Health Consultation

PUBLIC COMMENT VERSION

CRESTWOOD GROUNDWATER CONTAMINATION

CRESTWOOD, COOK COUNTY, ILLINOIS

MARCH 5, 2010

COMMENT PERIOD ENDS: APRIL 19, 2010

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

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HEALTH CONSULTATION

PUBLIC COMMENT RELEASE

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CRESTWOOD, COOK COUNTY, ILLINOIS

Prepared By:

Illinois Department of Public Health
Under cooperative agreement with the
Agency for Toxic Substances and Disease Registry (ATSDR)
and the ATSDR Division of Regional Operations

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Summary

In response to community concerns, this health consultation was prepared to summarize the health-based evaluation of available environmental and human exposure data related to the contamination of groundwater that served as a source of drinking water for the Crestwood community. The chemical contamination in Crestwood Well #1 was first discovered in 1985, and then confirmed in 1997 and 2007. However, there is no information regarding the actual concentrations of these volatile organic chemicals (VOCs) within the Crestwood water distribution system at any time. The Illinois Environmental Protection Agency (Illinois EPA) has determined that the *estimated* levels of contamination of the Crestwood water system did not exceed the federal drinking water standards. The Illinois Department of Public Health (IDPH) reviewed and agreed with these estimates. However, IDPH and the Agency for Toxic Substances and Disease Registry (ATSDR) have determined that there is insufficient information available to know the *actual* magnitude of chemical exposures to individuals using the Crestwood water system as their source of drinking water. Unfortunately, the past levels of contamination in the drinking water may never be known. As a result, we cannot conclude with certainty whether past exposure to contaminants in Crestwood drinking water could have harmed people's health. Currently, the Crestwood public water system obtains water from Lake Michigan water, which is treated at City of Chicago treatment plants, tested frequently and documented to meet regulatory standards. Sampling of surface soil in Playfield Park has shown that the levels of lead are not a health-concern for exposure to children. Sampling has confirmed that the subsurface soil and shallow groundwater in areas of Playfield Park are not contaminated, so there is not a concern for exposure to people using the park for recreation. The area of highest contamination is the subsurface soil and shallow groundwater near the Playfield Dry Cleaners, which will be evaluated by the U.S. Environmental Protection Agency for potential migration of chemical vapors into the interior of businesses in Playfield Plaza Shopping Center.

Purpose

ATSDR received petitions to evaluate the potential health hazards related to the discovery of water contamination in Crestwood, Illinois. IDPH, a cooperative agreement partner of ATSDR, and ATSDR Region 5 staff were asked to review the available information to determine if exposure to chemicals in the groundwater in Crestwood poses a public health hazard. This consultation is a health-based interpretation of information relative to this situation.

Background and Statement of Issues

In December 2007, Illinois EPA determined that evidence suggested the Village of Crestwood had been using Crestwood Community Well #1, a known contaminated well, as a water source and mixing this well water with public water purchased from the nearby Village of Alsip for delivery to Crestwood customers. Illinois EPA reviewed Alsip billing records and operational reports for 2007 and further confirmed these suspicions through information obtained from the Crestwood public water supply operator. However, the duration and extent of the use of Well #1 was not yet known. In 2009, after additional information was gathered and records were

obtained, Illinois EPA determined that from 1985 to 2007, Crestwood used water from Well #1 to supplement the water purchased from Alsip without informing the Illinois EPA or its water customers. [1]

Crestwood is located in Cook County, Illinois, about 6 miles southwest of Chicago. The Crestwood Community Water Supply provides water to approximately 11,000 persons (Figure 1). [2]

Site Description and History

Crestwood Community Well #1 was constructed in 1959 to a depth of 345 feet below the ground surface. The well is about 245 feet southeast of a dry cleaning facility in the Playfield Plaza Shopping Center in Playfield Park. Starting in 1972, Illinois EPA inspections documented that Lake Michigan water was being used as a primary source of drinking water for Crestwood public water, and that Well #1 was an emergency stand-by well. In 1985, under an Illinois EPA state-wide drinking water source sampling program for VOCs, a water sample from Well #1 was collected and analyzed by Illinois EPA and found to contain 1,1-dichloroethylene (DCE) at 2.8 micrograms per liter (µg/L). The source of contamination was not known.

In response to the detection of this contamination, Crestwood told Illinois EPA in 1986 that they would continue to purchase Lake Michigan water from the neighboring Village of Alsip as their sole source of drinking water. Crestwood Well #1 was only to be used as an emergency backup water source. Because of the designation of Well #1 as a backup supply, the federal Safe Drinking Water Act did not require the well to be sampled. [1]

In 2007, Illinois EPA implemented a new requirement to sample emergency wells of community water systems. The samples collected by both Crestwood and Illinois EPA showed vinyl chloride and cis-1,2 DCE in Crestwood Well #1 (Table 1).

