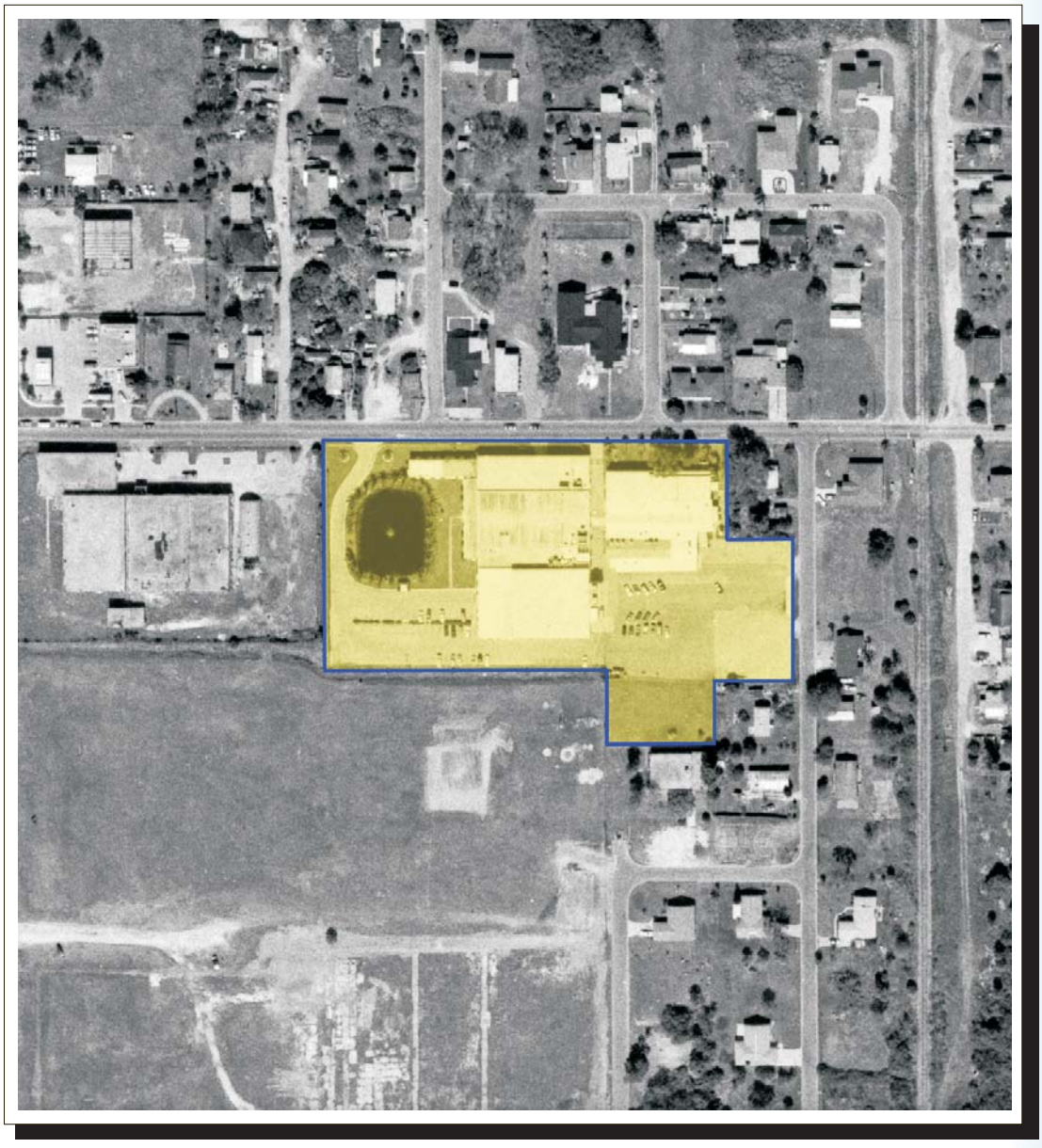
AUGUST 19, 2004
DRAFT SITE ASSESSMENT PLAN ADDENDUM

Former American Beryllium Company
1600 Tallevast Road
Tallevast, Florida



LOCKHEED MARTIN

Tetra Tech
Environmental Engineers & Scientists

TC-11665-06/August 2004

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

Section 1
Introduction

On behalf of the Lockheed Martin Corporation (Lockheed), Tetra Tech, Inc. has prepared this Site Assessment Plan Addendum (SAPA) for Lockheed's former American Beryllium Company (ABC) facility in Tallevast, Florida. The objective of the SAPA is to estimate the horizontal and vertical extent of contaminants of concern (COCs) in the subsurface soil and groundwater in the vicinity of the former ABC facility.

This document is organized into the following sections:

- Section 2 - Site Overview: Provides a brief description of the site, an overview of the site geology and hydrogeology, and a summary of previous investigations conducted at the site;

- Section 3 – Proposed Assessment Activities: Presents the technical approach to the assessment; the rationale for drilling, sampling, and analyses; a description of the field methodologies to be employed during the supplemental assessment activities; and provides a brief description of the data evaluation and reporting that will be performed upon completion of the supplemental assessment;

- Section 4 – Vapor Intrusion Air Monitoring: Presents the technical approach to the vapor intrusion air monitoring, the rationale for the air sampling and analyses, a description of the field methodologies to be employed during the sampling activities, and provides a brief description of the data evaluation and reporting that will be performed upon completion of the vapor intrusion air monitoring;

- Section 5 - References: Lists references and other citations used for compiling this SAPA.

Section 2
Site Overview

2.1 SITE LOCATION AND DESCRIPTION

The former ABC facility is composed of 5.167 acres of land and is located at 1600 Tallevast Road in Tallevast, Manatee County, Florida. The property is bounded by Tallevast Road to the north; a golf course, undeveloped, and residential areas to the south; 17th Street Court East to the east; and an abandoned industrial facility to the west. A site location map is shown as Figure 2-1.

The property is currently owned by BECSD, LLC and operates as Wire Pro Inc. (WPI). WPI is a privately owned connector and cable assembly manufacturing organization that offers a wide range of commercial, industrial, and military products. These products include cable harnesses and assemblies, connectors, and board-level components.

The property is zoned Heavy Manufacturing by Manatee County (Tetra Tech, February 1997). The property contains five primary buildings that cover a total surface area of approximately 66,335 square feet (ft^2). Exterior features consist primarily of a storm water retention pond, a concrete swale, and open asphalt-paved areas. The concrete swale is a slight depression located in the driveway between the main buildings, Buildings 1 and 2, and Buildings 3, 4, and 5. The swale is a pathway for storm water and discharges to the grass at the end of the paved area. A site map is provided on Figure 2-2.

The facility was formerly operated by ABC as an ultra-precision machine parts manufacturing plant, where metals were milled, lathed, and drilled into various components. Some of the components were finished by electroplating, anodizing, and ultrasonic cleaning. Chemicals used and wastes generated at the facility included oils, fuels, solvents, acids, and metals. Operations were discontinued on September 27, 1996. Building 1, the largest building structure, was

FIGURE 2-1
SITE LOCATION MAP

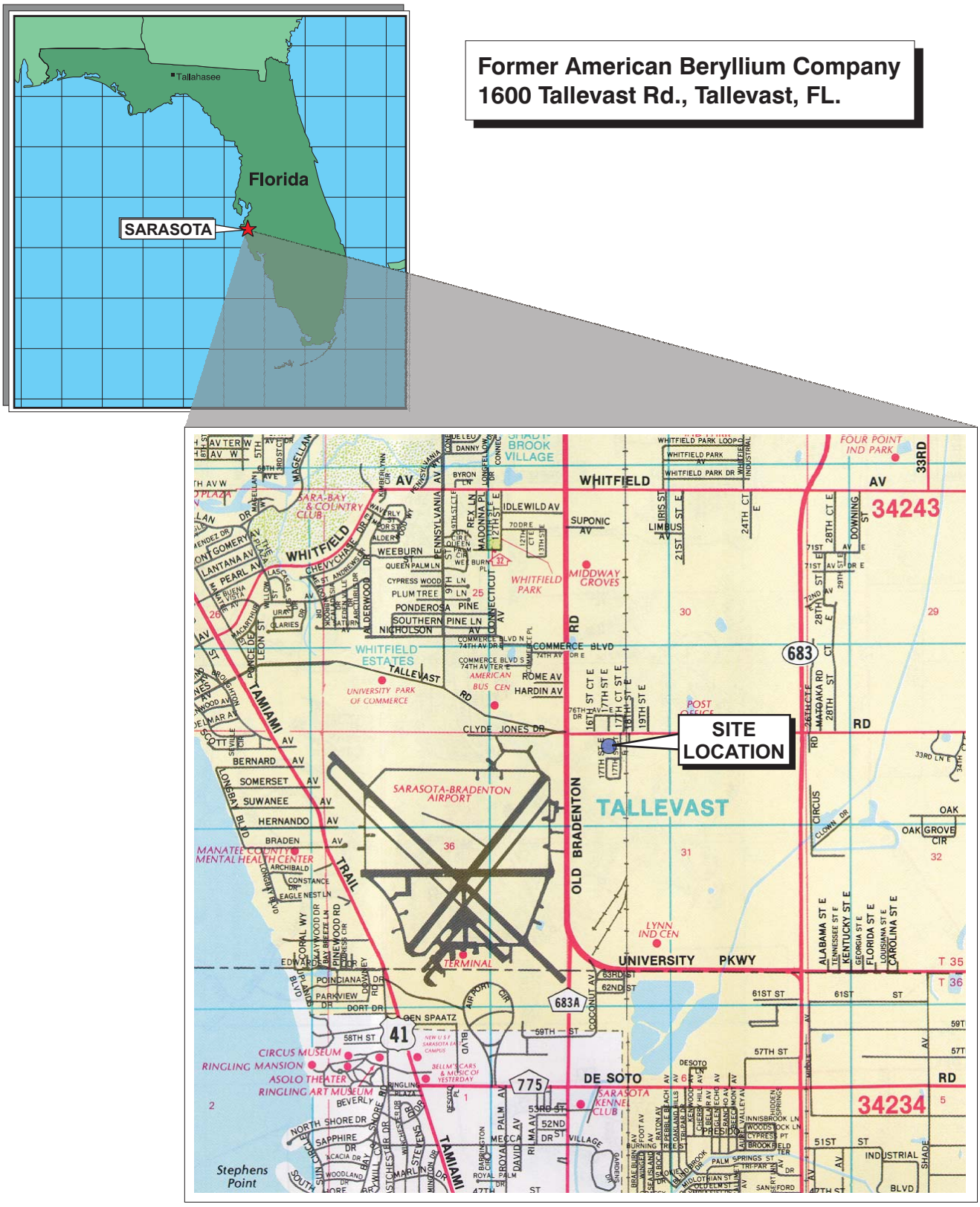
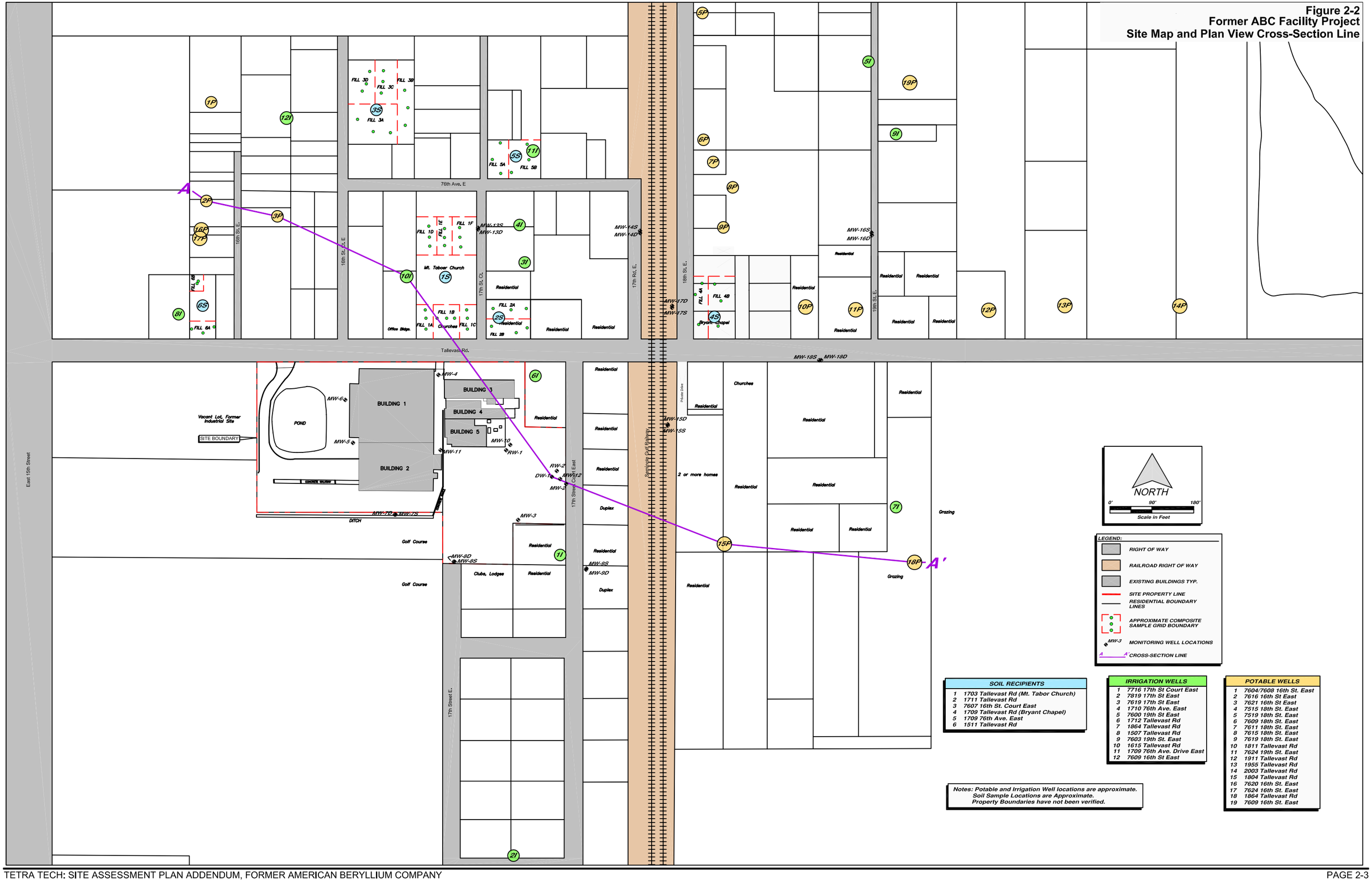


