

National Groundwater Monitoring Network- New Jersey Pilot

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*New Jersey Water Monitoring Council
September, 2011*



Advisory Committee on Water Information (ACWI)

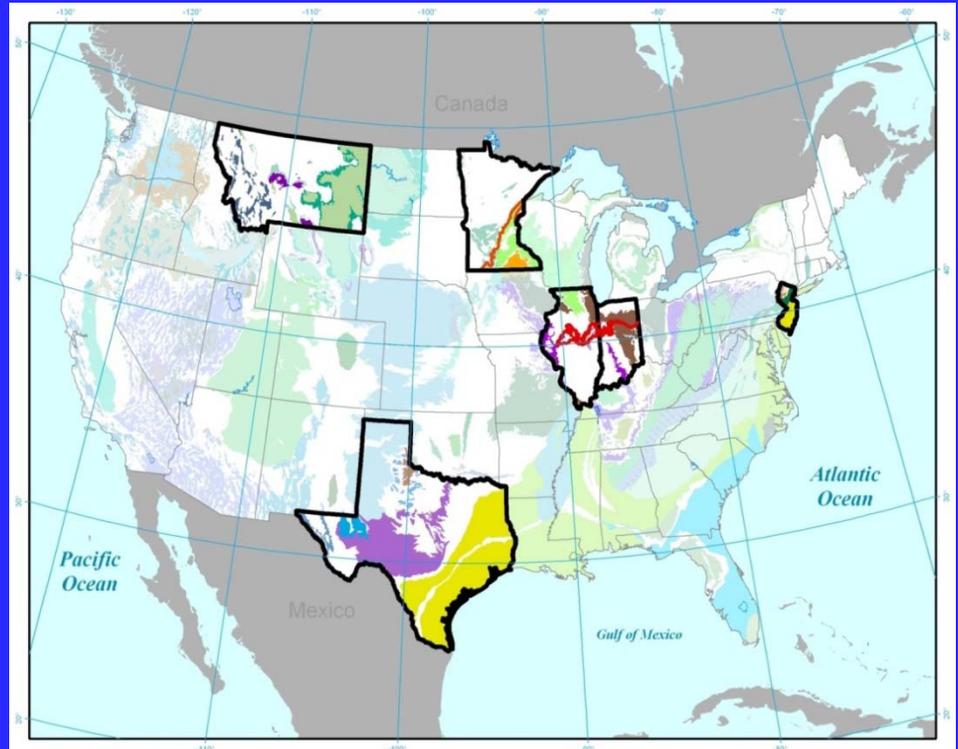
Subcommittee on Ground Water

- Overall goal
 - to develop a framework for and encourage implementation of a nationwide, long term groundwater quantity and quality monitoring network
- National Ground Water Monitoring Network (NGWMN)
 - Designed to provide information necessary for planning, management, and development of groundwater supplies
 - To meet current and future water-supply and ecosystem requirements
 - Based on Principal aquifers
 - Produced “Framework Document”



Pilot Projects

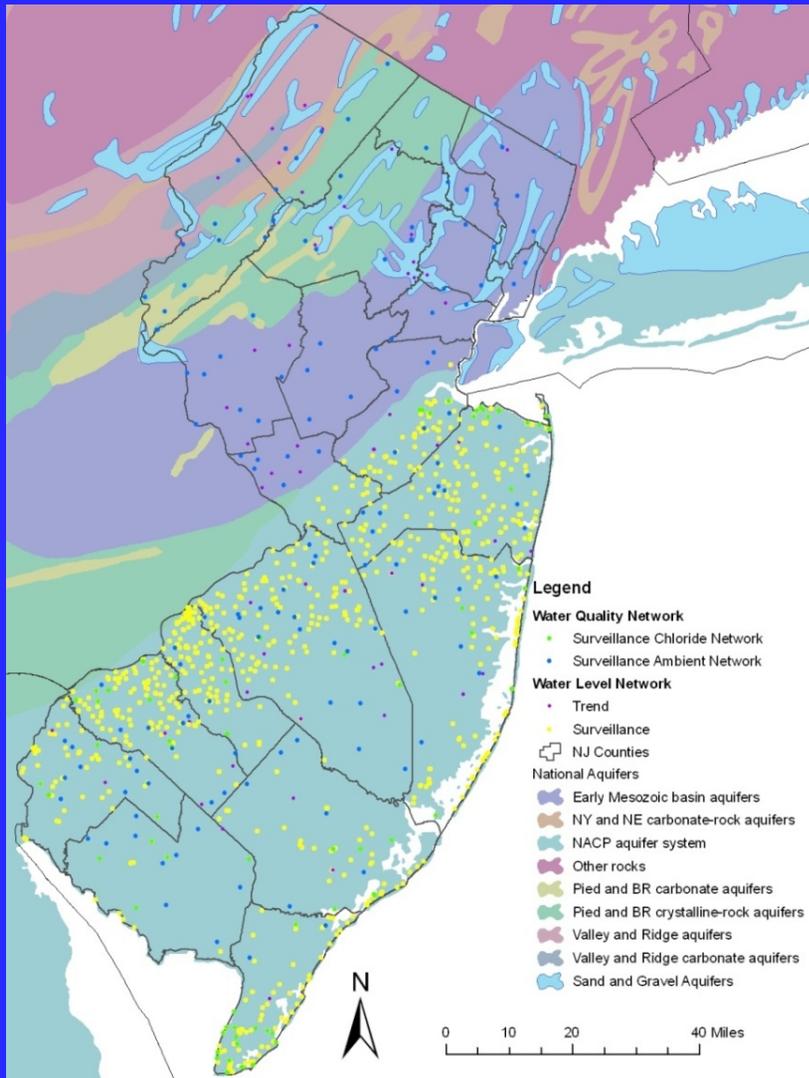
- Five pilots were selected
- Purpose was to test the concepts of the NGWMN
- Lessons learned will be used to improve the “Framework Document”



Types of networks

- Surveillance
 - “Synoptic measurements”
 - A periodic snapshot of groundwater conditions in an aquifer
 - Provides spatial data to ‘tie together’ points
- Trend
 - More frequent measurements
 - “Backbone” of network
 - Often continuous monitoring

New Jersey Pilot



- **Primary Agencies**

- NJDEP- NJ Geological Survey
- USGS NJ Water Science Center

- **Networks**

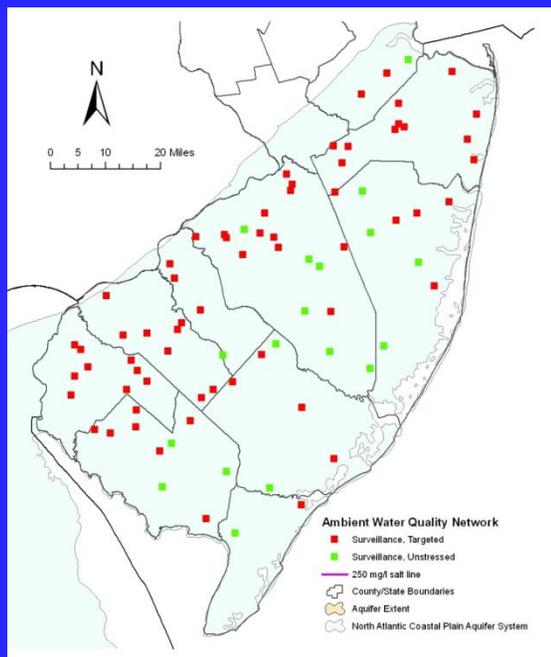
- Defined 4 networks
 - Water-quality Ambient Shallow
 - Water-quality Chloride
 - Water-level trend
 - Water-level synoptic

