LMS/PIN/N01179

Pinellas Environmental Restoration Project

Sitewide Environmental Monitoring Semiannual Progress Report for the Young - Rainey STAR Center December 2007 through May 2008

June 2008

U.S. Department of Energy

Office of Legacy Management

Work Performed Under DOE Contract No. DE–AM01–07LM00060
for the U.S. Department of Energy Office of Legacy Management.

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Acronyms and Abbreviations

bls	below land surface
°C	degrees Celsius
CMS	Corrective Measures Study
CMIP	Corrective Measures Implementation Plan
COPC	contaminants of potential concern
CTL	Cleanup Target Level
DCE	dichloroethene
DOE	U.S. Department of Energy
EA	environmental assessment
EMS	Environmental Management System
EPA	U.S. Environmental Protection Agency
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FONSI	Finding of No Significant Impacts
ft	feet
ft/ft	feet per foot
HSWA	Hazardous and Solid Waste Amendments
HRC	Hydrogen Release Compound®
ICM	interim corrective measure
IWNF	Industrial Wastewater Neutralization Facility
LM	Office of Legacy Management
MCL	maximum contaminant level
MSL	mean sea level
µmhos/cm	micromhos per centimeter
µg/L	micrograms per liter
mg/L	milligrams per liter
mV	millivolt
NAPL	non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	national geodetic vertical datum
NTU	Nephelometric Turbidity Units
PCIC	Pinellas County Industrial Council
QA/QC	quality assurance/quality control
RBCA	Risk-Based Corrective Action
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RPD	relative percent difference
STAR Center	Young - Rainey Science, Technology, and Research Center
SWMU	solid-waste management unit
TCE	trichloroethene
TCOPC	total contaminants of potential concern
VC	vinyl chloride
VOCs	volatile organic compounds
WWNA	Wastewater Neutralization Area

1.0 Introduction

The Young - Rainey Science, Technology, and Research Center (STAR Center) is a former U.S. Department of Energy (DOE) facility constructed in the mid-1950s in Pinellas County, Florida. The 99-acre STAR Center is located in Largo, Florida, and lies in the northeast quarter of Section 13, Township 30 South, Range 15 East (Figure 1). While it was owned by DOE, the facility primarily manufactured neutron generators for nuclear weapons. Other products manufactured at the STAR Center have included radioisotopically powered thermoelectric generators, thermal batteries, specialty capacitors, crystal resonators, neutron detectors, lightning-arrestor connectors, and vacuum-switch tubes. In 1987, the U.S. Environmental Protection Agency (EPA) performed a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) (EPA 1988) at the site to gather information on potential releases of hazardous materials. In February of 1990, EPA issued a Hazardous and Solid Waste Amendments (HSWA) permit to DOE, enabling DOE to investigate and perform remediation activities in those areas designated as solid-waste management units (SWMUs), contaminated by hazardous materials resulting from DOE operations. On March 17, 1995, DOE sold the facility to the Pinellas County Industrial Council (PCIC). The sales contract included clauses to ensure continued compliance with federal, state, and local regulations while DOE remediates the site. On July 1, 1999, the PCIC was disestablished, and ownership of the STAR Center changed to the Pinellas County government. In November 2000, the State of Florida received HSWA authorization from EPA. The Florida Department of Environmental Protection (FDEP) issued a new HSWA permit to DOE in January 2002.

The administration of DOE activities at the facility is the responsibility of the DOE Office of Legacy Management (LM) in Grand Junction, Colorado. S.M. Stoller Corporation (Stoller), a prime contractor to DOE-LM, provides technical support to DOE for remediation and closure of all active SWMUs on site.

The EPA RFA Report and the HSWA permit identified 15 sites at the former DOE facility that may have experienced environmental contamination as a result of past activities. Upon completion of the RCRA Facility Investigation (DOE 1991), 11 of the 15 SWMUs were recommended by DOE and approved by EPA Region IV and FDEP for no further action (DOE 1994b). A twelfth site, the Former Pistol Range Site, was remediated in 1993; it was recommended by DOE, and approved by EPA Region IV and FDEP, for no further action.

Two additional SWMUs, the West Fenceline Site and the Wastewater Neutralization Area/ Building 200 (WWNA/Building 200), were identified after the HSWA permit was issued, bringing the total to 17 SWMUs that have been identified and investigated at the STAR Center. The remediation of the West Fenceline Site was completed in 1997, and DOE recommended—and EPA Region IV and FDEP approved—no further action, for a total of 13 SWMUs remediated. A Corrective Measures Study (CMS)/Corrective Measures Implementation Plan (CMIP) was prepared and submitted in 1997 to EPA Region IV and FDEP to address the contamination at the WWNA/Building 200 Area.

Therefore, there are currently four SWMUs that have contamination in the surficial aquifer groundwater at levels in excess of protective standards. These four SWMUs are the Old Drum Storage Site (PIN06), the Industrial Drain Leaks-Building 100 Area (PIN12), the Northeast Site

(PIN15), and the WWNA/Building 200 Area (PIN18). Two SWMUs, PIN06 and PIN12, are collectively known as the Building 100 Area. Figure 2 depicts the location of the four SWMUs. Additional background information relative to each SWMU is briefly described below.

This document also serves as the semiannual progress report for each of these four SWMUs. The results of monitoring activities and a summary of ongoing and projected work are provided in this report.

1.1 Building 100 Area

The Building 100 Area (PIN06 and PIN12) is located in the southeast portion of the STAR Center. The Old Drum Storage Site is the former location of a concrete storage pad equipped with a drain and containment system used to store hazardous waste including methylene chloride, ignitable liquids, arsenic, and calcium chromate solids (DOE 1987a). Empty drums containing residual waste solvents were also stored in this area (DOE 1987b). The concrete pad was located near the northwest corner of Building 100. The pad was removed in October 1983 in accordance with an FDEP closure permit (DOE 1987a), and a closure report was submitted to FDEP in August 1986 (DOE 1986). The decommissioning of the pad and the cessation of drum storage effectively removed the potential for a future contaminant source at PIN06.

Building 100 is the largest building at the STAR Center and covers approximately 11 acres. In the past, offices, laboratories, and production facilities for DOE were housed in the building. SWMU PIN12 consists of the liquid waste drainage system that formerly served Building 100. Four individual drainage systems (sanitary, chemical, health physics, and storm water) were present within the building. In 1989, all four drainage systems were investigated, including verifying the system routing and the condition of underground and aboveground piping and ancillary equipment (EMC 1989). As a result of this investigation, the health physics and chemical drainage systems were flushed, grouted, and abandoned (DOE 1997). Some of the chemical drain lines were replaced by an aboveground system currently used by tenants of the building.

A CMS and CMIP were completed and approved for the Building 100 Area because volatile organic compounds (VOCs) concentrations measured in groundwater at the Old Drum Storage Site (PIN06) and one monitoring well located at the northwest corner of Building 100 (PIN12) exceeded the Safe Drinking Water Act and FDEP maximum contaminant levels (MCLs). Subsequent investigations revealed elevated VOCs concentrations under Building 100 and downgradient to the southeast as well. On August 15, 2000, EPA approved the Building 100 CMIP Addendum; FDEP approved the document on November 15, 1999.

In May 2001, DOE began an analysis of the potential remediation strategies for the three Building 100 Area tasks: plume control, source treatment, and dissolved phase treatment. The *Building 100 Area Remediation Technology Screening Report* (DOE 2001) assembled a list of remediation technologies, categorized them into the remediation tasks, and conducted an initial screening of the technologies. This initial screening eliminated the technologies that obviously would not work and recommended technologies that should be retained for detailed evaluation at a later time.

The *Building 100 Area Plume Control Technology Selection Report*, prepared in February 2002, conducted a detailed evaluation of five plume control technologies and recommended that enhanced bioremediation should be implemented for plume control at the Building 100 Area.

In-situ enhanced bioremediation to control the plume of dissolved contaminants at the Building 100 Area began as a pilot study on March 11, 2003. Hydrogen Release Compound® (HRC) was injected through nine injection points surrounding each of three monitoring wells. Groundwater samples were collected from each of the three monitoring wells at approximately 2-month intervals through May 2004 to track the progress of HRC at remediating site contaminants. HRC was selected because it is a proven technology for optimizing degradation rates of chlorinated hydrocarbons dissolved in groundwater. The continuous hydrogen source provided by the HRC can reduce the concentration of dissolved phase chlorinated hydrocarbons by greatly enhancing the reductive dechlorination process that occurs naturally at the Building 100 Area. The *In-Situ Enhanced Bioremediation Technology to Control the Plume of Dissolved Contaminants at the Building 100 Area of the Young - Rainey STAR Center Pilot Test* final report was received from the subcontractor on April 5, 2004. The results of the pilot test indicate that the injection of HRC had a limited influence in the pilot test area. This conclusion is based on increasing concentrations of the metabolic acids (as produced from HRC) and the decreasing concentrations of sulfate and iron and the observation of ethene at one location. A supplemental sampling event was conducted in May 2004, after which the pilot test was considered complete.

Several years have passed since the Building 100 Area CMS Report (DOE 1994a), the CMIP (DOE 1996a), and the CMIP Addendum (DOE 1998) were written. Therefore, in July 2006, the Building 100 Area CMS Report Addendum was prepared to update site conditions, discuss the regulatory framework, and re-evaluate active remediation alternatives for this SWMU. Based on the recommendations included in this report, FDEP and DOE continue to discuss the closure strategy for this SWMU. One recommendation that FDEP agreed on has already been implemented, with the shutdown of the two recovery wells at Building 100 on August 21, 2006.

1.2 Northeast Site

In the late 1960s, before the construction of the East Pond, drums of waste and construction debris were disposed of in the swampy area of the Northeast Site. The East Pond was excavated in 1968 as a borrow pit. In 1986, an expansion of the East Pond was initiated to create additional storm-water retention capacity. Excavation activities ceased when contamination was detected directly west of the East Pond. EPA identified the Northeast Site as a SWMU (EPA 1992). An Interim Corrective Measures (ICM) Study was developed and submitted to EPA, and approval of this document was received in October 1991. An interim groundwater recovery system for the Northeast Site was installed, and operation commenced in January 1992.

The groundwater treatment system, as initially installed, consisted of four recovery wells equipped with pneumatic recovery pumps, a holding tank, centrifugal transfer pumps, and approximately 2,500 feet (ft) of transfer and secondary containment piping. During 1993, DOE proposed a reconfigured system for the site, consisting of four shallow and three deep recovery wells. After EPA approved the upgrade, the system was reconfigured and became operational on March 1, 1994.

Between August and October 1995, after EPA and FDEP granted their approval, a portion of the Northeast Site was excavated to remove debris and other materials that could inhibit future corrective measures. The location of the areas of excavation was based primarily on the results of a geophysical survey and knowledge of existing utility locations. Detailed descriptions of the debris-removal activities were submitted to EPA and FDEP as part of the *Northeast Site Interim Measures Quarterly Progress Report* (DOE 1996b).

In 1996, DOE submitted a CMIP to EPA Region IV and FDEP. This plan was approved by both regulatory agencies in 1997. As part of the Northeast Site CMS and CMIP, a pump-and-treat system, in conjunction with a subsurface hydrogeologic barrier wall to prevent the migration of the contaminant plume, was identified as the best available technology. A pretreatment system for iron removal, an air-stripper unit, and a tank for holding treated groundwater before discharge to the Pinellas County Publicly Owned Treatment Works were recommended. The treatment system was constructed in early 1997 and became operational by July 1997, with seven Northeast Site recovery wells and two Building 100 recovery wells pumping to the system influent tank. Subsequently several additional recovery wells were installed, and some of the old recovery wells were abandoned.

During 1997, anaerobic bioremediation and rotary steam stripping pilot tests were conducted in the northern and southern portions of the Northeast Site, respectively. These tests were designed by an Innovative Treatment Remediation Demonstration group of regulatory and industry members to provide remedial options at the STAR Center. At the conclusion of the field tests in July 1997, pump-and-treat technology resumed at the Northeast Site.

An *Interim Measures Work Plan for Remediation of Non-Aqueous Phase Liquids* (NAPLs) *at the Northeast Site* was submitted to FDEP in late November 2001. The purpose of this document was to present the plan for the ICM to remediate NAPLs at the Northeast Site. An ICM was considered to be warranted because it supported the long-term corrective action to remediate the dissolved phase contamination in the surficial aquifer to FDEP drinking water MCLs. Without this measure, NAPLs would continue to act as a source of dissolved contamination, resulting in contaminant concentrations in groundwater well above the MCLs. FDEP approved this document on January 10, 2002.

Concurrent with the preparation of the ICM Plan, a National Environmental Policy Act (NEPA) Environmental Checklist recommending a Categorical Exclusion was approved by DOE on December 19, 2001. The categorical exclusion of the Area A pilot test activity was approved based on the fact that the NAPL remediation of Area A was a small-scale, short-term cleanup action and the siting, construction, and operation of treatment facilities were temporary and pilot-scale in size. Additionally, activities of this nature were evaluated in the 1995 *Environmental Assessment* (EA) *of Corrective Action at the Northeast Site* (DOE 1995).

A NEPA Action Review was conducted for the interim measure source removal action at Area B in October of 2002. A summary of the review concluded that Area B remediation would impact an area of approximately 38,000 square ft. The footprint of the above-ground treatment system would be about 80 ft by 80 ft, and an estimated 84,000 gallons per day of groundwater would be processed over a 24-week period of operation. The proposed interim measure, although not specifically identified in the 1995 EA, was determined to be within the scope of the proposed

actions. The remedial activity would occur within the same physical boundaries and address the same contaminants identified in the EA, but in a more concentrated form. Because the EA provided for "design modifications to reflect technological advances or site-specific conditions," it was determined that the NAPL remediation of Area B was within the scope of the existing EA. However, this flexibility was not mentioned in the Finding of No Significant Impacts (FONSI) document signed in May 1995 (Glass 1995). Therefore, it was determined that the appropriate action under NEPA would require an amendment to the FONSI to include the broader scope of activities from the EA and any additional impacts from the NAPL removal action. The FONSI was amended, reviewed by the DOE-Idaho NEPA Planning Board, and approved by the DOE Grand Junction Office NEPA Compliance Officer on February 24, 2003.

Construction of the NAPL Area A treatment system began in late May 2002, and system startup occurred on September 26, 2002. NAPL treatment was completed on February 28, 2003. Three post-treatment sampling events occurred in March, May, and August 2003. Demobilization activities began in early March and were completed in September 2003. The *Northeast Site Area A NAPL Remediation Final Report* (DOE 2003b), describing thermal remediation of Area A, was sent to stakeholders on September 25, 2003.

At the end of February 2004, a contract was awarded for the remediation of NAPL Area B using the electro-thermal dynamic stripping process. Construction of the NAPL Area B treatment system began in July 2004 and was completed in early August 2005. Operations began on August 16, 2005, and were completed on June 12, 2006. Heating resumed in a focused area from July 19, 2006, until August 25, 2006, to address groundwater concentrations that exceeded remediation goals at two locations. The treatment system was permanently shut down on August 29, 2006. Approximately 18,000 pounds of contaminants were removed during operations. Confirmatory sampling activities were completed by the end of September 2006. The *Final Report Northeast Site Area B NAPL Remediation Project at the Young - Rainey STAR Center Largo, Pinellas County, Florida* (DOE 2007a) describes Area B remediation.

Currently there is no ongoing remedial action at the Northeast Site. Monitoring wells have been installed at the former NAPL areas to monitor the remaining dissolved phase plumes.

1.3 WWNA/Building 200 Area

The WWNA/Building 200 Area includes the active Industrial Wastewater Neutralization Facility (IWNF), the area around Building 200, and the area south of the neutralization facility. The IWNF refers to the physical treatment facility that currently receives sanitary and industrial wastewater and has been in operation since 1957.

A CMS Report and CMIP were completed in 1997 for this SWMU because vinyl chloride (VC), trichloroethene (TCE), and arsenic were detected in surficial aquifer groundwater at concentrations above federal and state MCLs. The recommended remediation alternative for the WWNA/Building 200 Area was groundwater recovery with the Building 100 Area wells and an additional recovery well located in the WWNA. The CMIP recommended that recovered water from the additional well be discharged directly to the IWNF. This well was designed to withdraw surficial aquifer groundwater directly from the arsenic plume and thereby reduce the contaminant mass and prevent contaminant migration.

FDEP's response to the CMS/CMIP, concerning arsenic contamination in the upper 2 ft of soil, suggested that a treatment technology, air sparging, was eliminated too early. DOE then proposed a multi-phased Interim Action that included operating the recovery well for 6 months, then pulsing the system, as well as performing geochemical analyses and leaching studies of the site. On January 21, 1999, FDEP approved the proposed interim remedial action.

Additionally, EPA Region IV also approved the interim remedial action and concurred with FDEP's position regarding the arsenic contamination. EPA also requested an addendum or modification to the CMIP that would address DOE's final selection of the remediation technology and include a timeline for the completion of these activities.

In early June 1999, the WWNA recovery well commenced operation. All arsenic concentrations in water from the WWNA recovery well, PIN18−RW01, were below the STAR Center's daily maximum discharge standard for arsenic in wastewater of 0.20 milligrams per liter (mg/L) until shutdown.

Additional details concerning the impacts of groundwater extraction are reported in the WWNA/Building 200 Area CMIP Addendum (DOE 2000b). Modifications to the recovery of groundwater were proposed based on data collected through November 1999 and consisted of the installation of two new recovery wells screened at shallow intervals and the abandonment of RW01. The CMIP Addendum was submitted to the regulators and approved by FDEP and EPA in 2000. A Statement of Basis (DOE 2000a) was issued by DOE in late September 2000. This document provides a summary of environmental investigations and proposed cleanup alternatives for the WWNA/Building 200 Area. Part of DOE's proposed final action for the WWNA was to shut down the three extraction wells and begin a 1-year monitoring period. Verbal approval for this action was received from FDEP on December 20, 2005, and the wells were shut down that day.

A No Further Action With Controls Proposal for the WWNA/Building 200 Area was submitted to FDEP on March 14, 2007. FDEP approved the No Further Action With Controls Proposal on May 24, 2007, and requested that DOE submit an updated Statement of Basis. Submittal of this document is awaiting finalization of the institutional controls for the WWNA.

1.4 Site Update

Risk-Based Corrective Action (RBCA) rules are currently being evaluated for applicability to assist in expediting closure at some or all of the SWMUs at the STAR Center. Technical discussions regarding RBCA as the proposed final action continued between FDEP and DOE. Pinellas County is planning a major road construction effort along Bryan Dairy and Belcher Roads that initially was scheduled to start in late 2008 but now is scheduled to begin in late 2009. DOE is evaluating the effect, if any, that the Building 100 Area contaminant plume might have upon road construction activities along the east and south sides of the STAR Center. DOE installed new monitoring wells in this area in October 2007 and January and February 2008 to further define the plume, and this investigation confirmed that the plume was off-site. This off-site plume is discussed in more detail in Section 4.

In addition to the road construction work, Pinellas County Utilities plans to replace the 48-inch water line than runs under Belcher Road starting in October 2008. This work could also be affected by the contaminant plume. To further define the plume in this area, DOE installed 21 new monitoring wells (PIN12-0529 through PIN12-0549) along the southern and eastern STAR Center property boundaries in October 2007 and January 2008. These new wells indicated that the contaminant plume could extend off the site in a couple of locations, so nine additional wells (PIN12-0550-1 through PIN12-0552-3) were installed off site and were sampled in February and March 2008.

Groundwater samples from a few wells in a recently remediated area at the Northeast Site continue to show high concentrations of contaminants. Twelve soil borings were installed in August 2007 to investigate the potential for contaminant source remaining in the subsurface at these locations. Results indicated high contaminant concentrations in soil at most of these borings, so a second phase of investigation was conducted in March and April 2008 wherein 45 soil borings were installed. Ten additional borings were installed in May and 11 more in June with contingency for more if the edge of the hot spot areas have not been adequately defined by soil borings. Once the hot spot areas have been determined, soil excavation using a large diameter auger and off-site disposal of soil will be utilized to remediate areas of known contamination. This remedial activity will commence in 2009.