Figure 2-2
Former ABC Facility Project
Site Map and Plan View Cross-Section Line



LEGEND:

- RIGHT OF WAY
- RAILROAD RIGHT OF WAY
- EXISTING BUILDINGS TYP.
- SITE PROPERTY LINE
- RESIDENTIAL BOUNDARY LINES
- APPROXIMATE COMPOSITE SAMPLE GRID BOUNDARY
- MW-3 MONITORING WELL LOCATIONS
- A A' CROSS-SECTION LINE

SOIL RECIPIENTS

1	1703 Tallevast Rd (Mt. Tabor Church)
2	1711 Tallevast Rd
3	7607 16th St. Court East
4	1709 Tallevast Rd (Bryant Chapel)
5	1709 76th Ave. East
6	1511 Tallevast Rd

IRRIGATION WELLS

1	7716 17th St Court East
2	7819 17th St East
3	7619 17th St East
4	1710 76th Ave. East
5	7600 19th St East
6	1712 Tallevast Rd
7	1864 Tallevast Rd
8	1507 Tallevast Rd
9	7603 19th St. East
10	1615 Tallevast Rd
11	1709 76th Ave. Drive East
12	7609 16th St East

POTABLE WELLS

1	7604/7608 16th St. East
2	7616 16th St East
3	7621 16th St East
4	7515 18th St. East
5	7519 18th St. East
6	7609 18th St. East
7	7611 18th St. East
8	7615 18th St. East
9	7619 18th St. East
10	1811 Tallevast Rd
11	7624 19th St. East
12	1911 Tallevast Rd
13	1955 Tallevast Rd
14	2003 Tallevast Rd
15	1804 Tallevast Rd
16	7620 16th St. East
17	7624 16th St. East
18	1864 Tallevast Rd
19	7609 16th St. East

Notes: Potable and Irrigation Well locations are approximate.
Soil Sample Locations are Approximate.
Property Boundaries have not been verified.

composed of office space and machining areas. Buildings 2 and 3 contained machining areas and inspection rooms. Building 4 housed a wood working shop and non-hazardous material storage area. Building 5 contained plating and anodizing rooms, a wastewater treatment system, and hazardous materials storage areas. Further information associated with the buildings and historical chemical usage is provided in Tetra Tech's Phase I Environmental Assessment (EA) Report, dated February 7, 1997.

2.2 SUBSURFACE CONDITIONS

2.2.1 Geology

The former ABC facility is located on a gently sloping plain at an elevation of approximately 25 to 30 feet above mean sea level (amsl). The site is inland approximately 1.5 miles from Sarasota Bay, and approximately 5.75 miles from the Gulf of Mexico. The ground surface around the site has very low relief and slopes gently towards the south to southwest.

The uppermost 40 feet of the subsurface is comprised of undifferentiated surficial deposits consisting of variably clayey quartz sand and slightly phosphatic, iron-stained sand. From the surface to a depth of 20 feet below ground surface (bgs), these sands are fine to medium grained and unconsolidated. From 20 to 30 feet bgs, the sands are poorly consolidated with clay cement. Very dense, cemented sands occur from approximately 30 to 40 feet bgs (SFWMD, 1995).

The surficial deposits unconformably overlie approximately 45 feet of relatively pure clay (known as the "Venice Clay"). The clay sequence represents the upper confining beds of the intermediate aquifer system. The contact between the Venice Clay and the underlying Early Miocene undifferentiated Arcadia Formation occurs at approximately 85 feet bgs at the site. Based on lithologic data collected from on-site monitoring well DW-1, fractured limestone was observed in samples collected from 85 to 95 feet bgs. Clay was observed from 95 to 105 feet bgs, the maximum drilled depth at the site. Regionally, the Arcadia Formation extends to a depth greater than 300 feet bgs (SFWMD, 1995).

2.2.2 Hydrogeology

The near surface hydrogeology of the subject area consists of two distinct aquifer systems, the surficial aquifer system (SAS) and the intermediate aquifer system (IAS). The depth to water in the SAS has fluctuated during previous assessments from 4 to 7 feet bgs across the project area.

The SAS is a water table aquifer system that is unconfined. The SAS extends through the Holocene to Pliocene undifferentiated sand and silty sediments into the very dense phosphate cemented sand capping the Venice Clay that is located at approximately 40 feet bgs.

The IAS is a confined to semi-confined aquifer system that extends from the uppermost confining Venice Clay beds (approximately 40 feet bgs) through the Arcadia Formation. The Arcadia Formation consists predominantly of carbonates with varying amounts of sand, clay, and phosphate and is reported to extend to a depth of approximately 300 feet bgs in the vicinity of the site. The IAS includes all water-yielding units and confining units between the overlying SAS and the underlying Floridan Aquifer System (FAS). Groundwater was encountered in the IAS at approximately 85 feet. The water table was later measured at approximately 12 feet bgs, confirming that the IAS occurs under confined conditions (Tetra Tech, May 2003).

2.3 SUMMARY OF PREVIOUS INVESTIGATIONS

This section provides a brief summary of the previous investigations conducted at the site.

2.3.1 Contamination Assessment

Subsurface investigations conducted at the site from August 1997 through March 2003 are described below:

- January 2000: Initial Leak Discovery – Groundwater impacts were initially discovered during a preliminary groundwater sampling program conducted in January 2000 around the former sumps in Building #5. On behalf of Lockheed, Tetra Tech prepared a

Contamination Discovery Report (CDR), dated July 7, 2000, documenting the preliminary assessment activities conducted at the former ABC facility. In response to the CDR, the Florida Department of Environmental Protection (FDEP) submitted a letter dated August 24, 2000, requiring an assessment to delineate the chemicals detected at the site.

- February 2001: Initial Subsurface Assessment – In February 2001, a subsurface assessment program was conducted to evaluate the extent of chemicals previously detected in the soil and groundwater [i.e., volatile organic compounds (VOCs), beryllium, and chromium]. Beryllium and chromium appeared to be limited primarily to the immediate vicinity of the former sumps. However, VOCs were detected above groundwater cleanup target levels (GCTLs) in groundwater samples collected near the southeastern, northern, and northeastern property boundaries. Based on the analytical data, VOCs appeared to be migrating off-site of the former ABC facility. The findings from the initial assessment are presented in Tetra Tech's Contamination Assessment Report (CAR) dated April 30, 2001.

- September 2001: Source Remediation – As a source removal measure, a remedial excavation was completed to remove soil impacted with total petroleum hydrocarbons (TPH), VOCs, and metals in this area. Further details of the soil removal program are presented in Tetra Tech's Initial Remedial Action Report dated December 12, 2001.

- December 2001: Supplemental Groundwater Assessment – In December 2001, additional temporary monitoring wells were installed and sampled at on-site and off-site locations to assess the extent of VOCs in groundwater. A total of 23 temporary wells were used to evaluate the spatial distribution of VOCs. All groundwater samples from the wells were analyzed for VOCs, and selected samples were also analyzed for beryllium and chromium. VOCs were detected in each of the 23 groundwater samples collected on-site and off-site, prompting the requirement for further investigation of VOCs. TPH and beryllium were not detected in any of the groundwater samples analyzed. Based on the data, no further investigation of TPH or metals was warranted.

- January 2002: Installation of Deep Monitoring Well – In accordance with FDEP's letter dated August 27, 2001, a permanent monitoring well was installed to evaluate the presence of VOCs in the deeper IAS. In January 2002, a dual-cased well (TTDW-1) was installed to a depth of 92 feet bgs southeast of the Building #5 sump area, a location specified by FDEP.

- December 2002 through March 2003: Delineation Investigation – Additional on-site and off-site groundwater delineation investigation was conducted from December 2002 through March 2003. The delineation investigation was conducted in accordance with Tetra Tech's Contamination Assessment Plan Addendum (CAPA) #2 dated September 13, 2002, and FDEP's guidelines outlined in Corrective Actions for Contamination Site Cases. An approval letter dated October 28, 2002 was obtained from FDEP prior to conducting the field work. The primary intent of the program was to complete the delineation of VOCs in groundwater at the site. Data collected from the grab groundwater samples and the monitoring well samples suggested that the lateral extent of VOCs had been delineated both on- and off-site.

