Water Quality Network Overview

Changes to the WQN in 2011

Drew Reif

U.S. Geological Survey
Pennsylvania Water Science Center

USGS

Collaborating Agencies

- PaDEP – Manages network structure and does lab analysis (USGS KY does sediment analysis)
- Field Collections
  - USGS – 138 sites - Statewide
  - SRBC – 18 Sites in Susquehanna Basin
  - PaDEP SCRO 6 sites in Potomac Basin

Data Management

- Data is stored in PaDEP's data base (SIS)
- Data collected by USGS is transferred quarterly to the USGS data base (NWIS).
- Data collected by USGS is published in the USGS annual Report.
- Data is also transferred to STORET.

USGS

Objectives

- Monitor temporal water quality trends in major streams and rivers throughout PA. (*Standard Sites*)
- Monitor temporal water quality trends in selected reference streams (small limitedly disturbed). (*Reference Sites*)
- Monitor the trends of nutrients and sediment loads entering the Chesapeake Bay. (*CBL Sites*)

USGS

Network Design 2011

- Standard Sites (90) – Sampled 6 times a year for chemistry and once every other year for Bio.
- Standard Monthly (17) - Sampled 12 times a year for chemistry and once every other year for Bio.
- Chesapeake Bay Load Sites (29) -Sampled 12 times a year for chemistry, 8 storm samples and once every other year for Bio
- Reference Sites (26) - Sampled 12 times a year for chemistry and once every year for Bio.

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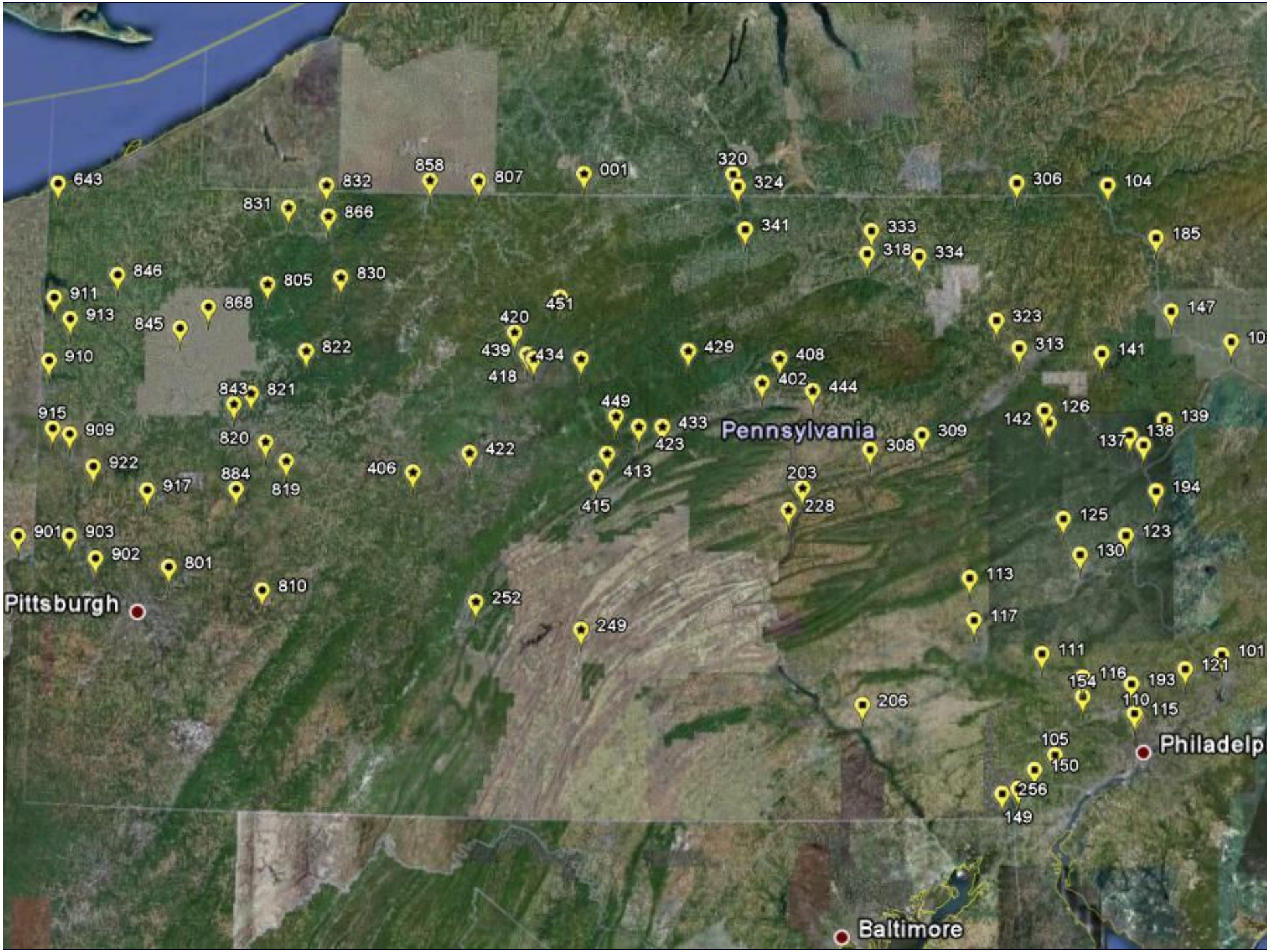