In December 2007, Illinois EPA discovered that Crestwood had been supplementing the Lake Michigan water supply with water from Well #1. However, the extent of use was not known. Information about the use of the contaminated well had not been included in any of the operating reports submitted by Crestwood to Illinois EPA. This information also had not been disclosed to the public in the Crestwood annual Consumer Confidence Report. [1]

In December 2007, the Illinois EPA sent a Non-Compliance Advisory letter to Crestwood advising against future use of the contaminated emergency back-up well, stating that the use of Well #1 was a violation of the Illinois Environmental Protection Act. In April 2008, Crestwood provided what Illinois EPA called “an unacceptable response” to the enforcement letter. Within a month, Illinois EPA responded with a Violation Notice for improper use of Crestwood Well #1 and for violation of the groundwater quality standard for vinyl chloride in the well. Illinois EPA took this enforcement action to ensure that a long-term solution was reached either to properly treat water produced by the Crestwood Well #1 or to properly abandon the well. On April 24, 2008, Illinois EPA resampled Well #1. [1]

In June 2008, Illinois EPA recommended to IDPH that notification should be made to the local media and area well owners of the potential threat of contamination to private water wells near Crestwood Well #1. Following the provisions in the Illinois Groundwater Protection Act , IDPH made that notice in August 2008. Later in August, the Crestwood public water supply operator admitted that Well #1 had been in use even though he had told Illinois EPA inspectors in November 2007 that Well #1 was not being used. This admission initiated further investigation. [1]

There is no available information about VOC testing of the finished drinking water in the Crestwood water system. To estimate how chemical contaminants in Well #1 may have impacted the drinking water quality in the system, Illinois EPA compared water supplier billing data to Crestwood pumping data. Based on an investigation of records, including monthly operational reports and on-site inspection of the public water supply meters dating to 1999, the volume of water taken from the contaminated well and then blended with the fully treated Lake Michigan water averaged about 10 percent of Crestwood's water distribution per month, with the greatest volume being no more than 20 percent of the total public water supply distribution per month. [1]

Continued investigation discovered an April 1998 letter to Illinois EPA from a consultant investigating a nearby dry cleaner at Playfield Plaza. This letter reported results from two samples collected from Well #1 in July 1, 1997. Both samples contained 3 µg/L of cis-1,2 DCE (Table 1).

In April 2009, the *Chicago Tribune* reported the Village of Crestwood's alleged use of a known contaminated well as a water source. On April 21, 2009, the Village of Crestwood hosted a public meeting to address community concerns and outrage.

On April 29, 2009, federal agents from the U.S. Environmental Protection Agency (USEPA) raided the Crestwood village offices. At the request of Illinois EPA, USEPA is conducting a criminal investigation of Village of Crestwood officials, in coordination with the U.S. Department of Justice (USDOJ). [3]

On May 9, 2009, Congressman Bobby Rush hosted a public meeting to discuss community concerns. Congressman Rush requested attendees from USEPA, USDOJ, Illinois EPA, and ATSDR. Many Crestwood residents expressed outrage over the use of the contaminated water and some shared concerns about whether cases of cancer among their families and friends could be caused by the contamination.

On June 8, 2009, Illinois EPA began an investigation of the potential source of the contamination of Crestwood Well #1. The investigation area included the Playfield Plaza Shopping Center, which has a dry cleaning facility and a possible underground storage tank, and the public area near Crestwood Well #1. Eleven borings were done at various depths down to bedrock throughout the investigation area (Figure 2). Illinois EPA found chlorinated VOCs in the shallow groundwater beneath the shopping center and near the suspected source behind the Playfield Cleaners facility. However, there were no detections of VOCs in any samples beyond the shopping center property in this shallow groundwater zone (Figures 3 and 4). [1]

On June 9, 2009, the Illinois Attorney General filed a civil lawsuit that accused the Village of Crestwood of lying more than 120 times about the use of Crestwood Well #1. [4]

On June 25, 2009, Illinois EPA asked IDPH to review surface soil sampling data generated by an x-ray fluorescence (XRF) device used to determine lead levels in soil beneath and near the Crestwood water tower in Playfield Park.

Environmental Data

Crestwood Community Well #1 Sampling 1985 to 2009

No information regarding the sampling of VOCs in Crestwood Community Well #1 has been identified before 1985. In 1985, under an Illinois EPA state-wide drinking water source sampling program for VOCs, Well #1 was found to contain 1,1-DCE at 2.8 µg/L. DCE is a breakdown product of the dry cleaning solvent, tetrachloroethylene (PCE). Samples collected from Well #1 in 1997 by a consultant (Conestoga-Rovers & Associates), investigating a dry cleaner at the Playfield Plaza site, found another dry cleaning solvent breakdown product, cis-1,2 DCE, at 3 µg/L. Other possible site-related VOCs were not detected (Table 1).

In 2007, in response to a new requirement to sample emergency wells of community water systems, Illinois EPA and Crestwood both collected water samples from Well #1. The results showed the detection of cis-1,2-DCE in multiple sampling events of the well from 2007 to 2009 with a maximum level of 2.6 µg/L (Table 1). In addition, the 2007 to 2009 sampling also identified the presence of another breakdown product of PCE, vinyl chloride. Because vinyl chloride had not been reported in the 1985 and 1997 samples, it may have been first present in the well sometime after 1997.