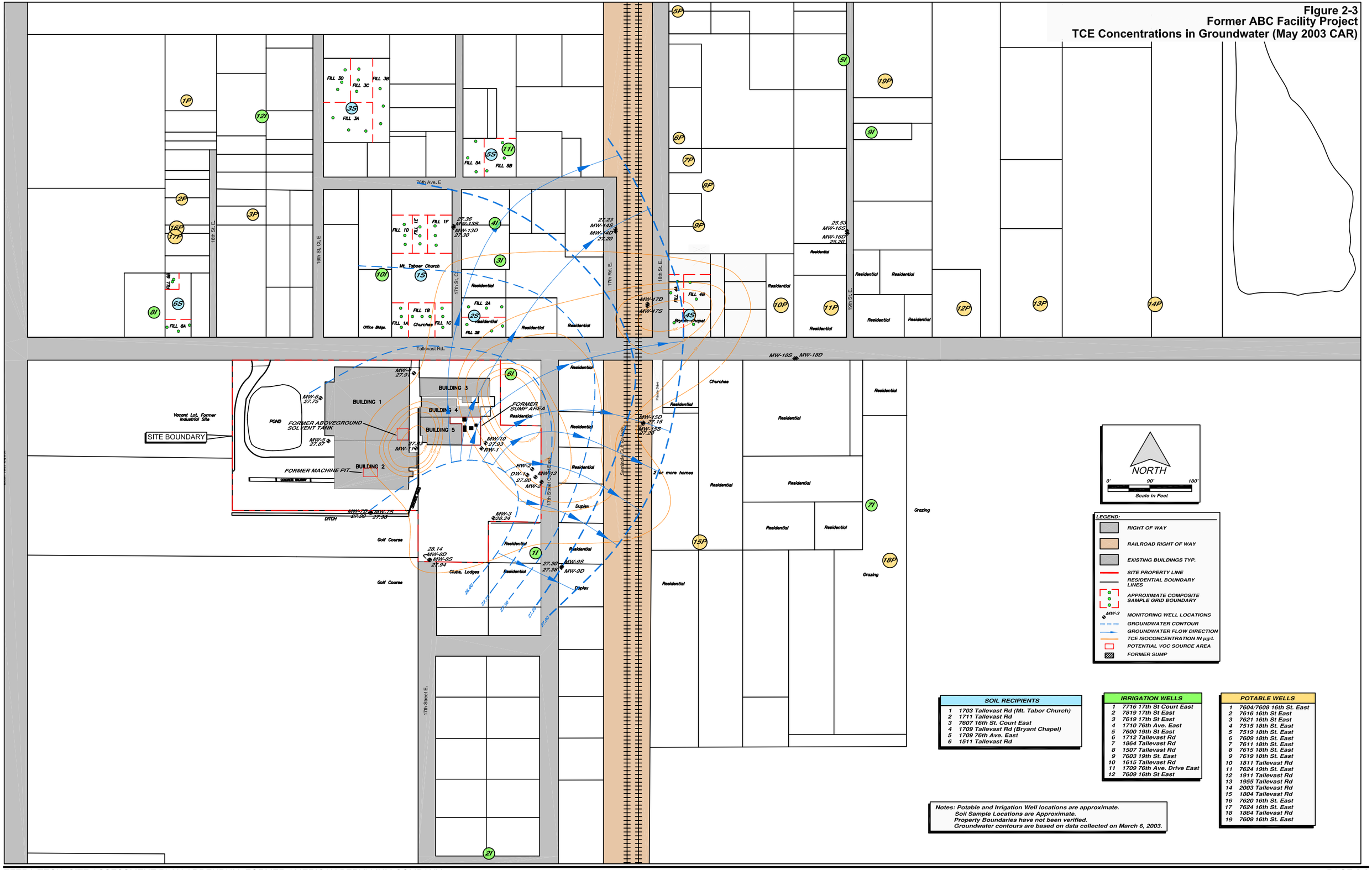
A CAR was submitted to the FDEP in May 2003. The CAR recommended that a Remedial Action Plan be prepared for the site. Figure 2-3 is a site map showing the concentrations of TCE as reported in the May 2003 CAR.

2.3.2 Quarterly Monitoring

Tetra Tech has conducted three quarterly monitoring events at the site since the CAR was submitted and approved. The quarterly monitoring events were performed in September 2003, December 2003, and March 2004. During each quarterly monitoring event, groundwater samples were collected from 26 monitoring wells at the site. The samples were analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method 8260 and total metals using USEPA Method 6010B.

Based on the data collected during the most recent quarterly sampling event, the highest concentrations of VOCs are located in the east-central portion of the former ABC property. VOCs

Figure 2-3
Former ABC Facility Project
TCE Concentrations in Groundwater (May 2003 CAR)



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- SITE PROPERTY LINE
- RESIDENTIAL BOUNDARY LINES
- APPROXIMATE COMPOSITE SAMPLE GRID BOUNDARY
- MW-3 MONITORING WELL LOCATIONS
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- TCE ISOCONCENTRATION IN µg/L
- POTENTIAL VOC SOURCE AREA
- FORMER SUMP

SOIL RECIPIENTS	
1	1703 Tallevast Rd (Mt. Tabor Church)
2	1711 Tallevast Rd
3	7607 16th St. Court East
4	1709 Tallevast Rd (Bryant Chapel)
5	1709 76th Ave. East
6	1511 Tallevast Rd

IRRIGATION WELLS	
1	7716 17th St Court East
2	7819 17th St East
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6	1712 Tallevast Rd
7	1864 Tallevast Rd
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18	1864 Tallevast Rd
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Notes: Potable and Irrigation Well locations are approximate.
Soil Sample Locations are Approximate.
Property Boundaries have not been verified.
Groundwater contours are based on data collected on March 6, 2003.

exceeding GCTLs were reported in wells MW-10, MW-11, and MW-12, which is consistent with previously collected data. VOCs were detected in very few perimeter wells, and all were below GCTLs. The results from the quarterly monitoring events indicate that the concentrations of COCs have remained fairly stable and the plume does not appear to migrating. Figure 2-4 is a site map showing the extent of TCE in groundwater based on the data from the March 2004 monitoring event.

2.3.3 Residential Well Sampling and Geophysical Logging

In May and July 2004, groundwater samples were collected from 29 residential wells located in the vicinity of the site. The samples were submitted to an off-site laboratory for VOC analysis. The results of the residential well sampling indicate that the concentrations of COCs exceeded the GCTLs in 17 of the 29 wells sampled. The results of the analysis are summarized in Table 2-1 and depicted on Figure 2-5.

In July 2004, geophysical logging was conducted on 22 residential wells in the vicinity of the site. The geophysical logging included natural gamma, induction (conductivity), and caliper logs. The logs were correlated with the lithologic descriptions from the boring installed for deep monitoring well DW-1. The location of the cross section is shown on Figure 2-2. Figure 2-6 is a generalized cross-section A-A'. The top of the first phosphate cemented (SP) sand was mapped, and Figure 2-7 illustrates that the slope of the bed dips to the south from approximately 19 feet bgs north of the site to approximately 33 feet bgs south of the site. The site topographic elevations were reported to be comparatively level ranging from 27 to 32 feet National Geodetic Vertical Datum (NGVD). Since the COCs at the site are chlorinated solvents and are denser than water, this dipping surface may add a component of gravity flow towards the south.

Fractured limestone was identified at monitoring well DW-1 from approximately 85 to 92.5 feet bgs and is interpreted to be the uppermost bed of the Arcadia Formation. This limestone correlates with natural gamma low response similar to the clay zones identified above. Two additional low response zones are identified in the log from the residential well at

Figure 2-4
Former ABC Facility Project
TCE Concentrations in Groundwater
(March 2004 Quarterly Monitoring Report)

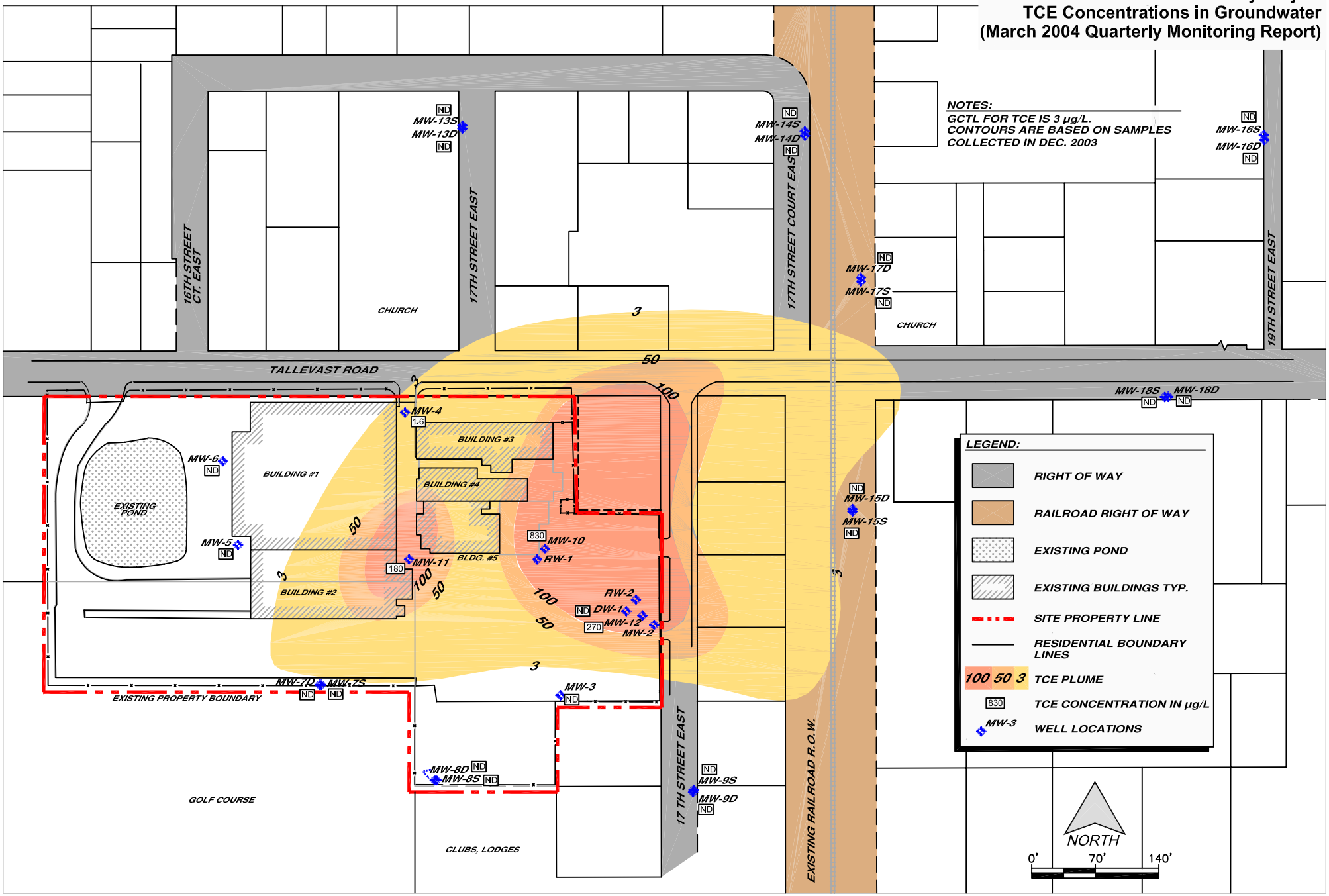

TABLE 2-1

CONCENTRATIONS OF CONTAMINANTS OF CONCERN IN RESIDENTIAL WELLS
TALLEVAST COMMUNITY PRIVATE WELLS

Residence Address / Sample ID	Well Type	Date Collected	Total Well Depth (Feet Below Ground Surface)	Bromodichloromethane	Bromoform	Chloroethane	Chloroform	Dibromochloromethane	1, 1 -Dichloroethane	1,1-Dichloroethene	cis-1,2 - Dichloroethene	trans 1, 2 - Dichloroethene	Methyl tert-butyl ether (MtBE)	Tetrachloroethene	Vinyl Chloride	Toluene	Trichloroethene
GCTL[(1)]	N/A	N/A	N/A	0.6	4.4	N/A	5.7	0.4	70	7	70	100	50	3	1	40	3
7616 16th Street East	Potable	5/24/2004	97.2	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	0.36 I	0.98	2.9	1.0 U	5.0 U	1.0 U	1.0 U	0.29I	**3.6**
7604/7608 16th Street East	Potable	5/24/2004	74.5	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	0.38 I	1.1	0.76	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.8
7620 16th Street East*	Potable / Irrigation	5/24/2004	NA	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	0.29 I	1.0 U	0.67	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.1
7621 16th Street East	Potable	5/24/2004	233.1	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	0.44 I	1.0 U	0.28 I	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
7624 16th Street East*	Potable / Irrigation	5/25/2004	90.8	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	3.6	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.7
1811 Tallevast Road	Potable	5/25/2004	77.5	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	2.5	3.8	32	1.0 U	0.27 I	1.0 U	1.0 U	1.0 U	**240**
7624 19th Street East	Potable	5/25/2004	114	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	2.9	**7.6**	30	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**140**
1955 Tallevast Road	Potable	5/25/2004	NA	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	0.54	0.75	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	0.26 I
1911 Tallevast Road	Potable	5/25/2004	NA	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	0.23 I
2003 Tallevast Road	Potable	5/25/2004	142.7	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	3.9	5.9	0.82	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	0.64
1804 Tallevast Road	Potable	5/25/2004	211	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	12	**28**	4.3	1.5	5.0 U	2.7	1.0 U	1.0 U	**4.6**
7615 18th Street East	Potable	5/25/2004	69	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	3.2	44	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**240**
7619 18th Street East	Potable	5/25/2004	105.8	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	0.27 I	0.68	9.2	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**110**