- **Designated wells as unstressed/targeted**

Water-Quality Surveillance Networks

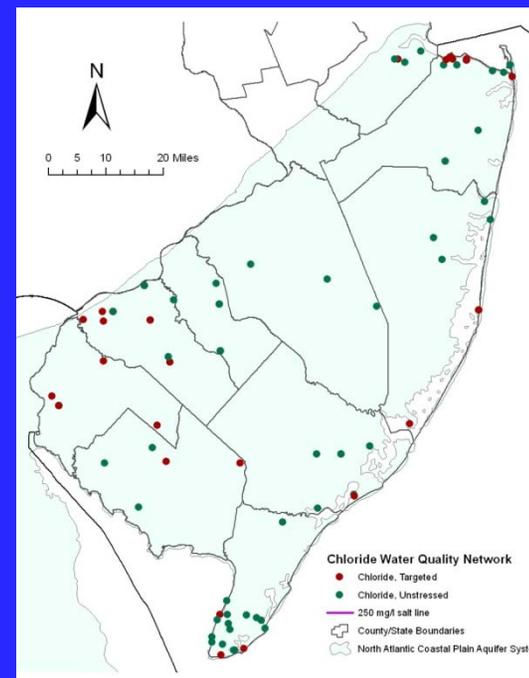
Ambient Network

145 shallow wells
categorized by land-use



Chloride Network

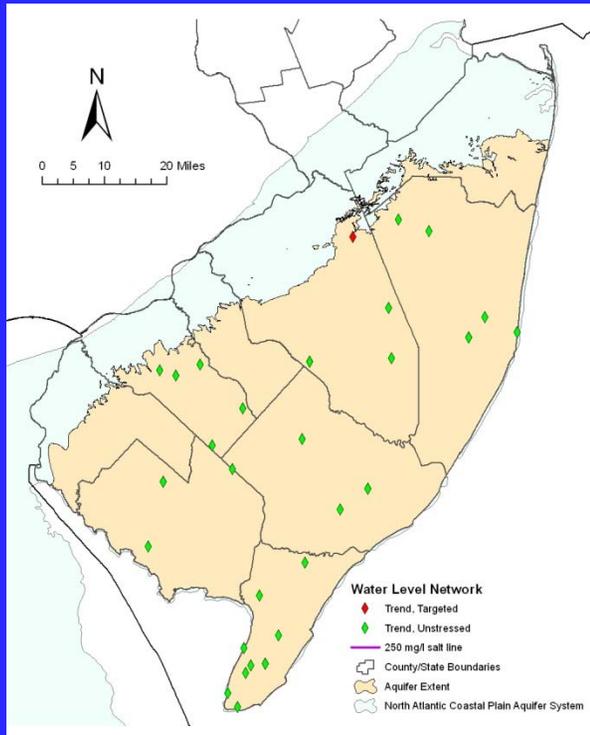
87 wells in NACP
Categorized by chloride



Water-Level Networks

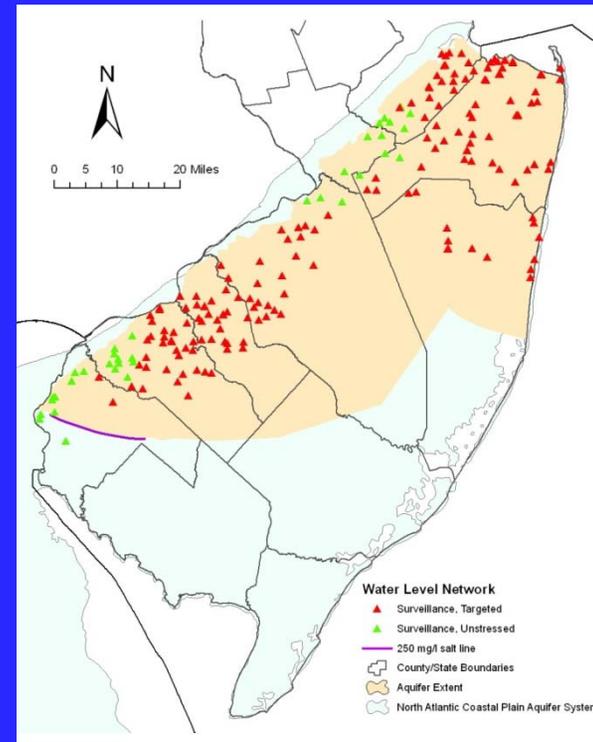
Trend Network

- 138 trend wells statewide
- Continuous data

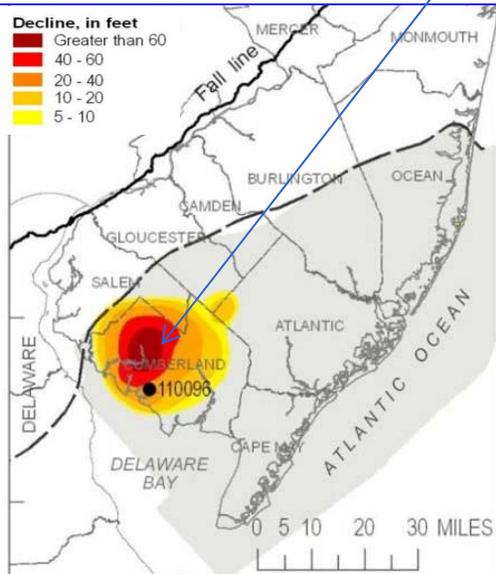
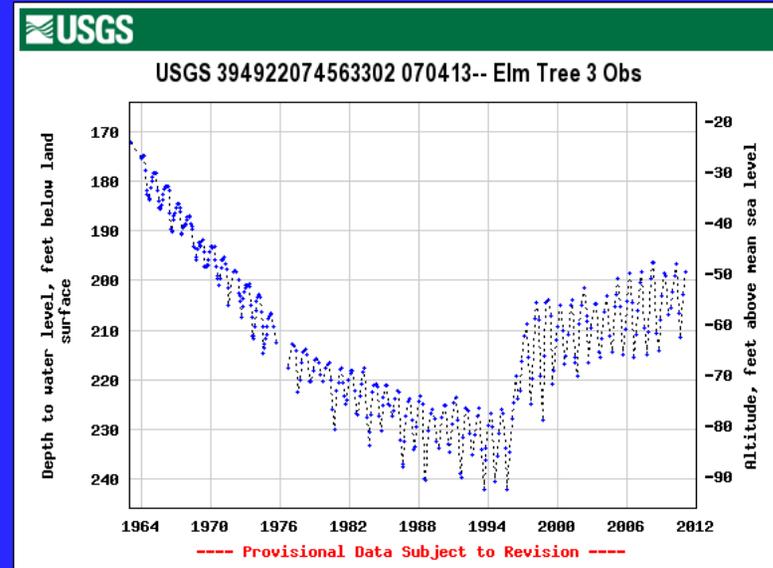
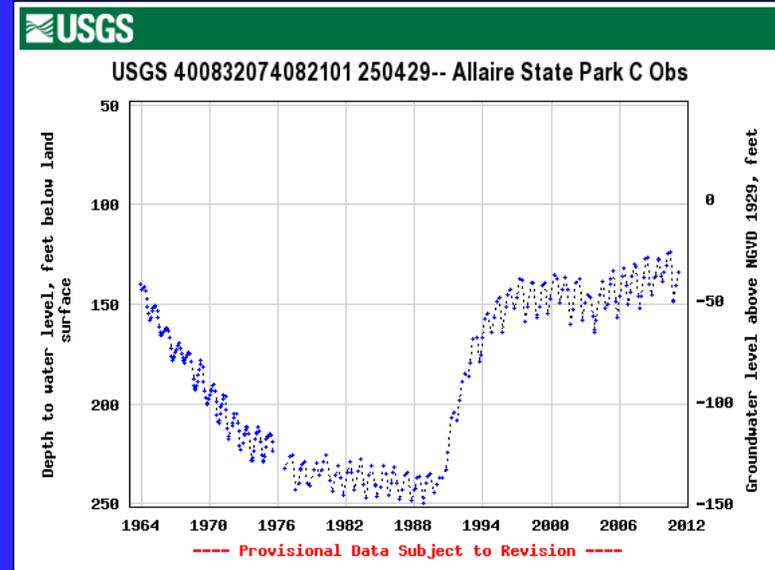
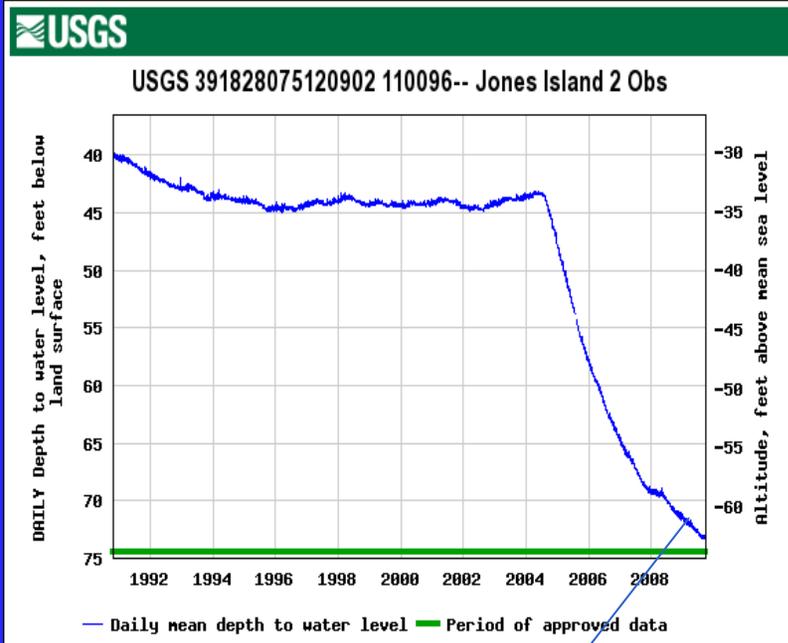