1.5 Waste Minimization and Pollution Prevention

The RCRA HSWA permit (No. 0034170/HH/003) which was reissued to the Site on August 21, 2007, by FDEP includes requirements for the project, including compliance with waste minimization requirements under 40 CFR 264.73(b)(9) and Section 3005(h) of RCRA, 42 U.S.C. 6925(h). The permit states the following:

"The Permittee must certify, no less than annually, that:

a. The Permittee has a program in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable;

b. The proposed method of treatment, storage or disposal is the most practicable method available to the Permittee, which minimizes the present and future threat to human health and the environment, and

c. The Permittee shall maintain copies of certification in the facility operating record as required by 40 CFR 264.73(b) (9).

d. The Department of Energy Legacy Management Pollution Program will meet the requirement of a. and b. of this part."

The Pinellas project maintains the above annual certification in the on-site records. DOE-LM implements the Environmental Management System (EMS) sustainability programs under three documents, the *Environmental Management Systems Manual*, the *Environmental Management System Description*, and the *Environmental Protection Manual*. The EMS program includes a Waste Minimization and Pollution Prevention Plan as part of the EMS Manual which describes the process of implementing and tracking the progress of pollution prevention achieved by decreasing the purchase of hazardous chemicals and replacing them with chemicals that are more

environmentally friendly and less toxic. The plan also describes the process of implementing and tracking the progress of waste minimization achieved by establishing mechanisms to recycle or reuse, to the extent feasible, solid waste and hazardous chemicals that result from DOE-LM operations.

There were no major field activities conducted at the Pinellas project during 2007, mainly environmental sampling and monitoring well installation, therefore the main items recycled consisted of office products. These types of materials have been recycled in the past, but starting in September 2007, the items have begun to be tracked and reported in accordance with the newly updated EMS system. The following materials were recycled in 2007:

- 208.5 pounds of paper
- 50 pounds of cardboard
- 5 pounds of plastic
- 133 pounds of magazines
- 77 pounds of telephone books

Also, during 2007, 9,000 pounds of spent carbon was recycled by shipping it to a carbon regeneration facility. This carbon was generated by the Northeast Site Area B treatment system which was shutdown in August 2006, but was not shipped until February 2007.

1.6 Site Activities

- Water-level measurements were obtained from all accessible monitoring wells, recovery wells, and ponds on February 26, 2008.
- The annual sampling event was conducted from February 25 to March 5, 2008, and included collection of water samples from 83 wells at the STAR Center.
- The results of the annual sampling event were reported (this document).

2.0 Water-Level Elevations

2.1 Work Conducted and Methods

On February 26, 2008, depth-to-water measurements were taken at all accessible monitoring wells, former extraction wells, and ponds at the STAR Center and two off-site ponds. The water levels were measured with an electronic water-level indicator or directly from a staff gauge. Groundwater elevations are listed in Table 1.

2.2 Groundwater Flow

Groundwater and surface-water elevations were used to construct sitewide groundwater contour maps of the shallow and deep surficial aquifers for the February data (Plates 1 and 2, respectively). Individual contour maps were also constructed for the shallow and deep surficial aquifers at the Northeast Site and the Building 100 Area (Figure 3 through Figure 6).

Previously, water levels throughout the STAR Center indicated that the water table was highest in the general area around the West Pond. As groundwater flowed from this discharge area, it dispersed to the west, south, and east. A new pattern was observed in the shallow surficial aquifer around the West Pond and Pond 5 in September 2006, and this new pattern was observed again in June and September 2007 and February 2008. As shown on Plates 1 and 2, the West Pond and Pond 5 now act as discharge points for the surficial aquifer. During recent construction activities at the site, the West Pond was cleaned out, Pond 5 was excavated, and the two ponds were connected by an underground pipe. This construction work seems to have changed the flow pattern in this area of the site to what is now observed. The flow pattern in the deep surficial aquifer is consistent with previously observed flow patterns.

At the Northeast Site, the natural pattern of flow generally to the east was again observed in February 2008. Along the northern boundary of the Northeast Site, the contours near the slurry wall for the past several years have indicated that the wall has been a significant barrier to groundwater flow. This pattern was observed again in February 2008. As shown in Figure 4, in February there was a differential of 0.68 ft between the downgradient and upgradient sides of the wall as measured in monitoring wells PIN15−M24D and −M33D, respectively. This differential is consistent with the differentials observed during the past 2 years. Water-table elevations indicate that the East Pond acted as a discharge point for the shallow surficial aquifer in February 2008 (Figure 3) In the shallow surficial aquifer at the Northeast Site, the hydraulic gradient was about 0.0024 feet per foot (ft/ft), with flow toward the east (Plate 1). Calculations using Darcy's Law, along with approximations of 1 ft/day for hydraulic conductivity and 0.3 for effective porosity, indicate that groundwater at the Northeast Site is estimated to move about 3 ft/year. This velocity is less than the historical estimates of 17 to 22 ft/year but consistent with the velocities observed since March 2006. Similar flow patterns were observed in the deep surficial aquifer (Plate 2).

The small groundwater mound observed the previous 2 years in the surficial aquifer at the WWNA was not observed in February 2008.

At Building 100, the surficial aquifer is no longer influenced by groundwater withdrawals from recovery wells PIN12−RW01 and –RW02 that were shut off in August 2006. For the past 5 years, shallow groundwater beneath Building 100 has been observed to flow to the southeast under a very slight gradient. This flow pattern was observed again in February 2008 The hydraulic gradient at the Building 100 Area was about 0.002 ft/ft. Using the approximations mentioned above, groundwater flow velocity in this area is estimated to be about 2.4 ft/year.

Water-level elevations in the three wells screened in the upper part of the Floridan aquifer are presented in Table 2. The water levels in these wells indicate that the potentiometric surface of the Floridan aquifer at the site was 0.1 to 0.4 ft higher in February 2008 than in September 2007.

Surface-water elevations were recorded from the East, South, Southwest, and West Ponds, Pond 5, the pond immediately north of the 4.5 Acre Site, and the pond just east of Belcher Road, and they are presented in Table 3. All the ponds are hydraulically connected to the shallow surficial aquifer system (Plate 1).

3.0 Groundwater Sampling and Analytical Results

3.1 Work Performed

During the annual sampling event at the STAR Center in February and March 2008, groundwater samples were collected from 83 monitoring wells. VOCs analyses were performed on 83 samples using EPA method SW-846 8260B. Aluminum and iron were analyzed in 40 samples from the Northeast Site wells using EPA method SW-846 6010B. Laboratory reports are provided in Appendix A. Analysis for arsenic and manganese was discontinued starting with this sampling event because the concentrations for these two analytes were below the Cleanup Target Levels (CTL), as described in the *Young - Rainey STAR Center and 4.5 Acre Site Annual Monitoring Plan for Fiscal Year 2008* (DOE 2007b).

Four samples were also collected for analysis of the microorganism *Dehalococcoides ethenogenes* (Table 4).

All samples were collected in accordance with the Stoller *Sampling Procedures for the Young - Rainey STAR Center and 4.5 Acre Site* (DOE 2006), using FDEP procedures. All samples were submitted to TestAmerica, Tampa, Florida, for analysis. TestAmerica, Tampa, Florida, is accredited by the Florida Department of Health in accordance with the National Environmental Laboratory Accreditation Conference (certification number E84282). All monitoring wells were micropurged using a dedicated bladder pump, and sampling was performed when the field measurements stabilized. Table 5 lists field measurements of pH, specific conductance, dissolved oxygen, oxidation-reduction potential, turbidity, and temperature recorded at the time the samples were collected. Measurements were made with a flow cell and a multiparameter instrument.

3.2 Analytical Results

3.2.1 Northeast Site (PIN15)

Concentrations of contaminants of potential concern (COPCs) in samples collected from wells at the Northeast Site (PIN15) are presented in Table 6, which, for comparison purposes, also shows the previous year of data. Figure 7 shows the total COPCs (TCOPCs) concentrations at the Northeast Site. The highest TCOPCs concentration, 21,200 micrograms per liter (µg/L), was measured in well PIN15−0587. This well also contained the highest concentration for any single analyte, cis-1,2- dichloroethene (cDCE) at 16,000 µg/L.

As described in the Annual Monitoring Plan (DOE 2007b), special sampling was conducted at the Northeast Site during this sampling event to determine the aluminum and iron concentrations remaining following NAPL remediation. All Northeast Site monitoring wells were sampled and analyzed for aluminum and iron using EPA Method 6010B. The results demonstrated that iron and aluminum concentrations exceeded CTL at several locations (Table 7).

3.2.2 Building 100 Area (PIN06, PIN09, PIN10, PIN12, and PIN21)

TCOPCs concentrations in samples collected from wells at the Building 100 Area are included in Table 8, which, for comparison purposes, also shows the previous year of data. Figure 8 shows

the TCOPCs concentrations, the highest of which was measured in well S35B at 75,900 µg/L. This well also contained the highest concentration for any single analyte, cDCE at 37,000 µg/L.

As discussed in Section 1.4, 30 new monitoring wells were installed in late 2007 and 2008 and are shown on Figure 8. Table 9 includes the COPC concentrations from these new wells. The highest TCOPC concentration from any of these new wells is from 0552 at almost 399 µg/L, with a cDCE concentration of 310 µg/L.

3.3 Quality Assurance/Quality Control

The results from the analytical laboratory, TestAmerica Laboratories Tampa, were checked for quality assurance/quality control (QA/QC) through duplicate samples and trip blanks. Detected analytes for each duplicate sample collected from the STAR Center are listed in Table 10. The duplicate sample results were compared and the relative percent differences (RPDs) between the results were calculated. All data passed QA/QC criteria at a Class A level, indicating that the data may be used for quantitative and qualitative purposes.

As specified in the *Sampling Procedures for the Young - Rainey STAR Center and 4.5 Acre Site* (DOE 2006), duplicate samples should be collected at a frequency of one duplicate for every 20 or fewer samples. For the STAR Center and the 4.5 Acre Site, there were 123 groundwater samples collected, with 7 duplicate samples collected. The duplicate requirements for this sampling event were met. There were 11 trip blanks collected during this event.

A data validation software module for identifying and tracking anomalous groundwater data points within the SEEPro database was used to generate a report of analytical results that fall outside of historical minimum or maximum values. No anomalous data were identified for this sampling event.

4.0 Data Interpretation

The purpose of this data-interpretation section is to aid in the evaluation of plume stability. Time-versus-concentration plots and plume maps were generated to aid in the interpretation.

While most of the previous documents for the Pinellas site have compared groundwater contaminant concentrations to drinking water standards (i.e., MCLs), those standards are not the applicable default CTLs for the purpose of evaluating site remediation under RBCA. Based on a comprehensive review of background data for the site (DOE 2003a), it has been determined that aluminum and iron levels in the shallow groundwater in the site vicinity are naturally elevated and far exceed State of Florida Secondary Drinking Water Standards (Chapter 62-550, Florida Administrative Code [F.A.C.]). Specifically, the average background concentration of 1.1 mg/L for aluminum exceeds the 0.2 mg/L secondary standard, and the average background concentration for iron (9.3 mg/L) exceeds the 0.3 mg/L secondary standard. The ambient shallow groundwater in the area is therefore designated as "poor quality" as defined in 62-780.200 (35), F.A.C. Thus, the applicable groundwater CTLs are those for groundwater of "low yield/poor quality" provided in Table 1 of Chapter 62-777, F.A.C. In essence, these CTL values are a factor of 10 higher than the MCL values.

4.1 Contaminant Concentration Trends

Monitoring well PIN15–0569 was chosen to evaluate plume stability at the Northeast Site. Well PIN15−0569 is located near the leading edge of the contaminant plume at the Northeast Site (Figure 7). The VC concentration in this well shows an overall decreasing concentration trend (Figure 9), indicating a stable or shrinking contaminant plume in the vicinity of this well.

Monitoring wells PIN21–0512 and PIN12–S73C were chosen to evaluate plume stability at the Building 100 Area because they are the monitoring wells nearest the property boundaries. Well 0512 lies along the southern boundary of the STAR Center and well S73C lies along the eastern boundary (Figure 8). Well PIN21−0512 was mistakenly not sampled during the annual sampling event, so the trend plot for this well is not included. Figure 10 shows the VC concentration in well S73C. Well S73C shows a decreasing VC concentration trend from 2002 to late 2003, followed by a stable trend since that time. These stable and decreasing concentration trends indicate a stable or shrinking contaminant plume near the property boundaries.

Figure 11 shows the TCE, cDCE, trans-1,2-DCE (tDCE), and VC concentrations in well PIN12−0524, located near the southeast corner of Building 100. The concentration trends in this well suggest that a localized slug of TCE, DCE, and VC is moving through the aquifer. The concentration trends in well 0524, particularly the significant TCE decrease, indicate that the slug is nearly past the well.

4.2 Plume Maps

For each SWMU, plume maps based on results from the February and March 2008 annual sampling event were generated for the TCOPCs as well as selected COPCs. The compound-specific CTL has been utilized to draw the inferred plume boundary for each COPC (i.e., concentrations below the CTL were not included in the plume area). Estimated values (J or B qualified data) were not used when the TCOPCs values were calculated. The outline of the 2007 plume is also shown on the maps for comparison.

Plume maps for the Northeast Site have been generated for TCOPCs (Figure 7), TCE (Figure 12), cDCE (Figure 13), VC (Figure 14), toluene (Figure 15), and benzene (Figure 16). In previous reports a methylene chloride plume map has been shown, but methylene chloride was not detected in any wells at the Northeast Site during the annual sampling event, so a plume map for this COPC is not shown. The highest COPCs concentrations were measured in the new monitoring wells in former NAPL Area B in the southern part of the site. When these wells were installed in Area B in February 2007, their locations targeted areas where the highest soil and ground water contaminant concentrations were measured during NAPL remediation confirmatory sampling in September 2006. Currently, DOE is conducting a soil investigation in this area of elevated groundwater concentrations to determine if a source of contamination remains in the subsurface.

Plume maps for the Building 100 Area have been generated for TCOPCs (Figure 8), TCE (Figure 17), cDCE (Figure 18), and VC (Figure 19). Results from the three wells installed south of Bryan Dairy Road indicated that the contaminant plume extended to this area, but no contaminants were detected in the six wells located east of Belcher Road.

4.3 Geochemical Parameters

Geochemical parameters measured in the field in all wells at the STAR Center during February and March 2008 are summarized in Table 5. Generally, conditions across the STAR Center are reducing as evidenced by the low values of dissolved oxygen and oxygen reduction potential.

5.0 Tasks to be Performed Semiannually

The following tasks are planned for the next semiannual period (June through November 2008):

- Installation and sampling of 18 monitoring wells and 10 soil borings around the day care center east of Building 100.
- Installation and sampling of additional soil borings for source characterization at the Northeast Site.
- Semiannual sampling of groundwater and water level measurement in September 2008.

6.0 References

DOE (U.S. Department of Energy), 1986. *Old Drum Storage Pad Closure Certification*, U.S. Department of Energy, Pinellas Plant, Largo, Florida.

DOE (U.S. Department of Energy), 1987a. *Draft Environmental Survey Sampling and Analysis Plan for the Pinellas Plant, Largo, Florida*, U.S. Department of Energy, Office of Environmental Audit, July 24.

DOE (U.S. Department of Energy), 1987b. *Phase 1. Installation Assessment Pinellas Plant*, Draft, Comprehensive Environmental Assessment and Response Program, U.S. Department of Energy, Albuquerque Field Office, Albuquerque, New Mexico, June.

DOE (U.S. Department of Energy), 1991. *Environmental Restoration Program, RCRA Facility Investigation Report, Pinellas Plant* [DRAFT]. U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico, September.

DOE (U.S. Department of Energy), 1994a. *Corrective Measures Study Report, Industrial Drain Leaks – Building 100 Area and Old Drum Storage Site*, Draft, Revision 0, Pinellas Plant, Largo, Florida, Environmental Restoration Program, Albuquerque Field Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1994b. *Statement of Basis for Twelve Solid Waste Management Units Recommended for No Further Action*, U.S. Department of Energy, Pinellas Plant, Largo, Florida, January.

DOE (U.S. Department of Energy), 1995. *Environmental Assessment of Corrective Action at the Northeast Site* [DRAFT], U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico, February.

DOE (U.S. Department of Energy), 1996a. *Building 100 Area Corrective Measures Implementation Plan*, Draft, Pinellas Plant, Largo, Florida, Environmental Restoration Program, January.

DOE (U.S. Department of Energy), 1996b. *Northeast Site Interim Measures Quarterly Progress Report*, U.S. Department of Energy, January.

DOE (U.S. Department of Energy), 1997. *Pinellas Plant Environmental Baseline Report*, prepared by Lockheed Martin Specialty Components, Inc. for U.S. Department of Energy, Pinellas Area Office, June.

DOE (U.S. Department of Energy), 1998. *Building 100 Area Corrective Measures Implementation Plan Addendum*, Pinellas STAR Center, Largo, Florida, February.

DOE (U.S. Department of Energy), 2000a. *Statement of Basis Wastewater Neutralization Area/Building 200 Area*, MAC−PIN 12.3.1, prepared by MACTEC−ERS, Grand Junction, Colorado, for U.S. Department of Energy, September.

DOE (U.S. Department of Energy), 2000b. *Wastewater Neutralization Area/Building 200 Area Corrective Measures Implementation Plan Addendum*, prepared by MACTEC−ERS, Grand Junction, Colorado for U.S. Department of Energy, January.

DOE (U.S. Department of Energy), 2001. *Building 100 Area Remediation Technology Screening Report*, GJO−2001−248−TAR, U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, August.

DOE (U.S. Department of Energy), 2003a. *Historical Review and Evaluation of Contaminants of Potential Concern*, GJO-2002-359-TAC, February.

DOE (U.S. Department of Energy), 2003b. *Northeast Site Area A NAPL Remediation Final Report*, GJO−2003−482−TAC, prepared by U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, September.

DOE (U.S. Department of Energy), 2006. *Pinellas Environmental Restoration Project Sampling Procedures for the Young - Rainey STAR Center and 4.5 Acre Site,* DOE-LM/GJ1159-2006, prepared by U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado, April.

DOE (U.S. Department of Energy), 2007a. *Final Report Northeast Site Area B NAPL Remediation Project at the Young - Rainey STAR Center Largo, Pinellas County, Florida*, DOE-LM/1457-2007, April.

DOE (U.S. Department of Energy) 2007b. *Young - Rainey STAR Center and 4.5 Acre Site Annual Monitoring Plan for Fiscal Year 2008*, DOE−LM/1527-2007, September.

EMC, 1989. *Conceptual Design Report to Upgrade the Existing Drain System, U.S. Department of Energy, Pinellas Plant*, prepared by EMC Engineers, Inc., for General Electric Company, Neutron Devices Department, Pinellas Plant, Pinellas County, Largo, Florida, June.

EPA (U.S. Environmental Protection Agency), 1988. *RCRA Facility Assessment Department of Energy - Fl6 890 090 008*, June.

EPA (U.S. Environmental Protection Agency), 1992. Letter to DOE, Gerald W. Johnson, Approval of Pinellas Site Remedial Facility Investigation Report. April.

Glass, R.E., 1995. Letter from R.E. Glass, U.S. Department of Energy, Pinellas Area Office, Largo, Florida, to B. Twining, U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico, May 19, 1995.