TABLE 2-1

CONCENTRATIONS OF CONTAMINANTS OF CONCERN IN RESIDENTIAL WELLS
TALLEVAST COMMUNITY PRIVATE WELLS

Residence Address / Sample ID	Well Type	Date Collected	Total Well Depth (Feet Below Ground Surface)	Bromodichloromethane	Bromoform	Chloroethane	Chloroform	Dibromochloromethane	1, 1 -Dichloroethane	1,1-Dichloroethene	cis-1,2 - Dichloroethene	trans 1, 2 - Dichloroethene	Methyl tert-butyl ether (MtBE)	Tetrachloroethene	Vinyl Chloride	Toluene	Trichloroethene
GCTL[1]	N/A	N/A	N/A	0.6	4.4	N/A	5.7	0.4	70	7	70	100	50	3	1	40	3
7611 18th Street East	Potable	5/25/2004	102.2	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	0.27 I	0.54	1.5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**3.3**
7609 18th Street East	Potable	5/25/2004	153.1	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
7519 18th Street East	Potable	5/25/2004	170.6	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
7515 18th Street East	Potable	5/25/2004	24 (Well Collapsed)	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
7716 17th Street Court East	Irrigation	5/25/2004	30	0.60 U	1.0 U	1.2	1.0 U	0.40 U	**100**	**160**	20	0.30I	5.0 U	**30**	0.79	1.0 U	**510**
7819 17th Street East	Irrigation	5/25/2004	NA	0.60 U	1.0 U	0.55	1.0 U	0.40 U	**110**	**94**	50	0.98	5.0 U	1.0 U	1.0 U	1.0 U	**11**
7619 17th Street East	Irrigation	5/25/2004	NA	**9.4**	1.6	1.0 U	**12**	**6.1**	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1710/1714 76th Avenue Drive East	Irrigation	5/26/2004	64	0.60 U	1.0 U	0.24 I	1.0 U	0.40 U	12	**98**	5.0	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**15**
7600 19th Street East	Irrigation	5/26/2004	NA	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.6	3.4	46	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**370**
1712 Tallevast Road	Irrigation	7/1/2004	26.2	**6.0 U**	**10 U**	10 U	**10 U**	**4.0 U**	13	**90**	**220**	10 U	50 U	**10 U**	**10 U**	10 U	**5400**
1709/7605 76th Avenue Drive East	Irrigation	7/2/2004	NA	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	2.2	**14**	15	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	**46**
1864 Tallevast Road	Irrigation	7/2/2004	126.9	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0	2.7	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1507 Tallevast Road	Irrigation	7/2/2004	84	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	1.6	1.0 U	5.0 U	1.0 U	1.0 U	2.0 U	1.1

TABLE 2-1

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TALLEVAST COMMUNITY PRIVATE WELLS

Residence Address / Sample ID	Well Type	Date Collected	Total Well Depth (Feet Below Ground Surface)	Bromodichloromethane	Bromoform	Chloroethane	Chloroform	Dibromochloromethane	1, 1 -Dichloroethane	1,1-Dichloroethene	cis-1,2 - Dichloroethene	trans 1, 2 - Dichloroethene	Methyl tert-butyl ether (MtBE)	Tetrachloroethene	Vinyl Chloride	Toluene	Trichloroethene
GCTL[1]	N/A	N/A	N/A	0.6	4.4	N/A	5.7	0.4	70	7	70	100	50	3	1	40	3
7603 19th Street East	Irrigation	7/6/2004	95.2	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	15	1.0 U	5.0 U	1.0 U	1.0 U	2.0 U	**76**
7609 16th Street East	Potable	7/6/2004	129.5	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0	**9.2**	6.7	1.0 U	5.0 U	1.0 U	1.0 U	2.0 U	**58**
1615 Tallevast Road	Irrigation	7/8/2004	121.7	0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	**12**	6.9	1.0 U	5.0 U	1.0 U	1.0 U	2.0 U	**82**
Trip Blank	5/24/2004	5/24/2004		0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	5/25/2004	5/25/2004		0.60 U	1.0 U	1.0 U	1.0 U	0.40 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	2.0 U	1.0 U

Values reported in micrograms per liter.

[1] Groundwater Cleanup Target Level as defined by Chapter 62-777, F.A.C.

U = nondetect

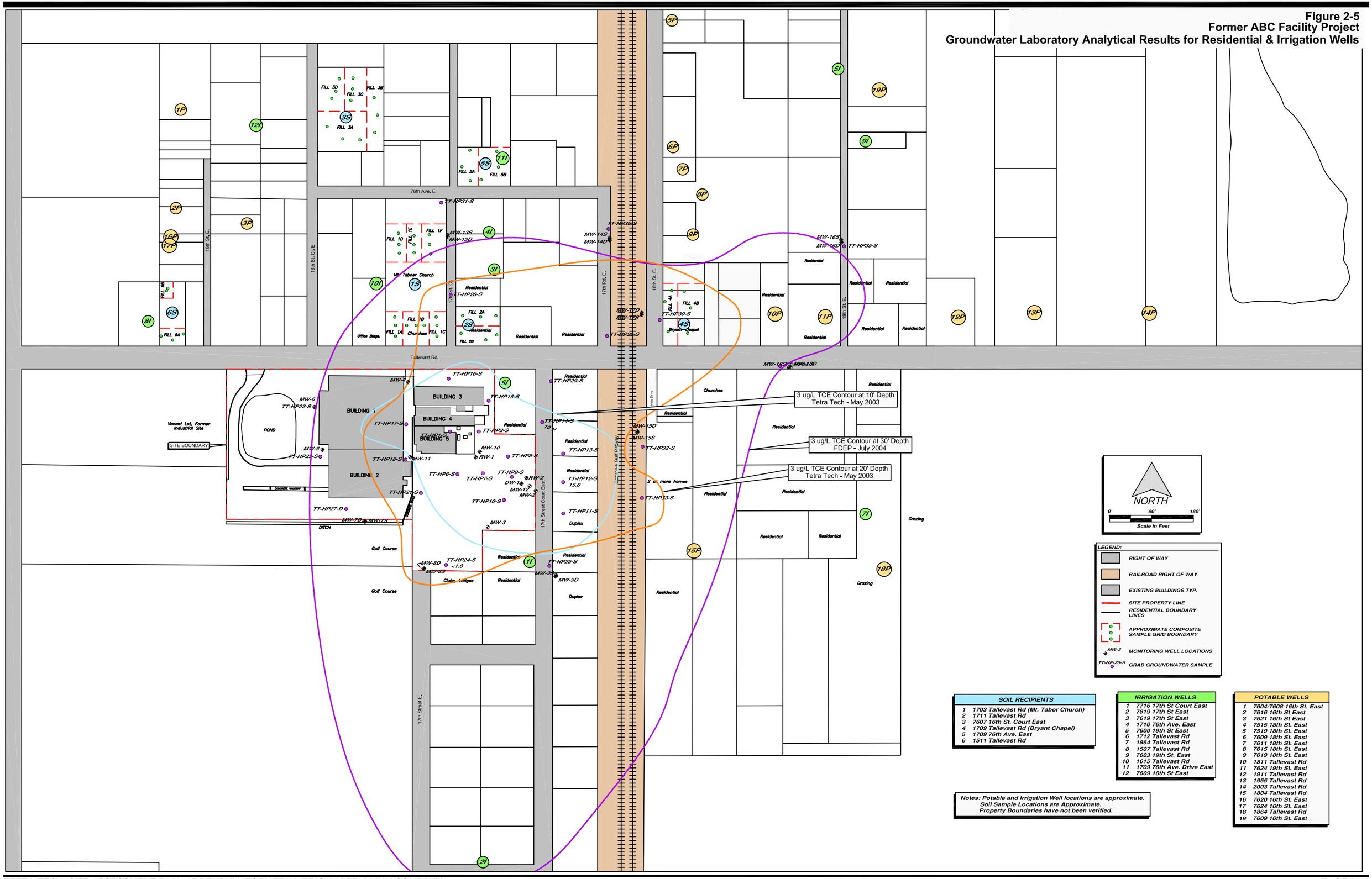
I = detected below the Practical Quantitation Limit, but above the Method Detection Limit

Values shown in bold are at concentrations exceeding GCTL.

* Wells were listed in County Records as irrigation; however, site observations indicate wells are likely potable.

NA - Well not accessible or casing diameter too small to accommodate logging tools.

Figure 2-5
Former ABC Facility Project
Groundwater Laboratory Analytical Results for Residential & Irrigation Wells



SOIL RECIPIENTS	
1	1703 Tallevast Rd (Mt. Tabor Church)
2	1711 Tallevast Rd
3	7607 16th St. Court East
4	1709 Tallevast Rd (Bryant Chapel)
5	1709 76th Ave. East
6	1511 Tallevast Rd

IRRIGATION WELLS	
1	7716 17th St Court East
2	7819 17th St East
3	7619 17th St East
4	1710 76th Ave. East
5	7600 19th St East
6	1712 Tallevast Rd
7	1864 Tallevast Rd
8	1507 Tallevast Rd
9	7603 19th St. East
10	1615 Tallevast Rd
11	1709 76th Ave. Drive East
12	7609 16th St East

POTABLE WELLS	
1	7604/7608 16th St. East
2	7616 16th St East
3	7621 16th St East
4	7515 18th St. East
5	7519 18th St. East
6	7609 18th St. East
7	7611 18th St. East
8	7615 18th St. East
9	7619 18th St. East
10	1811 Tallevast Rd
11	7624 19th St. East
12	1911 Tallevast Rd
13	1955 Tallevast Rd
14	2003 Tallevast Rd
15	1804 Tallevast Rd
16	7620 16th St. East
17	7624 16th St. East
18	1864 Tallevast Rd
19	7609 16th St. East

Notes: Potable and Irrigation Well locations are approximate.
Soil Sample Locations are Approximate.
Property Boundaries have not been verified.

Figure 2-6
Former ABC Facility Project
Cross Section A-A'

NORTHWEST A — SOUTHEAST A'

7621 16th St. | 1615 Tallevast Rd. | DW-1 | 1804 Tallevast Rd. | 1864 Tallevast Rd.

Depth 1:10 | Natural Gamma 0–400 cps | Induction Conductivity 0–150 mS/m

SURFACE

SURFICIAL AQUIFER

PROBABLE CEMENTED SANDSTONE

SP — Bottom of Casing

CL

SP

CL

LST

CL

SCREEN

INTERMEDIATE AQUIFER

Metal ??

TD 233.1

TD 121.7

TD 105

TD 211.0

TD 126.9

SP

17.5'

SM

27.5'

SP

37.5'

44' SURFACE CASING

CL

67.5'

SP

72.5'

CL

85'

LST

92.5'