Surveillance network

- 844 wells in NACP
- every 5 years



Value of networks



Targeted / Unstressed

Targeted: heavily pumped, land-use changes, or managed GW resources

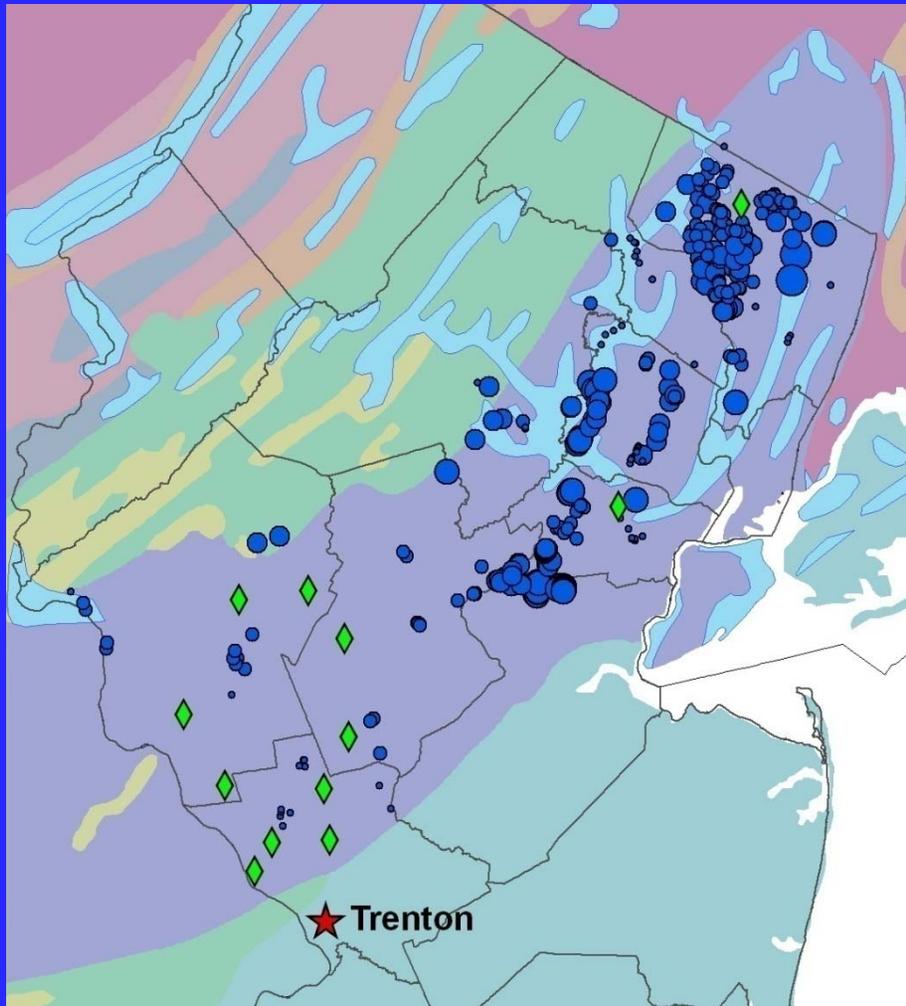
Water Level

- Targeted Confined
 - >40 ft decline from 'predevelopment'
 - or located in Critical Area
- Targeted Unconfined
 - >25 ft decline from earliest measurement

Water Quality

- Targeted Ambient Shallow GW
 - located in a non-undeveloped area
- Targeted Chloride
 - >125 mg/l (half of potable water standard)

Spatial Gaps- Early Mesozoic Basin



- Diversions (blue circles) are concentrated in northeastern NJ
- Network (green diamonds) is concentrated in west-central NJ
- Need to add or move wells near diversions
- Identified gaps in other networks/aquifers as well