On June 2009, the Illinois EPA Office of Site Evaluation began an investigation of the potential source of the contamination of Well #1. The investigation area included the Playfield Plaza Shopping Center, which has a dry cleaning facility and a possible underground storage tank, and the public area near Well #1. The purpose of this investigation was to gather information to help determine if the Playfield Plaza Shopping Center may have contributed to the contamination of Well #1.

From June 8 through June 11, 2009, Illinois EPA took 11 soil borings at various depths down to bedrock throughout the investigation area. Four soil samples and ten groundwater samples were analyzed. The soil cores also were visually inspected for staining and other signs of potential contamination, and screened for the presence of VOCs using a photoionization detector (PID). Detailed sampling methods, including boring logs are available on the Illinois EPA website at http://www.epa.state.il.us/community-relations/fact-sheets/crestwood-pws/update-2.html. The soil samples taken below the surface of the pavement at the Playfield Plaza Shopping Center showed that the chemical contamination was highest at location GP6, directly behind the Playfield Cleaners facility. The analysis detected the presence of the primary dry cleaning solvents, PCE and trichloroethylene (TCE), with lower levels of chloroform and 1,1,1-trichloroethane (Figure 4). The sampling results for the subsurface samples to the northeast from

the dry cleaners (GP7 and GP9) were non-detect for VOCs. Since these samples were taken below the ground surface, there is no direct exposure to this chemical contamination. However, it does indicate that the area behind the dry cleaners contains a significant contamination source. The specific concern is whether chemical vapors in the subsurface soil could migrate into the interior space of the buildings within Playfield Plaza Shopping Center.

Groundwater samples were taken at specific depths below the ground surface. Illinois EPA found chlorinated VOCs (PCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride) in the shallow groundwater beneath the area of the Playfield Plaza dry cleaners where contamination was found in subsurface soils and also beneath the parking lot on the north side of the shopping center (Figure 3). However, VOCs were not detected in shallow groundwater samples taken in areas away from Playfield Plaza, including samples taken in the playground and baseball fields of Playfield Park that are near Well #1.

Using groundwater modeling methods, Illinois EPA and Illinois State Water Survey hydrogeologists predicted that pumping water from Well #1 could have pulled contaminants from the shallow groundwater into the well. To determine if this was how Well #1 became contaminated, Illinois EPA conducted a follow-up field investigation effort in September 2009. A monitoring well was installed into the bedrock layer that defines the lowest level of the shallow groundwater. This bedrock monitoring well was installed at a depth of 49 feet at a location midway between the dry cleaning facility and Well #1. Samples from the bedrock monitoring well detected the same contaminants found in Well #1 and the shallow groundwater near the Playfield Plaza dry cleaners, including vinyl chloride (55.7 µg/L), cis-1,2-DCE (14.0 µg/L), and trans-1,2-DCE (0.57 µg/L), reported as averages of two samples. The detection of contamination in this monitoring well confirms that Well #1 became contaminated by pulling water from this shallow groundwater layer. Based on these findings, Illinois EPA has concluded that the Playfield Plaza Dry Cleaners is the source of the well contamination. [1]

In response to community concerns about possible lead contamination in the surface soil beneath the Village's water tower, Illinois EPA tested surface soil at five locations using an XRF device (Table 2). The highest lead level detected was 269 parts per million (ppm).

Discussion

Chemicals of Concern

Groundwater

IDPH and ATSDR compared the results of each sample collected from Crestwood Well #1 with the appropriate comparison values, specifically the ATSDR health based criteria (CREG- Cancer Risk Evaluation Guide and EMEG- Environmental Media Evaluation Guide) and the USEPA maximum contaminant levels (MCLs) for drinking water, to select chemicals for further evaluation for exposure and possible carcinogenic and non-carcinogenic health effects (Table 1). CREGs and EMEGs are health-based screening criteria that are used to evaluate environmental

sampling results for potential health hazards. MCLs have been established by USEPA as enforceable drinking water standards that public water supplies must meet.

Chemicals found at levels greater than the health-based screening criteria or MCLs were selected for further evaluation. Neither IDPH nor ATSDR were involved in the collection of the groundwater sampling data and relies on the data quality assurance procedures of the Illinois EPA to ensure that the results cited in this assessment are valid.

The contamination of Well #1 appears to consist of breakdown products of the dry cleaner solvent PCE, although PCE has not been detected in any of the Well #1 samples. 1,1-DCE was found in samples collected in 1985 and cis-1,2-DCE was found in 1997, 2007 and 2008. Vinyl chloride, a later breakdown product of PCE, was not reported to have been detected in the 1985 and 1997 samples, and was first reported to be detected in 2007. However, it should be noted that there is no sampling data for VOCs in Crestwood Well #1 prior to 1985 and no VOC testing at any time in the Crestwood water distribution system.

The concentrations of 1,1-DCE, cis-1,2-DCE , or trans-1,2-DCE detected in the limited sampling of Crestwood Well #1 did not exceed either the ATSDR health-based screening criteria or the MCLs for the respective chemicals. The highest level of vinyl chloride detected in Crestwood Well #1 was 5.4 µg/L in October 2007, which exceeds the ATSDR cancer-based screening criteria (0.03 µg/L) and the MCL (2 µg/L). Vinyl chloride was again detected in Well #1 at 4.9 µg/L in April 2008. Therefore, the primary chemical of concern for the Crestwood water system is vinyl chloride.