CL

LOOSE SAND

VERY DENSE PHOSPHATE CEMENTED SANDSTONE

GREEN GRAY CLAY WITH LIMESTONE AND SHELL FRAGMENTS

CEMENTED SANDSTONE

LT. GRAY CLAY

BEDROCK

LIMESTONE-FRACTURED

LT. GRAY CLAY

PROBABLE PHOSPHATE CEMENTED SAND

PROBABLE LIMESTONE

PROBABLE CALCARENITES AND CALCILUTITES

PROBABLE PHOSPHATE CEMENTED SANDSTONE

HOLOCENE TO PLIOCENE SEDIMENTS

VENICE CLAY

ARCADIA FORMATION

FT BLS

0 — 50 — 100 — 150 — 200 — 250

LEGEND

SAND

SANDSTONE

CLAY

LIMESTONE

DW-1 — SAMPLE LOCATION

TD 233.1 — TOTAL DEPTH IN FEET

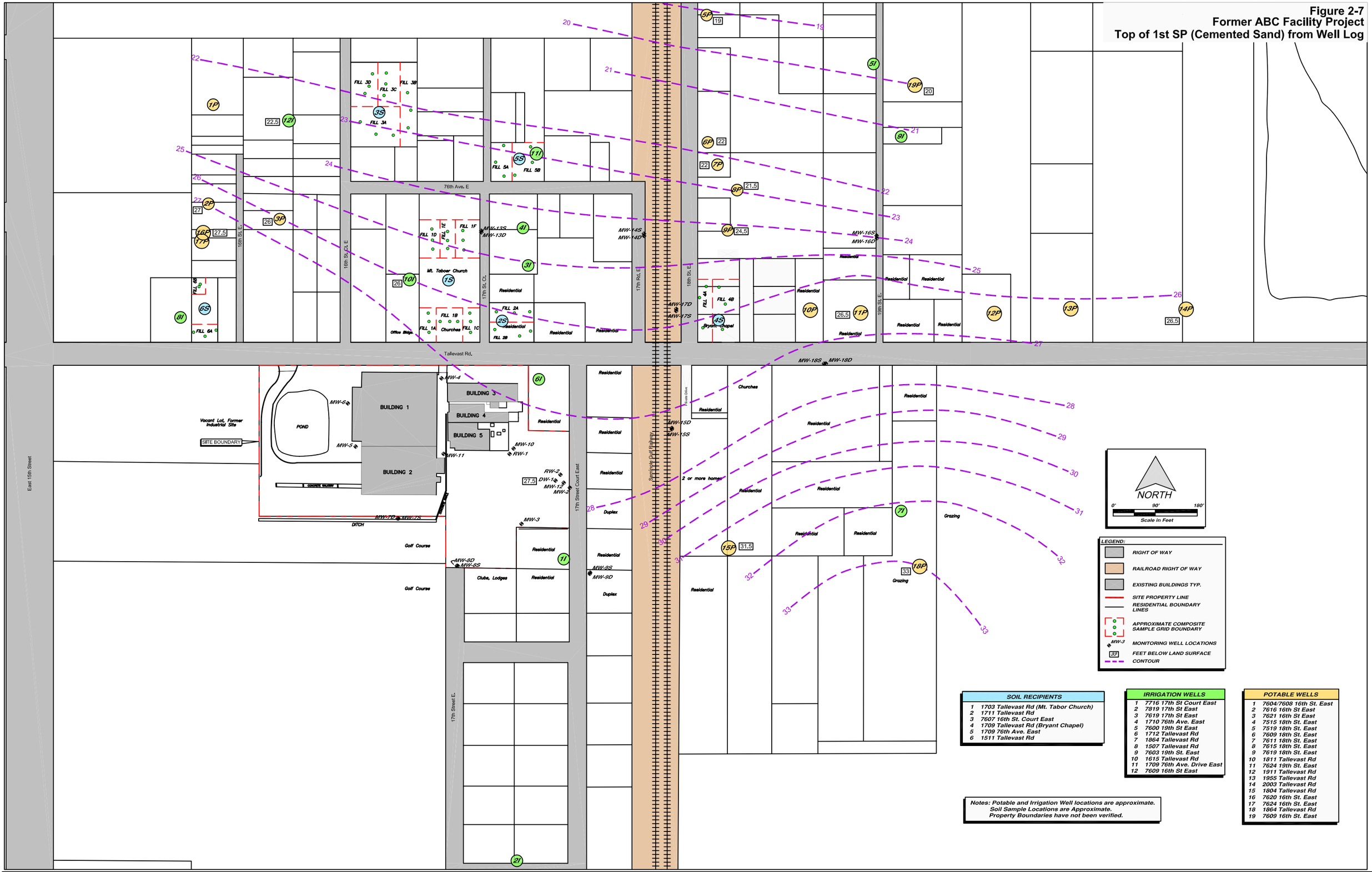
DEPOSIT CONTACT

0' 20' 40' 80'

SCALE 1" = 40'

DATE	DRAWN BY	MADE FROM	FILE NO.
8/19/04	IGE	TtNUS	4288

Figure 2-7
Former ABC Facility Project
Top of 1st SP (Cemented Sand) from Well Log



SOIL RECIPIENTS	
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Notes: Potable and Irrigation Well locations are approximate.
Soil Sample Locations are Approximate.
Property Boundaries have not been verified.

1804 Tallevast Road, at depths of approximately 125 to 133 feet bgs and 157 to 164 feet bgs. These low response zones may be interpreted to represent additional bedded limestone.

Correlation of the natural gamma log response suggests that a second phosphate cemented sand layer is present below the first clay at a depth of approximately 44 to 48 feet bgs, with a thickness of about 4 feet. This sand was not identified in the boring log for DW-1. However, the descriptions for this log were obtained from split spoon samples collected at 5 foot intervals. Therefore, the cemented sand layer may not have been identified. A third phosphate cemented sand was identified in the log for monitoring well DW-1 at a depth of 67.5 to 72.5 feet bgs. This correlates well with a natural gamma peak response in several of the residential wells. Two additional natural gamma peak responses indicative of phosphatic sands occur at approximately 111 feet bgs and 175 feet bgs in the 1804 Tallevast Road location and are easily identified as correlative units in other well logs that extend deep enough. The thickness of these sands is interpreted to be approximately 4 and 10 feet, respectively.

The geophysical logging report prepared by Technos, Inc. is provided in Appendix A.

2.3.4 FDEP Site Investigation Section Assessment

From June 14, 2004, through June 30, 2004, the Site Investigation Section (SIS) of the FDEP conducted an EA of the Tallevast community. Using a direct push technology (DPT) rig and a screen point sampling tool, the SIS collected 39 groundwater samples from the surficial aquifer, with the majority of the samples collected near its base. Groundwater samples were collected by driving a screen point sampling tool until refusal was met, typically between 25 and 35 feet bgs. All previously installed monitoring wells were purged and sampled with the exception of monitor well cluster MW15 (S&D), which could not be located. Groundwater samples were also collected from seven irrigation wells in the Tallevast community.

The SIS also collected 129 soil samples from the Tallevast community. Soil samples were collected from 12 residences, the Mount Tabor Church, and Bryant Chapel. All of these locations were reported to have received fill material from the former ABC facility. Nine soil samples were also collected from the Tallevast Community Center, and two soil samples, designated Culvert 1

and Culvert 2, were collected from a drainage ditch leading from the former ABC facility towards the adjoining golf course.

On July 21, 2004, the FDEP issued a Preliminary CAR summarizing the findings of their investigation. The report indicates that chlorinated solvents have impacted both the SAS and the underlying IAS in the Tallevast community. The report concludes that the source of chlorinated solvents in the surficial aquifer is due to a release(s) from the former ABC facility. SIS data indicates the base of the surficial aquifer occurs at an approximate depth of 30 feet bgs. A groundwater sample collected at the base of the surficial aquifer adjacent to former waste sumps in proximity to Building # 5 indicated a Tetrachloroethene (TCE) concentration of 29,000 micrograms per liter (µg/L) (35,000 µg/L duplicate). This indicates the mass of the chlorinated solvent plume is located at the base of the surficial aquifer subjacent to the former ABC facility. These concentrations infer the potential presence of TCE in the form of a dense non-aqueous phase liquid (DNAPL). Advective transport within the surficial aquifer has transported dissolved phase TCE and other chlorinated solvents to the north, northeast, east, and southeast of the former ABC facility. Figure 10 from the SIS report depicting the approximate extent of TCE in groundwater is provided in Appendix B.

The SIS report concludes that the source of the chlorinated solvents in the IAS has not been determined. Preliminary data suggests that the chlorinated solvent plume located in the SAS is responsible for the contamination of the underlying IAS. Potential migration pathways include recharge of the underlying IAS by the SAS, and possible preferential pathways created by the presence of the irrigation and potable supply wells. The majority of impacted irrigation and potable supply wells are located hydraulically downgradient (within the SAS) of the source area identified on the former ABC facility. Additional assessment work in the IAS is warranted to determine both the areal and vertical extent of contamination within the IAS.

Analyses of 129 soil samples collected from the Tallevast community indicate the presence of arsenic, barium, lead, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and total recoverable petroleum hydrocarbons (TRPH) exceeding their respective FDEP soil cleanup target

levels (SCTLs) in some of the samples collected. The SIS report concluded that the source of these contaminants is indeterminate.

On July 29, 2004, the State of Florida Department of Environmental Protection issued Consent Order OGC Number 04-1328 for additional assessment and remediation at the former ABC site. The Consent Order specifies the following COCs exceed the GCTLs specified in Chapter 62-777, Florida Administrative Code (F.A.C.):

Tetrachloroethene (PCE)
Trichloroethene (TCE)
1,1-dichloroethene (1,1-DCE)
1,1-dichloroethane (1,1-DCA)
cis 1,2-dicholoroethene (cis 1,2-DCE)

Section 3
Proposed Assessment Activities

The following section describes the approach and field methodology to conduct the Site Assessment. The investigation approach has been prepared in accordance with the Chapter 62-780, F.A.C. This document is an addendum to the *Contamination Assessment Plan, Former American Beryllium Company, Tetra Tech, Inc., September 25, 2000.* Specific requirements for site clearance, well permitting, sample handling, equipment decontamination, waste management, and quality assurance are provided in the September 25, 2000, Contamination Assessment Plan and are not repeated in this addendum.

3.1 PROJECT OBJECTIVES AND APPROACH

The intent of this SAPA is to delineate the horizontal and vertical extent of the chemicals detected in soil and groundwater at the former ABC site. The specific objectives of the SAPA are as follows:

- Determine if any VOC or metals impacted soil remains on site;
- Delineate the horizontal and vertical extent of VOCs in groundwater;
- Evaluate analytical data and compare to FDEP SCTLs, GCTLs, and Natural Attenuation Default criteria as specified in Chapter 62-777, F.A.C.

The specific groundwater COCs for this investigation will be as specified in the Consent Order issued by the FDEP on July 29, 2004 (see Section 2.3.4). The specific COCs for soil will include VOCs and metals.

To assess the extent of contamination in soil and groundwater, the investigation will be conducted using a phased approach. During the first phase of the investigation (preliminary assessment), a variety of technologies will be used to collect soil and groundwater samples for on site screening and/or laboratory analysis. This data will be used to create a vertical profile (chemical and lithologic) of the subsurface in the vicinity of the site. The data from the preliminary assessment

will be used to aid in determining the optimum number, location and screen interval for permanent monitoring wells. The second phase of the investigation will involve the installation of permanent monitoring wells to confirm the results of the preliminary assessment and provide horizontal and vertical delineation of the contamination.

Data collected during the site assessment will be used to evaluate further actions that may be required at the site (e.g., groundwater monitoring, remediation, risk assessment). Further description of the site assessment approach and proposed methodology is presented in the following sections.

3.2 PRELIMINARY ASSESSMENT/VERTICAL PROFILING

Prior to initiating the preliminary assessment, three soil borings will be installed to approximately 250 feet bgs using rotosonic drilling methods. Continuous cores will be collected from each boring. A field geologist will log each core using American Society for Testing and Materials (ASTM) standard procedures and techniques. The geologist will describe and record the color, moisture, sorting, grain size, and any other pertinent soil characteristics observed. Geophysical logs will be conducted in the three new borings and will be used to correlate the geophysical logs obtained previously from residential wells in the vicinity of the site. This information will be used to identify stratigraphic horizons that may serve as preferential pathways for contaminant migration.

3.2.1 Surficial Aquifer System

The preliminary assessment/vertical profiling of the surficial aquifer system will be conducted using one of the following technologies:

1. DPT rig equipped with a membrane interface probe (MIP)
2. Vibra-Push direct push rig using the Waterloo Groundwater Profiler system to collect discrete groundwater samples for VOC analysis by an on-site mobile laboratory

3. Rotosonic drill rig using a packer system to collect discrete groundwater samples for VOC analysis by an on-site mobile laboratory