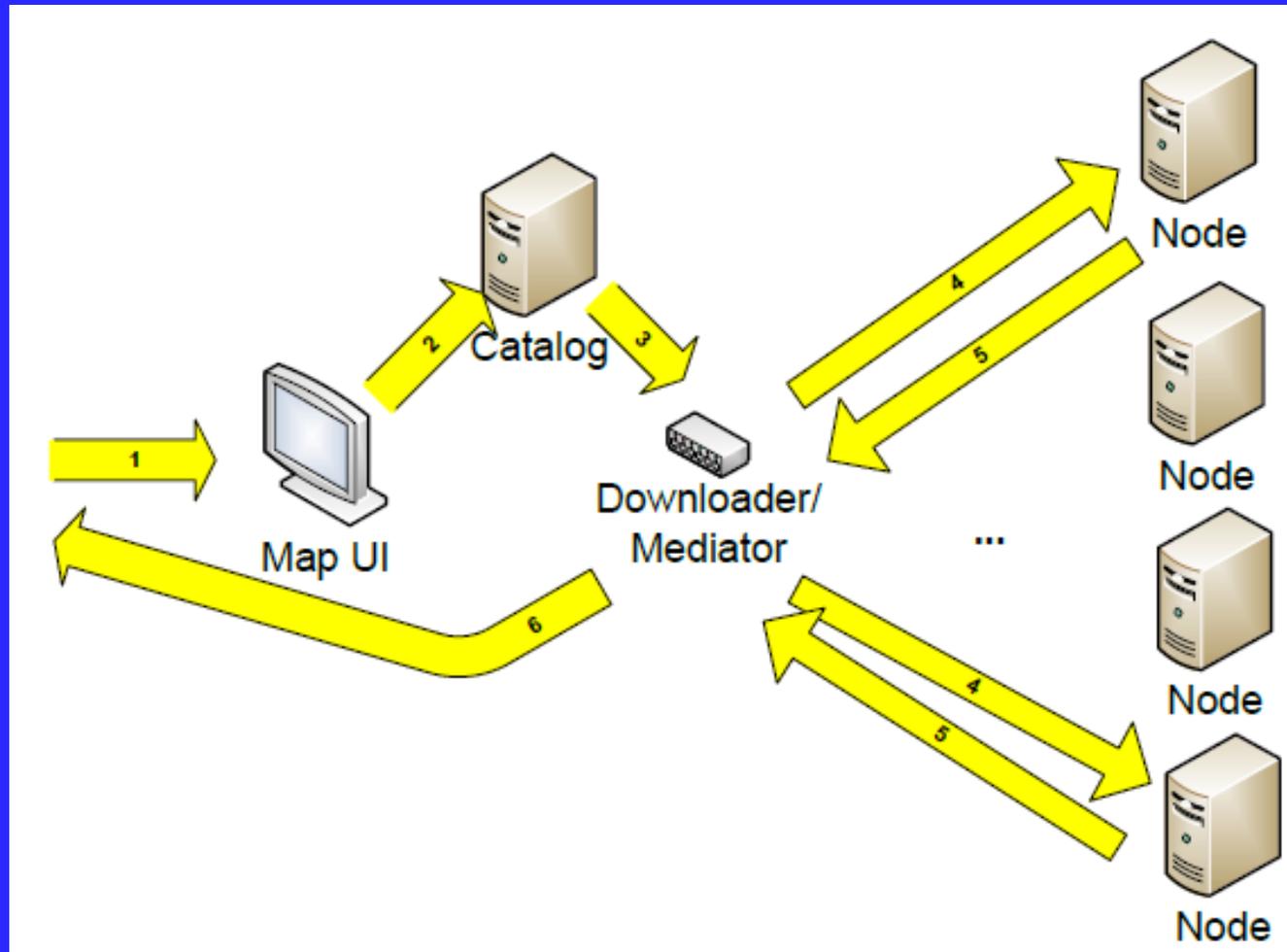
Temporal Gaps

- Water-Level Surveillance
 - For our conditions, the table of suggested monitoring frequency is daily monitoring. We do every 5-years
- Water-Quality Surveillance
 - Suggested frequency is 1-2 times per year
 - Shallow water-quality
 - We currently do 5-years.
 - Chloride network
 - We currently do 5-10 years.
- We estimated costs needed to meet guidelines

Suggested changes to Framework Document

- Clarify definitions of Unstressed/targeted wells
- Reduce monitoring frequency for surveillance networks
- Eliminate requirement for baseline monitoring period for Surveillance networks
- Minor changes to field or data-management practices

Data Portal: Retrieval Workflow



Current Status

- Pilots are complete (Jan 2011)
- Reports on pilot summary and data portal are in review
- Work group tasked with identifying changes to Network Framework document
- US House subcommittee suggested seeking funding for FY 2013
- USGS is working to add selected water-level data from USGS Centers to Network

Thanks!

- New Jersey Pilot Report
 - http://acwi.gov/sogw/pubs/tr/pilot_results/New_Jersey/index.html
- Summary of Pilot reports (draft)
 - http://acwi.gov/sogw/pubs/tr/pilot_results/NGWMN_State_Pilot_Synthesis_Draft_June_2011.pdf
- Data Portal article (draft)
 - http://acwi.gov/sogw/pubs/tr/pilot_results/Booth_etal_GeoHydro2011.pdf
- Data Portal (Pilot)
 - http://cida.usgs.gov/gw_data_portal/

Pilot Demo

- http://cida.usgs.gov/gw_data_portal/

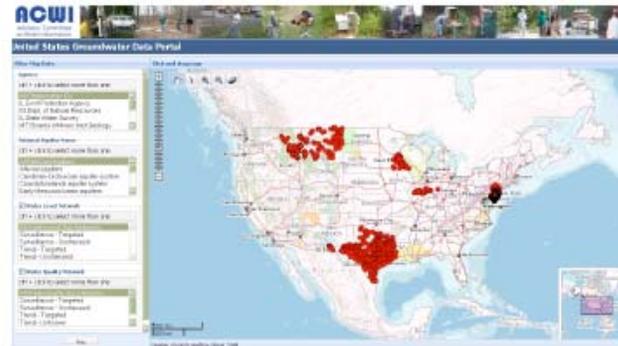


National Ground Water Monitoring Network Data Portal (BETA)

National Ground Water Monitoring Network Data Portal of the Federal Advisory Committee on Water Information Subcommittee on Ground Water

This page serves as a gateway to a pilot U.S. National Ground Water Monitoring Network (NGWMN) data portal developed as part of a NGWMN pilot study. The Network Portal can be accessed [here](#) or by clicking the image below.

Information about the NGWMN and the Pilot study, definitions of terms used in the portal follow, and links to related websites follow.



National Ground Water Monitoring Network Data Portal (BETA)

Filter Map Data

- All Organization IDs
- IL Env't Protection Agency
- IN Dept. of Natural Resources
- IL State Water Survey
- MT Bureau of Mines and Geology

U.S. Principal Aquifer Name

- ctrl + click to select more than one
- All National Aquifers
 - Alluvial aquifers
 - Cambrian-Ordovician aquifer system
 - Coastal lowlands aquifer system
 - Early Mesozoic basin aquifers

Water Level Network

- ctrl + click to select more than one
- All Water Level Sub Networks
 - Surveillance - Targeted
 - Surveillance - Unstressed
 - Trend - Targeted
 - Trend - Unstressed

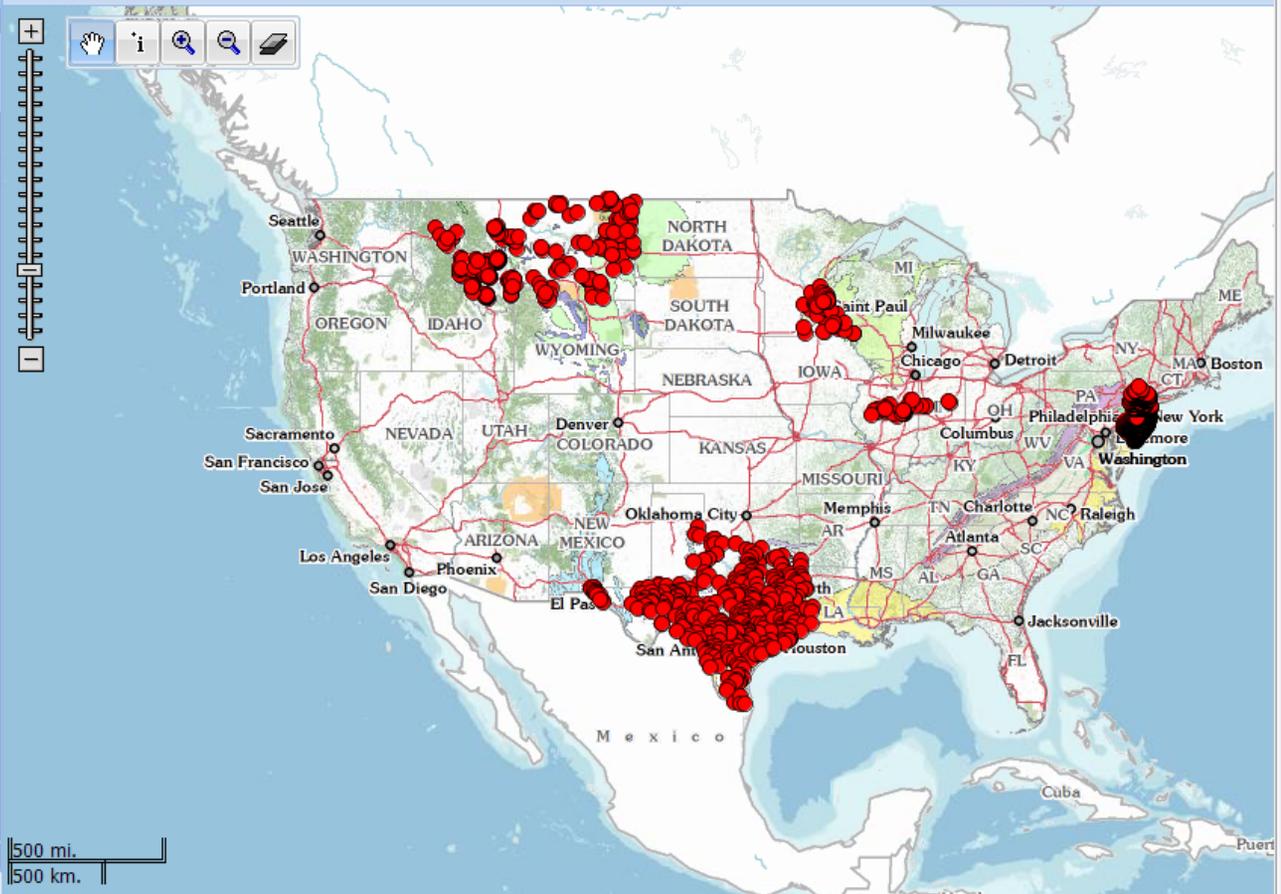
Water Quality Network

- ctrl + click to select more than one
- All Water Quality Sub Networks
 - Surveillance - Targeted
 - Surveillance - Unstressed
 - Trend - Targeted
 - Trend - Unknown

Map

Click and drag map

Map navigation controls including zoom in (+), zoom out (-), pan (hand), info (i), search (magnifying glass), and print (printer) icons. A vertical scale bar is also present.