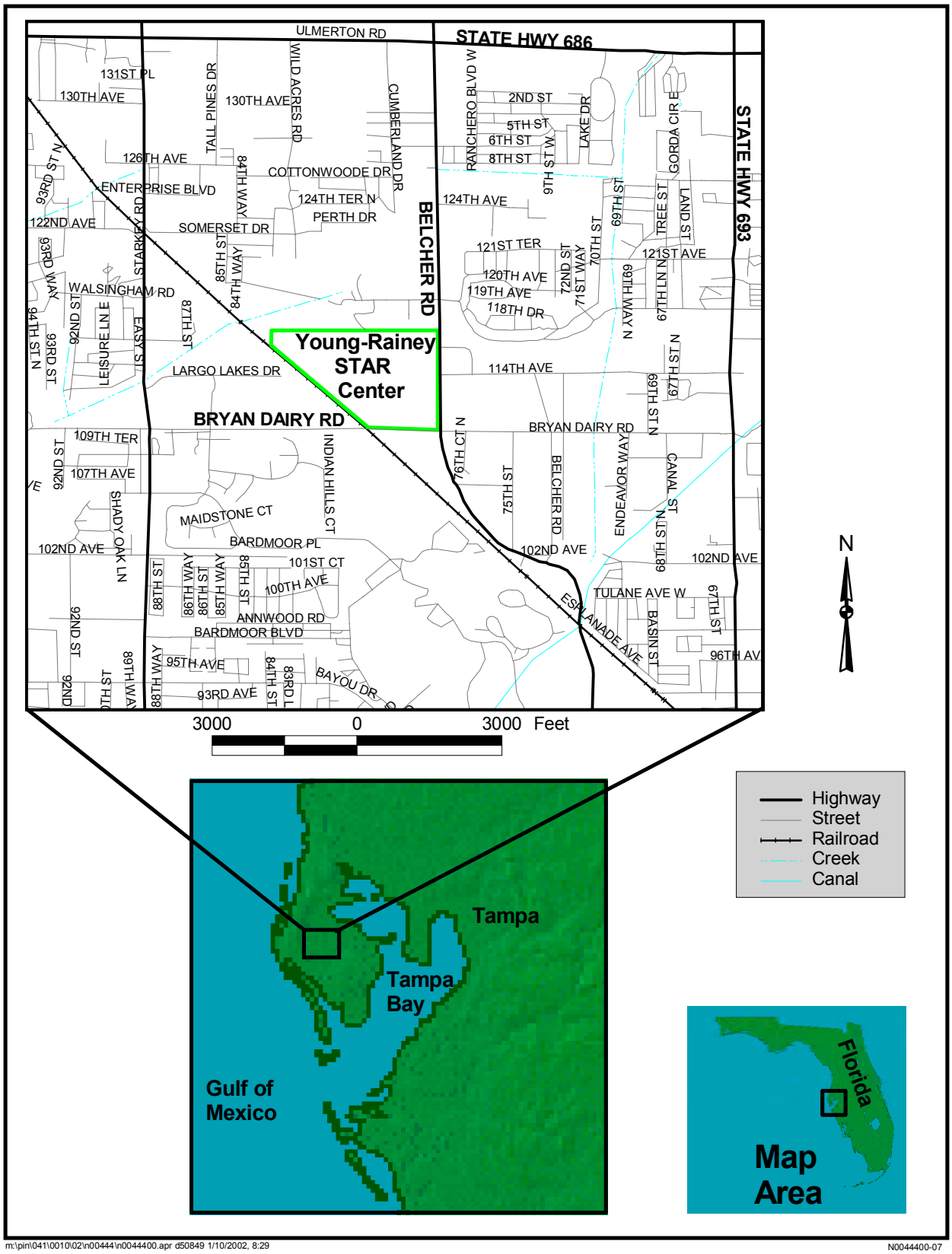


Figure 1. Young - Rainey STAR Center Location

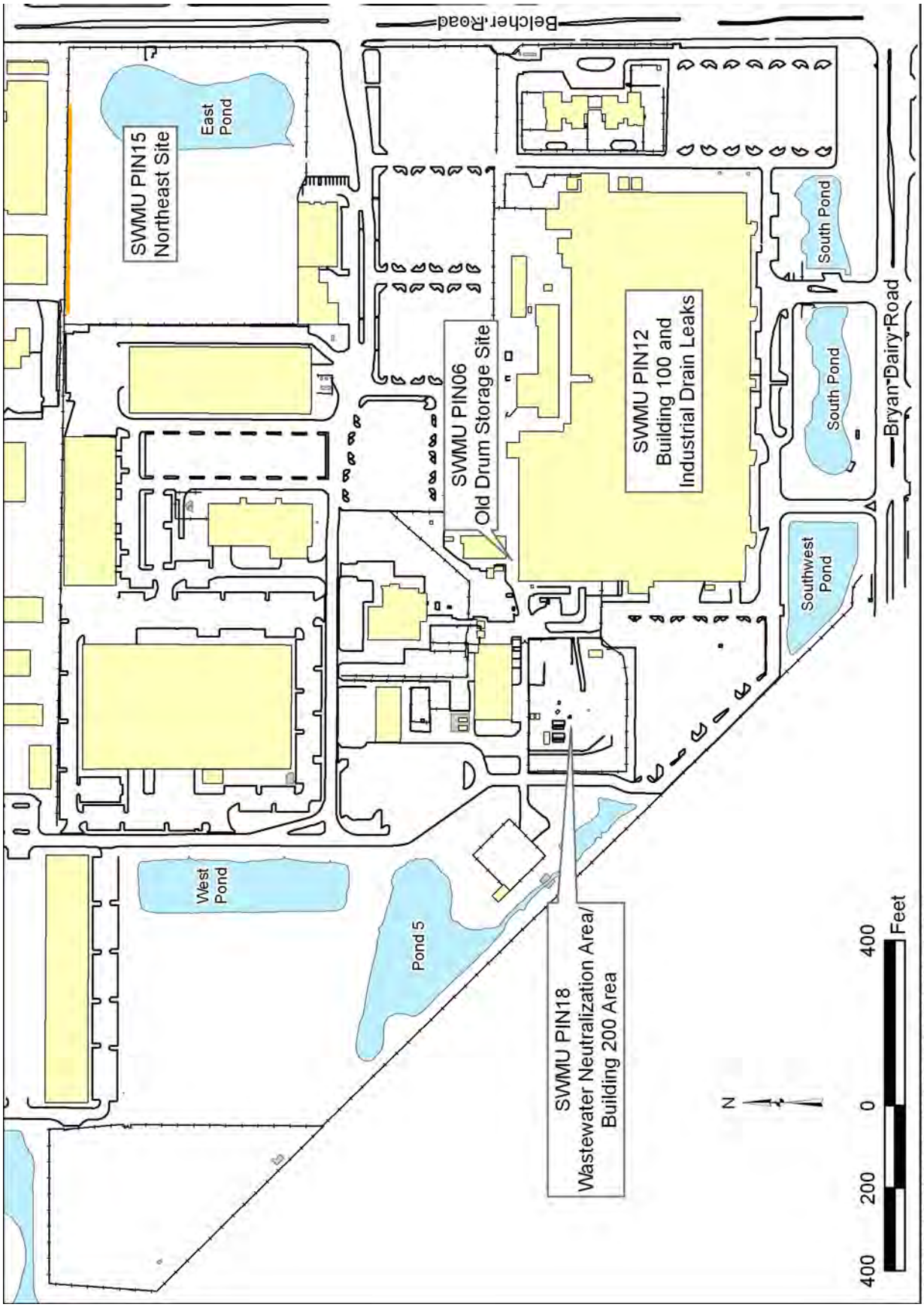


Figure 2. Location of STAR Center Solid Waste Management Units (SWMUs)

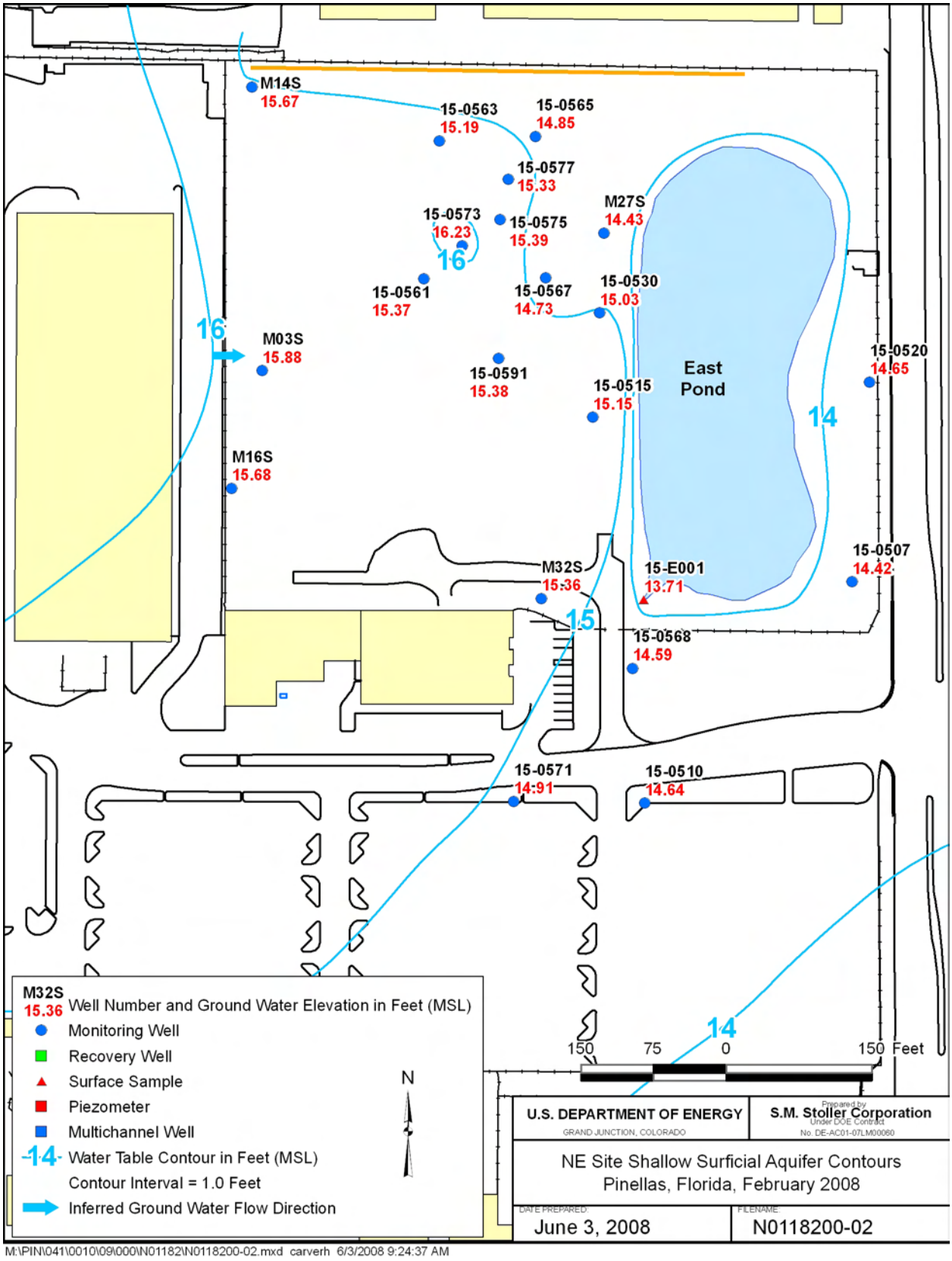


Figure 3. Groundwater Elevations and Shallow Surficial Aquifer Flow, Northeast Site, February 2008

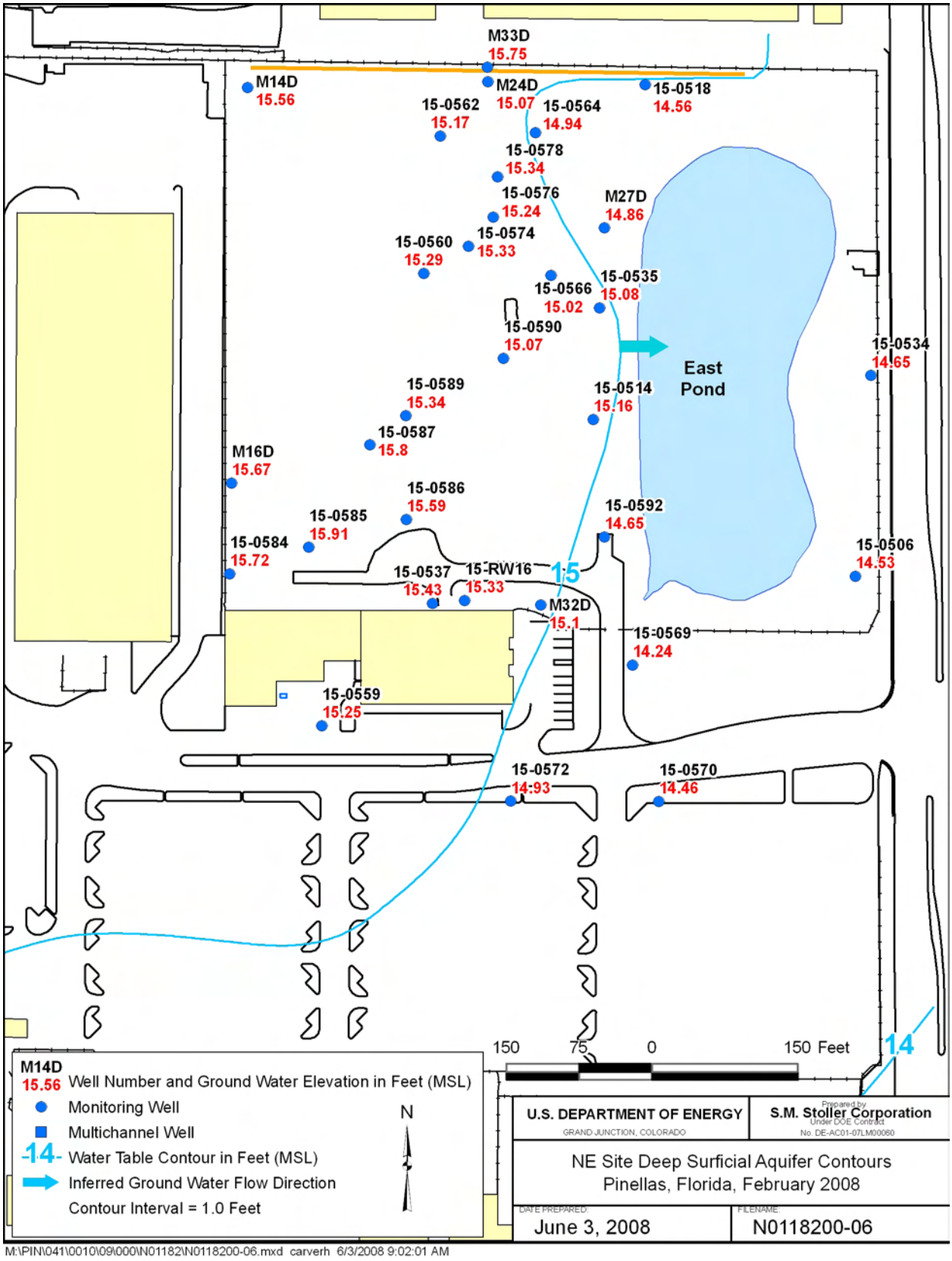


Figure 4. Groundwater Elevations and Deep Surficial Aquifer Flow, Northeast Site, February 2008

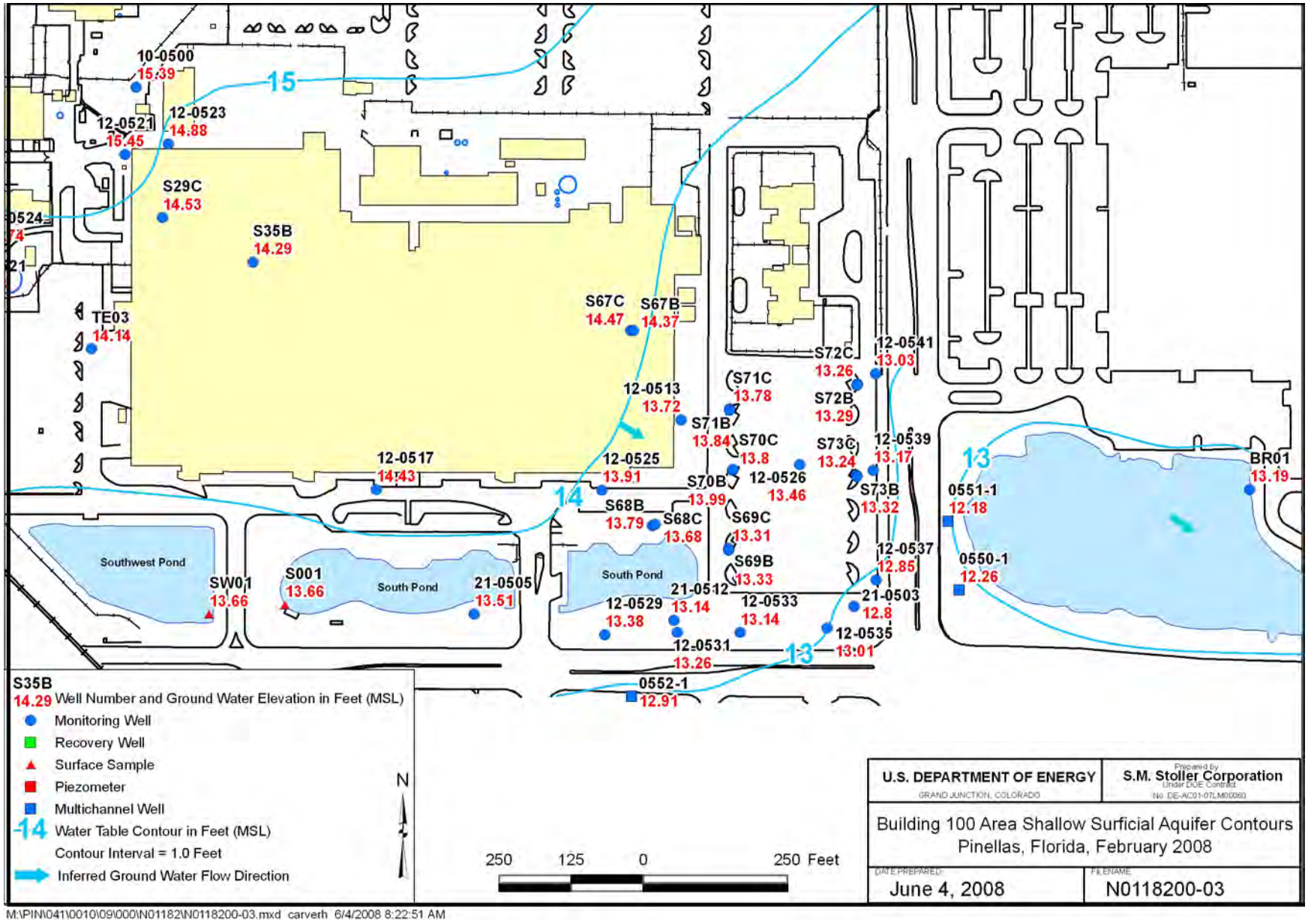


Figure 5. Groundwater Elevations and Shallow Surficial Aquifer Flow, Building 100 Area, February 2008

