

# Quality of Surface and Ground Water in New Jersey, Water Year 2006

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## Introduction

The U.S. Geological Survey (USGS), in cooperation with Federal, State, and local agencies, collects a large amount of data pertaining to the water resources of New Jersey each water year (October 1 to September 30). These data are stored and maintained in the National Water Information System database (NWIS) and constitute a valuable source of reliable, impartial, and timely information for developing an improved understanding of the water resources of the State. To make this information readily available, the data were published annually from water years 1961 to 2005 in the report series, titled "Water Resources Data-New Jersey." The data for the 2006 water year are now available on the World Wide Web and can be accessed at <http://pubs.water.usgs.gov/wdr2006/>. The water-quality volume of the annual data report consists of analytical results from 440 surface-water samples collected seasonally throughout the year, 22 bed sediment samples collected during late summer, and 30 ground-water samples collected during spring through late summer.

Data on the physical characteristics of some streams are available in real time. Continuous records of water temperature, specific conductance, pH, dissolved oxygen (DO) concentration, and DO percent of saturation for stations 01388000, Ramapo River at Pompton Lakes NJ, downstream of dam; 01389005, Passaic River below Pompton River at Two Bridges NJ; and 01463500, Delaware River at Trenton NJ are not summarized in this report but are available at <http://waterdata.usgs.gov/nj/nwis/current/?type=quality>. Turbidity records also are available for station 01463500, Delaware River at Trenton. These records consist of real-time hourly values for the most recent 31 days and daily values (maximum, minimum, and mean) for the period of record.

In 2006, a study was conducted to measure the 24-hour variability of continuously monitored DO concentration, DO percent of saturation, specific conductance, water temperature, and pH at six network stations during base flow conditions. The stations are 01377000, Hackensack River at Rivervale; 01378350, Tenakill River at Cresskill; 01393450, Elizabeth River at Elizabeth; 01393690, Morses Creek at Linden; 01464420, Crosswicks Creek near New Egypt; and 01464504,

Crosswicks Creek at Groveville Road at Groveville. In-situ multi-constituent water-quality monitors measured the occurrence and magnitude of diurnal variations not observed when instantaneous samples were collected during quarterly visits (generally between the hours of 8 a.m. and 2 p.m.). The monitors were deployed for 7-day periods during July to mid-September. The data are not summarized in this report but can be accessed in tabular form at [http://nj.usgs.gov/qw/diurnal\\_do/](http://nj.usgs.gov/qw/diurnal_do/) and in graphical form in the water year 2006 annual data report.

The purpose of this report is to summarize ambient surface-water and ground-water quality data collected cooperatively by the USGS and New Jersey Department of Environmental Protection (NJDEP). Data on the physical characteristics and (or) water-quality constituents in samples collected at 110 surface-water stations, 30 wells, and 22 bed-sediment sites are presented in figures and tables.

## Ambient Surface-Water-Quality Monitoring Network

The USGS, in cooperation with the NJDEP, operates the cooperative Ambient-Surface-Water-Quality Monitoring Network (ASWQMN), which is a series of monitoring stations on streams throughout New Jersey. Constituent concentration data from the ASWQMN are used to determine statewide water-quality status and trends, define the water quality of streams near the downstream end of each NJDEP Watershed Management Area (WMA), define background water quality in each of the four physiographic provinces of New Jersey, and define water quality in streams that drain targeted land-use areas. The ASWQMN consists of as many as 115 stations located throughout the 20 WMAs (fig. 1). Seven background stations are located on reaches of streams that remain relatively unaffected by human activity; data from these stations are used to develop a water-quality database consisting of baseline measurements. Twenty-three Watershed Integrator (WI) stations are located near the farthest downstream point, not affected by tide, in one of the large drainage basins in each WMA, except in WMAs 5, 9, and 16 due to tidal influence, lack of suitable sites, and limited basin size, respectively.

The WI stations provide water-quality data for large drainage areas that integrate the effects of different types of land use on, and point and nonpoint contributions of constituents to, the water quality of streams within each WMA. Land Use Indicator (LUI) stations are used to monitor the effects of the dominant land use in each WMA and provide data on non-point source loading of contaminants to streams. Of the 43 LUI stations, 15 are designated undeveloped, 9 agriculture, 13 urban, and 6 mixed. Forty-two statewide status (SS) stations are chosen randomly to obtain a statistical basis that can be used to estimate values of water-quality indicators statewide. In water year 2006, five of the SS stations were co-located at existing WI or LUI stations, reducing the total number of stations sampled to 110. Data from four locations on the Delaware River, the border between New Jersey and Pennsylvania, are not summarized in this report but are available at <http://pubs.water.usgs.gov/wdr2006/>.

## Laboratory Reporting Conventions

The analyzing laboratories use two different methods and reporting conventions for establishing the minimum concentration above which a quantitative measurement could be made. These reporting conventions are minimum reporting level (MRL) and laboratory reporting level (LRL). Reporting levels typically are set higher than the minimum detection limit (MDL). The MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the concentration is greater than zero. A long-term minimum detection limit (LT-MDL) is a detection level derived by determining the standard deviation of 20 or more MDL spiked-sample measurements conducted over an extended time. The MRL is defined by the National Water Quality Laboratory (NWQL) as the smallest measured concentration of a substance that can be reliably measured using a given analytical method. LRL is computed as twice the LT-MDL. In box and whisker distributions, values reported less than the LRL or MRL were included in each distribution as a value equal to the LT-MDL or one-half the MRL, respectively; values reported as “E” – estimated to be greater than the LT-MDL but less than the LRL – also were included. In scatter distributions of detected values, values reported as less than the LRL are considered to be not detected and were excluded; values reported as estimated below the LRL were included.

## Distribution and Concentration of Selected Constituents from Stations in the ASWQMN

Physical characteristics and concentrations of filtered and unfiltered nutrients, filtered organic carbon, and total dissolved solids (TDS; parameter code 70300, residue upon evaporation) were determined in samples from 110 stations in the ASWQMN. Samples were collected at each station four times a year during November to December, February to March, May to June, and August to September. The median water

temperatures for the water year were similar for all station types, ranging from 12.03 to 13.46 °C. Samples from urban-LUI stations had the lowest median DO in percent of saturation; the highest median turbidity; and the highest median concentrations of total dissolved solids (TDS), ammonia as nitrogen (N), ammonia-plus-organic nitrogen, and phosphorus. Agriculture-LUI stations had the highest median concentration of nitrite-plus-nitrate as N (fig. 2). In contrast, samples from background and undeveloped-LUI stations had the lowest median levels of turbidity, and the lowest median concentrations of TDS, ammonia as N, ammonia-plus-organic nitrogen, nitrite-plus-nitrate as N, and phosphorus.

Dissolved organic carbon (DOC) is a heterogeneous mixture of many organic materials, mostly high molecular-weight organic acids that result from the oxidation of organic matter. Organic matter can originate from anthropogenic or natural sources. For example, urban-LUI stations would have DOC associated with man’s activities and undeveloped-LUI and background stations would have naturally occurring DOC. The highest median concentrations of DOC during 2006 were found in samples from undeveloped-LUI stations.

## Distribution and Concentration of Recoverable Trace Elements from Selected Stations in the ASWQMN

Unfiltered water samples were collected for the analysis of recoverable trace elements (TEs) during February to March and August to September at 7 background and 42 SS stations. In general, median concentrations of TEs were lower in samples from background stations than in samples from SS stations (fig.3). Only two samples contained measurable concentrations of silver; therefore, the concentrations of silver are not shown in figure 3. No measurable concentrations of mercury were found in samples collected at background stations. Median concentrations of arsenic, barium, boron, iron, manganese, and nickel, determined in samples collected at background stations, were less than the 25<sup>th</sup> percentile concentration of samples from SS stations.

## Distribution, Concentration, and Detection Frequency of Pesticides from Selected Stations in the ASWQMN

Filtered samples for the analysis of pesticides (USGS method number O-2060-01) were collected during May and June at 7 background and 42 SS stations. Compounds with minimum reporting levels that were unaffected by sample matrices and had a stable detector response are discussed here. Sixteen pesticides were detected in low concentrations and were widely distributed throughout the State; all 16 compounds were detected in samples from one or more SS stations (fig. 4). Caffeine and carbaryl were the only two compounds detected at background stations. Caffeine, siduron, atrazine,