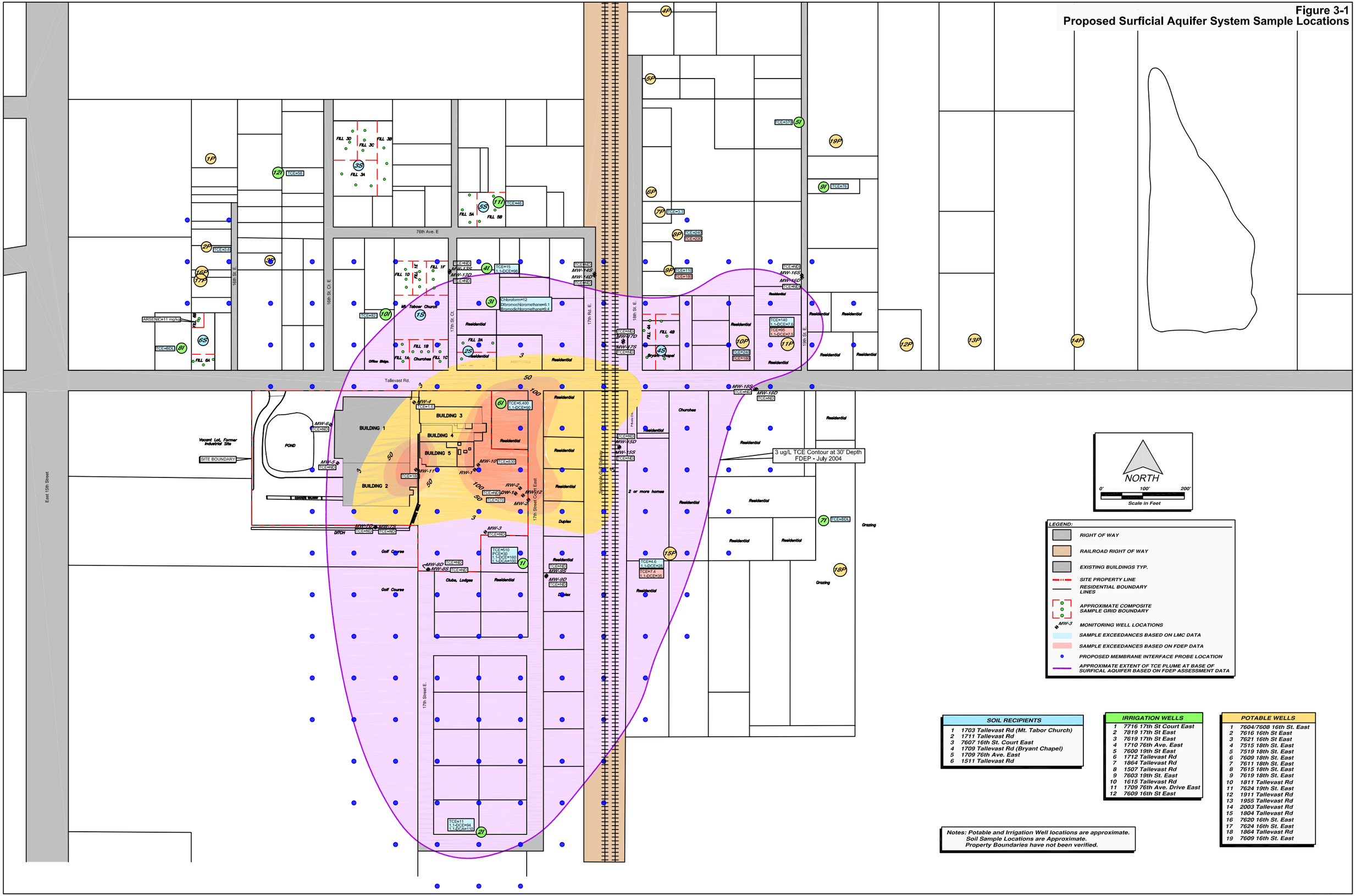
The actual technology will be determined in the field based on site conditions. The SAS sample points will be installed on a 100-foot x 100-foot grid as shown on Figure 3-1. The grid spacing will be modified as necessary (closer together in the source area, farther apart on the perimeter) based on site conditions and the results obtained during the preliminary assessment. Step out sample locations will be added as necessary.

DPT/MIP Sampling

Initially, the preliminary assessment/vertical profiling of the SAS will be conducted using a DPT rig equipped with a MIP. The MIP is a direct sensing device that collects real time continuous VOC data in the vadose and saturated zones. The MIP probe houses a permeable stainless steel membrane encased in a heater block. The heater block heats the soil and water to 250 degrees Fahrenheit, volatilizing the contaminants. The volatiles pass through the permeable membrane and are carried to the surface through a trunk line filled with an inert carrier gas, where they are analyzed using a flame ionization detector (FID), a photo ionization detector (PID), and an electron capture detector (ECD). The data is output in a continuous vertical profile of total VOC concentration. In addition to the chemical data, the MIP records soil conductivity utilizing a dipole measurement device. In general, lower soil conductivities will indicate sands while higher conductivities are indicative of silts and clays.

The DPT was selected as the preferred technology for this phase of the investigation because of the speed of data collection and minimal generation of investigation derived waste (IDW). The DPT/MIP probe will be advanced until refusal, or until the detection limit of the MIP is reached. DPT/MIP sampling will be conducted on a 2-foot vertical interval. Upon completion of the DPT/MIP investigation, groundwater samples will be collected from select DPT/MIP locations and intervals for on-site mobile laboratory analyses for correlation of MIP data. These samples

Figure 3-1
Proposed Surficial Aquifer System Sample Locations



SOIL RECIPIENTS

1	1703 Tallevast Rd (Mt. Tabor Church)
2	1711 Tallevast Rd
3	7607 16th St. Court East
4	1709 Tallevast Rd (Bryant Chapel)
5	1709 76th Ave. East
6	1511 Tallevast Rd

IRRIGATION WELLS

1	7716 17th St Court East
2	7619 17th St East
3	7619 17th St East
4	1710 76th Ave. East
5	7600 19th St East
6	1712 Tallevast Rd
7	1864 Tallevast Rd
8	1507 Tallevast Rd
9	7603 19th St. East
10	1615 Tallevast Rd
11	1709 76th Ave. Drive East
12	7609 16th St East

POTABLE WELLS

1	7604/7608 16th St. East
2	7616 16th St East
3	7621 16th St East
4	7515 18th St. East
5	7519 18th St. East
6	7609 18th St. East
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8	7615 18th St. East
9	7619 18th St. East
10	1811 Tallevast Rd
11	7624 19th St. East
12	1911 Tallevast Rd
13	1956 Tallevast Rd
14	2003 Tallevast Rd
15	1804 Tallevast Rd
16	7620 16th St. East
17	7624 16th St. East
18	1864 Tallevast Rd
19	7609 16th St. East

Notes: Potable and Irrigation Well locations are approximate.
Soil Sample Locations are Approximate.
Property Boundaries have not been verified.

will be collected using a DPT rig and a stainless steel screen point sampler. In addition, soil samples will be collected at select locations for laboratory analysis for VOCs and metals to evaluate if any contaminated soil remains on site.

Vibra-Push Sampling

When the DPT/MIP reaches refusal or the detection limit of the MIP technology, the soil borings will be continued using a Vibra-Push direct push rig. The Vibra-Push rig combines a percussion hammer with high frequency vibration and static push. Other DPT rigs typically only provide a percussion hammer and static push. The combination of all three functions increases the depth capability while retaining the advantages of DPT (high production and minimal IDW).

During the Vibra-Push investigation, groundwater samples will be collected at select intervals using the Waterloo Groundwater Profiler system. The Waterloo Groundwater Profiler allows for the collection of discrete in-situ groundwater samples at multiple depths from a single boring. The system also allows for grouting while retracting upon completion of each boring. If site conditions prevent the use of the Waterloo Profiler system, grab samples will be collected using stainless steel screen-point samplers. Samples will be collected at every stratigraphic horizon (as identified from the continuous cores) and at 5-foot intervals within stratigraphic layers. The groundwater samples will be analyzed for VOCs using an on-site mobile laboratory.

Rotosonic Drilling

If the Vibra-Push system reaches refusal within the SAS, a rotosonic rig will be used to continue advancing the borings until the bottom of the SAS is reached. Groundwater samples will be collected using a packer system to collect discrete samples from select intervals as specified for the Vibra-Push investigation above. The groundwater samples will be analyzed for VOCs using an on-site mobile laboratory. The preliminary assessment will continue until preliminary characterization of the horizontal and vertical extent of contamination in the SAS is complete.

3.2.2 Intermediate Aquifer System

The preliminary assessment/vertical profiling of the IAS will be conducted using one of the following technologies:

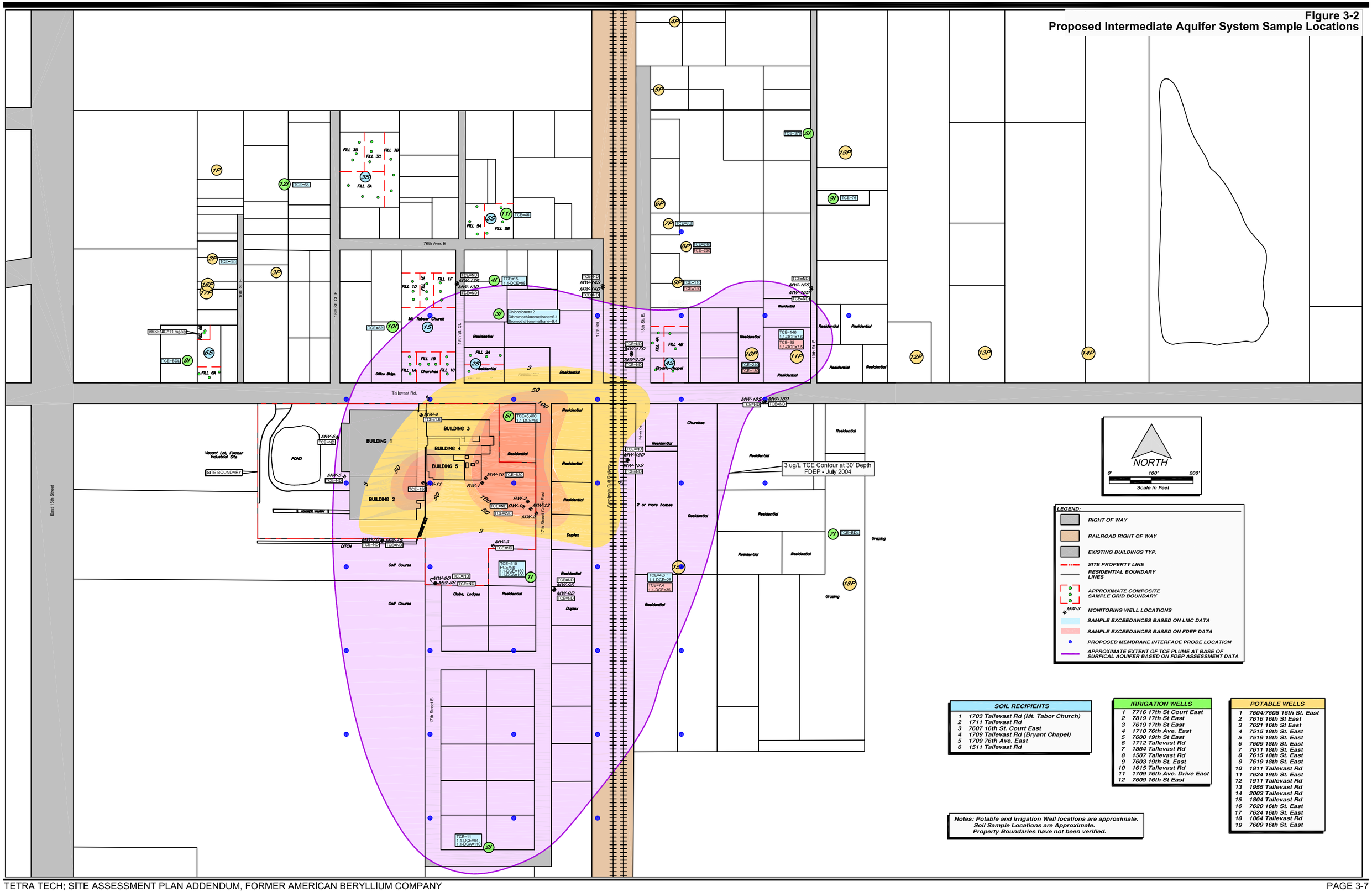
1. Vibra-Push direct push rig using the Waterloo Groundwater Profiler system to collect discrete groundwater samples for analysis by an on-site mobile laboratory
2. Rotosonic rig using packer system to collect discrete groundwater samples for analysis by an on-site mobile laboratory

The actual technology will be determined in the field based on site conditions. The IAS sample points will be installed on a 200-foot x 200-foot grid as shown on Figure 3-2. The grid spacing will be modified as necessary (closer together in the source area, farther apart on the perimeter) based on site conditions and the results obtained during the preliminary assessment. The borings will be advanced until the mobile laboratory analytical results indicate concentrations of COCs are below detection limits for three consecutive sample intervals. If the lithologic logs from the continuous borings indicate the potential for contamination to exist at greater depths, (such as contacts where higher permeability material overlies lower permeability material), deeper samples will be collected at select locations to confirm that the vertical extent of contamination has been delineated.

Vibra-Push Sampling

Initially, the preliminary assessment/vertical profiling of the IAS will conducted using the Vibra-Push direct push rig. The approach will be as described above for the SAS, except that the sample points for the IAS will installed on a 200-foot x 200-foot grid, and the vertical sampling interval will be at every stratigraphic horizon (as identified from the continuous cores) and at 20-foot intervals within stratigraphic layers.