Number of points meeting criteria: 1949

Filter Map Data

- MT Bureau of Mines and Geology
- MN Dept. of Natural Resources
- MN Pollution Control Agency
- TX Water Development Board
- NJ Geological Survey

U.S. Principal Aquifer Name

- ctrl + click to select more than one
- All National Aquifers
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 - Coastal lowlands aquifer system
 - Early Mesozoic basin aquifers

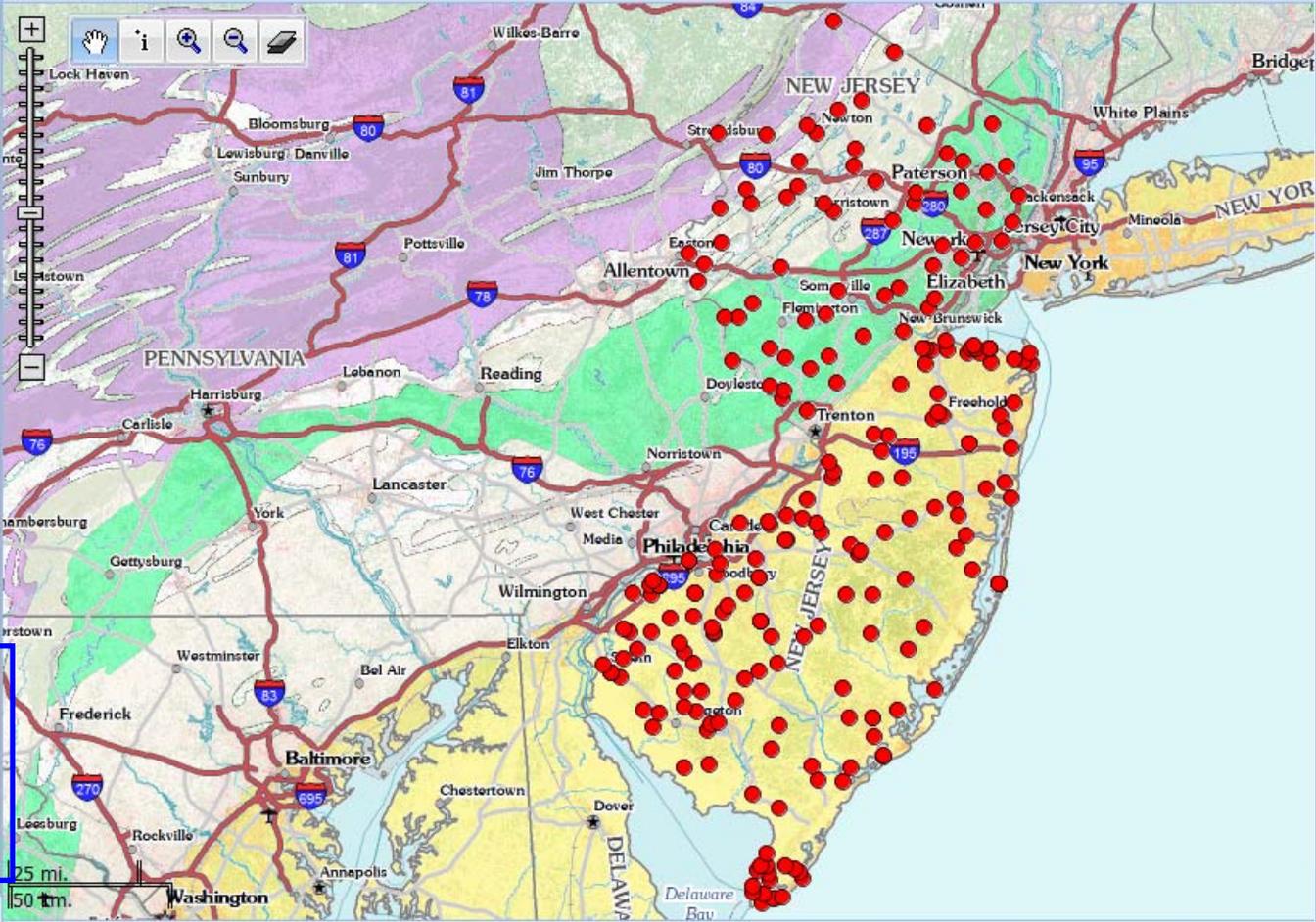
Water Level Network

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- All Water Level Sub Networks
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Water Quality Network

- ctrl + click to select more than one
- All Water Quality Sub Networks
 - Surveillance - Targeted
 - Surveillance - Unstressed
 - Trend - Targeted
 - Trend - Unknown

Click and drag map



Filter Map Data

- MT Bureau of Mines and Geology
- MN Dept. of Natural Resources
- MN Pollution Control Agency
- TX Water Development Board
- NJ Geological Survey

U.S. Principal Aquifer Name

ctrl + click to select more than one

- Coastal lowlands aquifer system
- Early Mesozoic basin aquifers
- Edwards-Trinity aquifer system
- Lower Tertiary aquifers
- Northern Atlantic Coastal Plain aquifer s

Water Level Network

ctrl + click to select more than one

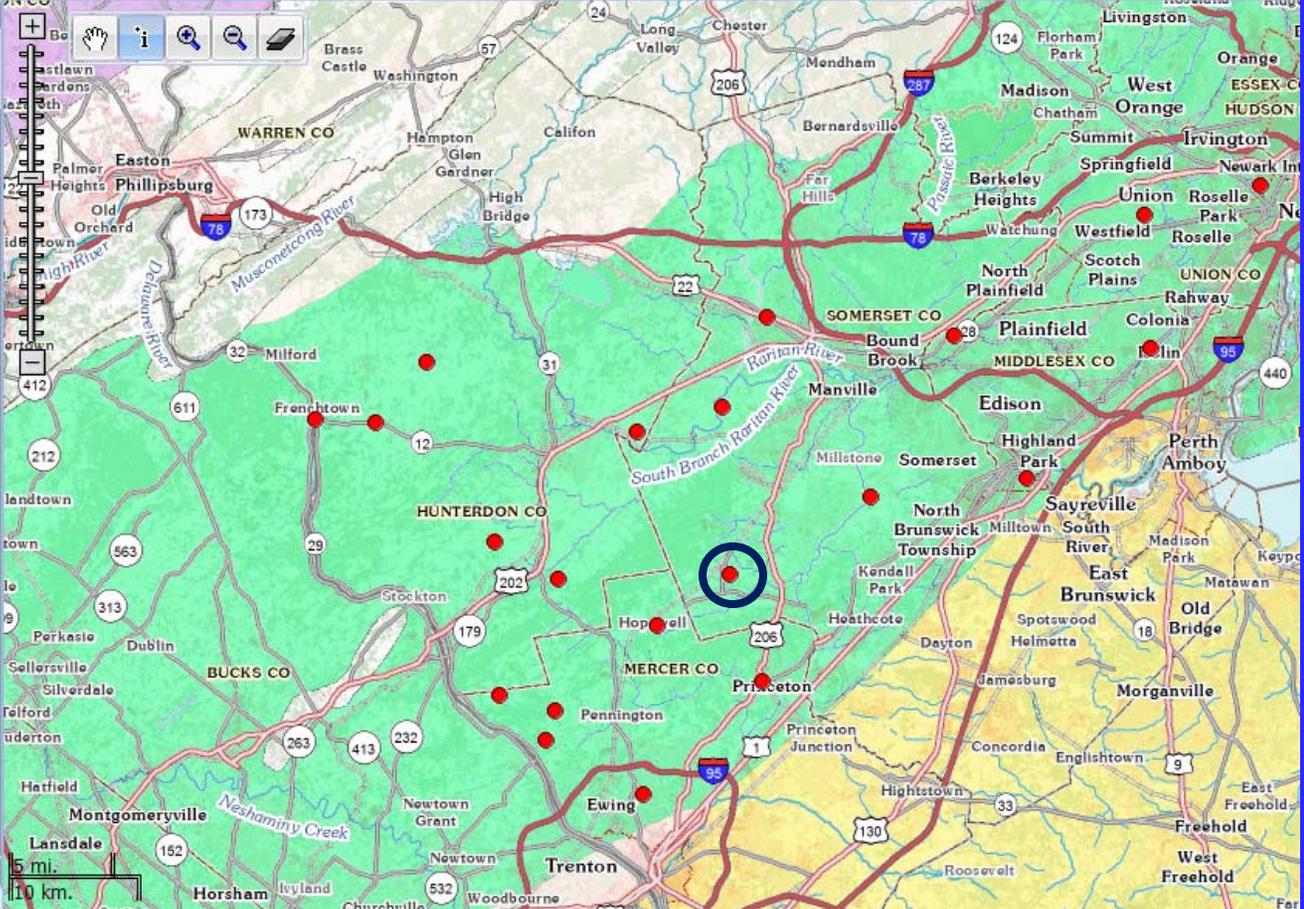
- All Water Level Sub Networks
- Surveillance - Targeted
- Surveillance - Unstressed
- Trend - Targeted
- Trend - Unstressed