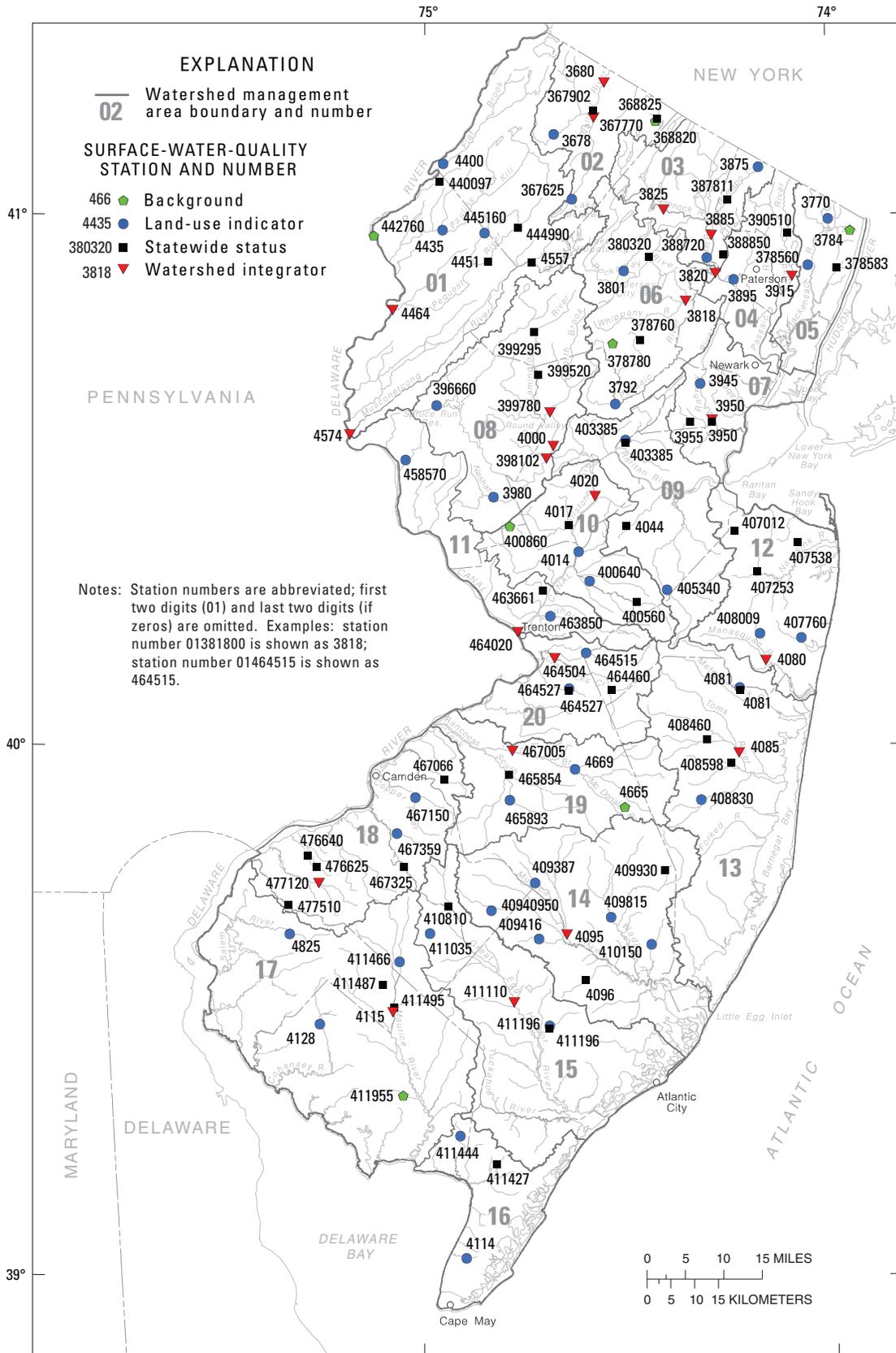
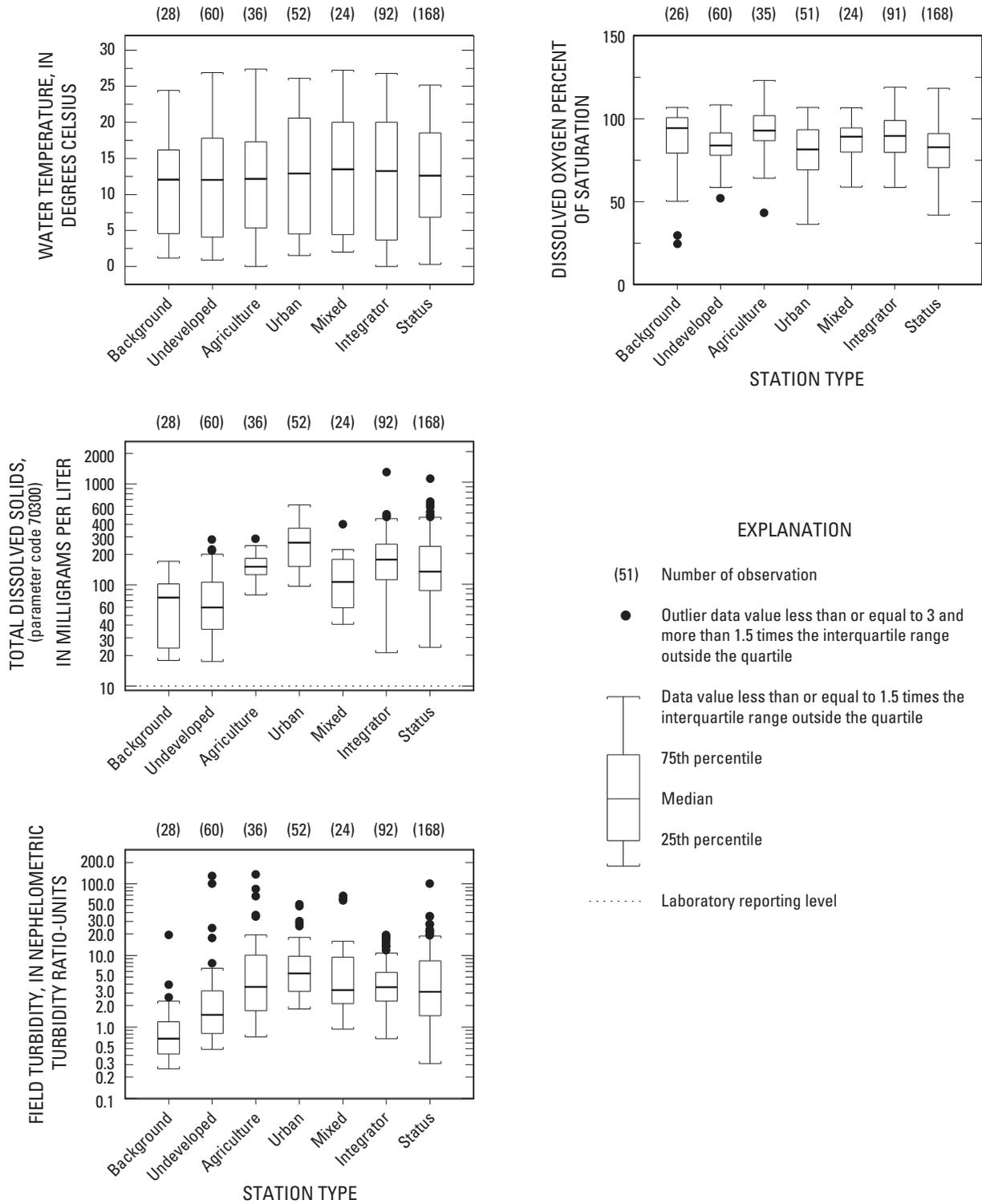
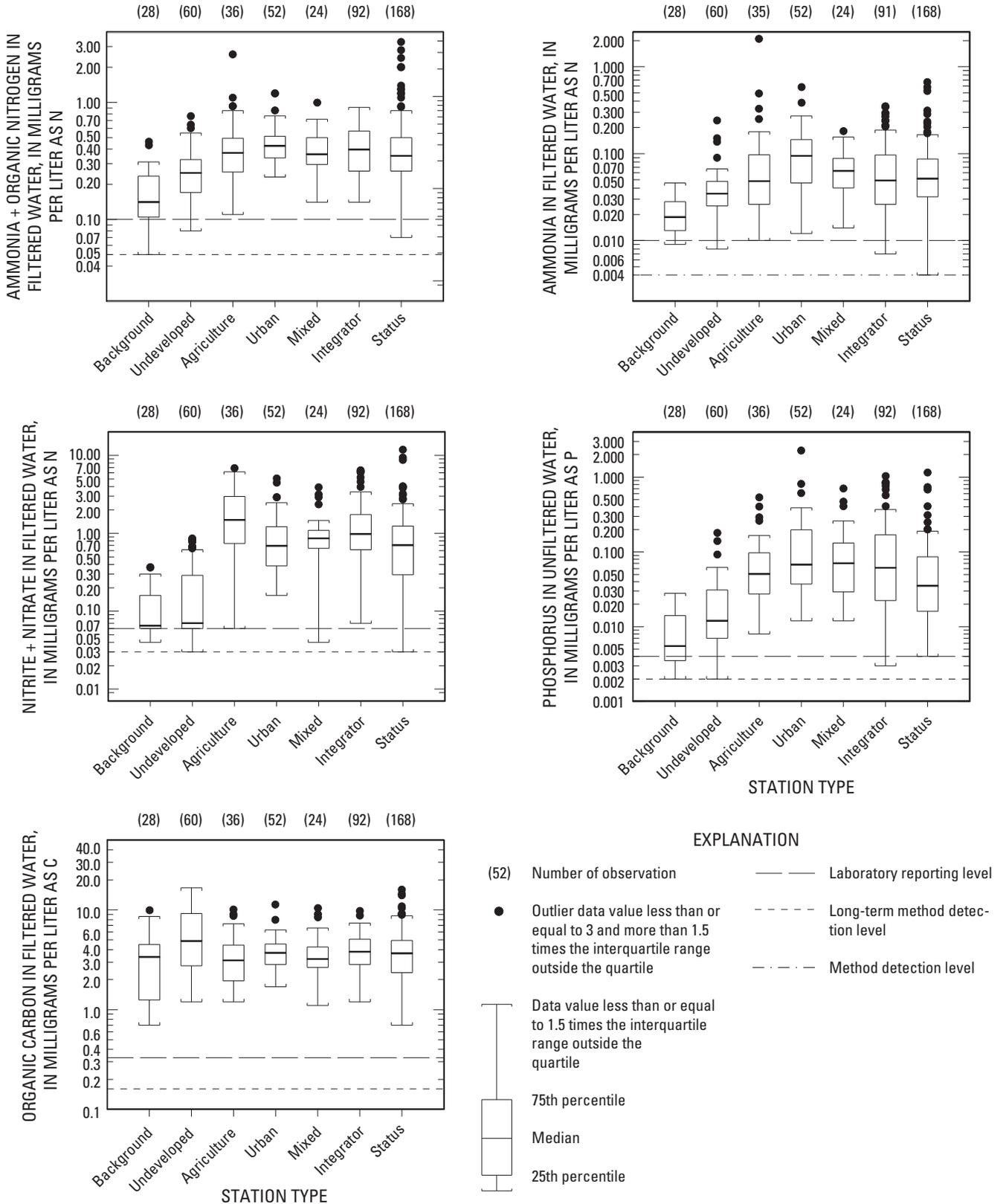


Figure 1. Location and type of surface-water-quality stations, water year 2006.