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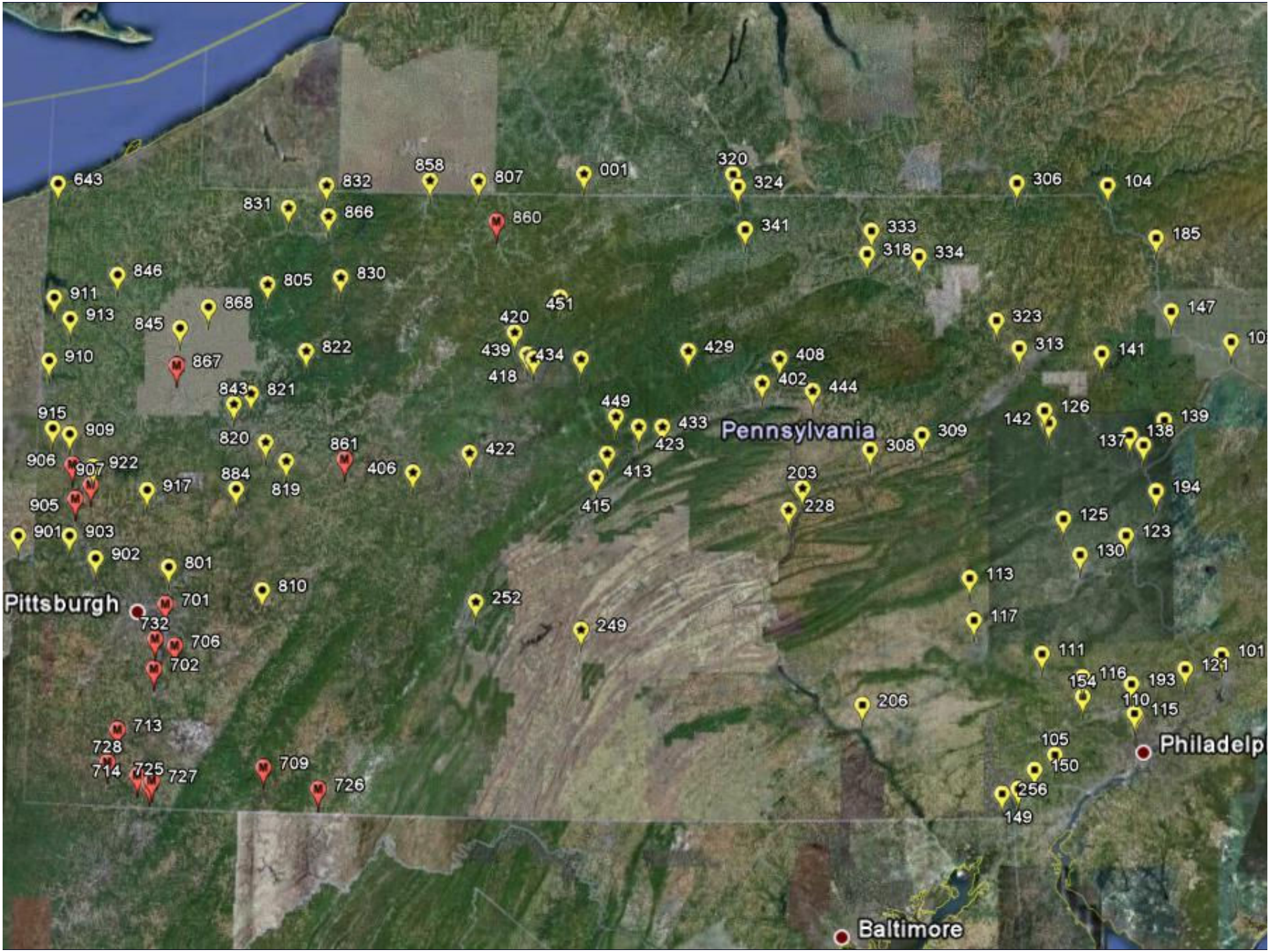