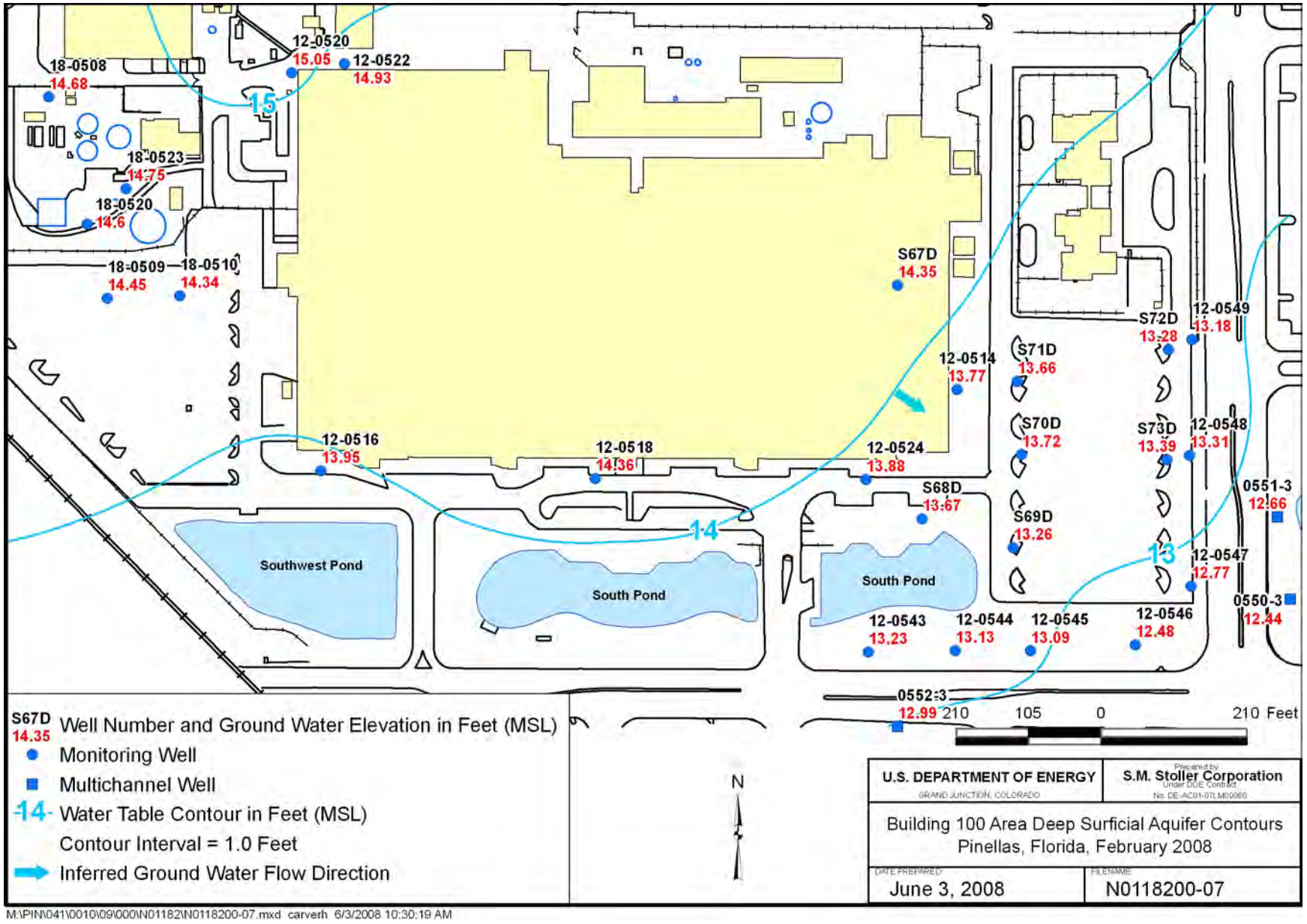


Figure 6. Groundwater Elevations and Deep Surficial Aquifer Flow, Building 100 Area, February 2008