4 Quality of Surface and Ground Water in New Jersey, Water Year 2006

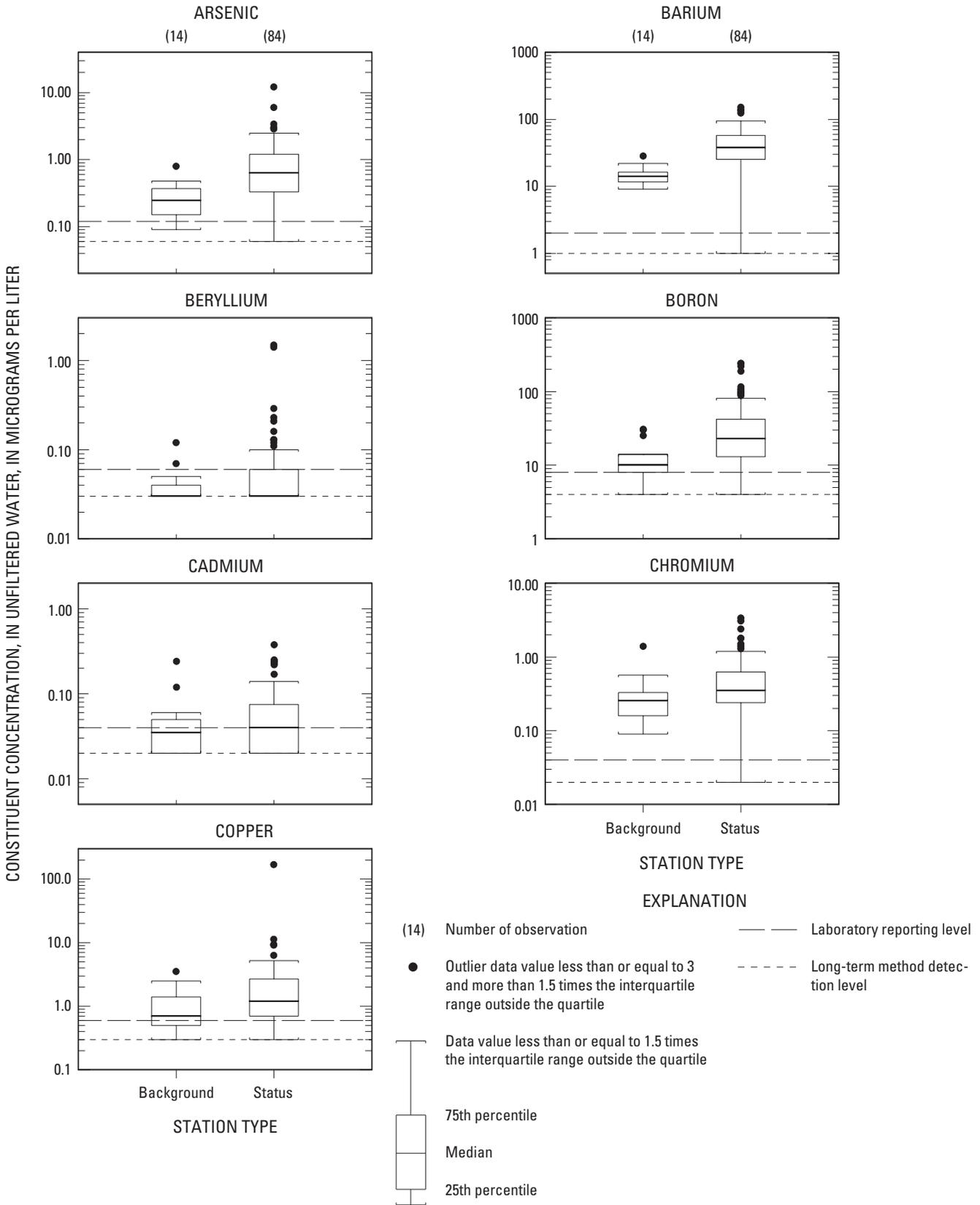


**Figure 2.** Distribution of physical characteristics of, and constituent concentrations in, samples from 110 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006. [Five of the status stations are collocated with other station types; data are included in both distributions. “Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]

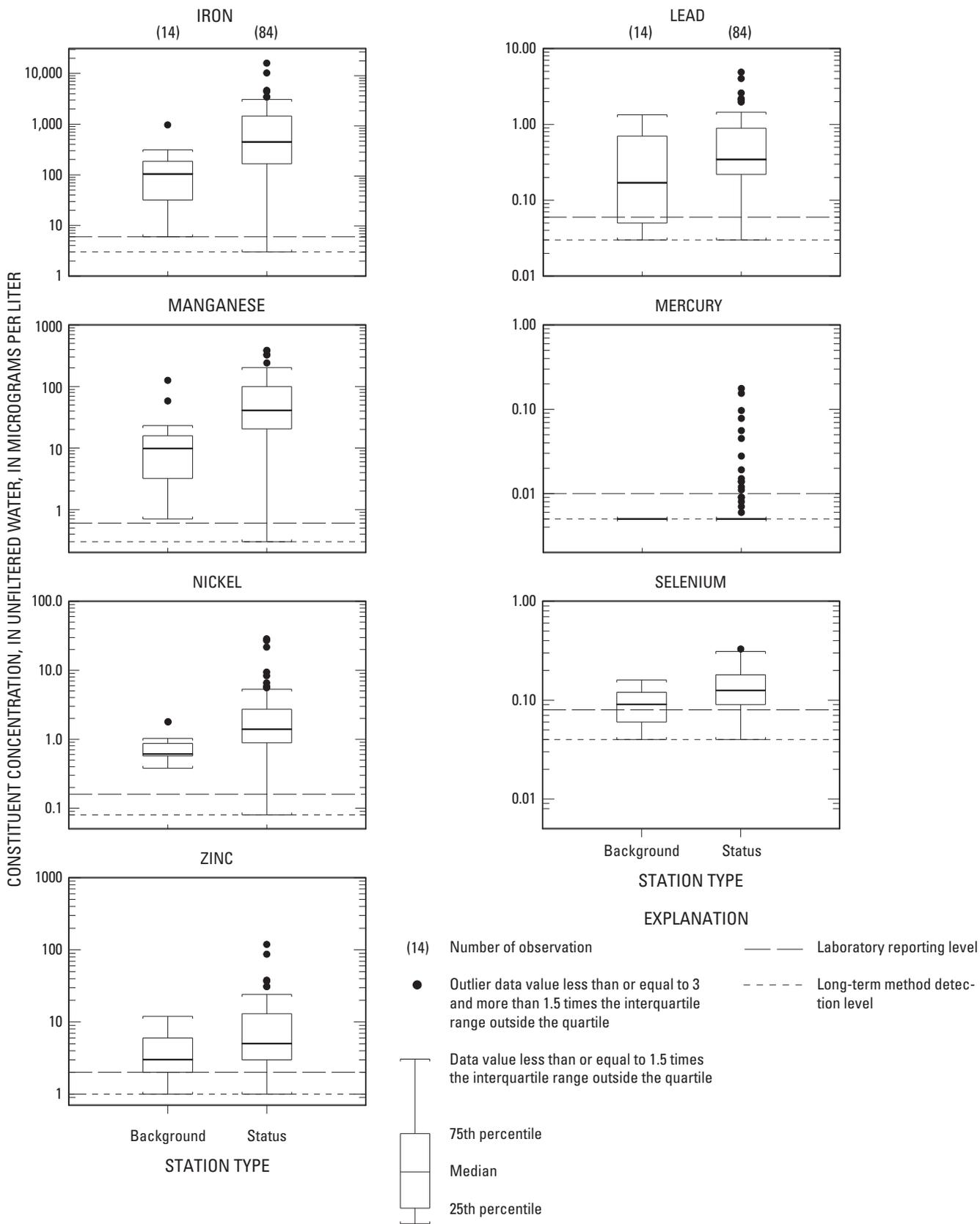


**Figure 2.** Distribution of physical characteristics of, and constituent concentrations in, samples from 110 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006—continued. [Five of the status stations are collocated with other station types; data are included in both distributions. “Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]

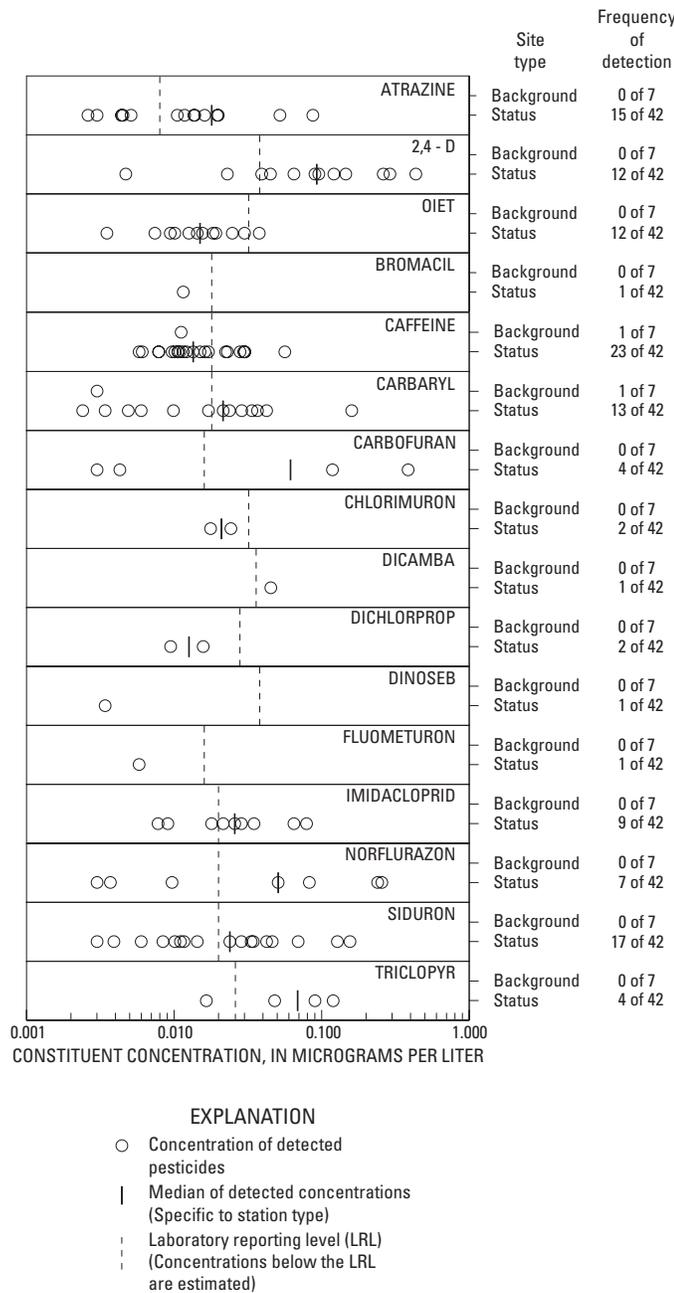
6 Quality of Surface and Ground Water in New Jersey, Water Year 2006



**Figure 3.** Distribution and concentration of trace elements in unfiltered samples from 49 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]



**Figure 3.** Distribution and concentration of trace elements in unfiltered samples from 49 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006—continued. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]



**Figure 4.** Concentration and detection frequency of selected pesticides detected in filtered samples from 49 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006. [Constituents whose values are reported by the laboratory as less than the method reporting level are considered to be not detected.]

and carbaryl were the most frequently detected compounds at 49, 35, 31, and 29 percent of all sites, respectively. OIET (2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine, a degradation product of atrazine) was detected in 24 percent of the samples. OIET was detected in four samples in which atrazine was not detected.