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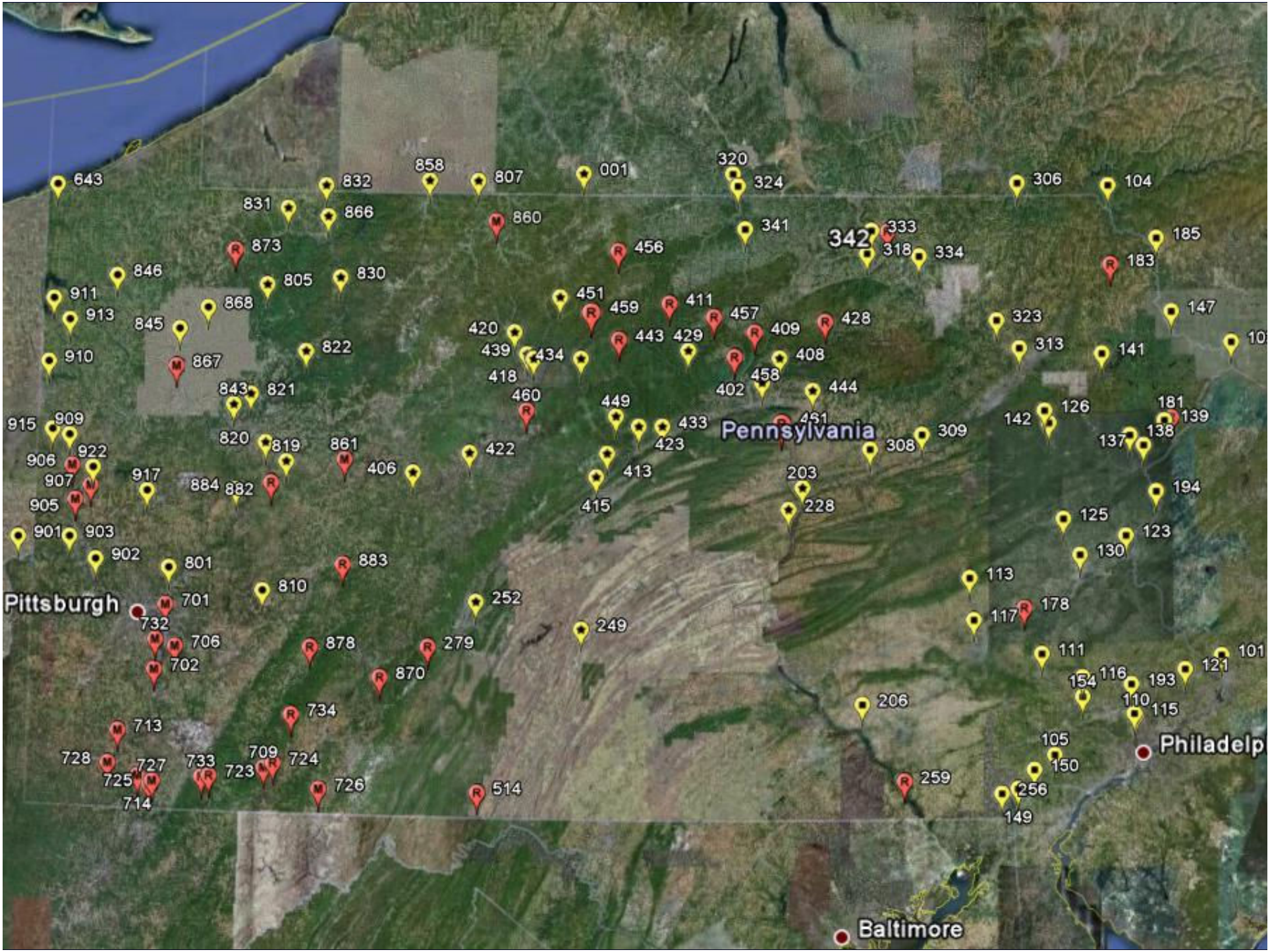