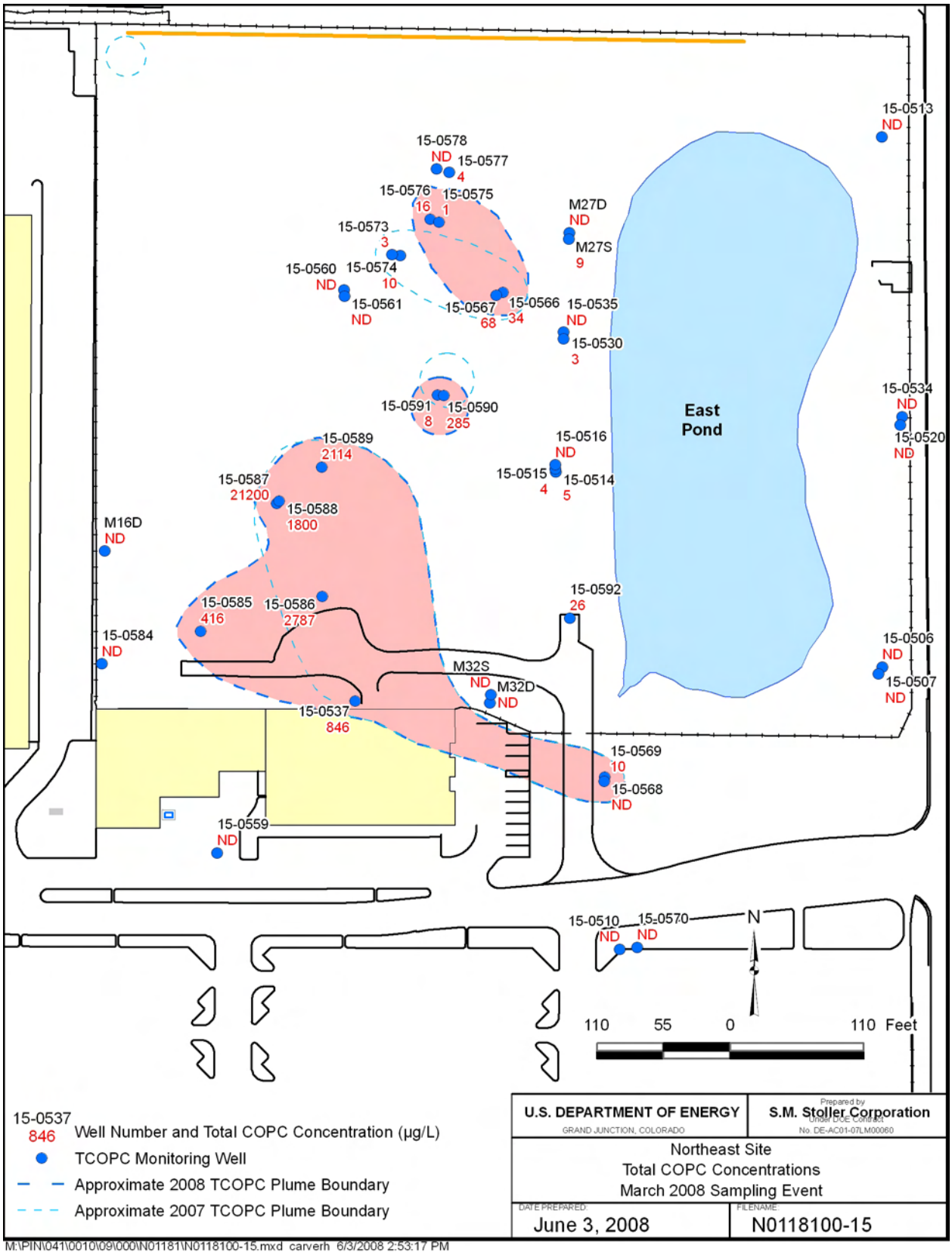


Figure 7. Northeast Site Total COPC Concentrations March 2008 Sampling Event

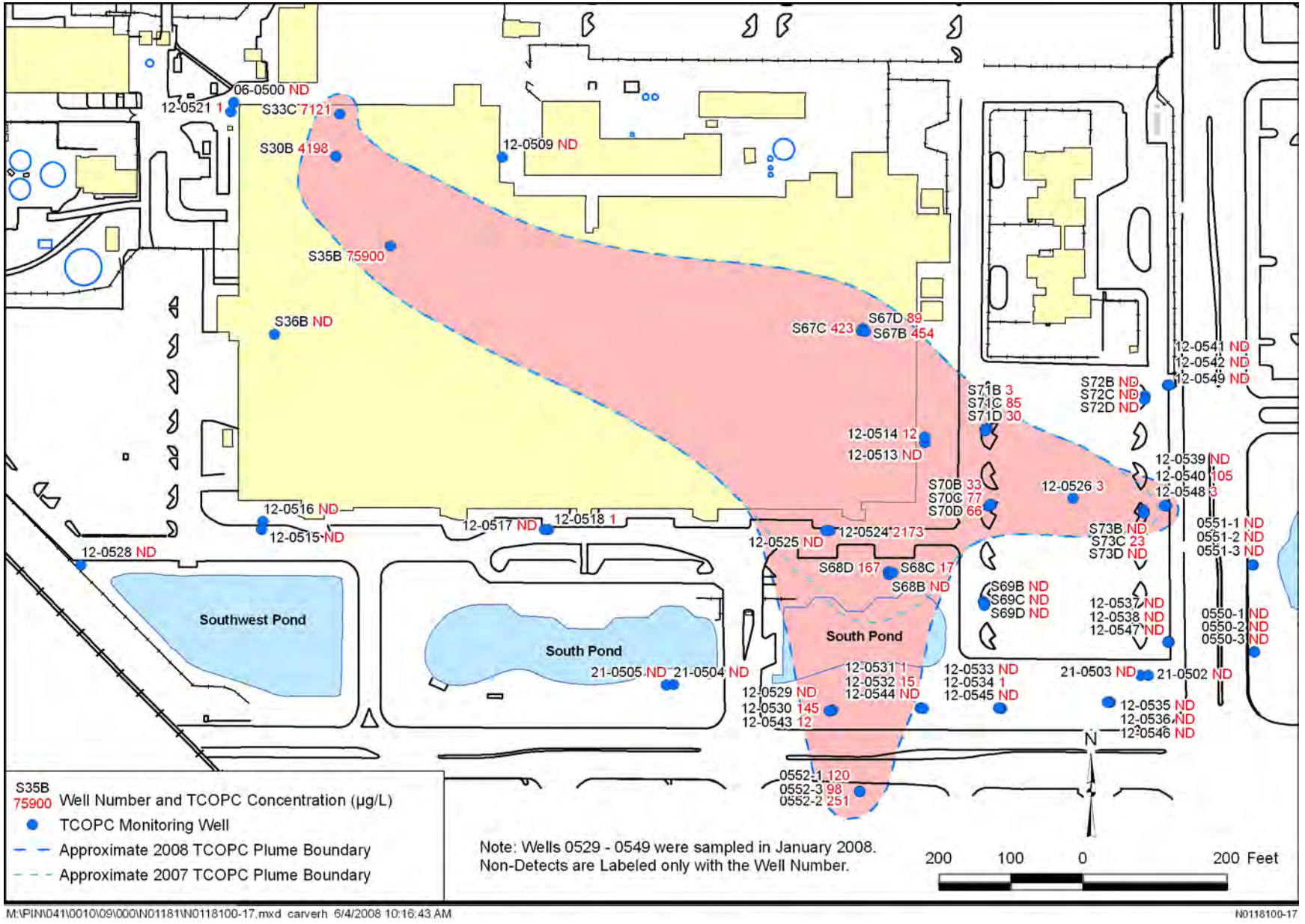


Figure 8. Building 100 Area Total COPC Concentrations March 2008 Sampling Event

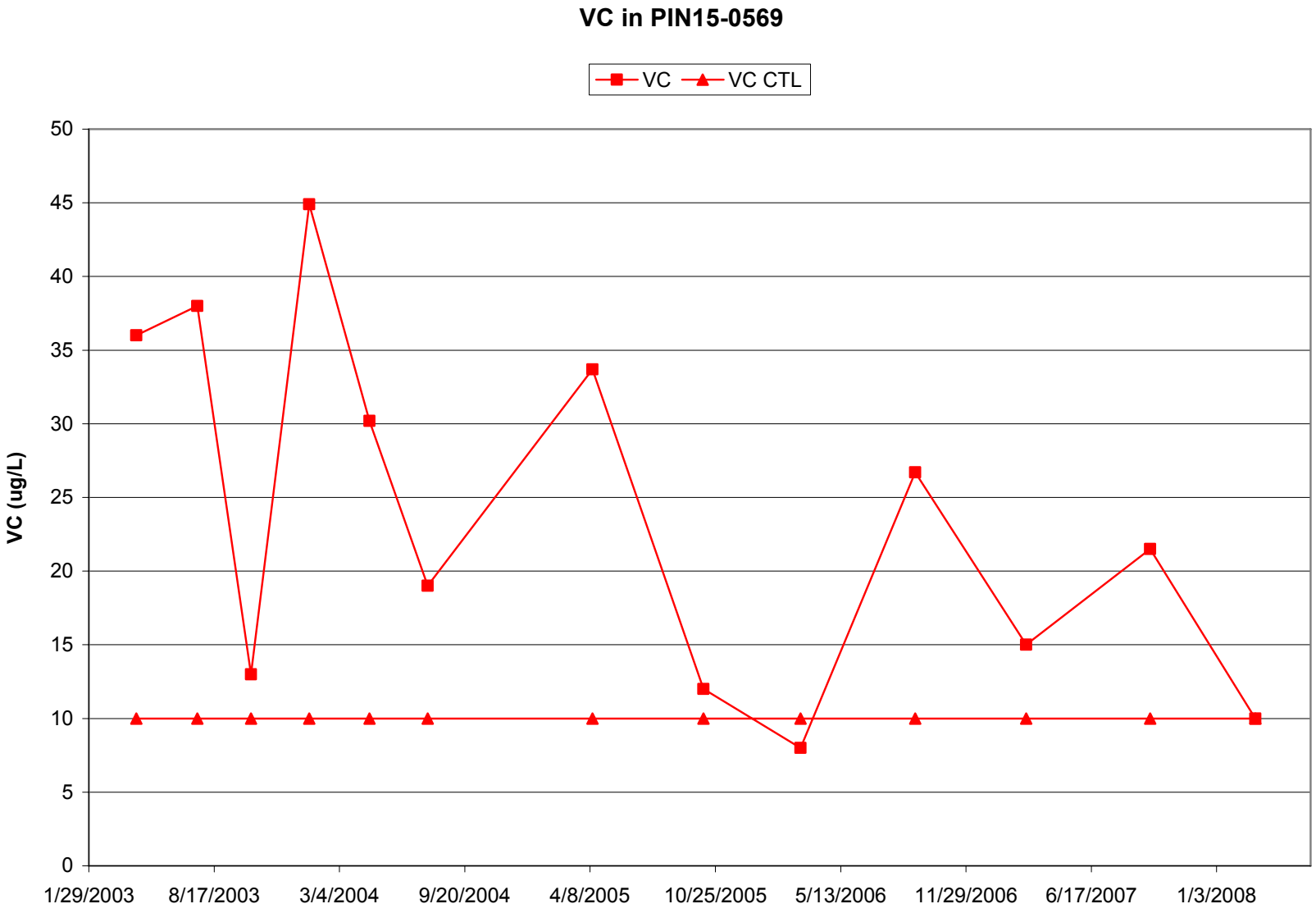


Figure 9. VC in PIN15−0569, Northeast Site

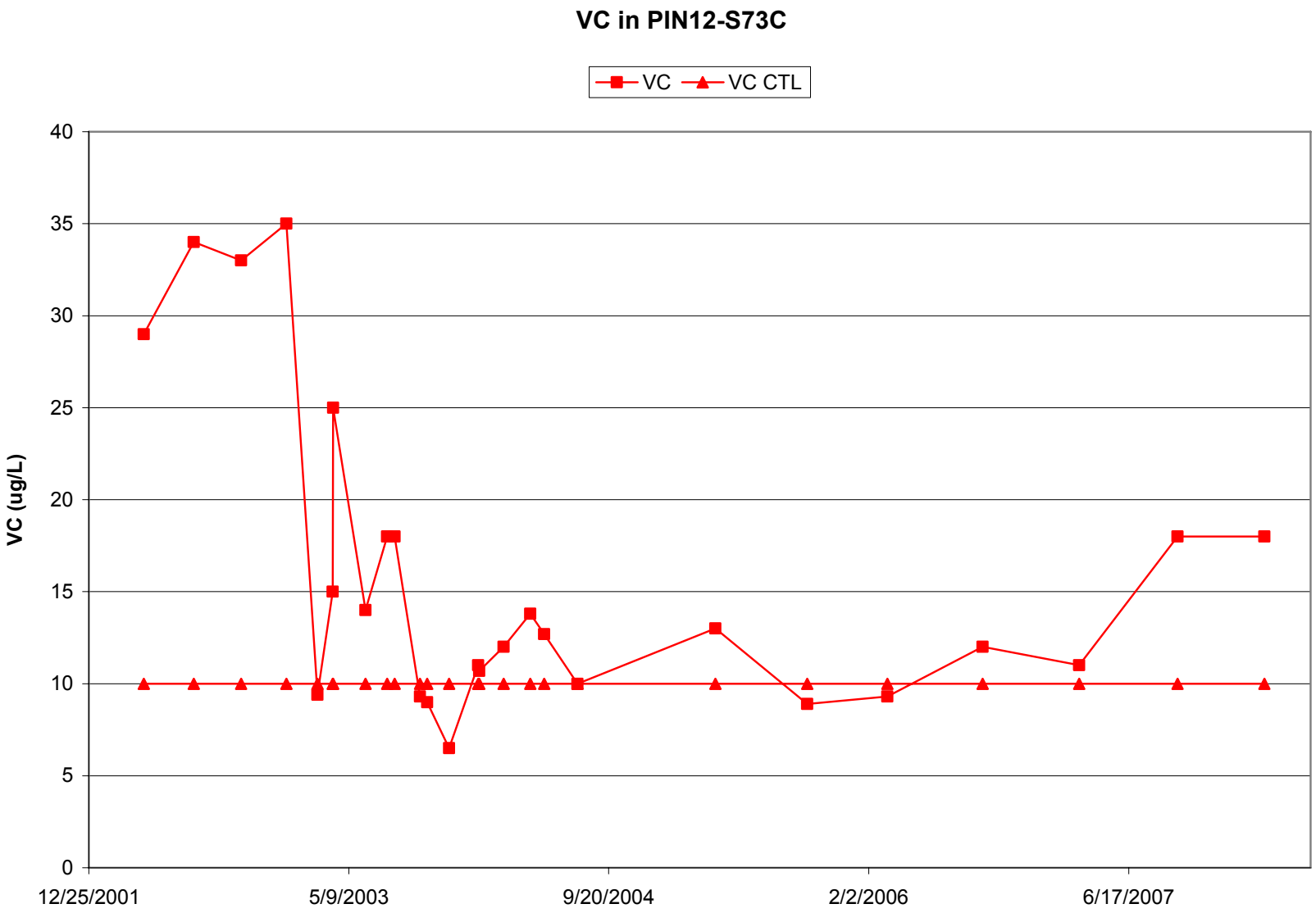


Figure 10. VC in PIN12−S73C, Building 100 Area

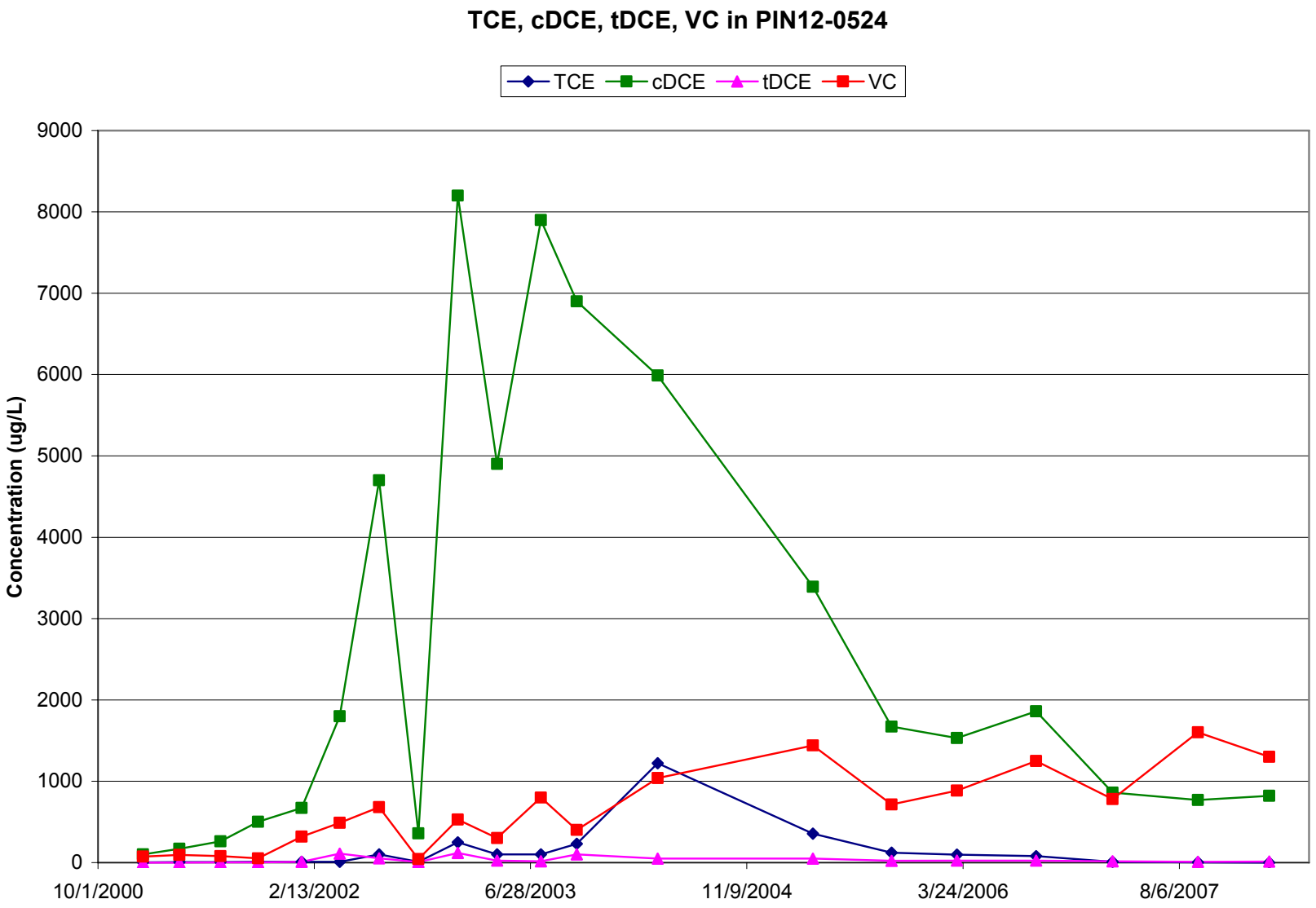


Figure 11. TCE, cDCE, tDCE, VC in PIN12−0524, Building 100 Area

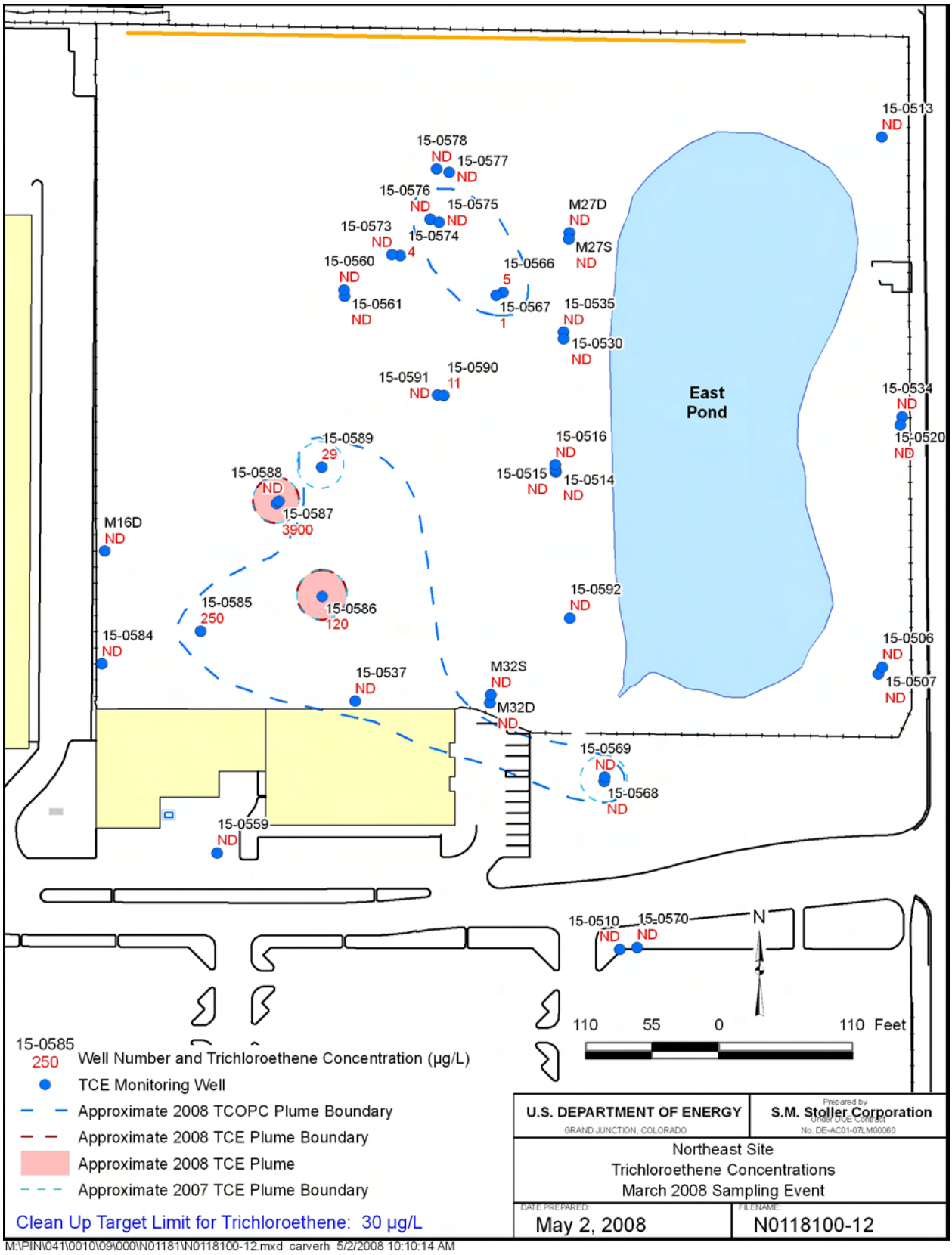


Figure 12. Northeast Site Trichloroethene Concentrations March 2008 Sampling Event

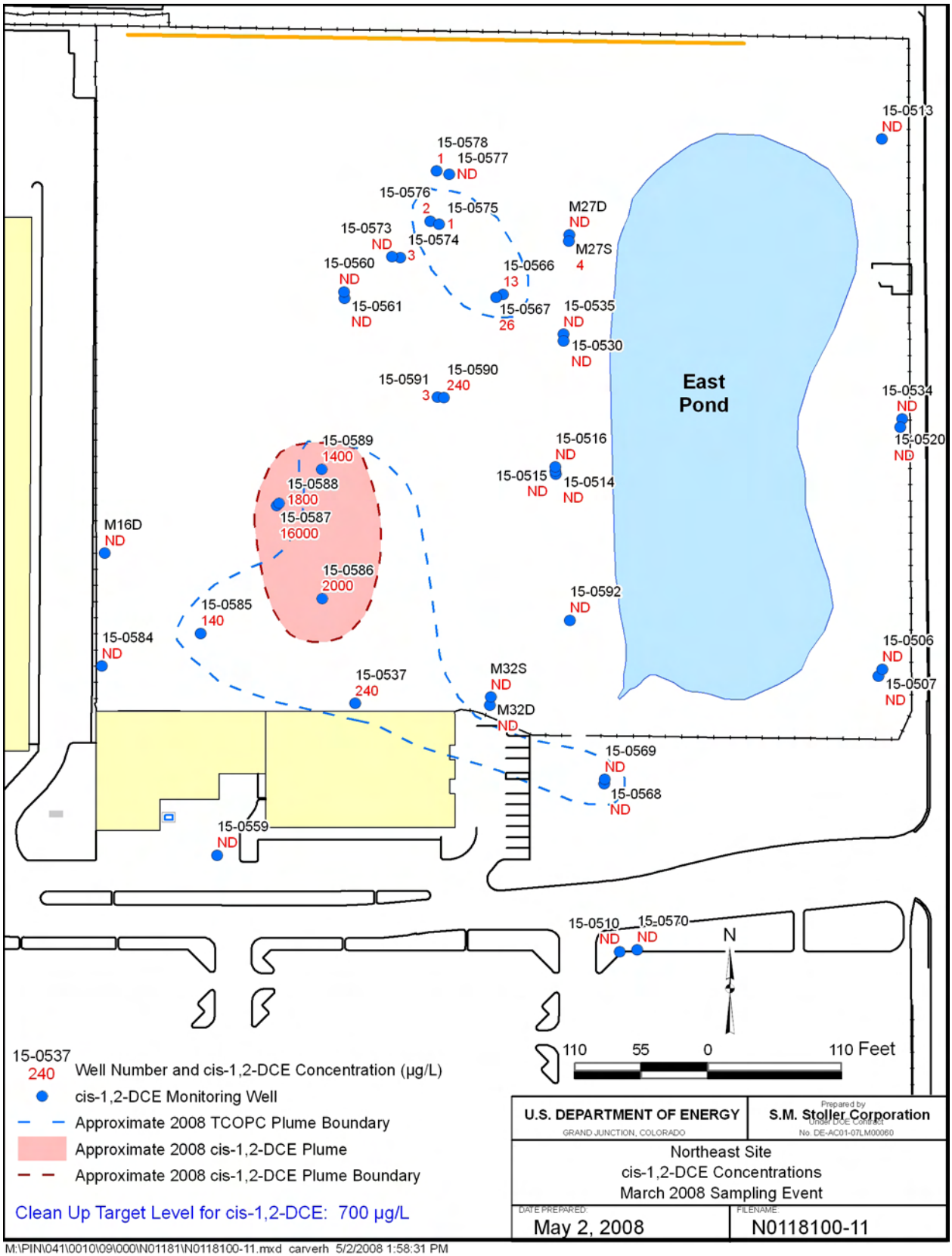


Figure 13. Northeast Site cDCE Concentrations March 2008 Sampling Event

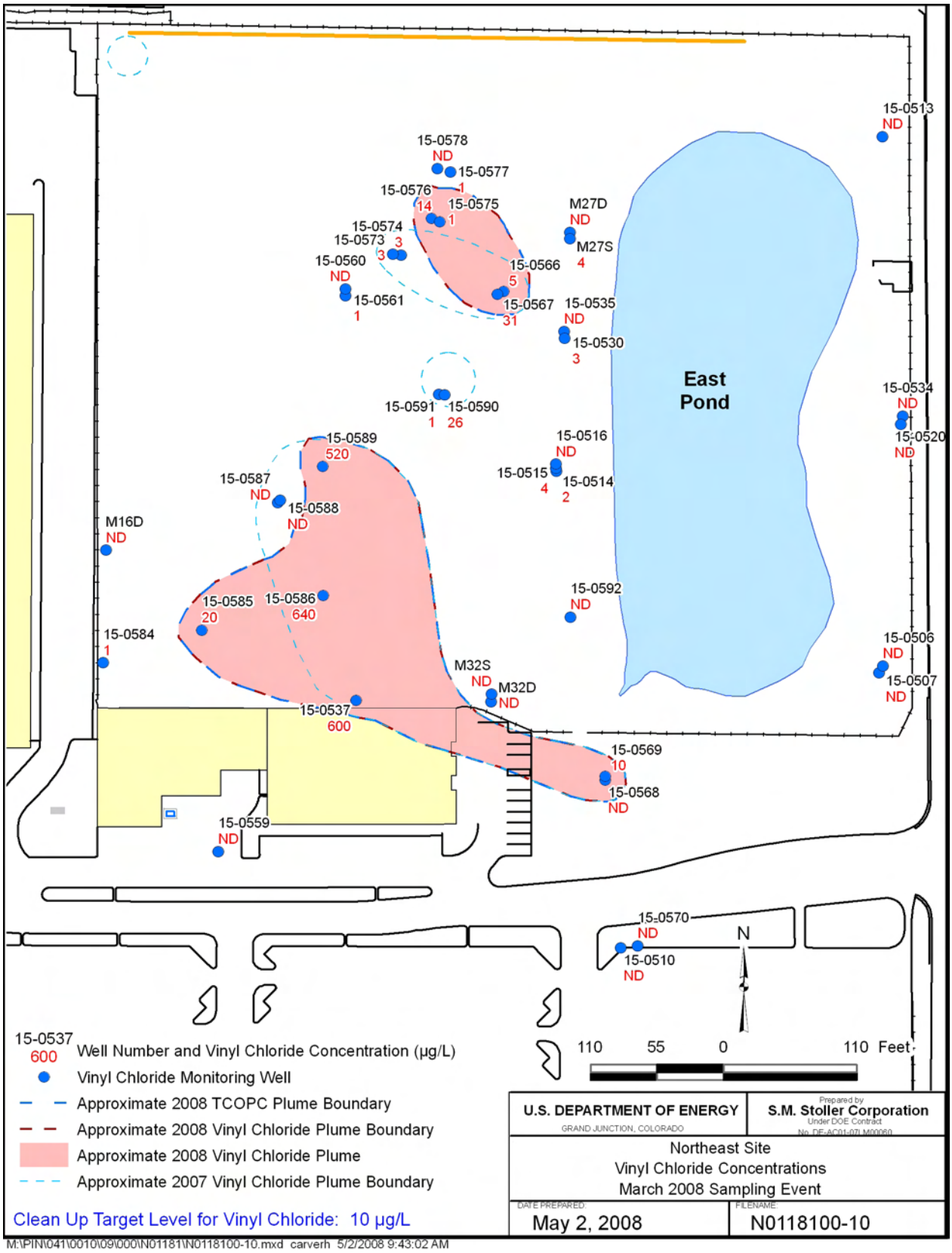


Figure 14. Northeast Site Vinyl Chloride Concentrations March 2008 Sampling Event