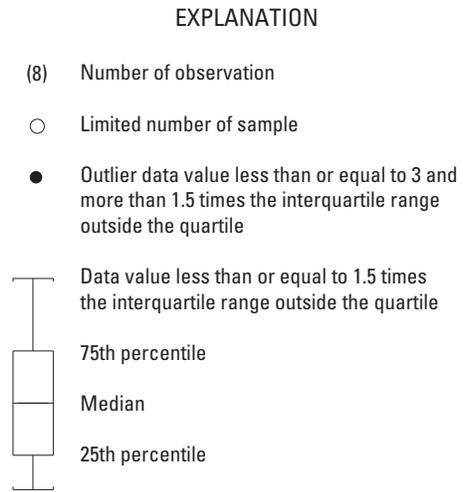
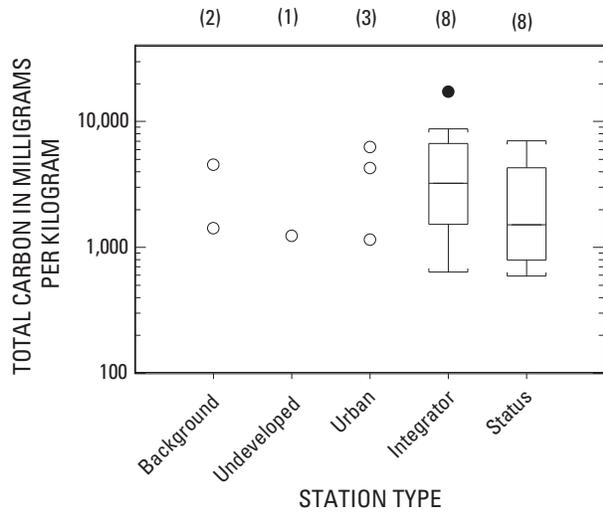
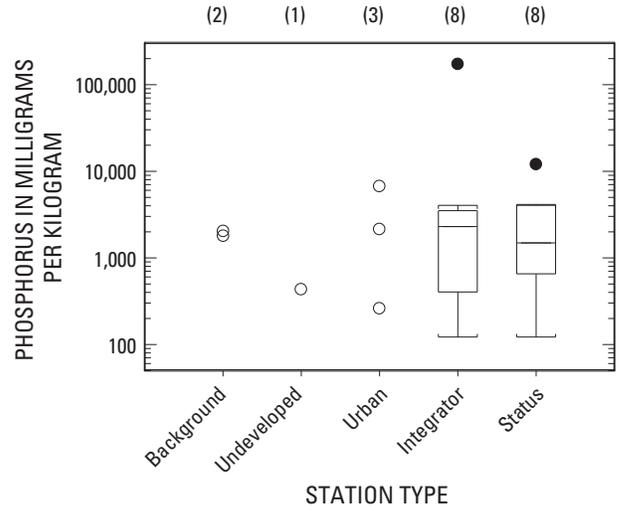
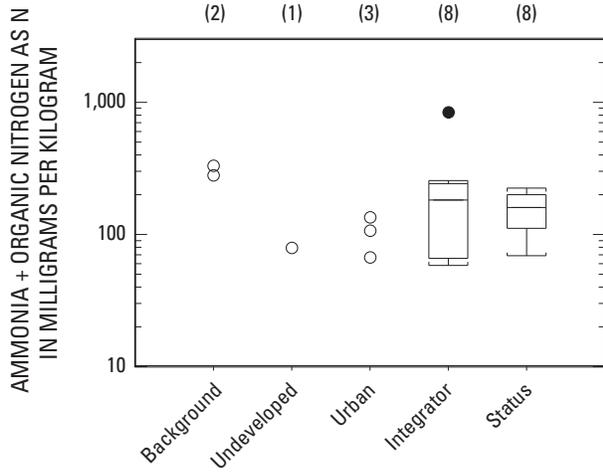
### Distribution and Concentration of Nutrients and Recoverable Trace Elements in Bed Sediment from Selected Stations in the ASWQMN

Bed-sediment samples for the analysis of nutrients and trace elements were collected during low-flow conditions during August and September at 2 background and 20 other station types. Two of the seven background stations are sampled for bed sediment each year and are resampled every third year. The 20 other stations sampled were selected on the basis of the availability of bed sediment at each station. The 20 station types consist of 1 undeveloped-LUI, 3 urban-LUI, 8 integrator, and 8 statewide status. Ammonia-plus-organic nitrogen, phosphorus, and total carbon were present in all samples at high concentrations (fig. 5). A phosphorus concentration of 175,600 mg/kg was measured in the sample from an integrator station.

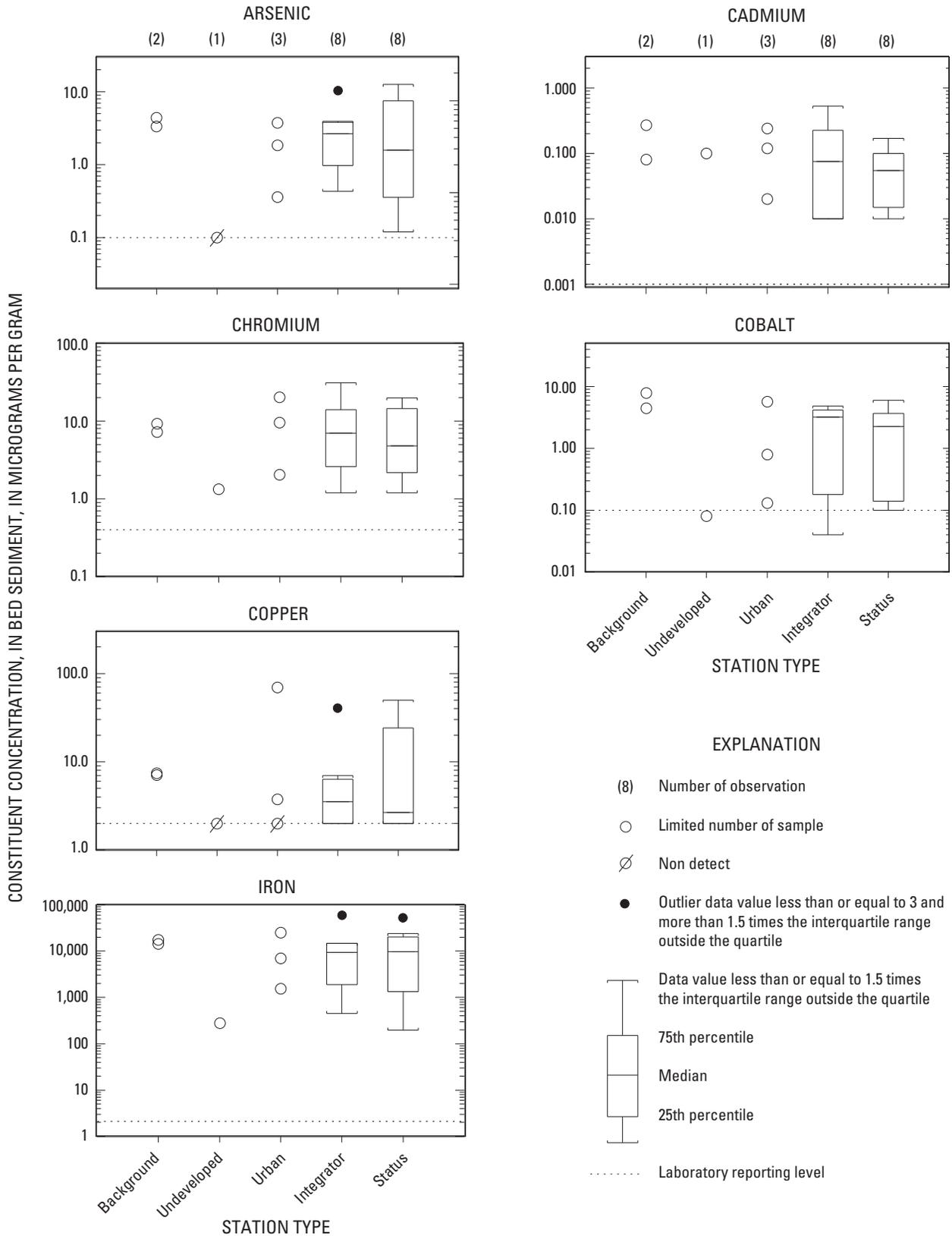
Measurable concentrations of several TEs – cadmium, chromium, lead, and nickel – were found in all samples of bed sediment (fig.6). Arsenic was detected in all samples except the one from the undeveloped-LUI station. Selenium, zinc, and copper were not detected in several samples from various station types.