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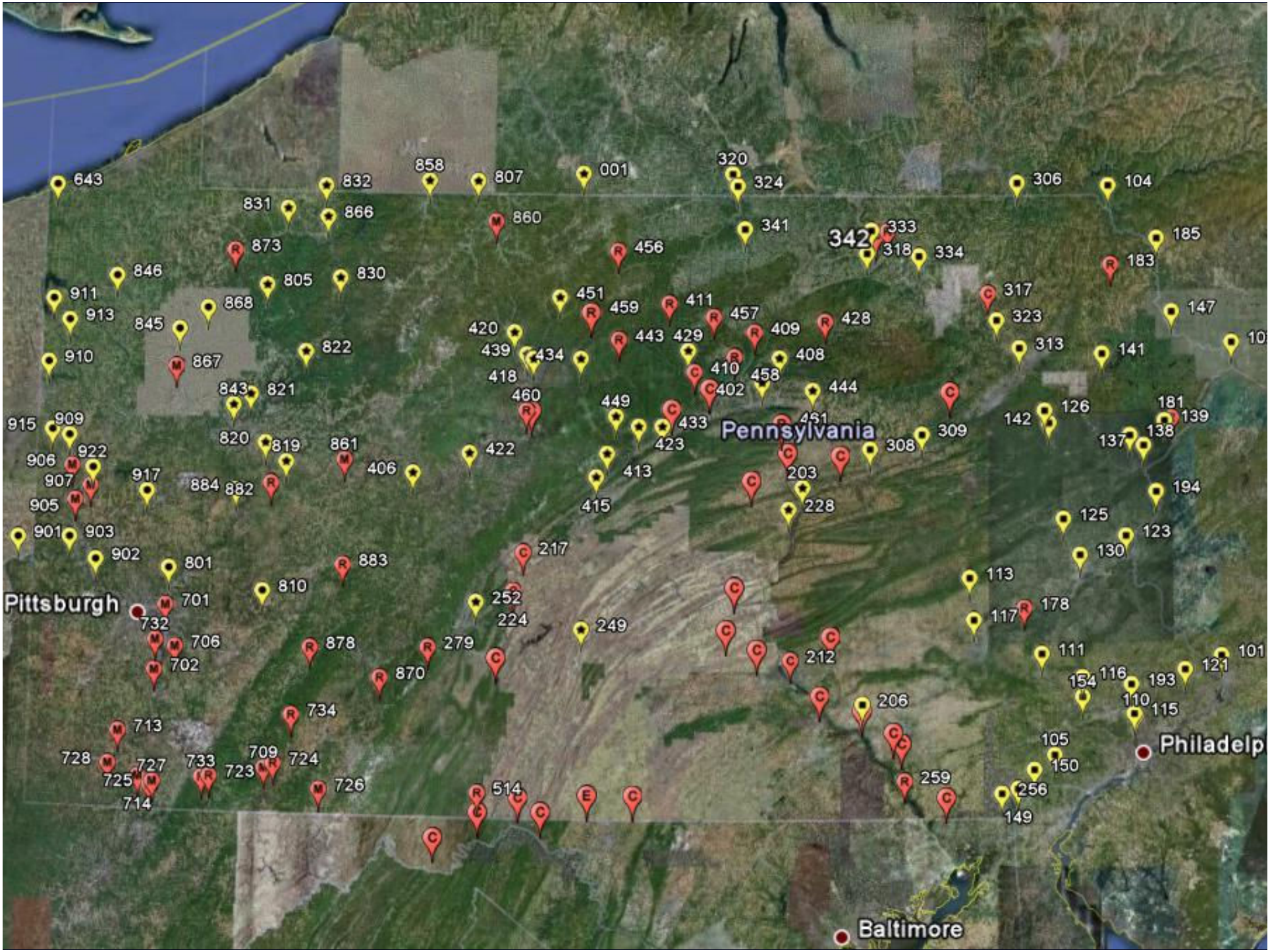