Soil

Lead is the chemical of interest in surface soil at Playfield Park and was a community concern due to past sandblasting of the water tower to remove paint that contained lead. IDPH reviewed the sample results and determined that all XRF readings were less than the USEPA guidance level of 400 ppm for residential soil. On June 30, 2009, IDPH sent a letter to Illinois EPA stating that the level of lead detected in soil did not exceed the residential soil screening level and would not pose a health hazard to children using the park. Lead in surface soil will not be evaluated further in this health consultation.

Exposure Evaluation

A chemical can cause an adverse health effect only if people contact it at a sufficient level for a sufficient amount of time. That requires:

- a source of exposure,
- an environmental transport medium,
- a point of exposure,
- a route of exposure, and
- a receptor population.

A pathway is complete if all its components are present and exposure of people occurred in the past, is occurring, or will occur in the future. If parts of the pathway are absent, data are insufficient to decide whether it is complete, or exposure may occur at some future time, then it is a potential pathway. If part of the pathway is not present and will never exist, the pathway is incomplete and can be eliminated from further consideration (Table 3).

The potential for exposed persons to experience adverse health effects depends on these three factors:

- how much of each chemical a person contacts,
- how long a person is exposed, and
- the person's health condition at the time of exposure.

Since there is no VOC sampling data for Crestwood Well #1 prior to 1985, it is not known when the well was first impacted by the groundwater contamination. From at least 1985 to 2007, the consumption of contaminated water from Crestwood Well #1 was a completed exposure pathway. Vinyl chloride was not reported in the 1985 Illinois EPA and Crestwood samples of the well and was not reported in the 1997 sample collected by a private consultant. The first reported detection of vinyl chloride in Well #1 was 2007.

Since there is no sampling data, the actual levels of VOCs in the finished Crestwood drinking water before the closing of Well #1 in 2008 are not certain. Crestwood mixed water pumped from Well #1 with water purchased from the Village of Alsip that was stored in 2 one million gallon tanks. There also is a water tower that floats additional storage of purchased water on top (i.e., pressure head and additional volume of water) of the Crestwood distribution system. The groundwater from the well was mixed with the purchased water stored in the 2 million gallon tanks. Illinois EPA review of available water records suggest that the actual blending rate over time was less than 10% of Crestwood Well #1 water and greater than 90% of Alsip water, which comes from Lake Michigan. Based on available information, the maximum blending rate of Well #1 use was 20% over short periods.

If these blending rates are accurate, then the highest estimated concentration of vinyl chloride in the finished drinking water is calculated by a dilution of the maximum concentration in Well #1 (5.4 µg/L) by a factor of 5 (assuming 20% blending rate). This estimated concentration (1.08 µg/L) is less than the USEPA drinking water standard (2 µg/L). Although it exceeds the ATSDR cancer-based screening criteria (0.03 µg/L), it still falls within EPA's acceptable risk range (less than 1 in 10,000 excess cancer risk).

$$\text{Final concentration} \approx 5.4\,\mu g/L \times 0.2 \approx 1.08\,\mu g/L$$

Health Outcome Data

Community concern regarding cancer rates prompted IDPH to look at the cancer incidence in zip code 60445, which covers the communities of Crestwood and Midlothian. In 2006, IDPH released a cancer incidence report that looked at rates for zip code 60445. This assessment was

conducted before public disclosure of the contamination in Crestwood Well #1. The evaluation of community cancer rates are generally performed at the zip code level, since that is how the cases are reported to the state cancer registry. Community concern regarding cancer rates in the area prompted this evaluation before the Crestwood well contamination became known to IDPH and the public. This report found that the incidence for the period 1998 to 2002 in white males (304 observed vs. 272 expected) and white females (322 observed vs. 342 expected) was not statistically different from expected rates. [5]

In response to community concerns, IDPH initiated a follow-up assessment of the cancer incidence specifically for residents in the Crestwood community for the years 1994 to 2006. [6] This assessment report is scheduled for release in March 2010.

Child Health Considerations

IDPH and ATSDR recognize that children are more sensitive to some contaminants than adults. Children receive a higher dose when exposed to the same contaminant level in water. Therefore, IDPH and ATSDR included children when evaluating exposure to vinyl chloride in the Crestwood public water system.

Conclusions

There is historical evidence of contamination of Crestwood Well #1 with chemicals derived from a dry cleaning solvent, based on three sampling periods beginning in 1985. There is uncertainty about when the contamination first impacted Well #1 and limited sampling information from 1985 until the well was no longer used in 2007. Illinois EPA estimates of the concentration of VOCs in the drinking water during the period from 1985 to 2007 did not exceed federal drinking water standards. However, IDPH and ATSDR recognize that the available information does not provide sufficient information to determine the *actual* levels of chemical contamination that were present in the Crestwood public water system during that time. Unfortunately, the levels of exposure to Crestwood residents may never be known. We cannot conclude whether past exposure to contaminants in Crestwood drinking water could have harmed people's health. Currently, the Crestwood public water system purchases water from Alsip, which obtains their from Lake Michigan through the City of Chicago.