### Distribution, Concentration, and Detection Frequency of Organic Compounds in Bed Sediment from Selected Stations in the ASWQMN

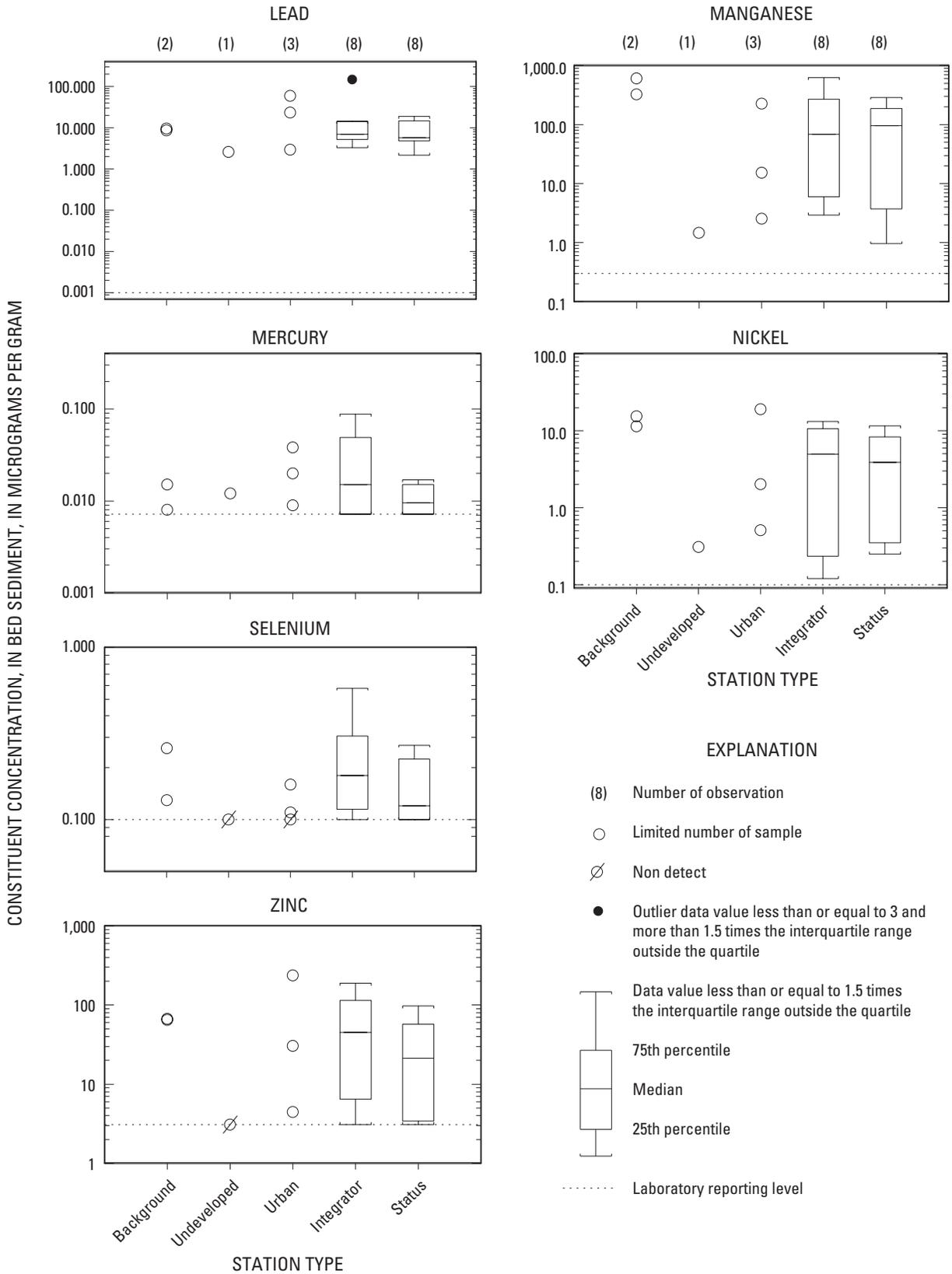
Samples were collected for analysis of polycyclic aromatic hydrocarbons (PAHs), and total polychlorinated biphenyls (PCBs) during low-flow conditions during August and September at 2 background and 20 other station types. Of the 30 PAH compounds analyzed using USGS method number O-5505-03, only those with State of New Jersey surface-water-quality standards are shown in figure 7. Fluoranthene and pyrene were detected in all 22 samples. PCBs, analyzed using USGS method number O-5504-03, were detected in 50 percent of the integrator and statewide status stations but were not detected in any sample from background or undeveloped stations.



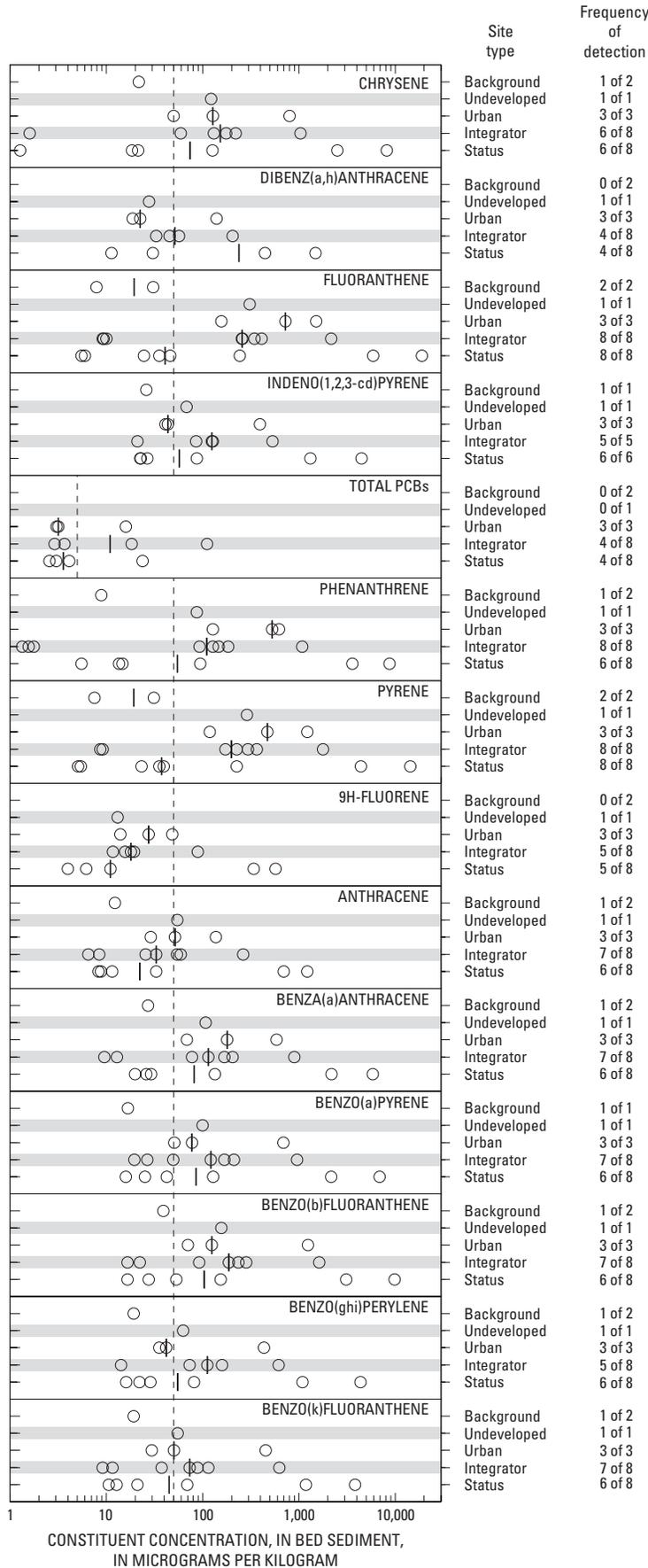
**Figure 5.** Distribution and concentration of nutrients in bed-sediment samples from 22 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006.



**Figure 6.** Distribution and concentration of trace elements in bed-sediment samples from 22 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]



**Figure 6.** Distribution and concentration of trace elements in bed-sediment samples from 22 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006—continued. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]



**EXPLANATION**

- Concentration of detected polycyclic hydrocarbons
- | Median of detected concentrations (Specific to station type)
- Laboratory reporting level (LRL) (Concentrations below the LRL are estimated)

**Figure 7.** Concentration and detection frequency of selected polycyclic aromatic hydrocarbons detected in bed-sediment samples from 22 stations in the Ambient Surface-Water-Quality Monitoring Network, water year 2006. [Constituents whose values are reported by the laboratory as less than the method reporting level are considered to be not detected.]

## Ambient Ground-Water-Quality Monitoring Network

The USGS, in cooperation with the NJDEP, operates the cooperative Ambient Ground-Water-Quality Monitoring Network (AGWQMN), which is designed to assess the status of ground-water quality by examining the concentrations of various constituents that can be used as environmental indicators, assess long-term water-quality trends, determine the effects of land use on shallow ground-water quality, identify potential nonpoint sources of contamination, and identify emerging or new environmental issues of concern to the public. The network consists of 150 shallow wells distributed throughout the State of New Jersey among three land-use types. Sixty wells are in agricultural areas, 60 are in urban/suburban areas, and 30 are in undeveloped areas. The State of New Jersey has been subdivided by the NJDEP into five watershed management regions (WMRs) – Passaic, Raritan, Upper Delaware, Lower Delaware, and Atlantic Coastal. These five WMRs are divided into 20 watershed-management areas (WMAs).

Thirty observation wells were sampled in water year 2006 (fig.8). Fourteen wells are located in the Upper Delaware WMR throughout WMAs 1, 2, and 11; 11 are located in the Atlantic Coastal WMR in WMAs 12, 13, and 14; and 5 are located in the Raritan WMR in WMAs 7, 9, and 10. The wells have 2-inch polyvinyl chloride casings; range in depth from 10.0 to 57.5 feet; and represent 3 land-use types, 10 water-chemistry types, and 15 hydrogeologic units (table 1). Samples from the wells were analyzed for physical characteristics, major ions, nutrients, organic carbon, trace elements, volatile organic compounds, pesticides, and gross alpha and gross beta radioactivity.

### Distribution and Concentration of Selected Constituents from Sites in the AGWQMN

Physical characteristics, filtered organic carbon, and total dissolved solids (TDS, parameter code 70300, residue upon evaporation) were determined in samples from 30 wells in the AGWQMN (fig.9). Samples from wells in undeveloped areas had the lowest median temperature and concentrations of TDS and DOC but the highest median concentration of DO. Samples from wells in agricultural areas had the highest median concentrations of hardness, TDS, and DOC but the lowest median concentration of DO. Urban land-use types had the highest median temperature but lowest median concentration of hardness.