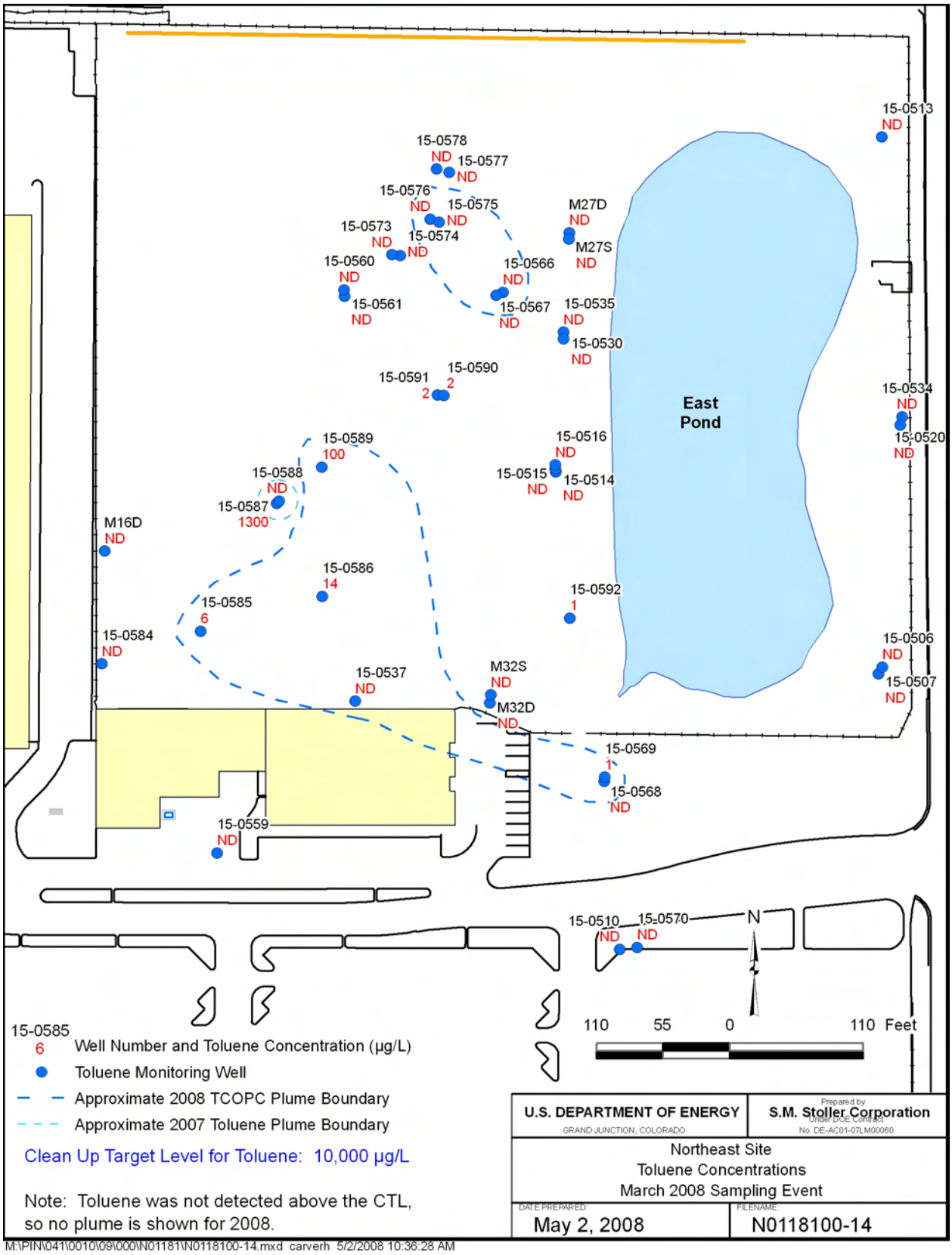


Figure 15. Northeast Site Toluene Concentrations March 2008 Sampling Event

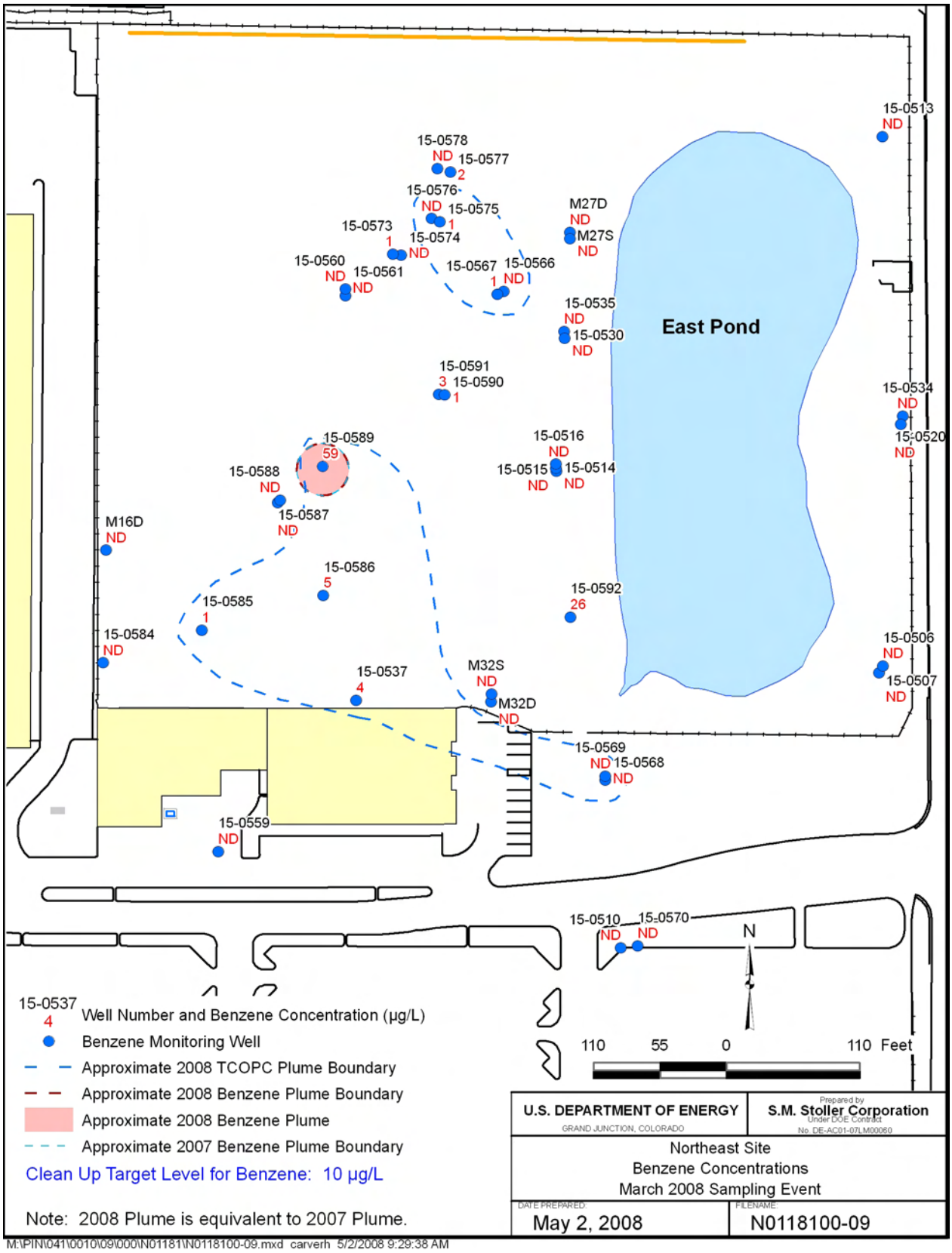


Figure 16. Northeast Site Benzene Concentrations March 2008 Sampling Event

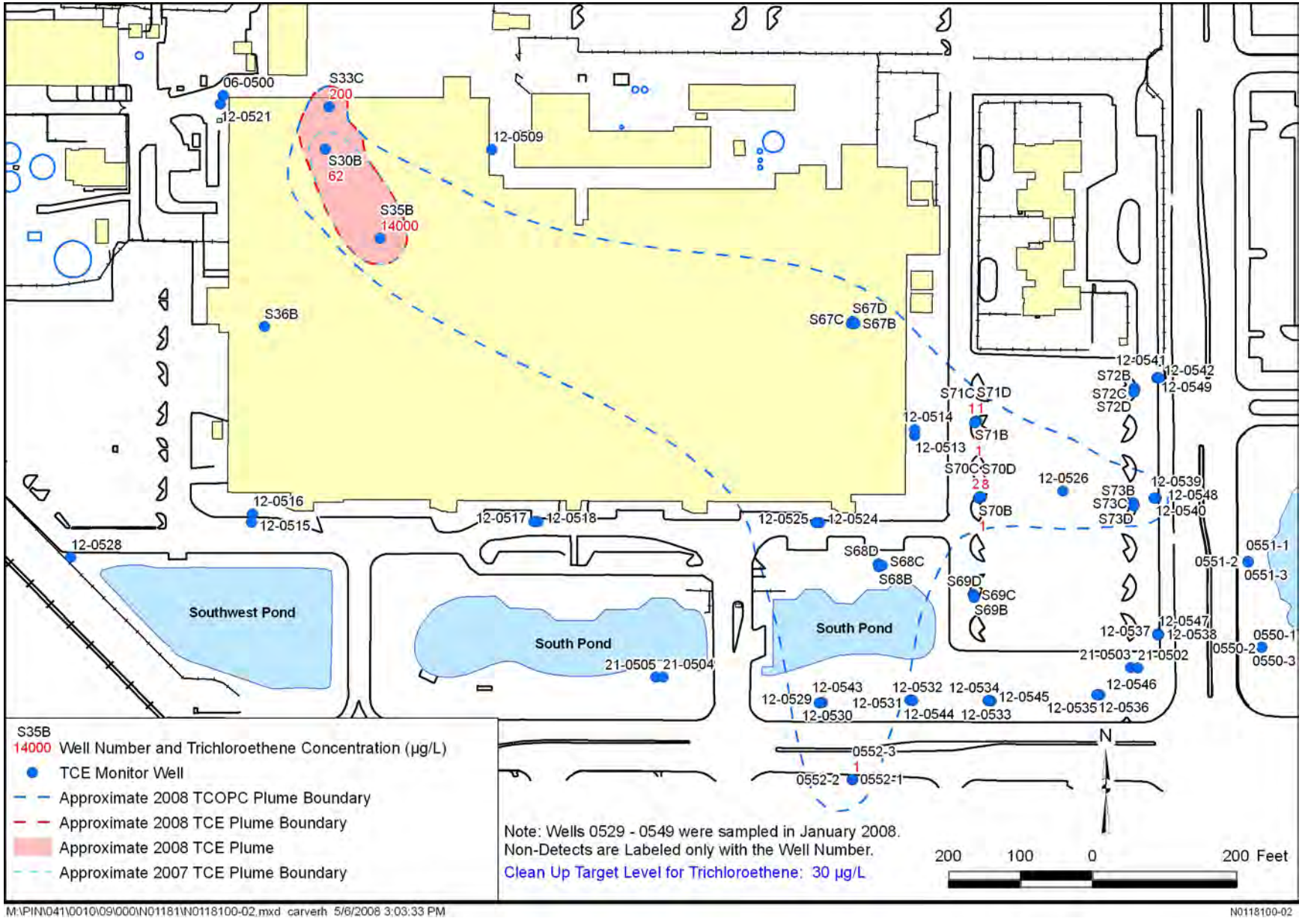


Figure 17. Trichloroethene Plume, Building 100 Area

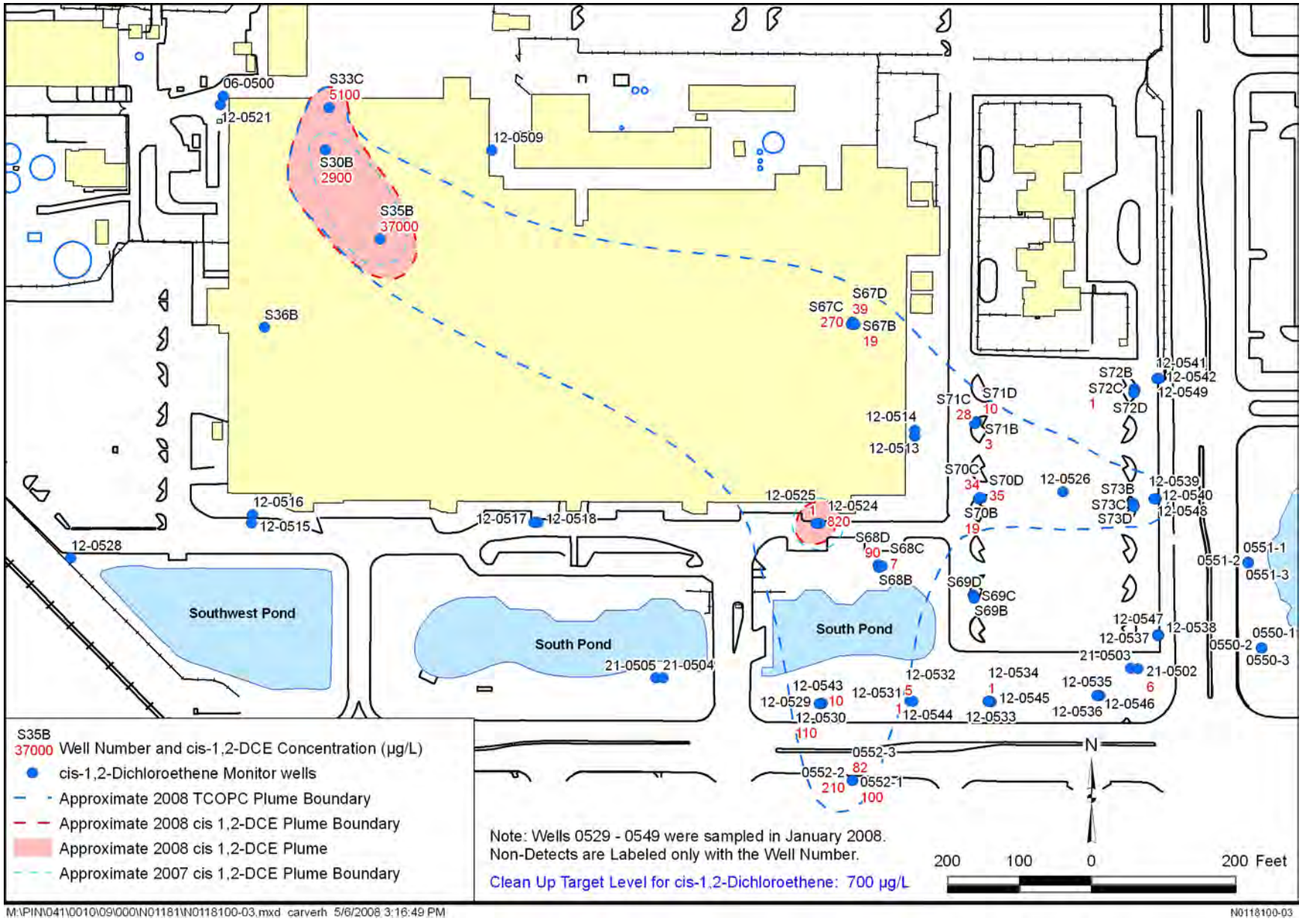


Figure 18. cDCE Plume, Building 100 Area

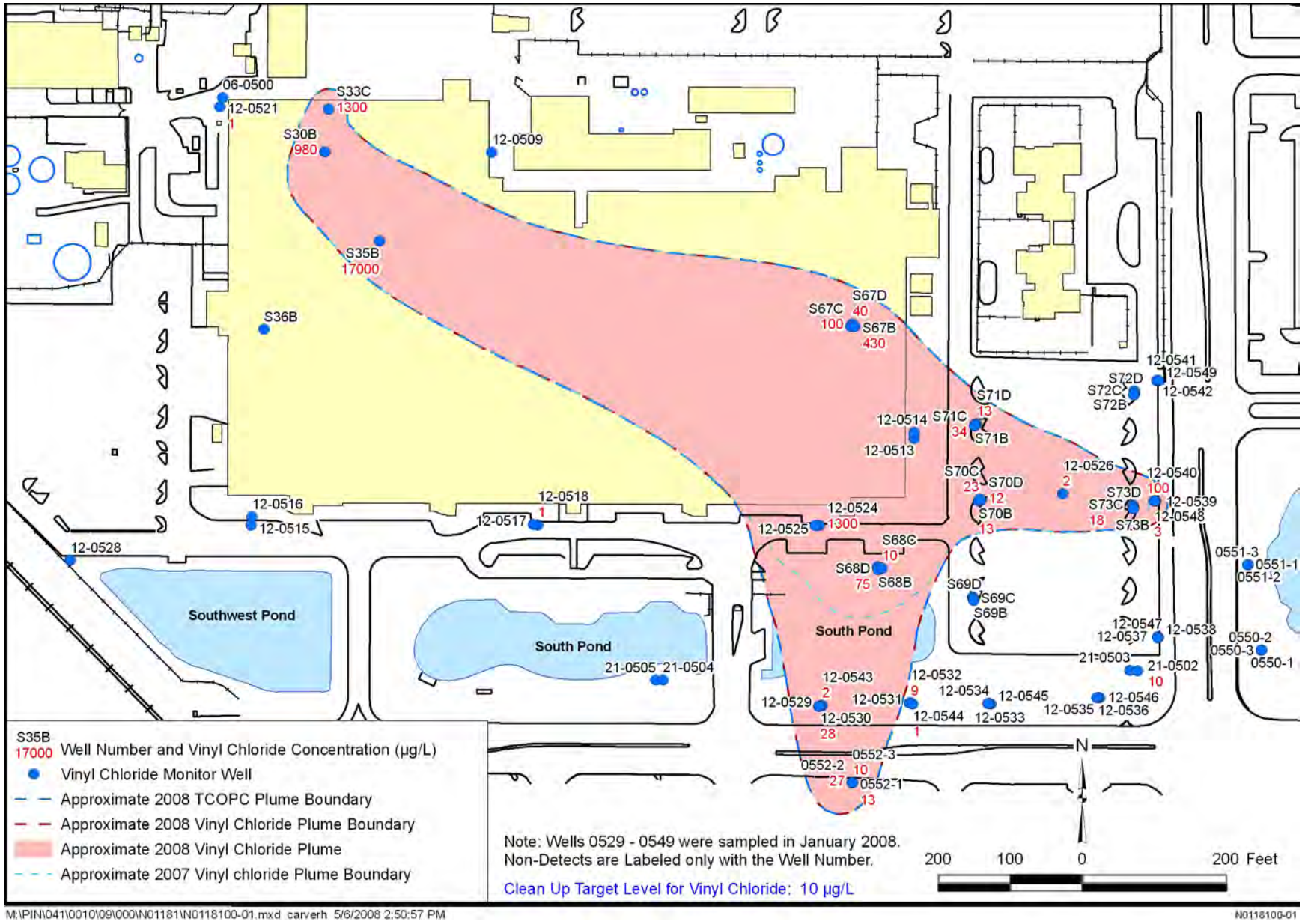


Figure 19. VC Plume, Building 100 Area

Table 1. Water-Level Data at the STAR Center

Water Levels at the STAR Center				
Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN02	**Site Wide Piezometers**			
PZ03	2/26/08	10:19	3.98	15.72
PZ04	2/26/08	10:26	2.40	15.80
PZ05	2/26/08	10:30	2.10	16.00
PZ08	2/26/08	10:43	3.78	14.62
PZ09	2/26/08	11:21	3.46	14.54
PIN06				
0500	2/26/08	14:14	3.05	14.95
0501	2/26/08	14:15	3.36	14.94
PIN09				
0500	2/26/08	14:26	3.15	14.82
PIN10				
0500	2/26/08	14:07	2.51	15.39
PIN12				
0509	2/26/08	14:22	3.55	14.49
0510	2/26/08	14:19	3.32	14.74
0513	2/28/08	13:17	4.64	13.86
0514	2/28/08	13:18	4.64	13.86
0515	2/26/08	13:24	3.91	13.99
0516	2/26/08	13:25	4.10	13.90
0517	2/26/08	13:30	3.52	14.38
0518	2/26/08	13:32	3.50	14.44
0520	2/26/08	14:11	2.96	15.05
0521	2/26/08	14:10	3.15	14.90
0522	2/26/08	14:16	3.27	14.93
0523	2/26/08	14:17	3.28	14.88
0524	2/26/08	13:42	3.57	13.84
0525	2/26/08	13:44	4.26	13.16
0526	2/28/08	13:31	2.61	14.21
0527	2/26/08	10:48	11.61	6.46
0528	2/26/08	13:22	11.32	6.28
0529	2/26/08	15:25	3.42	13.38
0530	2/26/08	15:27	3.58	13.22
0531	2/26/08	14:10	2.74	13.26
0532	2/26/08	14:12	2.83	13.17
0533	2/26/08	14:17	2.36	13.14
0534	2/26/08	14:18	0.41	15.09
0535	2/26/08	14:23	2.29	13.01
0536	2/26/08	14:24	2.36	12.94
0537	2/26/08	14:17	2.71	12.85
0538	2/26/08	14:18	2.71	12.85
0539	2/26/08	13:50	3.26	13.17
0540	2/26/08	13:47	3.29	13.14
0541	2/26/08	11:08	4.63	13.03
0542	2/26/08	11:09	4.51	13.15
0543	2/26/08	15:29	3.70	13.23
0544	2/26/08	14:15	2.83	13.13
0545	2/26/08	14:21	2.41	13.09
0546	2/26/08	14:26	2.81	12.48
0547	2/26/08	14:16	2.87	12.77

Table 1 (continued). Water-Level Data at the STAR Center

Water Levels at the STAR Center				
Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
0548	2/26/08	13:46	3.13	13.31
0549	2/26/08	11:10	4.48	13.18
0550-1	2/26/08	13:36	2.44	12.26
0550-2	2/26/08	13:36	2.31	12.39
0550-3	2/26/08	13:36	2.26	12.44
0551-1	2/26/08	13:40	3.22	12.18
0551-2	2/26/08	13:41	2.78	12.62
0551-3	2/26/08	13:41	2.74	12.66
0552-1	2/26/08	13:26	3.79	12.91
0552-2	2/26/08	13:26	3.70	13.00
0552-3	2/26/08	13:27	3.71	12.99
S29C	2/26/08	09:15	3.98	14.53
S30B	2/26/08	09:21	3.93	14.58
S31B	2/26/08	09:26	3.84	14.67
S32B	2/26/08	09:31	3.81	14.70
S33C	2/26/08	09:41	3.71	14.80
S35B	2/26/08	09:55	4.29	14.22
S36B	2/26/08	09:09	4.36	14.15
S37B	2/26/08	09:37	3.77	14.74
S67B	2/26/08	13:14	4.27	14.20
S67C	2/26/08	13:17	4.16	14.31
S67D	2/26/08	13:16	4.29	14.19
S68B	2/26/08	13:50	4.29	13.61
S68C	2/26/08	13:52	4.09	13.81
S68D	2/26/08	13:49	4.14	13.76
S69B	2/26/08	14:00	2.60	13.40
S69C	2/26/08	14:02	2.54	13.46
S69D	2/26/08	14:03	2.79	13.21
S70B	2/28/08	13:27	3.00	13.70
S70C	2/28/08	13:28	2.97	13.73
S70D	2/28/08	13:29	3.06	13.64
S71B	2/28/08	13:23	4.56	13.84
S71C	2/28/08	13:24	4.56	13.84
S71D	2/28/08	13:25	4.69	13.71
S72B	2/26/08	11:04	4.85	13.35
S72C	2/28/08	11:05	4.88	13.32
S72D	2/28/08	11:06	4.89	13.31
S73B	2/28/08	13:35	3.74	13.26
S73C	2/28/08	13:36	3.73	13.27
S73D	2/28/08		3.80	13.20
TE03	2/26/08	11:10	2.86	14.14
PIN15	**Northeast Site**			
0506	2/26/08	08:35	2.92	14.08
0507	2/26/08	08:36	2.92	14.08
0510	2/26/08	10:30	2.81	14.71
0513	2/26/08	08:29	11.26	6.34
0514	2/26/08	08:53	2.83	14.67
0515	2/26/08	08:52	2.86	14.64
0516	2/26/08	08:51	2.94	14.46
0518	2/26/08	08:26	3.24	14.56
0520	2/26/08	08:34	2.96	14.24
0530	2/26/08	08:36	2.82	14.58
0534	2/26/08	08:33	2.97	14.33

Table 1 (continued). Water-Level Data at the STAR Center

Water Levels at the STAR Center				
Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
0535	2/26/08	08:37	2.93	14.67
0537	2/26/08	09:04	3.14	15.46
0559	2/26/08	10:19	3.50	15.29
0560	2/26/08	09:59	2.81	15.19
0561	2/26/08	09:58	2.87	15.13
0562	2/26/08	08:21	2.63	15.17
0563	2/26/08	08:22	2.61	15.19
0564	2/26/08	08:23	2.26	14.94
0565	2/26/08	08:24	2.35	14.85
0566	2/26/08	08:44	2.73	14.77
0567	2/26/08	08:45	2.82	14.68
0568	2/26/08	10:27	3.84	14.66
0569	2/26/08	10:28	3.90	14.48
0570	2/26/08	10:32	3.48	14.50
0571	2/26/08	10:35	2.56	14.91
0572	2/26/08	10:36	2.58	14.93
0573	2/26/08	10:01	3.45	14.93
0574	2/26/08	10:02	3.31	15.11
0575	2/26/08	10:06	2.86	14.98
0576	2/26/08	10:05	2.55	14.93
0577	2/26/08	10:09	2.88	14.76
0578	2/26/08	10:10	2.52	15.00
0584	2/26/08	09:12	2.87	15.83
0585	2/26/08	09:08	2.29	16.01
0586	2/26/08	09:06	2.83	15.37
0587	2/26/08	09:38	3.03	15.67
0588	2/26/08	09:40	3.02	15.68
0589	2/26/08	09:43	3.25	15.25
0590	2/26/08	09:50	3.03	14.67
0591	2/26/08	09:51	2.73	15.17
0592	2/26/08	08:59	3.04	14.66
M03D	2/26/08	09:25	2.51	15.59
M03S	2/26/08	09:24	2.22	15.88
M14D	2/26/08	08:14	2.44	15.56
M14S	2/26/08	08:15	2.33	15.67
M16D	2/26/08	09:18	2.53	15.67
M16S	2/26/08	09:16	2.52	15.68
M24D	2/26/08	08:20	2.73	15.07
M27D	2/26/08	08:41	2.95	14.65
M27S	2/26/08	08:42	3.33	14.27
M32D	2/26/08	09:01	2.50	15.30
M32S	2/26/08	09:00	2.04	15.76
M33D	2/26/08	08:21	1.85	15.75
RW16	2/26/08	09:02	2.67	15.33
PIN18	**Wastewater Neutralization Area**			
0500	2/26/08	13:52	5.13	14.97
0502	2/26/08	13:49	5.10	14.90
0503	2/26/08	10:59	3.15	14.53
0504	2/26/08	10:58	4.59	15.01
0508	2/26/08	10:56	4.82	14.68
0509	2/26/08	11:04	3.38	14.45
0510	2/26/08	11:06	3.42	14.34
0519	2/26/08	11:16	4.04	14.24