The concentrations of lead detected in surface soil in Playfield Park are below health-based screening criteria and would not be expected to harm people's health.

Sampling of the shallow groundwater at several locations in Playfield Park and to the south of the source area in Playfield Plaza did not detect VOCs. Therefore, there is no evidence of migration of vapors into ambient air in Playfield Park or into homes to the east of Crestwood Well #1. However, there is uncertainty about whether the chemical contamination in the subsurface soil and shallow groundwater in the area behind the Playfield Dry Cleaners could pose a hazard based on the potential migration into the interior of businesses within the Playfield Plaza.

Recommendations

IDPH and ATSDR recommend that:

- Illinois EPA and USEPA continue their investigation of village records to determine if additional data exist that would better characterize past exposures.
- USEPA evaluate the Playfield Plaza Shopping Center businesses for potential vapor intrusion of VOCs detected in subsurface soils and shallow groundwater near the Playfield Dry Cleaners facility.
- The IDPH Division of Epidemiologic Studies complete its updated cancer incidence review of the Crestwood area, and continue cancer incidence surveillance for the Crestwood community.

IDPH and ATSDR will follow the developments of these investigations and will review any additional data to determine whether the conclusions of this health consultation require revision.

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6. Ries LA, Smith MA, Gurney JG, Lind M, Tamra T, Young JL, and Bunin GR (eds.) *Cancer Incidence and Survival among Children and Adolescents: United States SEER Program 1975-1995,* pp. 9-12, National Cancer Institute, SEER Program. NIH Pub. No. 99-4649. Bethesda, MD. September 1999.

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Table 1- Summary of Known Water Sample Results from Crestwood Well #1 in µg/L.

Date	Sample collected by	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl chloride
Nov. 1985	IEPA	2.8	nr	nr	nr
Aug. 1986	Crestwood	nr	nr	4	nr
Nov. 1986	IEPA	nr	nr	5	nr
Nov. 1997	CRA	nd	3.0	nd	nd
Sept. 2007	IEPA	nd	2.6	nd	1.5
Oct. 2007	IEPA	nd	1.6	nd	5.4
April 2008	IEPA	nd	1.1	nd	4.9
June 2008	IEPA	nd	1.3	nd	4.4
Nov. 2008	IEPA	nd	0.54	nd	2.1
Jan. 2009	IEPA	nd	0.75	nd	2.4
MCL		7	70	100	2
ATSDR EMEG		90 (child) 300 (adult)	3,000 (child) 10,000 (adult)	2,000 (child) 9,000 (adult)	30 (child) 100 (adult)
ATSDR CREG		na	na	na	0.03

µg/L = micrograms per liter
DCE = dichloroethene
nr = chemical was not reported
nd = chemical was not detected
na = not applicable, chemical is not considered to be a carcinogen
MCL = maximum contaminant level (USEPA federal drinking water standard)
EMEG = Environmental Media Evaluation Guideline- concentration in drinking water not associated with adverse health impacts for long-term exposure
CREG = Cancer Risk Evaluation Guide- concentration in drinking water associated with an increased cancer risk of 1excess cancer in 1 million exposed individuals

"Sample collected by" is the entity that collected and reported the sample results: Crestwood refers to the Village of Crestwood Water Department; CRA refers to Conestoga-Rovers and Associates who were investigating the Playfield Plaza site; IEPA refers to samples collected by the Illinois EPA

Table 2. X-Ray Fluorescence (XRF) Results for Playfield Park; June 11, 2009.

Sample Number	Depth	Lead Level in ppm
1	surface	67
	3 inches	62
2	surface	99
	3 inches	224
3	surface	269
	3 inches	57
4	surface	48
	3 inches	69
5	surface	89
	3 inches	37

ppm = parts per million

Table 3 -- Exposure Pathway Analysis for Groundwater Contamination in Crestwood

Pathway	Source	Media	Point of Exposure	Exposure Route	Exposed Population	Time	Completed Pathway
Public water supply	Dry cleaning operation	Crestwood Drinking water	Residential tap	Ingestion	Residents	Past	Complete
						Present	Incomplete- due to well closure
						Future	
Soil	Dry cleaning operation	Subsurface soil and ground water	Playfield Park	Ingestion Dermal	Recreational users	Past	Incomplete- no VOC subsurface contamination
						Present	
						Future	
	Dry cleaning operation	Subsurface soil and ground water	Playfield Plaza	Ingestion Dermal	Customers of Playfield Plaza businesses	Past	Incomplete- due to pavement cover
						Present	
						Future	
	Paint on Water Tower	Surface soil	Playfield Park	Ingestion Dermal	Recreational users	Past	Complete
						Present	
						Future	
Ambient Air	Dry cleaning operation	Air	Playfield Park	Inhalation	Recreational users	Present	Incomplete – no VOC soil contamination
						Present	
						Future	
Indoor Air	Dry cleaning operation	Air	Playfield Plaza businesses	Inhalation	Workers and customers	Present	Unknown
						Present	
						Future	