Figure 3-2
Proposed Intermediate Aquifer System Sample Locations



Rotosonic Drilling

When the Vibra-Push system reaches refusal, a rotosonic rig will be used to continue advancing the borings. Groundwater samples will be collected using a packer system to collect discrete samples from select intervals as specified for the Vibra-Push investigation above. The groundwater samples will be analyzed for VOCs using an on-site mobile laboratory. The preliminary assessment will continue until preliminary characterization of the horizontal and vertical limit of contamination is complete.

3.2.3 Floridan Aquifer System

If the results of the preliminary assessment/vertical profiling of the IAS indicate that the contamination may extend to the FAS, soil borings will be advanced at select locations to the first water bearing zone of the FAS. The soil borings will be advanced using a rotosonic rig. Groundwater samples will be collected for VOC analysis by an on-site mobile laboratory.

3.3 MONITORING WELL INSTALLATION

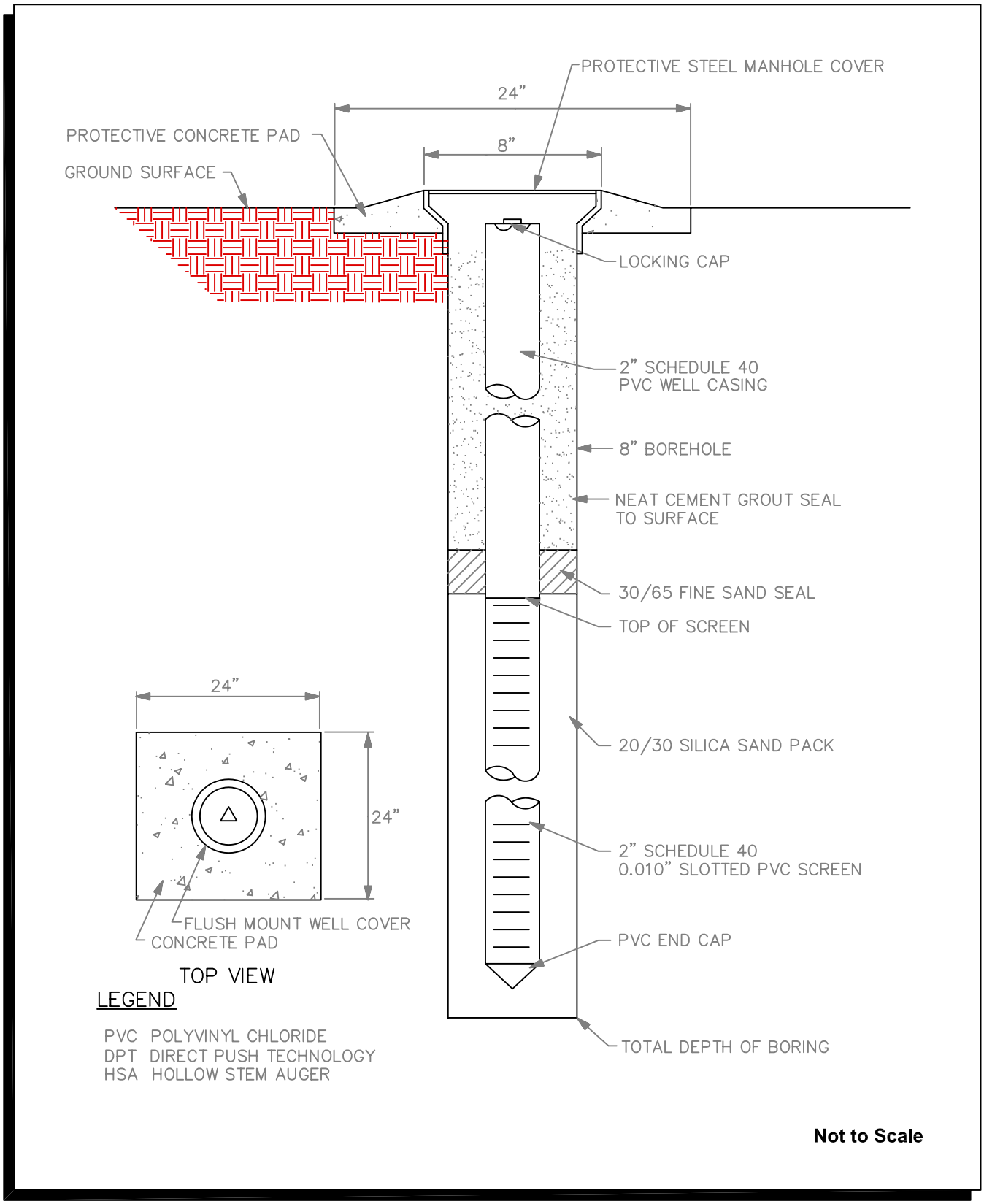
Upon completion of the preliminary assessment, permanent monitoring wells will be installed using hollow stem augers or rotosonic technology. The preliminary assessment data will be used to determine the optimum number and locations for the permanent monitoring wells. Monitoring wells will be installed within the plume and around the perimeter of the plume to ensure adequate coverage to monitor the progress of active remediation, determine if the plume is migrating over time, and/or conduct natural attenuation monitoring if necessary. Soil samples will not be collected during the monitoring well installation as sufficient soil data will be obtained during the preliminary assessment to characterize the site lithology.

Monitoring wells will be constructed of 2-inch inside diameter (ID) Schedule 40, flush-joint polyvinyl chloride (PVC) riser and flush-joint factory slotted well screen. Each section of casing and screen shall be National Sanitation Foundation (NSF) approved. Screen slot size shall be 0.01 inch. The screen intervals for the monitoring wells will be based on the data obtained from

the preliminary assessment/vertical profiling. After the borings are drilled to the desired depth, the well will be installed through the augers (for hollow stem auger wells), or through the casing (for rotosonic wells).

The lithology has been sufficiently characterized from previous investigations at ABC that a sieve analysis of the soils is not needed in determining the type of sand pack and screen slot size for well completion. Clean silica sand of U.S. Standard Sieve Size Number 20/30 will be installed into the boring annulus around the well screen. The sand pack will be set from the bottom of the hole to approximately 2 feet above the top of the well screen. A minimum 2-foot thick 30/65 fine sand seal will be installed above the sand pack. The remainder of the boring will be backfilled with a Type I Portland cement/bentonite grout. The depths of all backfill materials will be constantly monitored during the well installation process by means of a weighted stainless steel or fiberglass tape. The position of the top of the screen interval, sand pack and fine sand seal may be adjusted as site conditions warrant (elevated water table, etc.). A detail of a typical flush-mounted single-cased monitoring well is shown on Figure 3-3.

For any monitoring well installations that will potentially pass through contaminated zones or confining units, an outer casing will be installed to prevent cross contamination of the underlying aquifer. The outer casing will be installed using hollow-stem auger or rotosonic drilling techniques to advance the boring to the confining layer. Upon completion of the boring, a 6-inch, Schedule 40 PVC casing will be set to the desired depth and the annular space tremie grouted from total depth to land surface using a Type I Portland cement / bentonite slurry. After allowing the grout to cure for a minimum of 24 hours, rotosonic or mud-rotary drilling methods will be used to drill inside the outer casing to install the monitoring well to the desired depth. A 20/30 sand filter pack and 30/65 fine sand seal will installed around the well screen as specified for the single cased wells above, and the remainder of the annular space grouted from the top of the fine sand seal to land surface. The filter pack, fine sand seal, and grout will be installed via tremie pipe to avoid bridging. The depths of the backfill material will be monitored throughout the process by means of a weighted tape or by monitoring the length of the tremie pipe. A detail of a


PROTECTIVE STEEL MANHOLE COVER
24"
PROTECTIVE CONCRETE PAD
8"
GROUND SURFACE
LOCKING CAP
2" SCHEDULE 40
PVC WELL CASING
8" BOREHOLE
NEAT CEMENT GROUT SEAL
TO SURFACE
30/65 FINE SAND SEAL
TOP OF SCREEN
20/30 SILICA SAND PACK
2" SCHEDULE 40
0.010" SLOTTED PVC SCREEN
PVC END CAP
TOTAL DEPTH OF BORING
24"
24"
FLUSH MOUNT WELL COVER
CONCRETE PAD
TOP VIEW
LEGEND
PVC POLYVINYL CHLORIDE
DPT DIRECT PUSH TECHNOLOGY
HSA HOLLOW STEM AUGER
Not to Scale

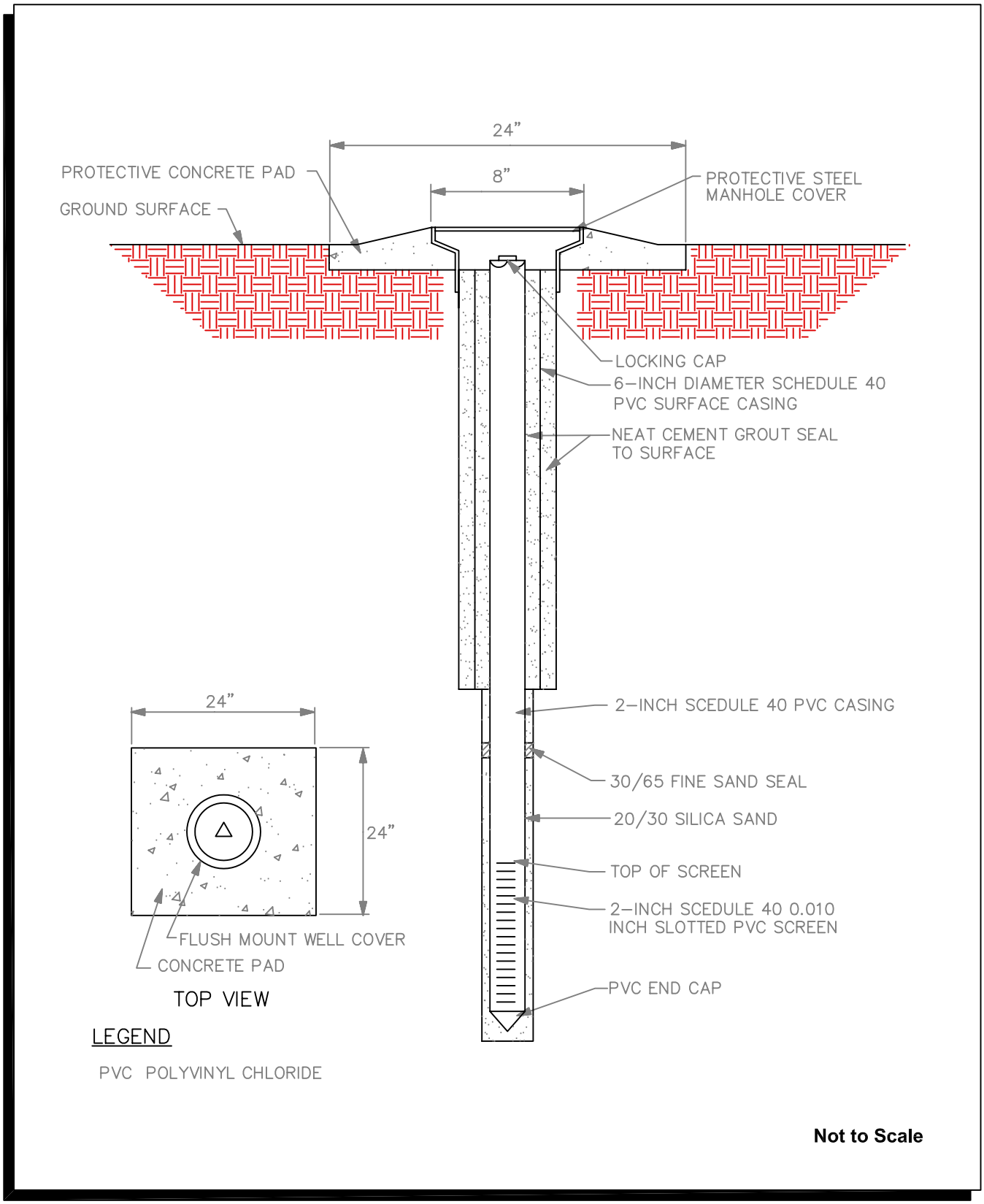
typical flush-mounted double-cased monitoring well is shown on Figure 3-4. It is anticipated that any wells installed into the IAS through contaminated portions of the SAS will be cased into the upper clay unit that begins at approximately 40 feet bgs. The need for surface casings at deeper depths will be determined based on the lithologic logs from the continuous borings that will be installed prior to conducting the preliminary assessment. Flush mounted steel well covers and 8-inch diameter manholes will be installed around the 2-inch ID wells. The manhole will consist of flush mounted 22-gauge steel, water resistant, welded box with 3/8-inch steel lid. A 2-foot by 2-foot by 6-inch thick concrete apron will be constructed around the manhole. The manhole shall be completed 2 inches above existing grade and the apron tapered to be flush with the existing grade at the edges such that water will run off of the apron. All locks supplied for the wells will be keyed alike. After installation, the ground surface, and the top of the PVC riser pipe will be surveyed to within 0.01-foot vertical accuracy. A monitor well construction diagram will be completed for each well installed.