Water Quality Network

ctrl + click to select more than one

- All Water Quality Sub Networks
- Surveillance - Targeted
- Surveillance - Unstressed
- Trend - Targeted
- Trend - Unknown

Click on map to identify a point of interest



350139-- MW109

Summary

Well Log

Water Levels

Water Quality



Agency	USGS NJ / NJGS
Site Name	350139-- MW109
Site #	402512074414301
Lat/Long(WGS84)	40.4200,-74.6940
Local Aquifer Name	Passaic Formation
National Aquifer Name	Early Mesozoic basin aquifers
Water Level Network	Trend - Unstressed
Water Quality Network	Surveillance - Targeted

Download Data

Done

350139-- MW109

Summary Well Log Water Levels **Water Quality**

Activity Start Date	Activity Start Time	Time Zone	Characteristic Name	Measure Value	Units	Detection
2007-04-10	10:00:00	EDT	Barometric pressure	762	mm/Hg	
2007-04-10	10:00:00	EDT	Specific conductance	392	uS/cm @25C	
2007-04-10	10:00:00	EDT	Magnesium	11.9	mg/l	
2007-04-10	10:00:00	EDT	Potassium	0.83	mg/l	
2007-04-10	10:00:00	EDT	Bicarbonate	98	mg/l	
2007-04-10	10:00:00	EDT	Chloride	12.2	mg/l	
2007-04-10	10:00:00	EDT	Total dissolved solids	234	mg/l	
2007-04-10	10:00:00	EDT	Total dissolved solids	0.33	tons/ac ft	
2007-04-10	10:00:00	EDT	Kjeldahl nitrogen	0.07	mg/l as N	
2007-04-10	10:00:00	EDT	Ammonia and ammonium	Not Detected		Not Dete
2007-04-10	10:00:00	EDT	Nitrate-nitrite	9.72	mg/l as N	
2007-04-10	10:00:00	EDT	Phosphate	0.069	mg/l as P	
2007-04-10	10:00:00	EDT	Antimony	Not Detected		Not Dete
2007-04-10	10:00:00	EDT	Boron	21	ug/l	
2007-04-10	10:00:00	EDT	Iron	Not Detected		Not Dete
2007-04-10	10:00:00	EDT	Nickel	0.07	ug/l	
2007-04-10	10:00:00	EDT	Silver	Not Detected		Not Dete

Download Data Done

350139-- MW109

Summary Well Log Water Levels **Water Quality**

Activity Start Date	Activity Start Time	Time Zone	Characteristic Name
2007-04-10	10:00:00	EDT	Barometric pressure
2007-04-10	10:00:00	EDT	Specific conductance
2007-04-10	10:00:00	EDT	Magnesium
2007-04-10	10:00:00	EDT	Potassium
2007-04-10	10:00:00	EDT	Bicarbonate
2007-04-10	10:00:00	EDT	Chloride
2007-04-10	10:00:00	EDT	Nickel
2007-04-10	10:00:00	EDT	Silver

Downloading Site Data...

Please wait...

Cancel

File Download

Do you want to open or save this file?

 Name: gwdp_USGS_NJ_NJGS_402512074414301.zip
Type: Compressed (zipped) Folder
From: cida.usgs.gov

Open Save Cancel

 While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. [What's the risk?](#)

Not Detected	Not Det
21 ug/l	Not Det
Not Detected	Not Det
0.07 ug/l	Not Det
Not Detected	Not Det

Download Data Done

USGS_NJ_NJGS_402512074414301.xls [Read-Only] [Compatibility Mode] - Microsoft Ex...

Home Insert Page Layout Formulas Data Review View Developer Acrobat

Clipboard Font Alignment Number Styles Cells Editing WebEx

Activity Start Date

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Activity St	Activity St	Timezone	Characteri	Value	Unit	Detection	Result stat	Value Type	Comment	Sample Fr	USGS PC	Method N	Method Ide	Method Cc	Metho
2	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Oxygen	43	% saturatn		Accepted	Calculated		Dissolved	00301	ALGOR	USGS	Computati	NWIS
3	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Temperatu	12.0	deg C		Accepted	Actual			00010				
4	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Calcium	42.3	mg/l		Accepted	Actual		Dissolved	00915	PLA11	USGS	Metals, wf	USGS
5	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Sodium ad	0.36	None		Accepted	Calculated			00931	ALGOR	USGS	Computati	NWIS
6	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Sodium	10.1	mg/l		Accepted	Actual		Dissolved	00930	PLA11	USGS	Metals, wf	USGS
7	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Fluoride			Not Detect	Accepted	Actual		Dissolved	00950	ISE04	USGS	Fluoride, w	USGS
8	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Silica	22.8	mg/l		Accepted	Actual		Dissolved	00955	CL064	USGS	Silica, wf,	USGS
9	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Sulfate	36.4	mg/l		Accepted	Actual		Dissolved	00945	IC022	USGS	Anions, wf	USGS
10	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Phosphate	0.190	mg/l		Accepted	Calculated		Dissolved	00660	ALGOR	USGS	Computati	NWIS
11	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Organic ca	0.2	mg/l		Accepted	Estimated		Dissolved	00681	OX006	USGS	DOC, 0.45	USGS
12	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Aluminum	3.1	ug/l		Accepted	Actual		Dissolved	01106	PLM43	USGS	Metals, wf	USGS
13	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Beryllium			Not Detect	Accepted	Actual		Dissolved	01010	PLM43	USGS	Metals, wf	USGS
14	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Alachlor			Not Detect	Accepted	Actual		Dissolved	46342	GCM35	USGS	Pest, high	USGS
15	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Benfluralin			Not Detect	Accepted	Actual		Dissolved	82673	GCM35	USGS	Pest, high	USGS
16	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Carbofuran			Not Detect	Accepted	Actual	0.7 micron	Dissolved	82674	GCM35	USGS	Pest, high	USGS
17	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Disulfoton			Not Detect	Accepted	Actual		Dissolved	82677	GCM35	USGS	Pest, high	USGS
18	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Ethalfuralin			Not Detect	Accepted	Actual		Dissolved	82663	GCM35	USGS	Pest, high	USGS
19	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Fonofos			Not Detect	Accepted	Actual		Dissolved	04095	GCM35	USGS	Pest, high	USGS
20	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Linuron			Not Detect	Accepted	Actual	0.7 micron	Dissolved	82666	GCM35	USGS	Pest, high	USGS
21	2003-01-15 09:30:00	2003-01-15 09:30:00	EST	Methyl parathion			Not Detect	Accepted	Actual		Dissolved	82667	GCM35	USGS	Pest, high	USGS

Well Log Water Levels Water Quality

Ready 100%

National Ground Water Monitoring Network Data Portal (BETA)