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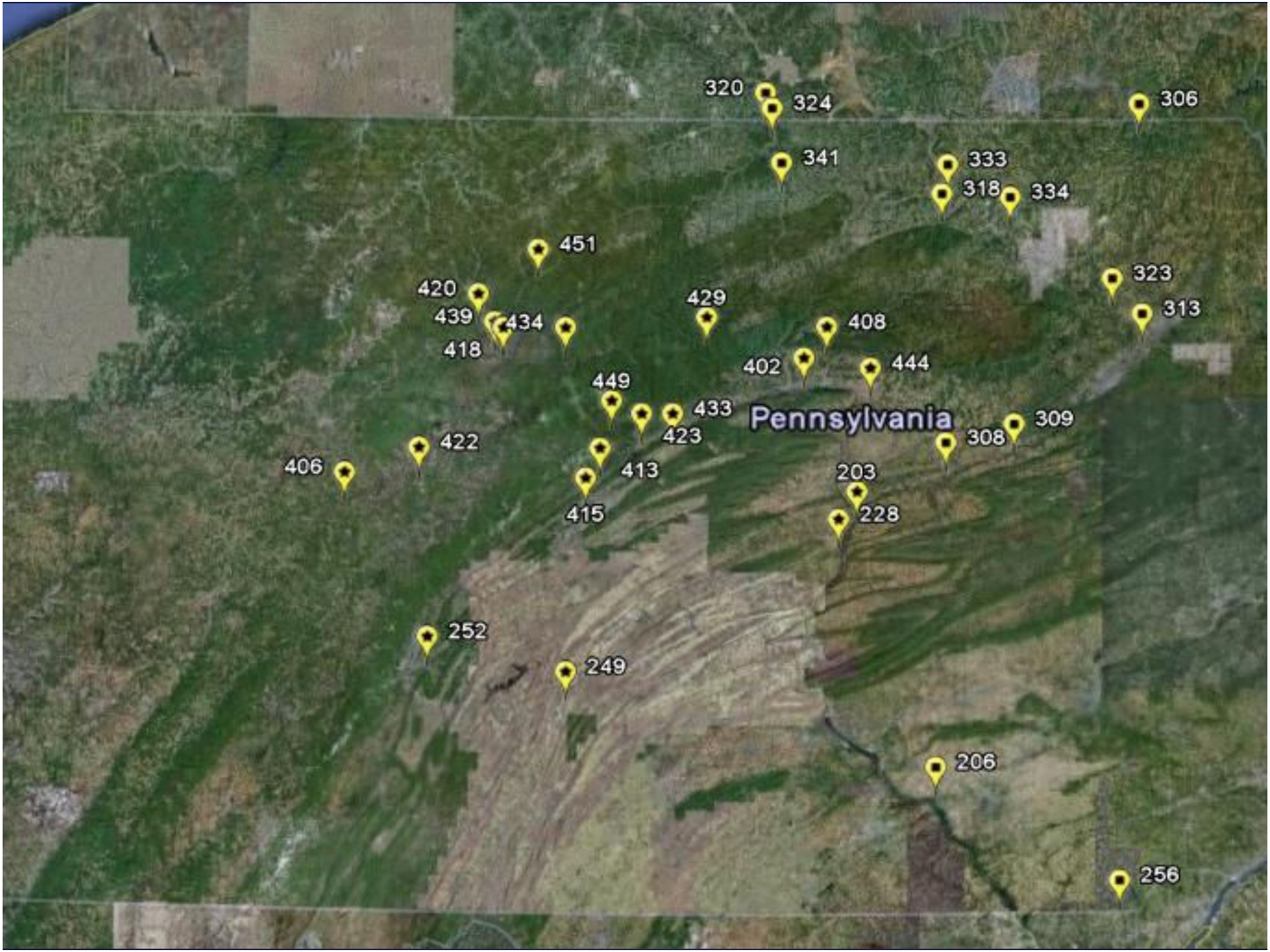
Chesapeake Bay Basin Sites
Susquehanna/Potomac