Table 1 (continued). Water-Level Data at the STAR Center

Water Levels at the STAR Center				
Location	**Measurement**		**Water Depth From Land Surface (ft)**	**Ground Water Elevation (ft NGVD)**
	Date	**Time**		
0520	2/26/08	13:54	3.40	14.60
0521	2/26/08	13:55	3.37	14.73
0522	2/26/08	13:53	3.37	14.73
0523	2/26/08	13:58	4.65	14.75
0524	2/26/08	13:57	4.26	14.74
0525	2/26/08	13:56	4.37	14.53
0526	2/26/08	10:51	4.16	14.44
RW02	2/26/08	13:52	5.20	14.90
RW03	2/26/08	14:02	3.53	14.77
RW0501	2/26/08	13:51	5.11	14.89
PIN21	**Perimeter Monitoring Wells**			
0502	2/28/08	14:25	2.20	13.00
0503	2/28/08	14:26	2.28	12.92
0504	2/26/08	13:40	4.09	13.51
0505	2/26/08	13:36	3.87	13.53
0512	2/26/08	13:54	4.16	13.14

Table 2. Floridan Aquifer Monitoring Well Water Elevations

Well Identification	September 2007 Water Level Elevation (ft, MSL)	February 2008 Water Level Elevation (ft, MSL)
PIN12−0527	6.35	6.46
PIN12−0528	5.88	6.28
PIN15−0513	6.15	6.34

Table 3. Surface Water Elevations

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN01	**Pond 5**			
P501	2/26/08	10:52		13.66
P502	2/26/08	10:45		13.77
PIN02	**West Pond**			
W005	2/26/08	10:34		13.76
PIN12	**Industrial Drain Leaks Bldg 100**			
BR01	2/26/08	11:06		13.19
PIN15	**Northeast Site**			
E001	2/28/08	10:48	2.31	13.71
PIN20	**4.5 Acre Site**			
BP01	2/26/08	09:52		15.19
PIN23	**Southwest Pond**			
SW01	2/26/08	13:33		13.66
PIN37	**South Pond**			
S001	2/26/08	13:30		13.66

Table 4. Dehalococcoides ethenogenes

Location		Date Sampled	Dehalococcoides ethenogenes copy (numbers/L)
Northeast Site			
PIN15	0537	3/3/2008	3,000,000
	0585	3/4/2008	<20,000
	0587	3/3/2008	<20,000
	0588	3/3/2008	<7,000

"<" values are method detection limits.

Table 5. Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
PIN06	**Industrial Drain Leaks Bldg 100/Old Drum Storage Site**						
0500	3–13	21.69	465	3.9	6.73	33.6	3.7
PIN12							
0509	3–13	22.1	635	2.4	6.93	19.5	2.42
0513	15–25	22.41	714	4.97	6.8	-91	2.66
0514	30–40	22.7	1,299	281	6.53	-222.3	8.23
0515	15–25	25.4	566	4.9	7.01	-225.4	0.38
0516	30–40	25.53	1,514	9	6.8	-272.5	0.34
0517	15–25	26.93	529	115	7.1	-189.3	0.29
0518	30–40	26.83	671	15	6.82	-156.4	0.28
0521	19.5–29.5	23.98	636	24.9	6.85	-55	5.46
0524	27–37	25.3	1,533	5.1	6.63	-54.6	2.85
0525	12–22	25.1	797	16.7	6.84	-82	2.76
0526	19.5–29.5	27.9	1,935	2.1	6.46	-117	4.59
0527	118–137.9	27.33	1,588	6.6	7	-137.1	0.49
0528	127–146.9	24.37	1,232	3.2	7.25	-253.8	0.45
S30B	5–15	22.6	1,305	3.8	6.77	-20.2	3.02
S33C	11–21	22.4	1,142	42.5	6.74	-70.4	3.15
S35B	5–15	22.4	1,756	12.8	6.56	-26.9	2.26
S36B	5–15	22.7	790	7.4	6.65	-43.9	2.38
S67B	10–19.83	21.26	1,197	27.9	6.77	-32	5.46
S67C	20–29.83	21.51	869	17.9	6.81	-72	4.9
S67D	30–39.83	21.62	1,038	129	6.8	-70	4.9
S68B	10–20	23.9	789	55	5.91	-21.1	0.23
S68C	18–28	25.24	957	6.9	6.67	-97.8	0.16
S68D	30–40	23.42	1,273	8.2	6.66	-85.5	0.57
S69B	10–20	25.3	599	36	6.97	-68.7	4.21
S69C	20–30	26.4	800	13.4	6.79	-63.7	3.83
S69D	30–40	25.9	1,420	8.7	6.82	-46.4	2.58
S70B	10–20	26.22	1,321	170	6.66	-72.7	0.09
S70C	20–30	27.24	1,496	290	6.52	-69.1	0.11
S70D	30–40	27.33	1,557	25	6.52	-63	0.09
S71B	10–20	25.66	1,438	55	6.59	-90.8	0.23
S71C	20–30	26.26	1,549	180	6.52	-79.1	0.13
S71D	30–40	26.82	1,470	120	6.55	-68.2	0.29
S72B	10–20	27.3	1,726	12.9	6.23	-28.3	3.08
S72C	20–30	28	714	9.7	6.74	-52.6	2.63
S72D	30–40	27.68	1,372	14	6.69	-78.5	0.16
S73B	10–20	26.63	956	40	6.41	-183.7	0.2
S73C	20–30	26.47	1,965	65	6.36	-83.2	0.24
S73D	30–40	25.15	2,401	180	6.5	-125.1	0.26
PIN15	**Northeast Site**						
0506	12–21.5	23.19	1,344	17.3	6.81	-102.1	0.26
0507	5–14.5	21.56	984	24.1	6.86	-2.2	0.43
0510	4–13.5	26.28	404	13	7.05	-101	0.26

Table 5 (continued). Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
0513	135–149.6	22.87	1,376	0.43	6.95	-226.3	0.34
0514	15.5–25.5	23.19	1,632	48.6	6.53	-82	0.18
0515	7.6–17.6	22.08	787	1.05	6.71	-79.2	0.21
0516	0.3–10.3	21.67	1,468	11.5	6.83	-35	1.35
0520	5–14.5	20.52	957	5.33	6.74	30.1	0.45
0530	5–14.5	21.38	869	26.6	6.45	-34.2	0.29
0534	19.5–29	21.71	1,822	30.9	6.64	5.2	0.22
0535	20.5–30	22.83	1,744	128	6.59	-100.2	0.14
0537	17.5–30	22.81	1,076	5.7	6.74	-69.8	0.27
0559	22–31.5	26.03	1,249	54.2	6.61	-150.6	0.14
0560	19–28.5	23.34	955	27.9	6.56	-71	0.19
0561	5–14.5	23.16	1,140	17.1	6.54	-10.5	0.15
0566	19–28.5	24.86	1,420	>999	6.7	-92.5	0.08
0567	5–14.5	24.13	1,276	56.7	6.56	-82.3	0.22
0568	10–20	23.93	961	258	6.73	-71.4	0.11
0569	20–30	24.96	1,443	6.96	6.53	-63.6	0.12
0570	20–30	28.15	1,916	130	6.65	-120.4	0.2
0573	5–15	24.05	2,049	8.33	6.75	-123.3	0.12
0574	18–28	25.05	930	2.02	6.68	-72.2	0.2
0575	5–15	23.65	2,301	4.62	6.95	-132.7	0.12
0576	20–30	25.07	1,310	9.18	6.98	-148.4	0.07
0577	5–15	22.51	1,558	13.3	6.76	-114.7	0.26
0578	20–30	23.45	1,034	10.7	6.91	-254.1	0.38
0584	20–30	27.13	927	281	6.65	-107	0.29
0585	20–30	34.91	1,288	180	7.08	-360.6	0.29
0586	20–30	34.75	1,664	501	6.68	-212.9	0.21
0587	20–30			>999			
0588	5–15	28.23	2,410	12	6.89	-221.7	0.11
0589	20–30	33.44	1,794	278	6.22	-228.7	0.25
0590	20–30	30.62	1,570	50.1	6.74	-158.4	0.08
0591	5–15	32.28	1,546	101.2	6.67	-240.3	0.28
0592	20–30	23.4	1,751	>999	6.18	-109.1	0.28
M16D	18.5–28.5	24.96	1,187	6	6.62	-80.2	0.32
M27D	21–31	23.9	1,772	13.7	6.46	-112.4	0.14
M27S	6–16	23.08	976	11.4	6.44	-53.1	0.17
M32D	14–24	23.22	1,055	185	6.59	-62	0.3
M32S	3–13	21.09	557	9.1	6.84	-49.3	0.4
PIN21							
0502	7–17	24.35	877	16	6.76	-118.9	0.33
0503	20–28	24.2	722	26.2	6.83	-70.3	2.02
0504	7–17	21.8	736	13.5	6.93	-63.6	1.95
0505	20–28	23.3	865	9.3	6.78	-47.3	2.45

[a]Temperature corrected to 25°C.

Table 6. COPC Concentrations at the Northeast Site
(reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			3	70	63	1	5	1	1,000	
PIN15	Northeast Site									
0506	12–21.5	3/7/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0507	5–14.5	3/8/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0510	4–13.5	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		3/5/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0513	135–149.6	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0514	15.5–25.5	3/8/07	<0.5	<0.65	2.3	<0.5	<4	0.76J	<0.51	2.3
		2/27/08	<0.5	<0.65	3	2	<4	<0.5	<0.51	5
0515	7.6–17.6	3/8/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	4.3	<4	<0.5	<0.51	4.3
0516	0.3–10.3	3/8/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/28/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0518	23–28	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0520	5–14.5	3/7/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0530	5–14.5	3/28/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	3.2	<4	<0.5	<0.51	3.2
0534	19.5–29	3/7/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0535	20.5–30	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/27/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0537	17.5–30	3/2/07	<0.5	0.93J	0.93J	31	<4	2.8	<0.51	33.8
		9/12/07	<0.5	120	120	450	<4	3.2	<0.51	573.2
		3/3/08	<0.5	240	241.8	600	<4	4	<0.51	845.8
0559	22–31.5	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		3/5/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0560	19–28.5	3/12/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/29/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0561	5–14.5	3/12/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/29/08	<0.5	<0.65	ND	0.62J	<4	<0.5	<0.51	ND
0562	20–29.5	3/8/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0563	5–14.5	3/8/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0564	20–29.5	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0565	5–14.5	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0566	19–28.5	3/12/07	1.5	7.6	7.6	4.9	<4	0.93J	<0.51	14
		2/29/08	5.4	13	23	5.3	<4	<0.5	<0.51	33.7
0567	5–14.5	3/12/07	1.8	26	33.8	11	<4	0.96J	<0.51	46.6
		2/29/08	1.2	26	34.8	31	<4	1.4	<0.51	68.4
0568	10–20	3/5/07	50	1.8	1.8	<0.5	<4	<0.5	50	101.8
		9/19/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		3/5/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND

Table 6 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			3	70	63	1	5	1	1,000	
0569	20–30	3/5/07	<0.5	<0.65	ND	15	<4	<0.5	<0.51	15
		9/19/07	<0.5	<0.65	ND	21	<4	<0.5	<0.51	21
		3/5/08	<0.5	<0.65	ND	10	<4	<0.5	0.69J	10
0570	20–30	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		3/5/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0571	10–20	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0572	20–30	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
0573	5–15	2/28/08	<0.5	<0.65	0.5J	2.8	<4	0.64J	<0.51	2.8
0574	18–28	3/13/07	<0.5	52	52	140	<4	0.61J	<0.51	192
		2/28/08	3.9	3	3	3	<4	<0.5	<0.51	9.9
0575	5–15	3/13/07	<0.5	<0.65	0.77J	0.62J	<4	0.66J	<0.51	ND
		2/28/08	<0.5	1.4	1.4	0.73J	<4	0.85J	<0.51	1.4
0576	20–30	3/13/07	<0.5	3	3	1.8	<4	<0.5	<0.51	4.8
		2/28/08	<0.5	1.7	1.7	14	<4	<0.5	<0.51	15.7
0577	5–15	3/8/07	<0.5	<0.65	2	<0.5	<4	3.1	<0.51	5.1
		2/28/08	<0.5	<0.65	0.56J	1.1	<4	2.4	<0.51	3.5
0578	20–30	3/8/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/28/08	<0.5	0.68J	0.68J	<0.5	<4	<0.5	<0.51	ND
0584	20–30	3/7/07	<0.5	<0.65	ND	1.1	<4	<0.5	5.2	6.3
		9/12/07	<0.5	<0.65	ND	1.8	<4	<0.5	<0.51	1.8
		3/4/08	<0.5	<0.65	ND	0.59J	<4	<0.5	<0.51	ND
0585	20–30	3/3/07	21	35	35	2.5	<4	1.3	18	77.8
		9/13/07	180	140	140	28	<4	0.86J	9	357
		3/4/08	250	140	140	20	<4	0.76J	5.7	415.7
0586	20–30	3/7/07	430	2,400	2,406.3	1,200	<4	7.2	140	4,183.5
		9/13/07	430	1,400	1,400	490	<20	3J	28	2,348
		3/4/08	120	2,000	2,008	640	<4	5.2	14	2,787.2
0587	20–30	3/3/07	16,000	390	390	29J	<250	<50	17,000	33,390
		3/28/07	23,000	1,100	1,100	60	<200	<25	22,000	46,160
		9/14/07	1,700	8,200	8,200	300	<200	<25	1,700	11,900
		3/3/08	3,900	16,000	16,000	<120	<1,000	<120	1,300	21,200
0588	5–15	3/3/07	15	360	364.2	28	<4	1.9	52	461.1
		9/13/07	1.1	170	171.1	8.8	<4	1.8	9	191.8
		3/3/08	<25	1,800	1,800	<25	<200	<25	<26	1,800
0589	20–30	3/7/07	65	1,500	1,500	710	<4	37	1,200	3,512
		9/14/07	18	630	632.5	440	<4	49	430	1,569.5
		3/4/08	29	1,400	1,406	520	<4	59	100	2,114
0590	20–30	3/8/07	14	180	180	12	<4	0.91J	0.79J	206
		9/17/07	2.6	17	17	<0.5	<4	2.2	<0.51	21.8
		2/29/08	11	240	246	26	<4	0.96J	2.1	285.1
0591	5–15	9/17/07	40	410	418.2	28	<8	1.3J	4.2	490.4
		3/4/08	<0.5	3.3	3.3	0.52J	<4	3.4	1.5	8.2
0592	20–30	3/8/07	<0.5	<0.65	ND	<0.5	<4	28	1.6	29.6
		9/13/07	<0.5	<0.65	ND	<0.5	<4	29	0.94J	29
		3/4/08	<0.5	<0.65	ND	<0.5	<4	26	0.94J	26
M03D	15–25	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND

Table 6 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	Total 1,2-DCE[b]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[c]
FDEP MCL			3	70	63	1	5	1	1,000	
M03S	2.5–12	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M14D	18.5–28.5	3/7/07	<0.5	<0.65	ND	13	<4	<0.5	<0.51	13
M14S	4–14	3/7/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M16D	18.5–28.5	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		3/4/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M16S	5–14.5	3/6/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M24D	20–30	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M27D	21–31	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/29/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M27S	6–16	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		2/29/08	<0.5	3.7	5.4	3.5	<4	<0.5	<0.51	8.9
M32D	14–24	3/7/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		3/4/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M32S	3–13	3/7/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
		3/4/08	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
M33D	20–30	3/5/07	<0.5	<0.65	ND	<0.5	<4	<0.5	<0.51	ND
RW16	20–30	3/7/07	<0.5	<0.65	ND	3.3	<4	<0.5	<0.51	3.3

[a]Before December 18, 2003 "<" values are reporting limits. On or after December 18, 2003 "<" values are method detection limits.
[b]Total 1,2-DCE is the sum of cDCE and tDCE.
[c]Total COPC is the sum of the individual COPC concentrations. The cDCE and tDCE values are not part of the total COPC value because these values are included in the total 1,2-DCE value. "J" values are not included in the total COPC value.

ND = Not detected.
J = Estimated value, result is between the reporting limit and the method detection limit.
Arsenic, while a COPC, is not included in this table, nor in the total COPC value.

Table 7. Aluminum and Iron Concentrations Measured at the Northeast Site (reported in µg/L)

Well	Aluminum	Iron
Cleanup Target Level:	**2,000**	**3,000**
0506	3,000	1,500
0507	2,800	1,100
0510	350	1,300
0513	<70	<22
0514	3,700	2,300
0515	130 B	1,400
0516	340	3,000
0520	350	880
0530	1,800	2,900
0534	3,100	770
0535	7,100	2,300
0537	<70	7,500
0559	1,900	640
0560	430	6,100
0561	86 B	3,000
0566	44,000	17,000
0567	1,300	11,000
0568	2,700	1,600
0569	630	3,000
0570	5,000	1,200
0573	150 B	2,700
0574	72 B	1,300
0575	99 B	3,900
0576	570	590
0577	320	7,300
0578	200	130
0584	8,800	6,300
0585	6,100	5,300
0586	8,300	12,000
0587	43,000	56,000
0588	220	690
0589	6,700	12,000
0590	1,700	2,900
0591	2,000	1,400
0592	25,000	18,000
M16D	230	2,200
M27D	1,800	1,100
M27S	<70	3,600
M32D	180 B	11,000
M32S	140 B	4,400

< = not detected
B= estimated value metals
J=estimated
N=spike sample recovery not within control limits inorganics.