Filter Map Data

MT Bureau of Mines and Geology
MN Dept. of Natural Resources
MN Pollution Control Agency
TX Water Development Board
NJ Geological Survey

U.S. Principal Aquifer Name

ctrl + click to select more than one

Lower Tertiary aquifers
Northern Atlantic Coastal Plain aquifers
Northern Rocky Mountains Intermontan
Paleozoic aquifers
Pecos River Basin alluvial aquifer

Water Level Network

ctrl + click to select more than one

All Water Level Sub Networks
Surveillance - Targeted
Surveillance - Unstressed
Trend - Targeted
Trend - Unstressed

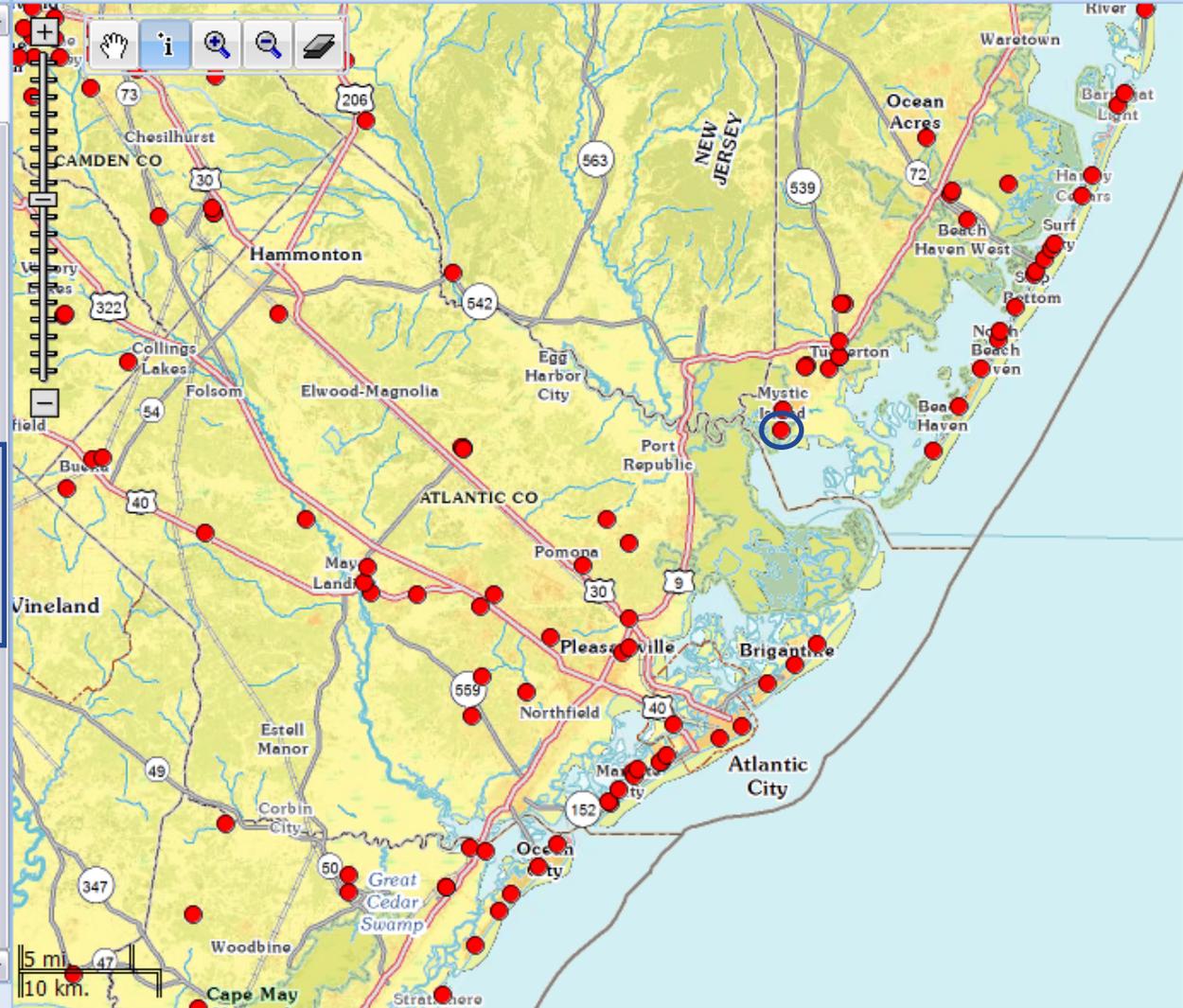
Water Quality Network

ctrl + click to select more than one

All Water Quality Sub Networks
Surveillance - Targeted
Surveillance - Unstressed
Trend - Targeted
Trend - Unknown

Map

Click on map to identify a point of interest



Number of points meeting criteria: 844

290814-- Mystic 7

Summary Well Log Water Levels



Agency	USGS NJ / NJGS
Site Name	290814-- Mystic 7
Site #	393253074230802
Lat/Long(WGS84)	39.5470,-74.3850
Local Aquifer Name	Atlantic City 800-Foot sand of the Kirkwood Formation
National Aquifer Name	Northern Atlantic Coastal Plain aquifer system
Water Level Network	Surveillance - Targeted
Water Quality Network	Unknown

Download Data Done

290814-- Mystic 7

Summary

Well Log

Water Levels

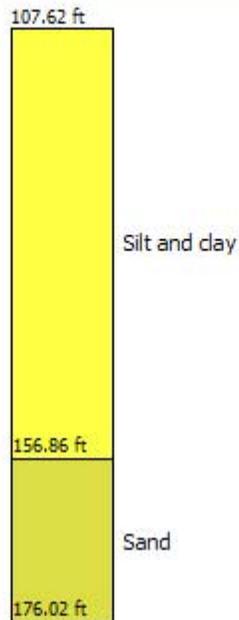
Longitude: -74.3851

Latitude: 39.5479

Elevation: 3.04 ft.

Well Depth: 169.33 ft.

Resource: [USGS NWIS Database](#)



Depth From (ft)	Depth To (ft)	Lithology	Description
107.62	156.86	SILT, CLAY	Silt and clay
156.86	176.02	SAND	Sand

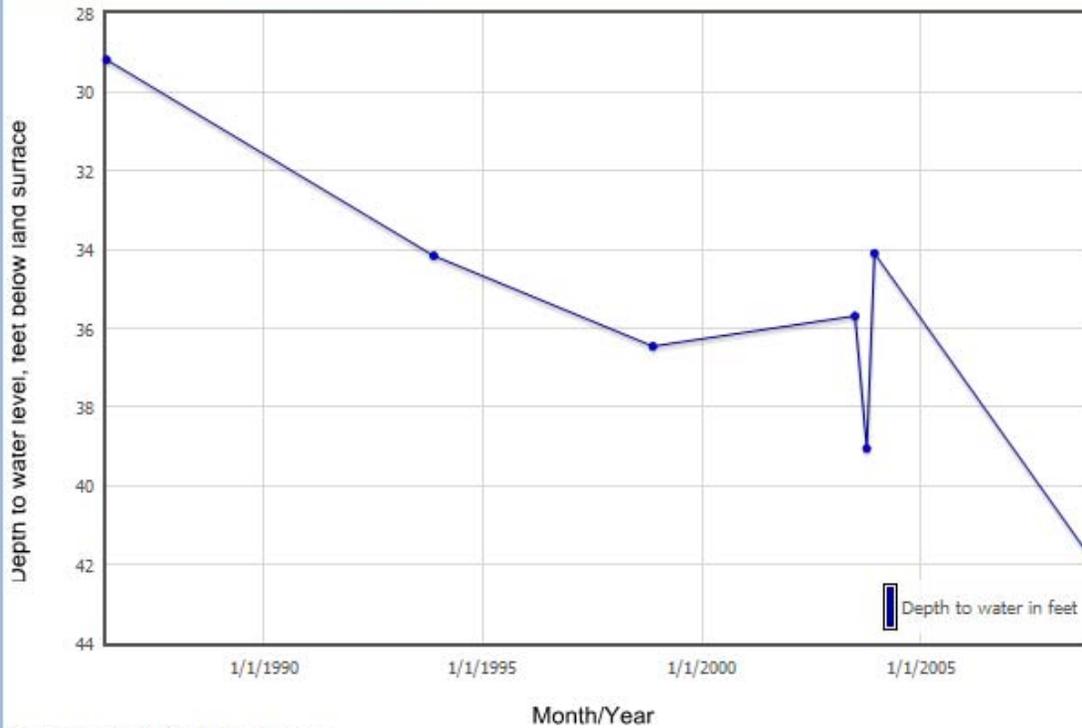
Depth From (ft)	Depth To (ft)	Screen/Casing Material
155.65	167.81	Stainless steel

