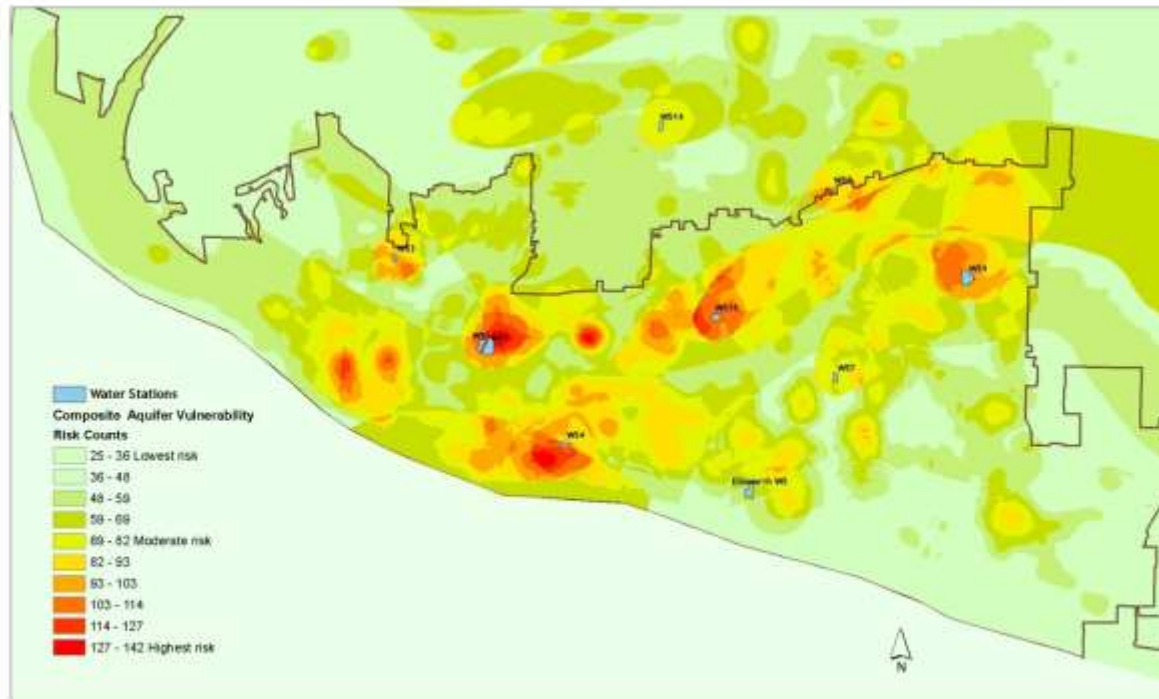
# Vancouver Water Service Area Location of Water Facilities





## **December 13, 2013 – Initial Spill Response**

Kenan Advantage Group (KAG) Gas Tanker Truck has solo accident in early hours. This shows the response a few hours after occurrence. Unleaded gasoline, 3,300 gallons, released to the environment.



*Aquifer Vulnerability - Vancouver, WA*

## Area Vulnerable to Spills?

Vulnerability derived mostly from aquifer depth and travel time. Other factors included existing features that typically threaten GW quality. DRYWELL accepted spill majority.



NE 18th St. Gasoline Spill



## Preferred Monitoring Well Configuration

City formulated a response requesting action.