Table 8. COPC Concentrations at the Building 100 Area
(reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	tDCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
Industrial Drain Leaks Bldg 100/Old Drum Storage Site									
PIN06									
0500	3–13	3/6/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		2/27/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0501	3–13	3/6/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
PIN09									
0500	3–13	3/2/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/12/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
PIN10									
0500	3–13	3/2/07	0.63J	1.1	<0.44	1.1	<0.45	<0.5	1.1
		9/12/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
PIN12									
0509	3–13	3/6/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0510	3–13	3/7/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0513	15–25	3/14/07	<0.5	<0.65	0.64J	0.64J	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	0.59J	0.59J	<0.45	<0.5	ND
		3/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0514	30–40	3/14/07	<0.5	8.1	26	34.1	<0.45	32	66.1
		9/19/07	<0.5	5.8	15	20.8	<0.45	42	62.8
		3/4/08	<0.5	<0.65	12	12	<0.45	<0.5	12
0515	15–25	3/3/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0516	30–40	3/3/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0517	15–25	3/3/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0518	30–40	3/3/07	<0.5	<0.65	<0.44	ND	<0.45	1.3	1.3
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	1.9	1.9
		3/1/08	<0.5	<0.65	<0.44	ND	<0.45	1.1	1.1
0520	36–46	3/2/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0521	19.5–29.5	3/2/07	<0.5	0.75J	<0.44	0.75J	<0.45	2.3	2.3
		9/12/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		2/27/08	<0.5	<0.65	<0.44	ND	<0.45	1.1	1.1
0522	32–42	3/7/07	<0.5	<0.65	<0.44	ND	<0.45	0.59J	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0523	18–28	3/6/07	0.67J	5.5	3.1	8.6	<0.45	<0.5	8.6
		9/18/07	1	32	22	54	<0.45	20	75

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	tDCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
0524	27–37	3/5/07	9.1	860	15	875	53	780	1,717.1
		9/18/07	4.3	770	10	780	29	1,600	2,413.3
		3/1/08	<5	820	12	832	41	1,300	2,173
0525	12–22	3/3/07	<0.5	1.7	<0.44	1.7	<0.45	<0.5	1.7
		9/18/07	<0.5	1.6	<0.44	1.6	<0.45	0.66J	1.6
		3/1/08	<0.5	0.91J	<0.44	0.91J	<0.45	<0.5	ND
0526	19.5–29.5	3/3/07	<0.5	2.1	0.97J	2.1	<0.45	1.1	3.2
		9/19/07	<0.5	1.9	1.3	3.2	<0.45	3	6.2
		3/1/08	<0.5	<0.65	1.4	1.4	<0.45	1.9	3.3
0527	118–137.9	3/6/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0528	127–146.9	3/3/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S29C	14–24	3/5/07	<0.5	0.72J	2.8	2.8	<0.45	9.4	12.2
		9/13/07	<0.5	<0.65	<0.44	ND	<0.45	4.8	4.8
S30B	5–15	3/5/07	1,400	8,700	510	9,210	140	1,100	11,850
		9/13/07	350	6,000	330	6,330	120	2,100	8,900
		2/29/08	62	2,900	190	3,090	66	980	4,198
S31B	5–15	3/5/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/13/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S32B	5.5–15.5	3/5/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/13/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S33C	11–21	3/5/07	9.6	210	21	231	17	210	467.6
		9/13/07	43	1,700	29	1,729	110	1,100	2,982
		2/29/08	200	5,100	91	5,191	430	1,300	7,121
S35B	5–15	3/5/07	13,000	26,000	5,900	31,900	150	7,800	52,850
		9/13/07	7,500	14,000	3,300	17,300	90	9,300	34,190
		2/29/08	14,000	37,000	7,900	44,900	<220	17,000	75,900
S36B	5–15	3/5/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/13/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		2/29/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S37B	5–15	3/5/07	<0.5	5.4	<0.44	5.4	<0.45	9.7	15.1
		9/13/07	<0.5	3.7	<0.44	3.7	<0.45	3.4	7.1
S67B	10–19.83	3/6/07	<0.5	34J	7.5J	41.5	<0.45	510	551.5
		9/17/07	<0.5	24	5.4	29.4	<0.45	450	479.4
		2/27/08	<0.5	19	4.9	23.9	<0.45	430	453.9
S67C	20–29.83	3/6/07	<0.5	290J	72J	362	5.9J	120	487.9
		9/17/07	<0.5	190	39	229	2.8	130	361.8
		2/27/08	<0.5	270	49	319	4.3	100	423.3
S67D	30–39.83	3/6/07	<0.5	100	19	119	3.5	83	205.5
		9/17/07	<0.5	65	12	77	1	69	147
		2/27/08	<0.5	39	9.6	48.6	0.78J	40	88.6
S68B	10–20	3/16/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	tDCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S68C	18–28	3/16/07	<0.5	3.7	<0.44	3.7	<0.45	8.8	12.5
		9/19/07	<0.5	4.2	<0.44	4.2	<0.45	10	14.2
		3/5/08	<0.5	7	<0.44	7	<0.45	10	17
S68D	30–40	3/2/07	<0.5	51	1.2	52.2	<0.45	44	96.2
		9/19/07	<0.5	56	1.1	57.1	1	80	138.1
		3/5/08	<0.5	90	1.7	91.7	0.56J	75	166.7
S69B	10–20	3/15/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/20/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S69C	20–30	3/15/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/20/07	<0.5	<0.65	<0.44	ND	<0.45	1	1
		3/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S69D	30–40	3/15/07	<0.5	0.92J	<0.44	0.92J	<0.45	<0.5	ND
		9/20/07	<0.5	<0.65	<0.44	ND	<0.45	0.54J	ND
		3/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S70B	10–20	3/15/07	<0.5	18	0.72J	18	<0.45	20	38
		9/20/07	<0.5	16	0.61J	16	<0.45	22	38
		3/1/08	1.3	19	0.72J	19	<0.45	13	33.3
S70C	20–30	3/15/07	<0.5	25	10	35	0.98J	21	56
		9/20/07	<0.5	25	11	36	1.5	35	72.5
		3/1/08	2.3	34	18	52	<0.45	23	77.3
S70D	30–40	3/15/07	<0.5	16	7.3	23.3	0.71J	12	35.3
		9/20/07	<0.5	17	7.4	24.4	1.6	19	45
		3/1/08	8	35	11	46	<0.45	12	66
S71B	10–20	3/16/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	0.52J	3.1	<0.44	3.1	<0.45	<0.5	3.1
S71C	20–30	3/5/07	<0.5	15	10	25	<0.45	20	45
		3/16/07	<0.5	14	8.9	22.9	<0.45	19	41.9
		9/19/07	<0.5	20	14	34	1.3	45	80.3
		3/1/08	0.7J	28	23	51	<0.45	34	85
S71D	30–40	9/19/07	<0.5	7.7	4.8	12.5	1	19	32.5
		3/1/08	0.88J	10	7.2	17.2	<0.45	13	30.2
S72B	10–20	3/13/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S72C	20–30	3/13/07	<0.5	2.3	<0.44	2.3	1.6	0.86J	3.9
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/5/08	<0.5	0.82J	<0.44	0.82J	0.53J	<0.5	ND
S72D	30–40	3/13/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
S73B	10–20	3/14/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)[a]

Location	Screen Depth (ft)	Date Sampled	TCE	cDCE	tDCE	Total 1,2-DCE[b]	1,1-DCE	Vinyl chloride	Total COPC[c]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S73C	20–30	3/14/07	<0.5	0.85J	3.5	3.5	<0.45	11	14.5
		9/19/07	<0.5	<0.65	3.9	3.9	<0.45	18	21.9
		3/4/08	<0.5	<0.65	4.8	4.8	<0.45	18	22.8
S73D	30–40	3/13/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
TE03	–	3/3/07	<0.5	<0.65	<0.44	ND	<0.45	5	5
PIN21	**Perimeter Monitoring Wells**								
0502	7–17	3/14/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	<0.5	5.9	<0.44	5.9	<0.45	9.5	15.4
		3/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0503	20–28	3/14/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/19/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0504	7–17	3/14/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0505	20–28	3/14/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		9/18/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
		3/1/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0512	20–29.5	3/2/07	<0.5	6.1	<0.44	6.1	<0.45	7.7	13.8
		9/19/07	<0.5	5.9	<0.44	5.9	<0.45	14	19.9

[a]"<" values are reporting limits.
[b]Total 1,2-DCE is the sum of cDCE and tDCE
[c]Total COPC is the sum of the individual COPC concentrations. The cDCE and tDCE values are not part of the total COPC value because these values are included in the total 1,2-DCE value. "J" values are not included in the total COPC value.
ND = Not detected.
J = Estimated value, result is between the reporting limit and the method detection limit.
Arsenic, while a COPC, is not included in this table, nor in the total COPC value.

Table 9. COPC Concentrations from Wells at the Building 100 Area

COPC Concentrations from Wells at the Building 100 Area (reported in micrograms per liter)[a]									
Location	**Screen Depth (ft)**	**Date Sampled**	**TCE**	**cis-1,2-DCE**	**trans-1,2-DCE**	**Total 1,2-DCE[b]**	**1,1-DCE**	**Vinyl chloride**	**Total COPC[c]**
FDEP MCL			3	70	100	63	7	1	
PIN12	**Industrial Drain Leaks Bldg 100**								
0529	10-20	10/15/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0529	10-20	1/2/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0530	19.5-29.5	10/15/07	<0.5	170	2.9	172.9	12	72	256.9
0530	19.5-29.5	1/2/08	<0.5	110	1.2	111.2	5.9	28	145.1
0531	10-20	10/15/07	<0.5	3.4	<0.44	3.4	<0.45	<0.5	3.4
0531	10-20	1/2/08	<0.5	1.3	<0.44	1.3	<0.45	<0.5	1.3
0532	20-30	10/15/07	<0.5	7.3	<0.44	7.3	<0.45	14	21.3
0532	20-30	1/3/08	<0.5	5.4	<0.44	5.4	<0.45	9.4	14.8
0533	10-20	10/16/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0533	10-20	1/3/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0534	20-30	10/16/07	<0.5	3	<0.44	3	<0.45	<0.5	3
0534	20-30	1/3/08	<0.5	0.67	<0.44	0.67	<0.45	<0.5	0.67
0535	10-20	10/16/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0535	10-20	1/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0536	20-30	10/16/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0536	20-30	1/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0537	10-20	10/16/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0537	10-20	1/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0538	20-30	10/16/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0538	20-30	1/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0539	9.5-19.5	10/17/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0539	9.5-19.5	1/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0540	20-30	10/17/07	<0.5	<0.65	4.7	4.7	<0.45	37	41.7
0540	20-30	1/7/08	<0.5	<0.65	5	5	<0.45	100	105
0541	10-20	10/17/07	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0541	10-20	1/7/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0542	20-30	10/17/07	<0.5	3.3	<0.44	3.3	<0.45	<0.5	3.3
0542	20-30	1/7/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0543	28-38	1/2/08	<0.5	10	<0.44	10	<0.45	2.5	12.5
0544	30-40	1/3/08	<0.5	<0.65	<0.44	ND	<0.45	0.76J	ND
0545	29.5-39.5	1/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0546	29.5-39.5	1/4/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0547	29.5-39.5	1/5/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0548	30-40	1/7/08	<0.5	<0.65	<0.44	ND	<0.45	2.6	2.6
0549	30-40	1/7/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0550-1	9-18	2/20/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0550-2	20-29	2/20/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0550-3	31-40	2/21/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0551-1	9-18	2/21/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0551-2	20-29	2/21/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0551-3	31-40	2/21/08	<0.5	<0.65	<0.44	ND	<0.45	<0.5	ND
0552-1	9-18	2/22/08	<0.5	100	1.1	101.1	5.9	13	120
0552-1	9-18	3/18/08	<0.5	270J	4.6J	274.6	21J	62J	357.6

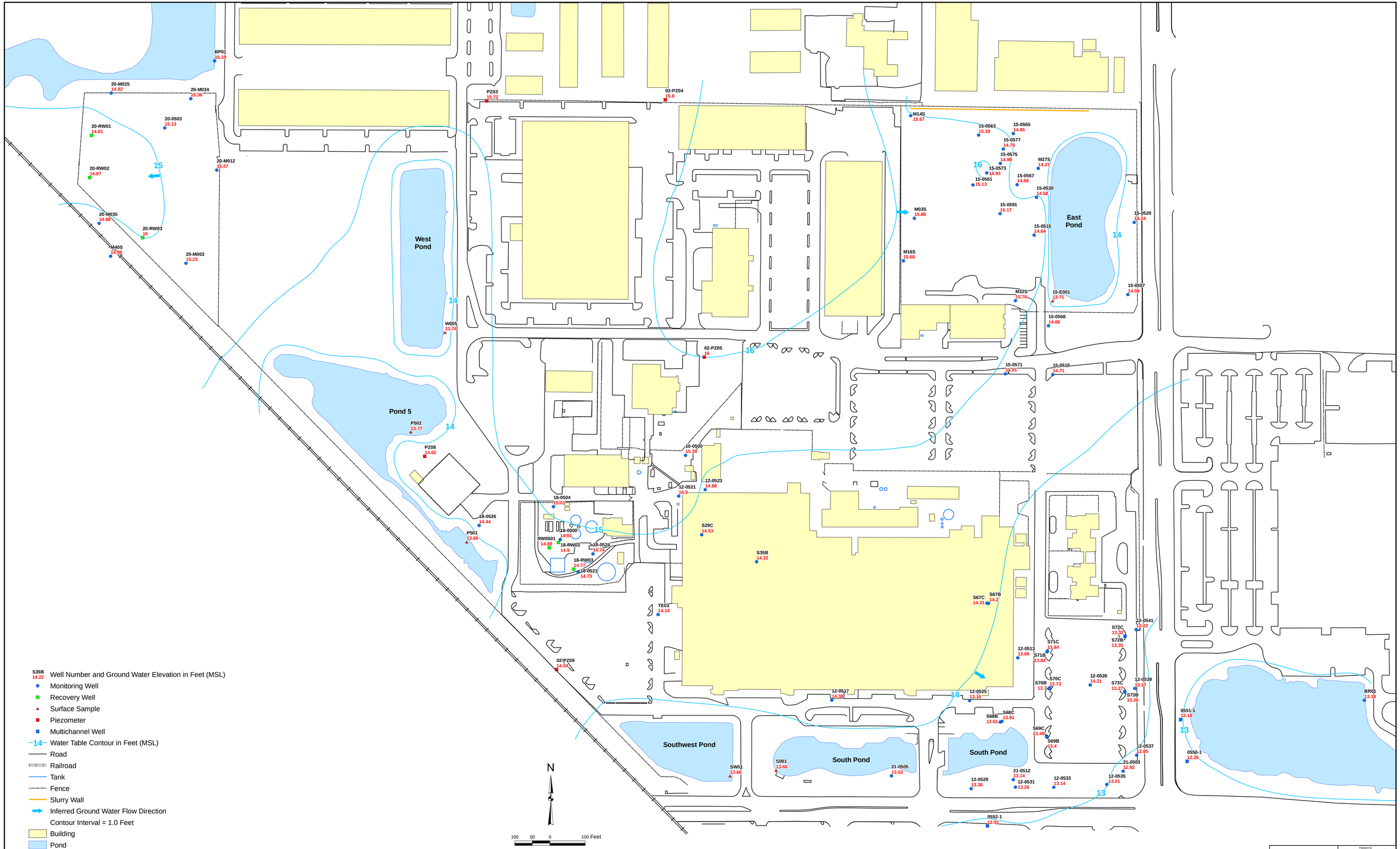
Table 9 (continued). COPC Concentrations from Wells at the Building 100 Area

COPC Concentrations from Wells at the Building 100 Area (reported in micrograms per liter)[a]									
Location	**Screen Depth (ft)**	**Date Sampled**	**TCE**	**cis-1,2-DCE**	**trans-1,2-DCE**	**Total 1,2-DCE[b]**	**1,1-DCE**	**Vinyl chloride**	**Total COPC[c]**
0552-2	20-29	2/22/08	<0.5	210	2.4	212.4	12	27	251.4
0552-2	20-29	3/18/08	<0.5	310	4.7	314.7	23	61	398.7
0552-3	31-40	2/22/08	0.85J	82	0.81J	82	5.6	10	97.6
0552-3	31-40	3/18/08	<0.5	79	0.95J	79	4.4	15	98.4

[a] "<" values are reporting limits.
[b] Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE
[c] Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE and trans-1,2-DCE values are not part of the Total COPC value because these values are included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.
ND Not detected.
J Estimated value, result is between the reporting limit and the method detection limit.
Arsenic, while a COPC, is not included in this table, nor in the Total COPC value.

Table 10. Relative Percent Difference (RPD) for Duplicate Samples

Sample	Analyte	Result	Dup Result	RPD	MDL	5xMDL	Fail?
PIN12–S73C	trans-1,2-Dichloroethylene	4.8	5.3	10	0.44	2.2	
PIN12–S73C	Vinyl chloride	18	19	5	0.5	2.5	
PIN15–0569	Aluminum	0.63	0.57	10	0.07	0.35	
PIN15–0569	Iron	3	3	0	0.022	0.11	
PIN15–0569	Vinyl chloride	10	11	10	0.5	2.5	
PIN15–0587	Aluminum	43	45	5	0.07	0.35	
PIN15–0587	cis-1,2-Dichloroethylene	16,000	15,000	6	160	800	
PIN15–0587	Iron	56	60	7	0.022	0.11	
PIN15–0587	Toluene	1,300	1,200	8	130	650	
PIN15–0587	Trichloroethylene	3,900	3,400	14	120	600	
PIN15–0591	Aluminum	2	2.2	10	0.07	0.35	
PIN15–0591	Benzene	3.4	3.4	0	0.5	2.5	
PIN15–0591	cis-1,2-Dichloroethylene	3.3	3.5	6	0.65	3.25	
PIN15–0591	Iron	1.4	1.6	13	0.022	0.11	
PIN15–0591	Toluene	1.5	1.7	13	0.51	2.55	
PIN15–0591	Vinyl chloride	0.52	0.5	4	0.5	2.5	



S35B 14.22 Well Number and Ground Water Elevation in Feet (MSL)
Monitoring Well
Recovery Well
Surface Sample
Piezometer
Multichannel Well
14 Water Table Contour in Feet (MSL)
Road
Railroad
Tank
Fence
Slurry Wall
Inferred Ground Water Flow Direction
Contour Interval = 1.0 Feet
Building
Pond

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Prepared by S.M. Stoller Corporation No. DE-AC01-02GJ80080
Plate 1: Sitewide Shallow Surficial Aquifer Contours Pinellas, Florida, February 2008	
DATE PREPARED June 17, 2008	FILENAME N0118200-01

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West Pond

Pond 5

East Pond

Southwest Pond

South Pond

South Pond

20-M023 15.11
20-0502 15.11
M054 15.1
M38D 14.11
M055 14.88
20-M015 14.97
M056 14.78
M064 15.67
20-M001 15.08
20-M011 15.47
M053 14.79
M063 15.33
MWL2 14.92
MWL4 15.33
MWL5 15.33
MWL6 15.38
M057 14.89
MWL3 15.16
MWL1 15.15
M049 15.36
M41D 14.66
20-M18D 14.87
M062 15.54
M058 14.99
20-M019 14.95
20-M028 15.36
M060 15.27
M061 15.27
M40D 14.91
M059 15
M22D 15.04
20-M005 15.17
20-M036 13.87
20-M007 15.23
M33D 15.75
M14D 15.56
M24D 15.07
15-0518 14.56
15-0562 15.17
15-0564 14.94
15-0578 15
15-0576 14.93
M27D 14.65
15-0574 15.11
15-0560 15.19
15-0566 14.77
15-0535 14.67
15-0590 14.67
15-0534 14.53
15-0589 15.25
15-0587 15.67
15-0514 14.67
M16D 15.67
15-0586 15.37
15-0585 16.01
15-0592 14.66
15-0584 15.83
15-0537 15.46
15-RW16 15.33
M32D 15.3
15-0506 14.08
15-0569 14.48
15-0559 15.29
15-0572 14.93
15-0570 14.5
12-0520 15.05
12-0522 14.93
18-0508 14.68
18-0523 14.75
18-0520 14.8
18-0509 14.45
18-0510 14.34
S67D 14.19
12-0549 13.18
S72D 13.31
S71D 13.71
12-0514 13.86
S70D 13.64
S73D 13.2
12-0548 13.21
12-0516 13.9
12-0518 14.44
12-0524 13.84
S68D 13.76
S69D 13.21
12-0547 12.77
0551-3 12.66
0550-3 12.44
12-0543 13.23
12-0544 13.13
12-0545 13.09
12-0546 12.48
0552-3 12.99

15
14
13

N

100 50 0 100 200 Feet

S67D 14.19 Well Number and Ground Water Elevation in Feet (MSL)
Monitoring Well
Multichannel Well
14 Water Table Contour in Feet (MSL)
Road
Railroad
Tank
Fence
Slurry Wall
Inferred Ground Water Flow Direction
Contour Interval = 1.0 Feet
Building
Pond

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	PREPARED BY S.M. Stoller Corporation No. DE-AC01-07LM00002
Plate 2: Sitewide Deep Surficial Aquifer Contours Pinellas, Florida, February 2008	
DATE PREPARED June 17, 2008	FILENAME N0118200-05

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