With the exception of nitrite-plus-nitrate, median concentrations of nutrients exhibited little variation among samples from wells of different land-use types; concentrations generally were low (fig. 10). Wells in agricultural areas had the highest single value and highest median concentration of nitrite-plus-nitrate as N. Urban wells yielded the highest single concentration of ammonia as N, ammonia-plus-organic nitrogen, and ortho-phosphorus.

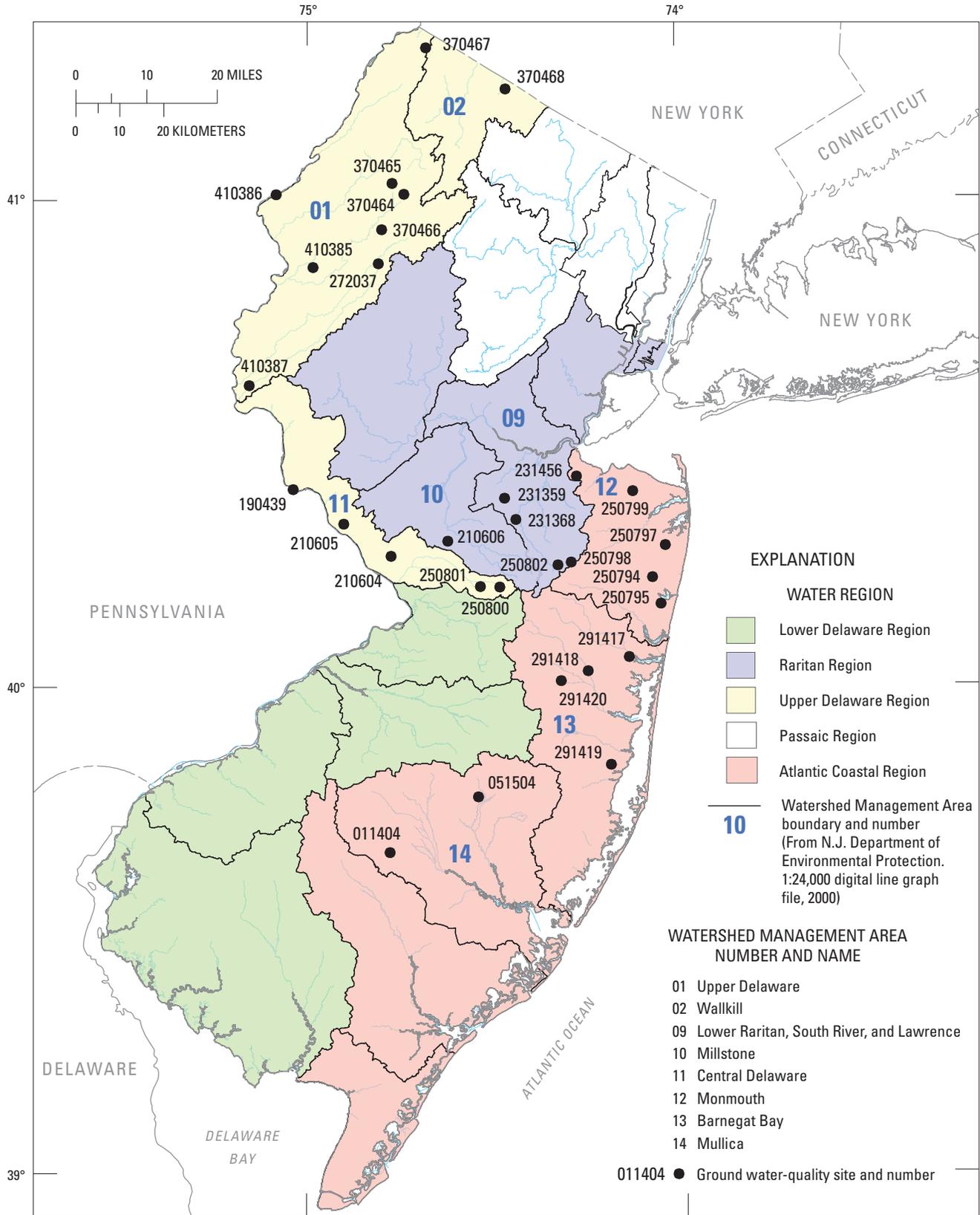
### Distribution and Concentration of Trace Elements from Sites in the AGWQMN

Filtered samples for the analysis of recoverable trace elements (TEs) were collected at 30 wells in the AGWQMN. Iron was present in the greatest concentrations in samples from all land-use types followed by manganese, aluminum, barium, zinc, boron, and nickel (fig.11). Silver was detected in only one sample, and antimony was not detected in any. Silver and antimony are not shown in figure 11. With the exception of nickel and iron, samples from wells in undeveloped areas had the lowest median concentrations of TEs. With the exception of arsenic, barium, iron, mercury, and thallium, samples from urban areas had the greatest median concentrations of TEs. The highest median concentration of arsenic was measured in agriculture land-use areas. Land use had a pronounced effect on the concentration of several other TEs. Median concentrations of manganese, beryllium, and cadmium in urban land-use areas were greater than the 75<sup>th</sup> percentiles for the other land use data. Median concentrations of boron and chromium in undeveloped land-use areas were less than the 25<sup>th</sup> percentiles for the other land use data.

### Detection Frequency of Pesticides and VOCs from Sites in the AGWQMN

Filtered samples from 30 wells were analyzed for 52 pesticides. Only those detected in one or more samples are included in table 2. Six pesticide compounds – five herbicides and one insecticide – were detected in more than one sample. The herbicides atrazine and CIAT (2-chloro-4-isopropylamino-6-amino-s-triazine, a degradation product of atrazine) were the most frequently detected; they were present in 27 percent of the samples. Three other herbicides and one insecticide were detected only once.

Unfiltered samples from 30 wells were analyzed for 34 volatile organic compounds (VOCs). Only VOCs detected in one or more samples are included in the table 3. Three compounds were detected in more than one sample. Trichloromethane (chloroform) was the most frequently detected VOC; it was present in 17 percent of the samples. Tetrachloroethene was detected only once.



Base from U.S. Geological Survey digital line graph files, 1:24,000

Figure 8. Location of wells in the Ambient Ground-Water-Quality Monitoring Network, water year 2006.

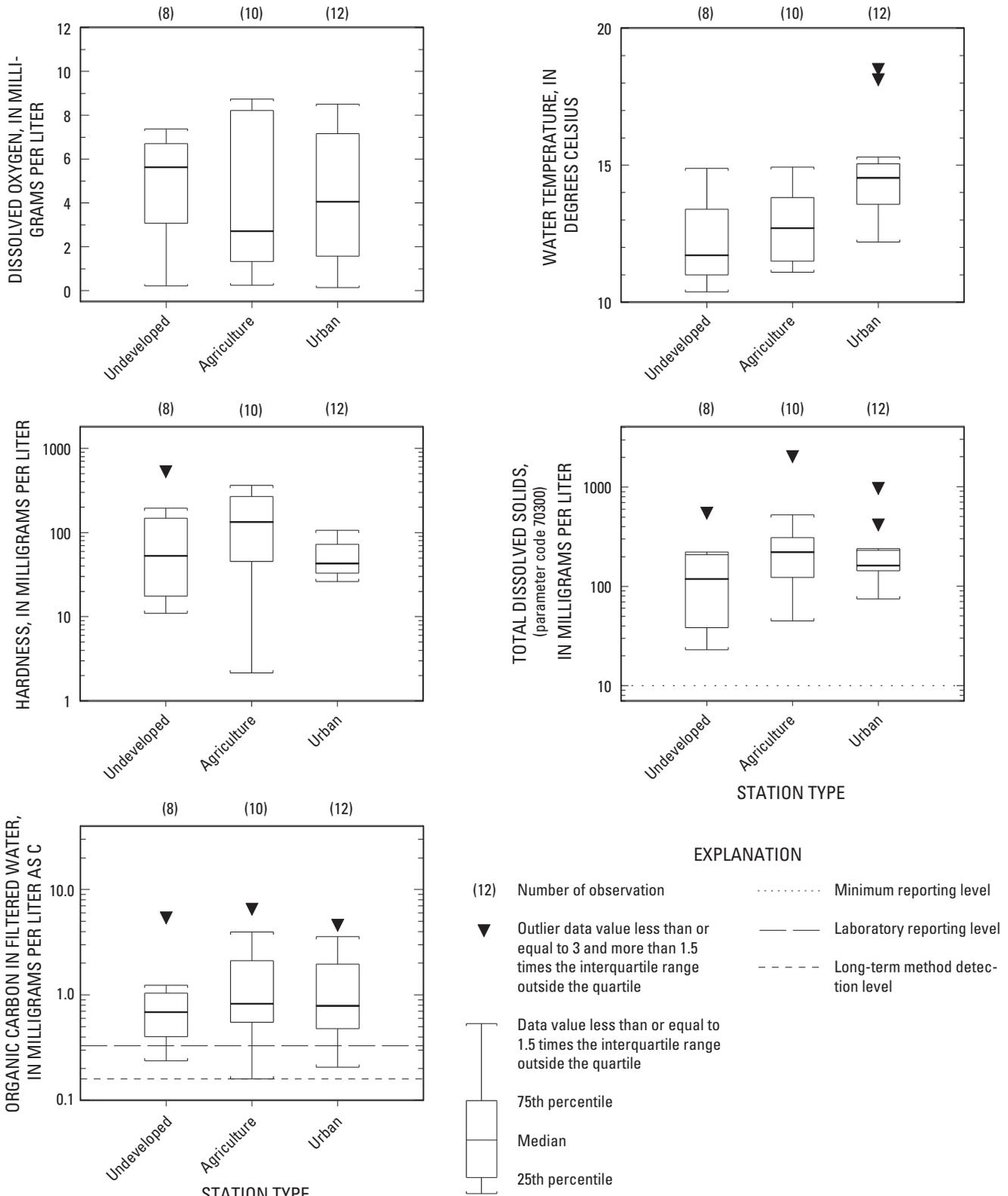
**Table 1.** Hydrogeologic unit, land use, and constituent data for 30 wells sampled as part of U.S.Geological Survey-N.J. Department of Environmental Protection (cooperative) Ambient Ground-Water-Quality Network, water year 2006.