## **December 18, 2013 – Cleanup**

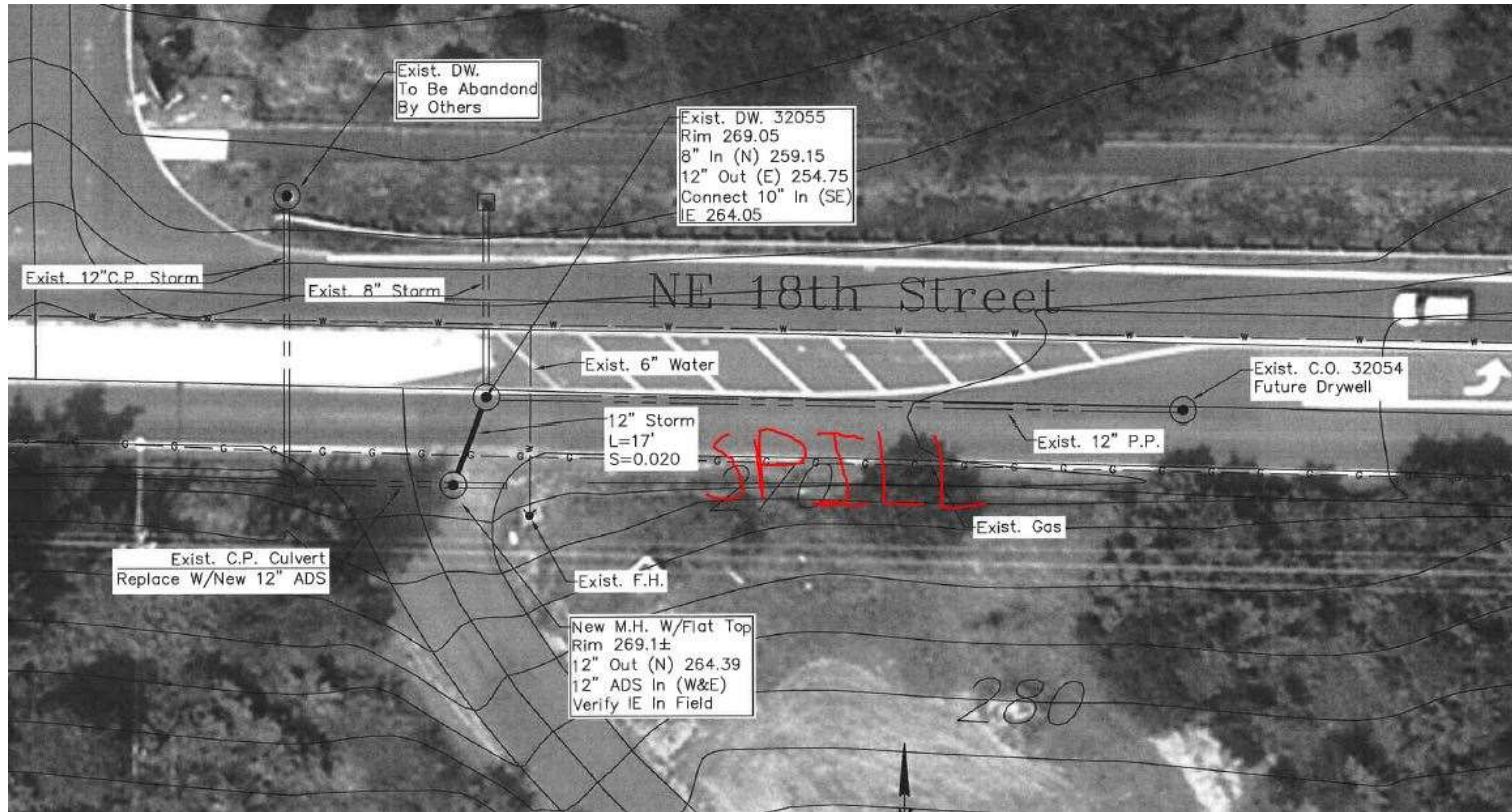
Responsible party, Kenan Advantage Group (KAG), through Brown & Caldwell initiates a cleanup response.



## **January 7, 2014 – Stormflow**

Stormflow running down street following same path as spill.





## Stormwater Revision Plan

Abandon existing, compromised drywell.

Divert stormwater to existing disposal system.



## **January 15, 2014 – Stormwater Revision Complete**

City of Vancouver (COV) alters collection system abandoning affected drywell. New flow pattern takes all flow from southern ditch to disposal system under road centerline.

# Was that all?

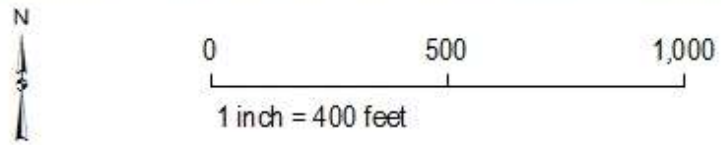
- COV requests conference call.
- Brown & Caldwell arranges and shares characterization study approach.
- Two B&C, four COV staff attend February 21, 2014 call.
- COV staff provide input on monitoring well and soil boring locations/depths.





**Legend**

- Monitoring Wells
- Soil Borings



KAG - Mission Hills  
 Site Map and Borings  
 Vancouver, WA  
 May 2014



# COV Actions

- COV understands that spill response will follow WAC 173-340-120.
- COV captures gas spill related costs under three projects: Ops, Storm and Water Eng.
- Landau Associates hired by COV to assess hydraulic paths near water station.
- Water Station 7, Well 1 started Nov. 18, 2014.

### Legend

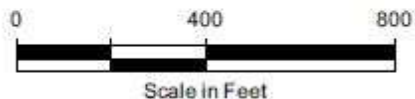
-  Active Irrigation Well
-  Drywell
-  Monitoring Well
-  Private Water Supply Well
-  Decommissioned
-  City of Vancouver Water Station No. 7
-  Likely Direction of Groundwater Flow

### Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



Source: Esri Street Map 2012, Esri World Imagery 2010, City of Portland GIS, 2002



City of Vancouver  
Water Station 7 Protection  
Vancouver, Washington

Site Map - Showing Well Locations

Figure  
1

# Lessons Learned

- Protect your interests with your actions.
- Codified groundwater responses are tailored to long term spills.
- Involved parties will have different motives.
- DOE serves as informational source.
- Surface water spills have increased chance for quick and comprehensive response.
- Hydraulic connectivity awareness guides actions.