- Standard Sites (33) – Sampled 6 times a year for chemistry and once every other year for Bio.
- Standard Monthly (0) - Sampled 12 times a year for chemistry and once every other year for Bio.
- Chesapeake Bay Loading Sites (29) -Sampled 12 times a year for chemistry, 8 storm samples and once every other year for Bio
- Reference Sites (14) - Sampled 12 times a year for chemistry and once every year for Bio.

USGS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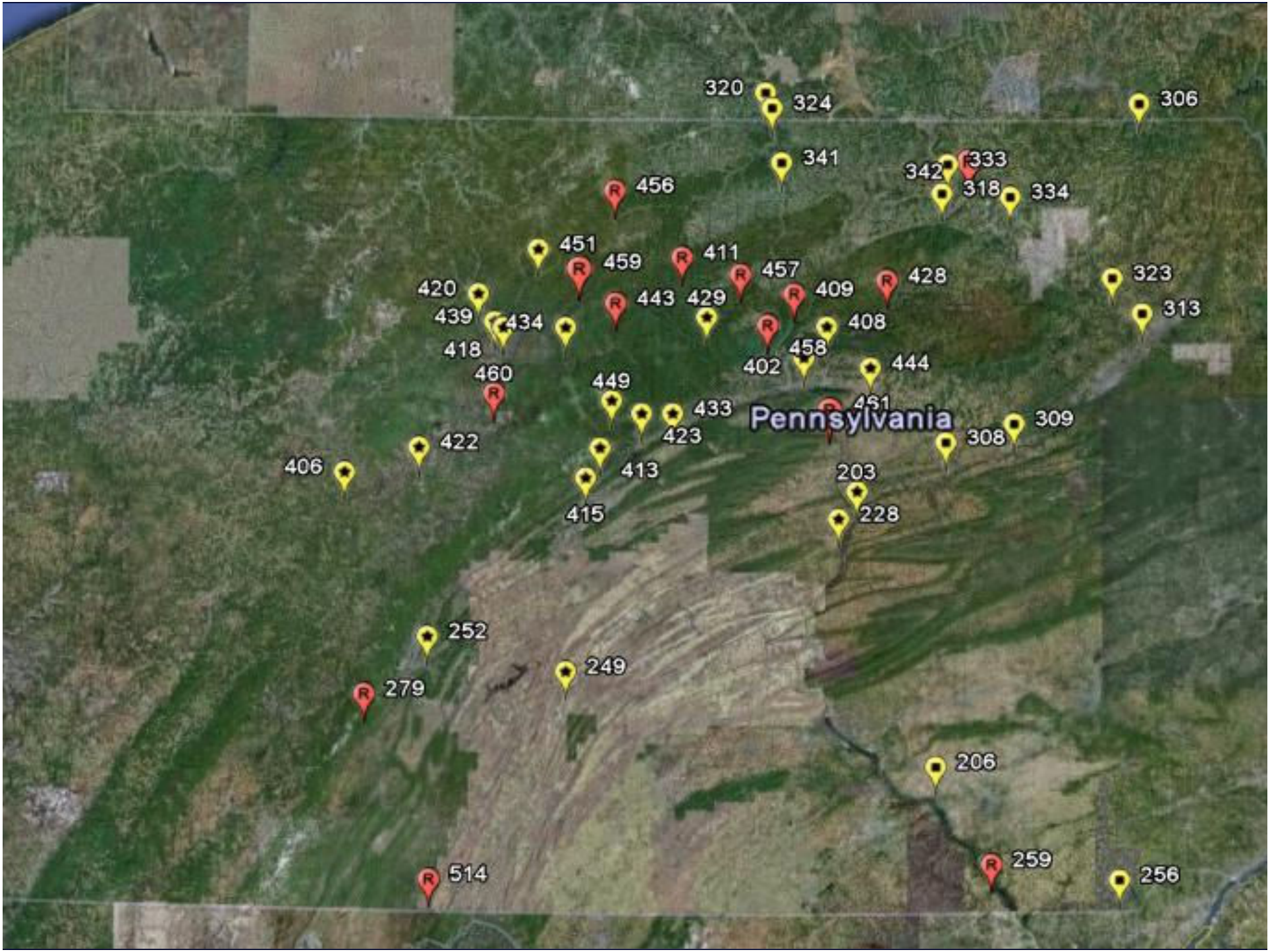
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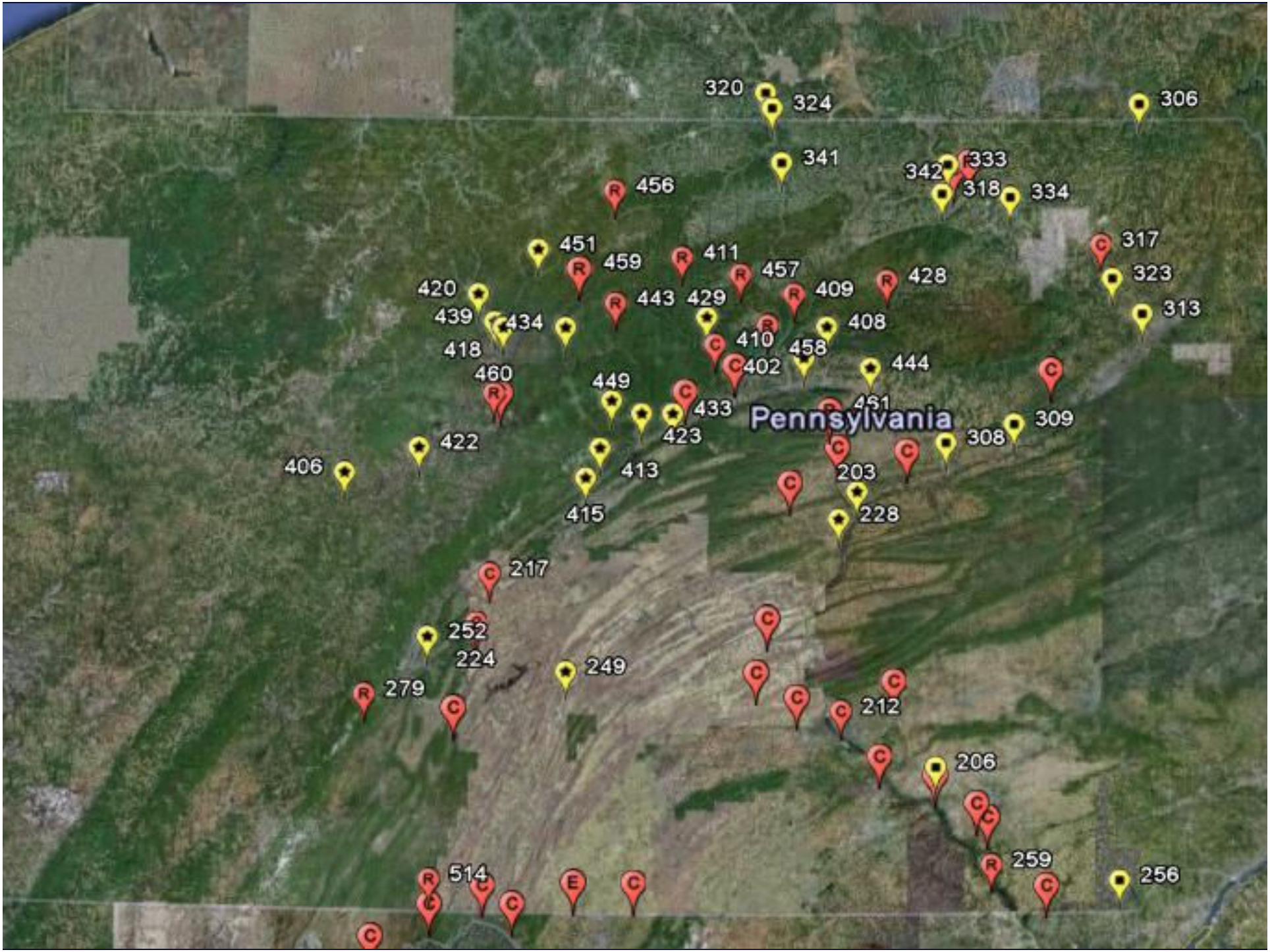
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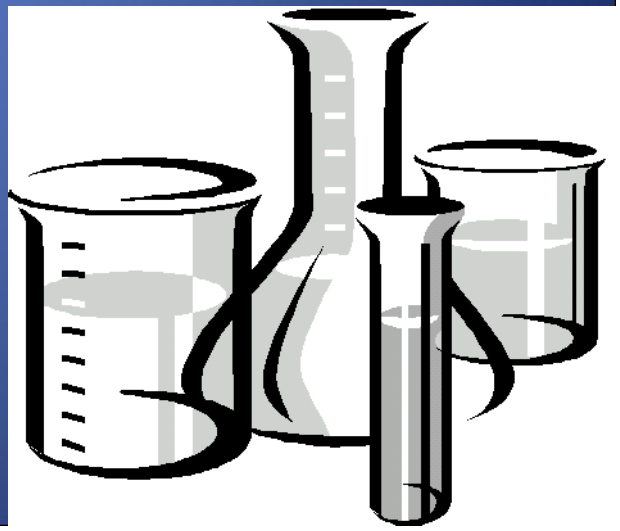
Chemical Parameters