[WMA, Watershed Management Area; VOCs, volatile organic compounds; mg/L, milligrams per liter; NO<sub>2</sub>+NO<sub>3</sub>, nitrite plus nitrate; <, less than; ft bls, feet below land surface; 111ALVM, Holocene Alluvium; 111HPPM, Undifferentiated Holocene, Pleistocene, and Miocene; 112SFD, Stratified Drift; 121CKKD, Cohansey Sand-Kirkwood Formation; 125VNCN, Vincentown Formation; 211EGLS, Englishtown Formation; 211MCVL, Merchantville Formation; 211MLRL, Mount Laurel Sand; 211MLRW, Mount Laurel Sand-Wenonah Formation; 211MRPAU, Magothy-Karitan-Potomac aquifer system, Upper Aquifer; 211MRSL, Marshalltown Formation; 211ODBG, Old Bridge Sand Member of Magothy Formation; 211RDBK, Red Bank Sand; 227PSSC, Passaic Formation; 231SCKN, Stockton Formation; 350HGFL, High Falls Formation]

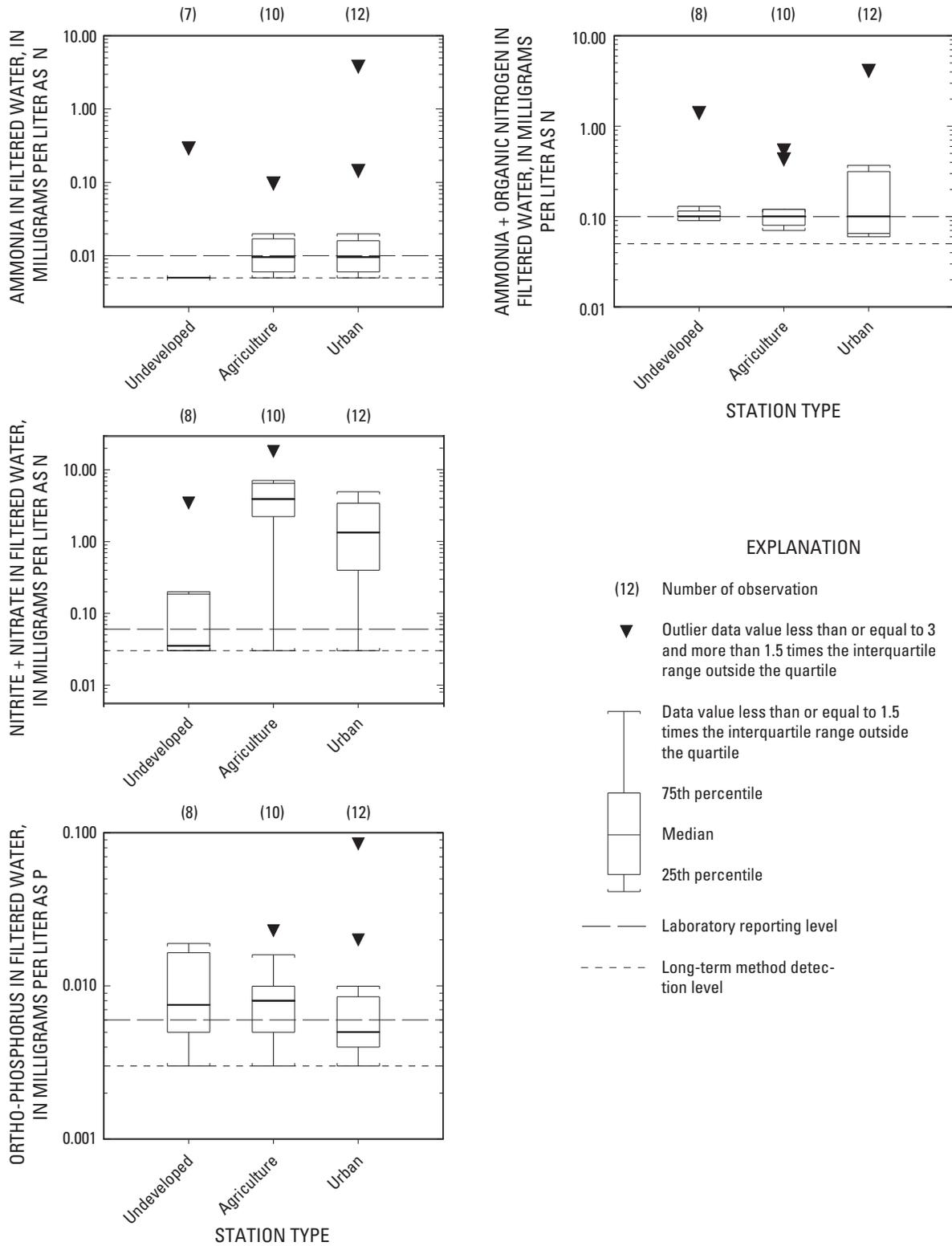
NJ- WRD Well Num- ber	WMA Number	Station Number	Hydrogeo- logic Unit Aquifer Code	Predomi- nant Land Use <sup>1</sup>	Water Type (dominant cation-anion)	Dissolved Oxygen (mg/L)	Nitrogen NO <sub>2</sub> +NO <sub>3</sub> dissolved (mg/L)	Total Dis- solved Solids (mg/L)	Number of Pes- ticides Detected <sup>2</sup>	Number of VOCs Detected	Number of Trace Elements Detected <sup>2</sup>	Well Depth (ft bls)
291419	13	39503407412101	121CKKD	Urban	Sodium-Chloride	0.80	1.34	133	2	2	13	20.0
291420	13	400052074191201	211MLRL	Urban	Sodium-Chloride	2.36	2.99	171	2	1	11	25.0
291418	13	400204074145401	121CKKD	Urban	Sodium-Chloride	8.50	0.77	240	4	1	14	24.0
291417	13	400346074081701	121CKKD	Urban	Sodium-Chloride	2.98	4.66	973	0	0	14	18.5
250795	12	401021074030601	121CKKD	Urban	Sodium-Chloride	8.06	3.83	222	0	0	15	27.5
250794	12	401335074042701	121CKKD	Urban	Magnesium-Sulfate	3.10	<.06	144	0	1	12	29.5
250798	9	401531074172801	211RDBK	Urban	Sodium-Chloride	0.39	4.96	418	2	1	13	22.0
210604	11	401619074462401	231SCKN	Urban	Calcium-Bicarbonate	5.25	<.06	149	0	0	12	19.5
250797	12	401732074022101	125VNCN	Urban	Calcium-Carbonate	7.85	1.10	144	0	3	6	38.5
210606	10	401809074371701	111HPPM	Urban	Sodium-Chloride	6.47	1.31	221	2	0	15	18.0
231368	9	402046074261901	211ODBG	Urban	Sodium-Chloride	5.00	1.36	75	0	1	14	37.8
250799	12	402412074073001	211MRSL	Urban	Sodium-Chloride	0.14	<.06	153	0	0	9	23.8
11404	14	393947074464501	121CKKD	Agricultural	Calcium-Sulfate	0.25	18.10	246	3	0	15	14.0
51504	14	394640074323201	121CKKD	Agricultural	Sodium-Bicarbonate	0.28	<.06	45	2	0	14	10.0
250800	11	401229074290001	211MLRW	Agricultural	Magnesium-Nitrate	3.42	6.46	68	0	0	15	18.5
250801	11	401233074320401	211EGLS	Agricultural	Calcium-Nitrate	8.70	7.10	123	4	0	11	26.0
250802	9	401508074193501	211RDBK	Agricultural	Sodium-Chloride	8.22	2.23	2040	0	0	13	35.1
210605	11	402018074540301	227PSSC	Agricultural	Calcium-Carbonate	1.93	2.58	169	2	0	13	13.5
410387	1	403719075091801	112SFD	Agricultural	Calcium-Bicarbonate	4.73	E.04	193	2	0	11	12.0
370466	1	405631074475001	112SFD	Agricultural	Calcium-Carbonate	1.33	5.18	311	2	0	8	13.8
370465	1	410213074460901	112SFD	Agricultural	Calcium-Carbonate	8.30	6.28	269	0	0	8	31.5
370468	2	411348074273901	112SFD	Agricultural	Calcium-Carbonate	1.98	2.31	528	2	0	10	13.5
231359	9	402323074280901	111HPPM	Undeveloped	Ferrus-Bicarbonate	0.21	<.06	147	0	0	11	14.5
190439	11	402431075020801	111ALVM	Undeveloped	Calcium-Chloride	5.19	3.46	197	1	0	13	39.0
231456	12	402606074163401	211MR-PAU	Undeveloped	Calcium-Sulfate	5.23	<.06	53	0	1	15	31.2
410385	1	405154074585701	112SFD	Undeveloped	Calcium-Carbonate	6.02	<.06	90	0	0	6	37.0
272037	1	405220074482201	112SFD	Undeveloped	Calcium-Carbonate	6.71	0.20	222	2	0	10	57.5
410386	1	410049075045801	112SFD	Undeveloped	Calcium-Sulfate	6.70	E.04	23	0	0	10	36.0
370464	1	410053074441301	112SFD	Undeveloped	Calcium-Carbonate	0.94	0.17	549	0	0	9	38.0
370467	1	411853074403601	350HGFL	Undeveloped	Magnesium-Sulfate	7.37	<.06	24	0	0	9	50.0

<sup>1</sup>Land use based on New Jersey Geographic Information System (New Jersey Department of Environmental Protection, 1996).