Download Data

Done

290814-- Mystic 7

Summary Well Log **Water Levels**



Date created: 09/19/2011 15:49:07

Date	Time	Value	Unit	Comment
11-12-2008	16:12-05:00	41.79	feet	Electric-tape measurement.
12-11-2003	14:16-05:00	34.09	feet	Calibrated electric-tape measurement.
10-08-2003	17:00-04:00	39.05	feet	Electric-tape measurement.
07-01-2003	17:00-04:00	35.68	feet	Electric-tape measurement.
11-19-1998	15:07-05:00	36.45	feet	Electric-tape measurement.
11-16-1993	19:44-05:00	34.15	feet	Reported, method not known.
05-28-1986	01:00-04:00	29.17	feet	Observed.

Download Data

Done

Filter Map Data

U.S. Principal Aqu

ctrl + click to select

Water Level Network

ctrl + click to select more than one

Water Quality Network

ctrl + click to select more than one

291210-- Great Bay Blvd 1 Obs

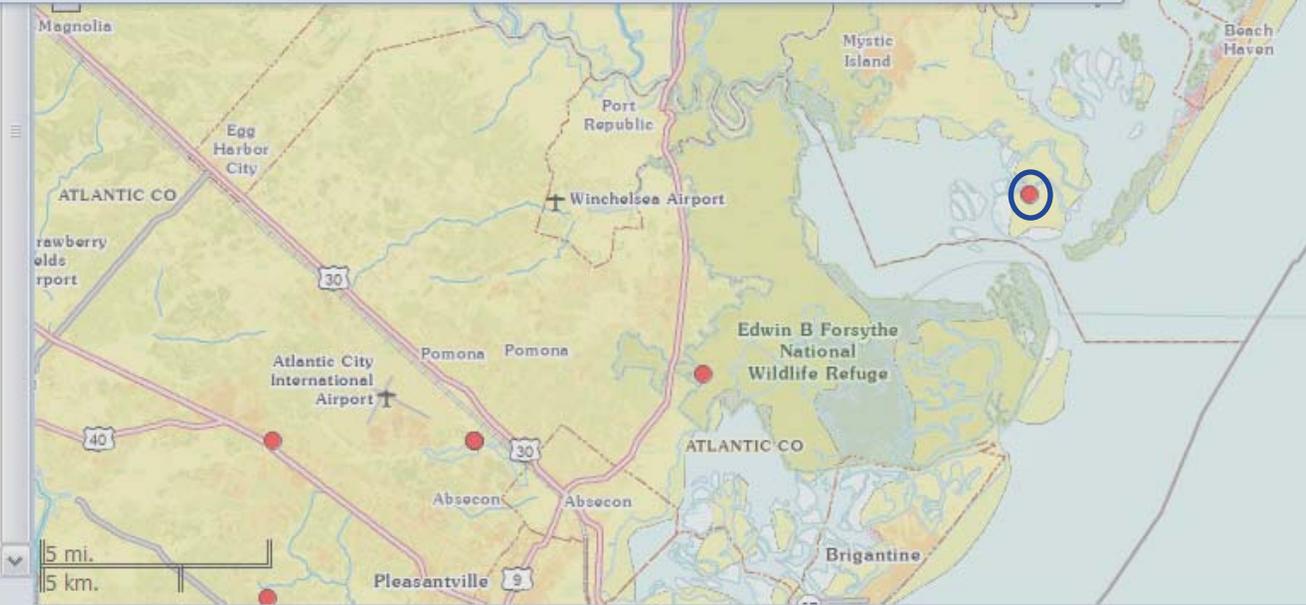
Summary Well Log Water Levels Water Quality



Agency	USGS NJ / NJGS
Site Name	291210-- Great Bay Blvd 1 Obs
Site #	393115074191001
Lat/Long(WGS84)	39.5200,-74.3190
Local Aquifer Name	Piney Point aquifer
National Aquifer Name	Northern Atlantic Coastal Plain aquifer system
Water Level Network	Trend - Targeted
Water Quality Network	Surveillance - Targeted

Download Data

Done

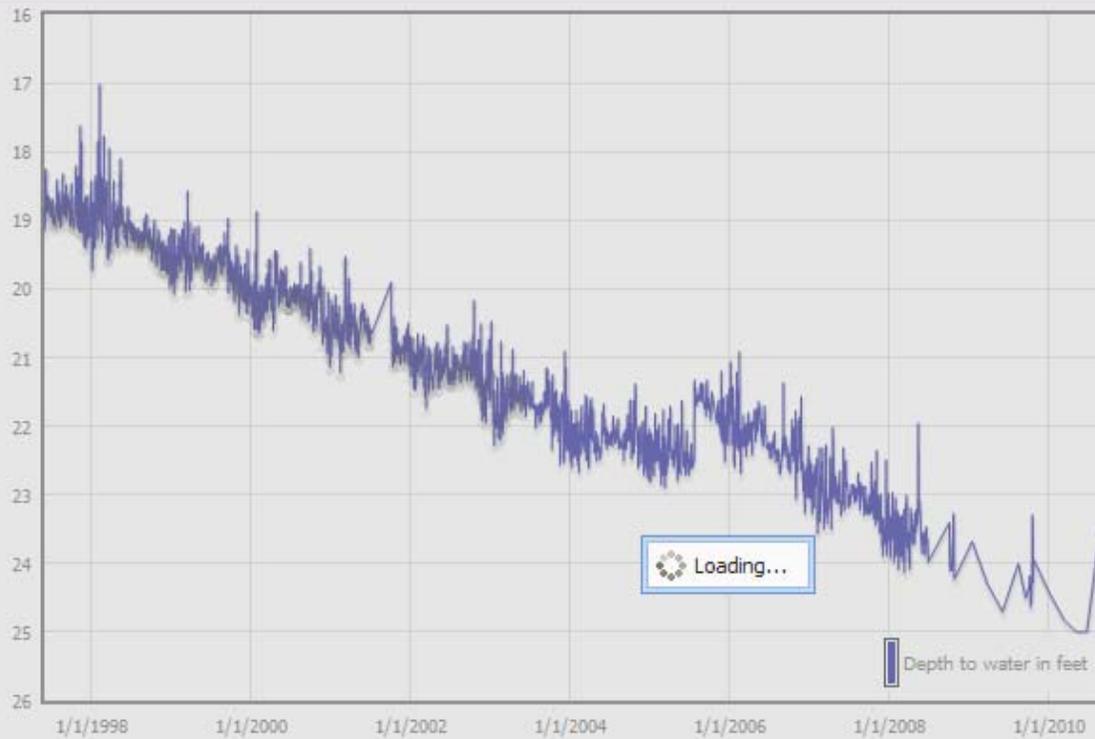


Map

Number of points meeting criteria: 107

291210-- Great Bay Blvd 1 Obs

Summary Well Log **Water Levels** Water Quality



Date created: 09/19/2011 15:58:18

Date	Time	Value	Unit	Comment
08-24-2010	13:58-04:00	23.47	feet	Steel-tape measurement.
06-22-2010	16:22-04:00	25	feet	Steel-tape measurement.
05-07-2010	14:23-04:00	25	feet	Steel-tape measurement.
03-10-2010	15:47-05:00	24.82	feet	Steel-tape measurement.
12-28-2009	14:18-05:00	24.4	feet	Steel-tape measurement.
10-21-2009	15:03-04:00	23.94	feet	Steel-tape measurement.

Download Data

Done