- All sites are sampled for:
  - Field Parameters
  - Discharge
  - Total nutrients (P, $P_{(O)}$, N, Ammonia, NO_3, NO_2)
  - Total metals (Al, Cu, Fe, Mn, Ni, Pb, Zn)
  - Ions (Ca, Mg, Cl, Sulfate)
  - Solids (TSS and TDS)



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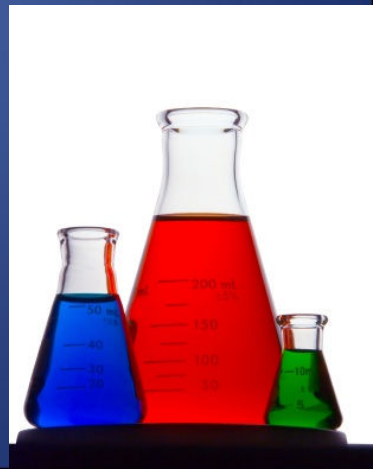
Chemical Parameters

- Reference Sites are also sampled for:
  - Dissolved metals (Al, Ar, Ba, Cd, Cu, Fe, Mn, Ni, Pb, Zn)
  - Fluoride
  - Phenols
  - BOD
  - Fecal Coliform
  - Osmotic Pressure

USGS

Chemical Parameters

- Chesapeake Bay Loading Sites are also sampled for:
  - Dissolved Nutrients (P, $P_{(O)}$, N, Ammonia, NO_3, NO_2)
  - Total Organic Carbon
  - Suspended Sediment during 8 storm events.



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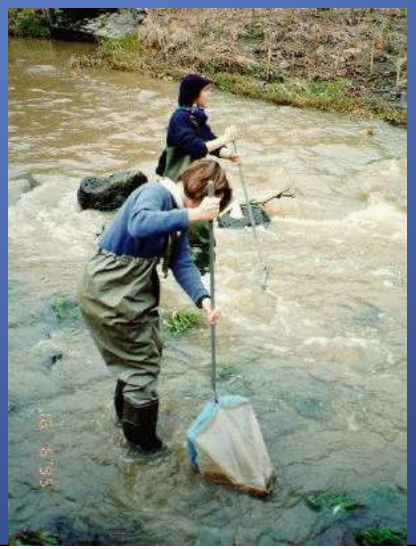
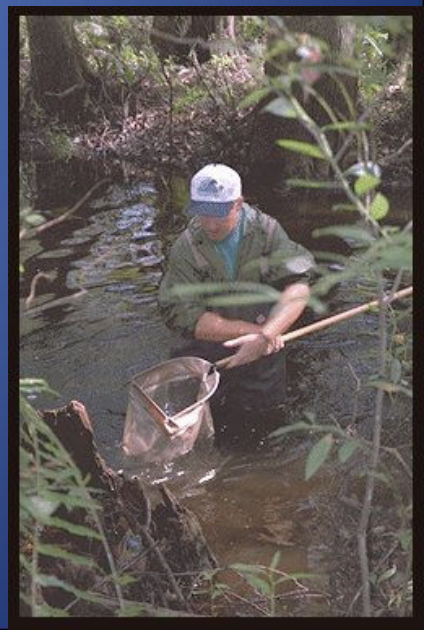
Biological Sampling

- All Standard, Standard Monthly, and Chesapeake Bay Loading sites have macroinvertebrate samples collected every other year.
- Reference sites are sampled annually.





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2011 Changes

- Increased the number of Standard Monthly sites from 8 to 17.
- Addition of 10 new sampling sites.
- 2 gaging stations installed.
- Conversion of 2 sites from standard to CBL sites.
- 26 new Reference sites place.
- 10 Real time Water Quality sondes are being installed.

USGS

Questions/Thank You

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