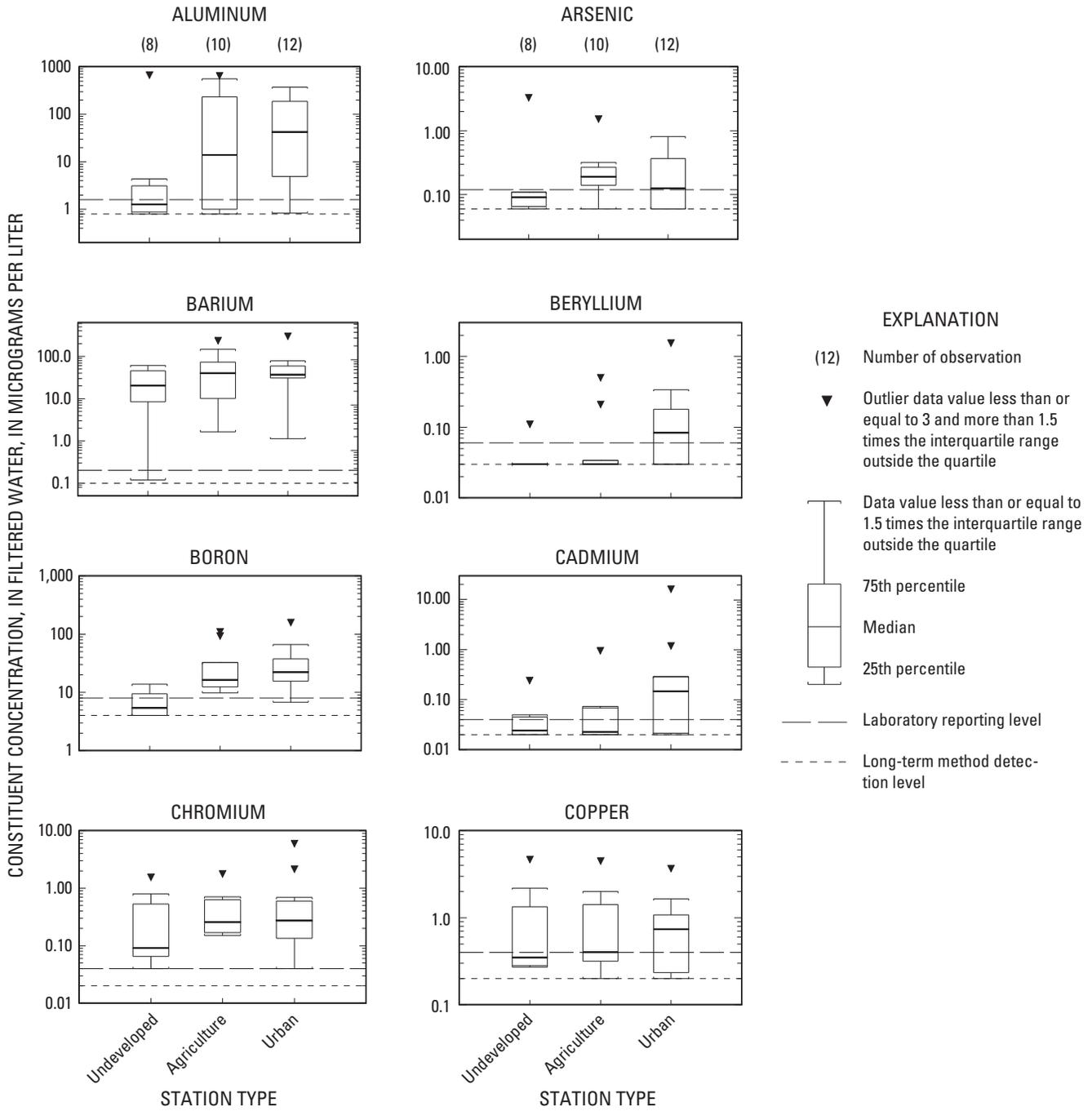
<sup>2</sup>Includes compounds with estimated concentrations, defined as positive detections of a compound, but measured as less than the laboratory reporting levels.



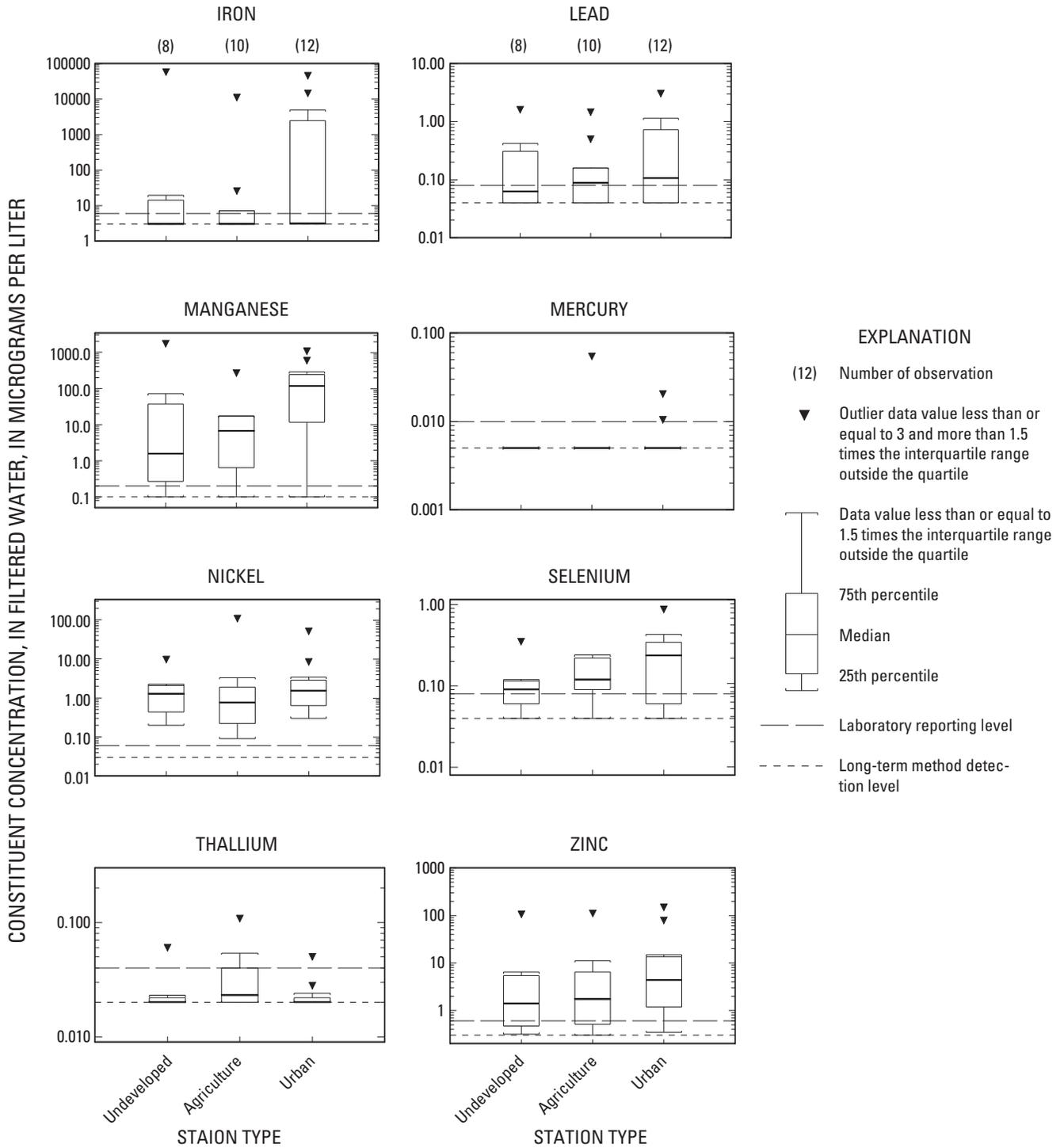
**Figure 9.** Distribution of physical characteristics of, and constituent concentrations in, samples from 30 sites in the Ambient Ground-Water-Quality Monitoring Network, water year 2006. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]



**Figure 10.** Distribution and concentration of selected nutrients in filtered samples from 30 sites in the Ambient Ground-Water-Quality Monitoring Network, water year 2006. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]



**Figure 11.** Distribution and concentration of trace elements in filtered samples from 30 sites in the Ambient Ground-Water-Quality Monitoring Network, water year 2006. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]



**Figure 11.** Distribution and concentration of trace elements in filtered samples from 30 sites in the Ambient Ground-Water-Quality Monitoring Network, water year 2006—continued. [“Less than” values are shown as equal to the long-term method detection level or one-half the laboratory reporting level.]

**Table 2.** Frequency of detected pesticides in filtered samples from 30 sites in the Ambient Ground-Water-Quality Monitoring Network, water year 2006.

[CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine, is a degradation product of atrazine]

<b>Constituent</b>	<b>Urban land use</b>	<b>Agriculture land use</b>	<b>Undeveloped land use</b>	<b>All samples</b>
Atrazine	2 of 12	5 of 10	1 of 8	8 of 30
Carbofuran <sup>1</sup>	1 of 12	1 of 10	0 of 8	2 of 30
CIAT <sup>1</sup>	2 of 12	5 of 10	1 of 8	8 of 30
Dieldrin	1 of 12	0 of 10	0 of 8	1 of 30
Fipronil sulfone	1 of 12	0 of 10	0 of 8	1 of 30
Metolachlor	2 of 12	2 of 10	0 of 8	4 of 30
Napropamide	0 of 12	1 of 10	0 of 8	1 of 30
Prometon	3 of 12	0 of 10	1 of 8	4 of 30
Simazine	0 of 12	1 of 10	0 of 8	1 of 30
Terbacil	0 of 12	2 of 12	0 of 8	2 of 30

<sup>1</sup> All values are estimated owing to high variability within analysis method.**Table 3.** Frequency of detected volatile organic compounds in unfiltered samples from sites in the Ambient Ground-Water-Quality Network, water year 2006.

<b>Constituent</b>	<b>Urban land use</b>	<b>Agriculture land use</b>	<b>Undeveloped land use</b>	<b>All samples</b>
Methyl-tert-butyl-ether	3 of 12	0 of 10	0 of 8	3 of 30
Tetrachloroethene	1 of 12	0 of 10	0 of 8	1 of 30
Toluene	2 of 12	0 of 10	0 of 8	2 of 30
Trichloromethane	4 of 12	0 of 10	1 of 8	5 of 30