Figure 1. Map of service area for Crestwood Water Supply

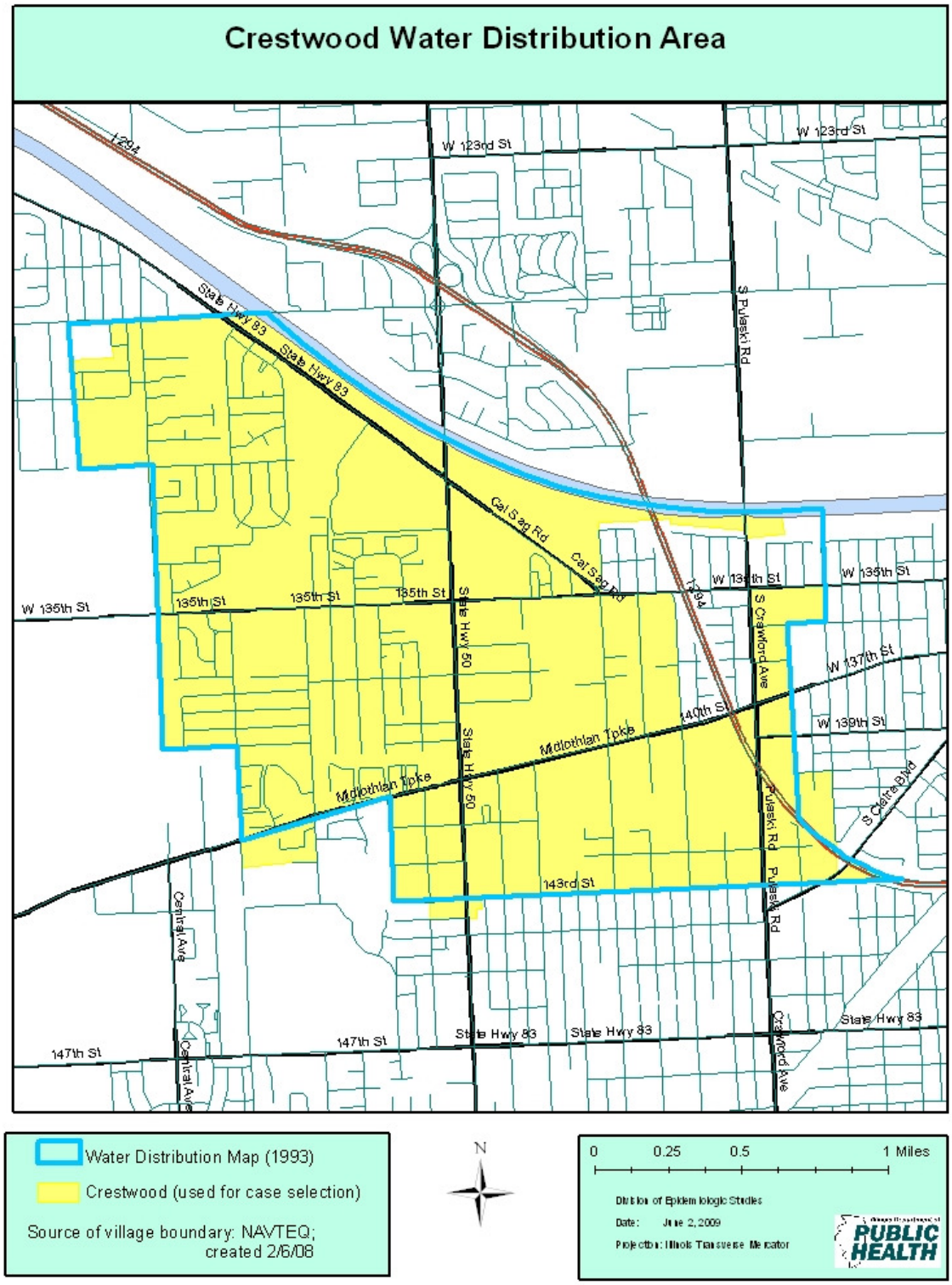


Figure 2. Locations of 2009 Illinois EPA Soil Borings and Samples

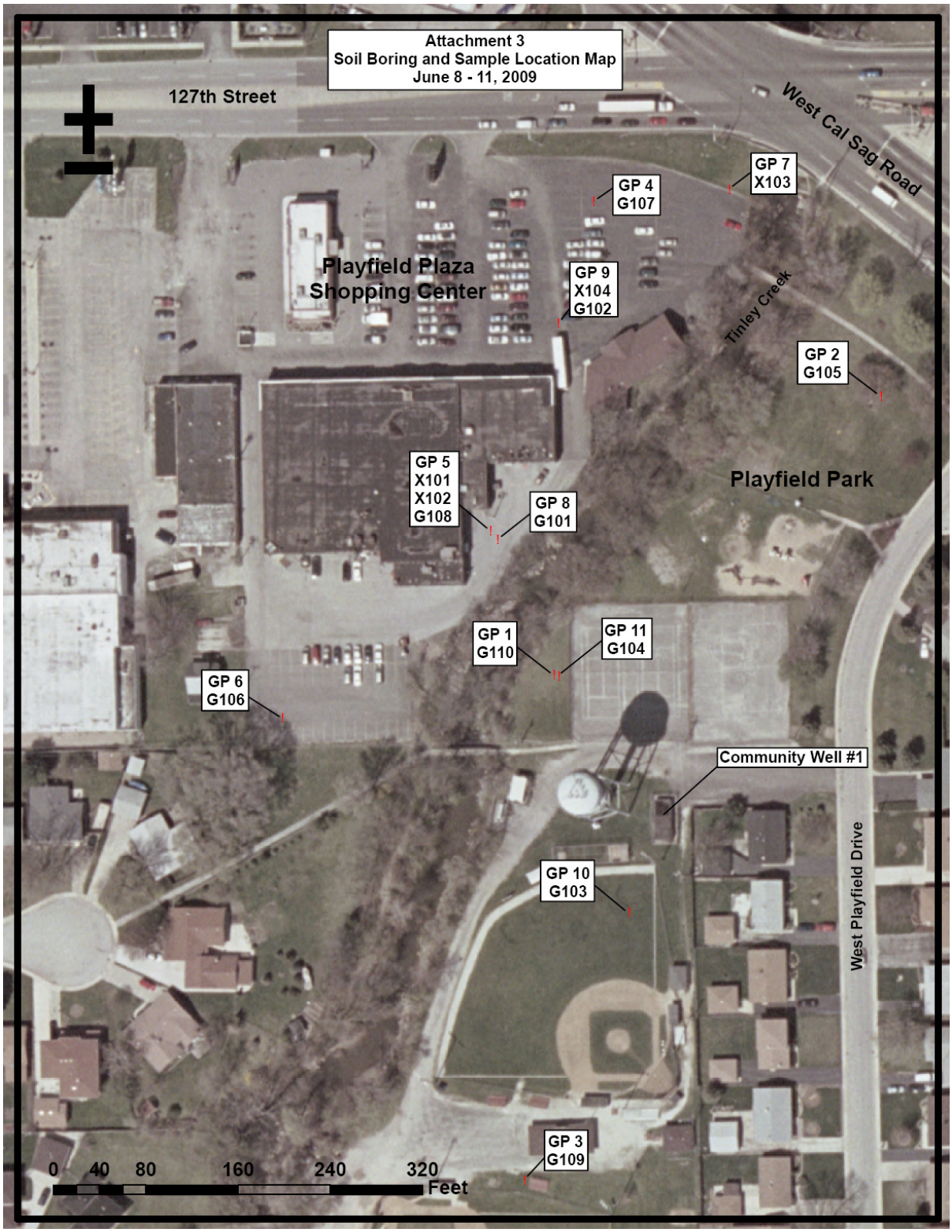
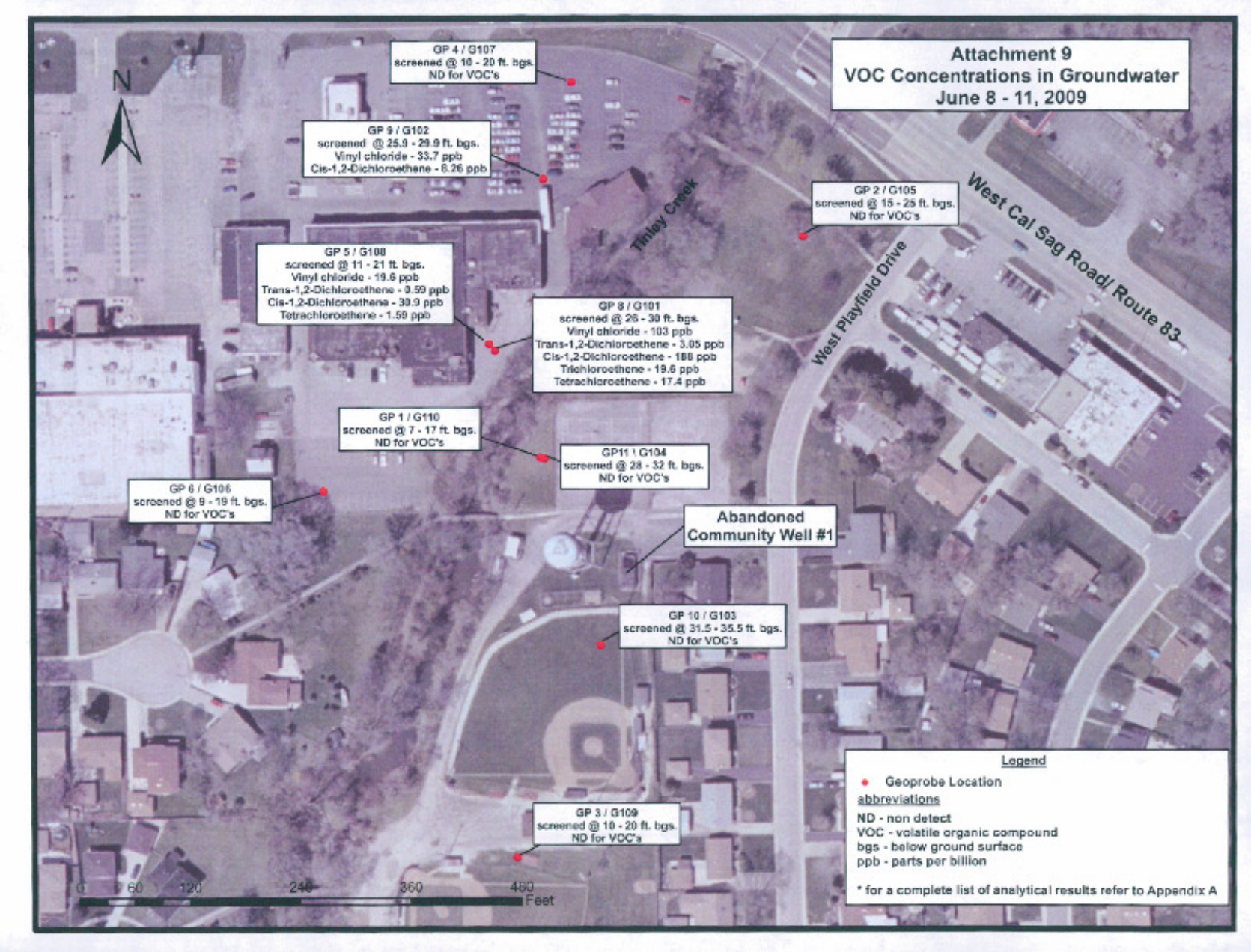
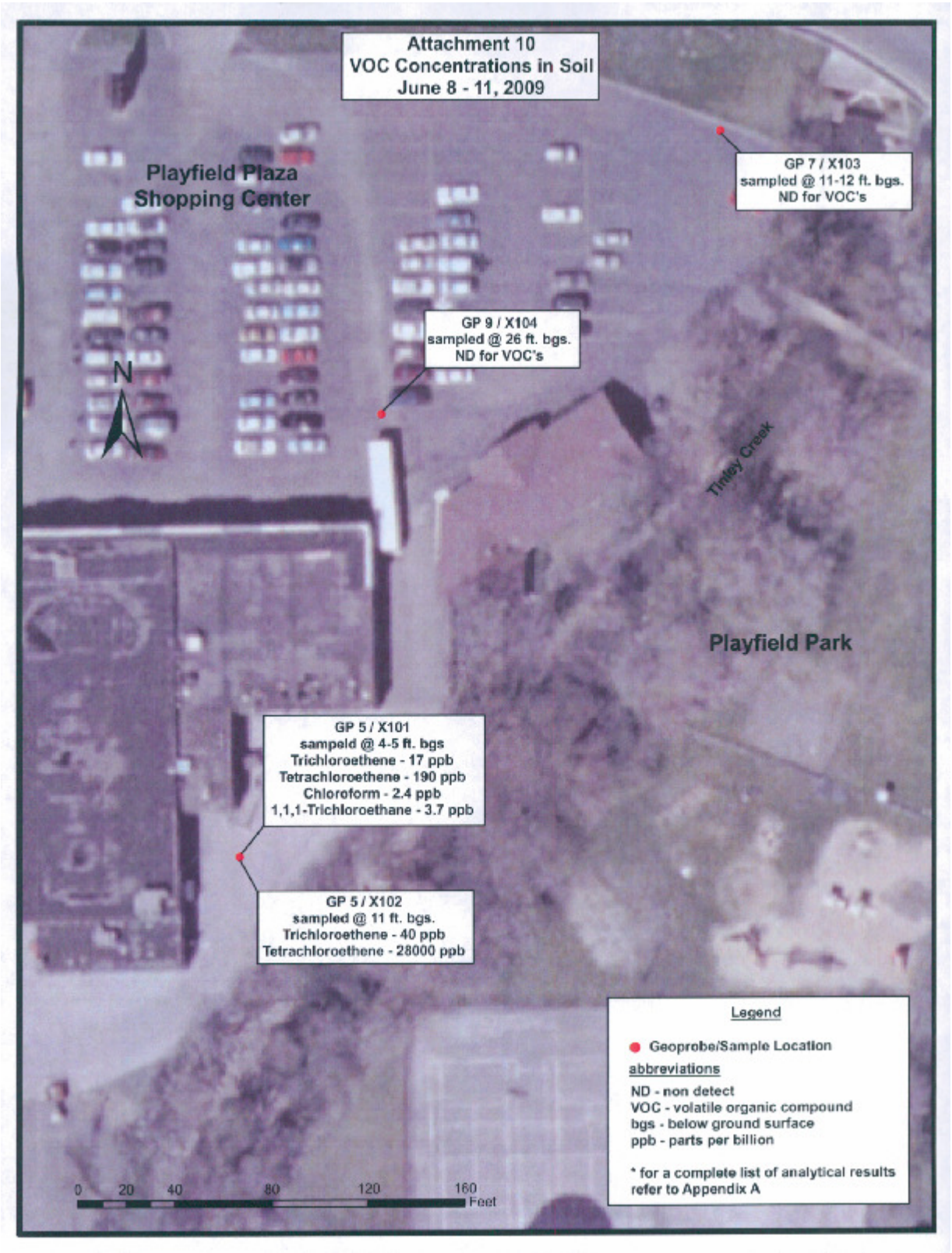


Figure 3. Illinois EPA 2009 Groundwater Sampling Results Summary Map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