The monitoring wells will be developed no sooner than 24 hours after installation to remove fine material from around the monitored interval of the well. Wells will be developed by bailing and surging, or by pumping, as determined by the field geologist. The pH, temperature, specific conductance, and turbidity measurements will be collected from the purge water. Wells will be developed up to a maximum of one hour or until these measurements become stable and the purge water is visibly free of sand. Wells will be developed until approved by the field geologist.

3.3.1 Surficial Aquifer System

Monitoring wells in the SAS will be installed using hollow stem auger drilling techniques. It is estimated that permanent monitoring wells will be installed at approximately 25 to 30 locations within the SAS. The actual number of locations and screen intervals of the wells will be based on the results of the preliminary assessment/vertical profiling. Monitoring well locations and screen intervals will be selected to provide horizontal and vertical delineation of the contaminant plume within the SAS.

Figure 3-4
Typical Double Cased Monitoring Well Construction Detail



3.3.2 Intermediate Aquifer System

Monitoring wells will be installed in the IAS using rotosonic drilling techniques. It is estimated that permanent monitoring wells will be installed at approximately 10 to 15 locations within the IAS. The actual number of locations and screen intervals of the wells will be based on the results of the preliminary assessment/vertical profiling. Monitoring well locations and screen intervals will be selected to provide horizontal and vertical delineation of the contaminant plume within the IAS.

3.3.3 Floridan Aquifer System

If required, monitoring wells will be installed in the FAS using rotosonic drilling techniques. Monitoring wells will only be installed into the FAS if the results of the preliminary assessment/vertical profiling indicate that the contamination extends to the FAS. The actual number of locations and screen intervals of the wells will be based on the results of the preliminary assessment/vertical profiling.

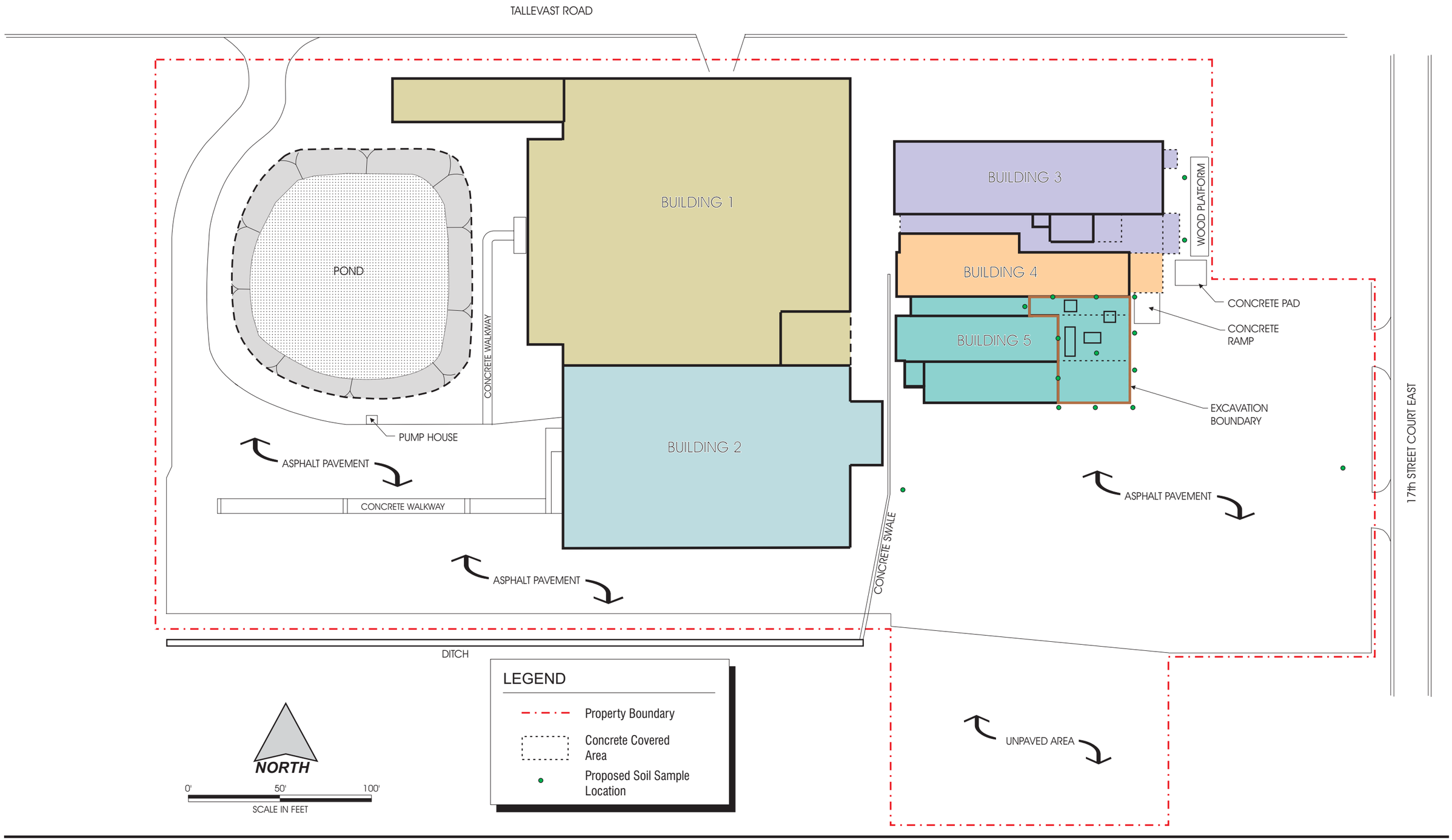
3.4 SOIL SAMPLING AND ANALYSIS

Based on a review of historical soil analytical results, subsurface soil samples will be collected from select locations during the preliminary assessment to evaluate if any contaminated soil is present on the site. Soil samples will be collected from the following locations:

- East of Building 5 in the vicinity of the former sumps (12 samples);
- East of Building 4 near the wood platform (2 samples);
- In the vicinity of a surface depression in the asphalt parking lot near the eastern property boundary where oil staining was previously observed (1 sample);
- In the vicinity of the former wastewater treatment line previously used to deliver wastewater from various buildings to the wastewater treatment facility / evaporation pond (1 sample).

The proposed soil sample locations are shown on Figure 3-5. Additional step out samples will be collected as needed based on the laboratory results.

FIGURE 3-5
PROPOSED SOIL SAMPLE LOCATIONS



The soil samples will be obtained using a DPT rig. Soil samples will be collected using either a 2-foot or 4-foot sampler with plastic liners. After extracting the sampler, the plastic liners will be opened and the sample transferred to the appropriate containers provided by the laboratory. The soil samples will be submitted to an off-site laboratory for analysis for VOCs, PAHs, TRPH, and TAL metals. The soil samples will be placed in a cooler on ice and submitted to a State-certified laboratory for analysis. The analyses to be performed on each soil sample are shown in Table 3-1.

TABLE 3-1

ANALYTICAL METHODS FOR SOIL SAMPLING

Analyte	Analytical Method
Volatile Organic Compounds (VOCs)	USEPA 8260
Polynuclear Aromatic Hydrocarbons	USEPA 8310
Total Petroleum Hydrocarbons	FLPRO
TAL Metals	USEPA 6010B

3.5 MONITORING WELL SAMPLING AND ANALYSIS

Groundwater samples will be collected from all newly installed monitoring wells. Prior to sampling, the monitoring wells will be purged in accordance with FDEP's Standard Operating Procedures for Field Activities (DEP-SOP-001/01, January 2002). During well purging, field parameters including water temperature, pH, conductivity, dissolved oxygen, and turbidity will be measured using a field water quality monitoring system. Stabilization of these parameters will serve as an indication of water representative of the formation, and their values will be recorded on field data logging sheets. Water quality stabilization will be determined using the following criteria: temperature +/- 1.0°C (plus or minus one degree Celsius), pH +/- 0.1unit, and specific conductivity +/- 10 percent and turbidity remains within a 10 Nepelometric Turbidity Unit (NTU) range for 2 consecutive readings.

Groundwater samples obtained for laboratory analysis will be collected with a peristaltic pump or submersible pump and dedicated pre-cleaned Teflon tubing. Purging and sampling will be conducted using the low flow quiescent purging and sampling technique. The samples will be transferred directly into the appropriate (pre-preserved) sample bottles for analysis. Water samples

will be placed in a cooler on ice and submitted to a State-Certified laboratory for analysis. A trip blank will be included with each sample shipment. The analyses to be performed on each groundwater sample are shown in Table 3-2.

TABLE 3-2

ANALYTICAL METHODS FOR MONITORING WELL SAMPLING

Analyte	Analytical Method
Volatile Organic Compounds (VOCs)	USEPA 8260

3.6 DATA EVALUATION AND REPORTING

Upon completion of all field work and laboratory analysis, a Site Assessment Report (SAR) will be prepared in accordance with the requirements specified in Chapter 62-780, F.A.C. The SAR will provide a detailed description of the investigation methodology and include complete summaries of the soil and groundwater analytical results. All sample locations and monitoring well locations will be presented on scaled figures. Boring logs, chain-of-custody forms, field forms, field screening results, and analytical reports will be included in Appendices of the report. The report will include a recommendation for further action at the site (active remediation, natural attenuation monitoring, risk assessment, etc.).

Section 4
Vapor Intrusion Air Monitoring

4.1 INTRODUCTION

This indoor air intrusion assessment scope-of-work has been developed to assess whether detectable concentrations of select chlorinated VOCs are in the indoor air within industrial buildings at the former ABC facility in Tallevast, Florida. The intent of this investigation is to assess if VOCs that could be associated with substances that have been identified as COCs in an underground contaminant plume can be detected in these building structures.

4.2 OBJECTIVE

The objective of this assessment will be to assess whether chlorinated VOCs associated with groundwater contamination at the site are present in indoor air at detectable concentrations in on-site buildings. It is not the objective of this investigation to perform any occupational or residential exposure evaluations.

4.3 APPROACH

The stated objective will be addressed through an investigation that will include identification of former ABC buildings most-likely-to-be impacted by vapor intrusion from contaminated groundwater, a data gathering task and an onsite inspection at the former ABC facility, development of a site-specific indoor air sampling plan based on information obtained during the data gathering and site inspection, and the selection and use of a sampling and analytical method designed for the measurement of low concentrations of airborne VOCs.

Relevant guidance used in the development of the investigation methodology includes:

Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils (Docket ID Number RCRA-2002-0033 Federal Register: November 29, 2002 (Volume 67, Number 230) (USEPA, 2002).

Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition Compendium Method TO-15 Determination of VOCs in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS) Center for Environmental Research Information Office of Research and Development United States Environmental Protection Agency Cincinnati, Ohio 45268 January 1999 (EPA/625/R-96/010b) (USEPA 1999).

4.4 BACKGROUND

As discussed in Section 2 of the SAPA, the former ABC facility is currently owned by BECSD, LLC and operates as WPI. WPI is an operating industrial facility that manufactures products including cable harnesses and assemblies, connectors, and board-level components. A contaminated groundwater plume is present beneath the former ABC site. The groundwater COCs as identified in the State of Florida Consent Order (Florida, 2004) include the following chlorinated VOCs:

- 1,1-DCA,
- 1,1-DCE,
- cis-1,2-DCE,
- PCE, and
- TCE.

Based on the concentrations of the COCs detected and the nature of the geology and hydrogeology at the former ABC site as discussed in Section 2, these COCs may represent a source of potential VOC releases into the air from subsurface vapor migration. Assuming that the chemical properties, such as volatility, solvency, miscibility, specific gravity, etc., are similar for these compounds, contamination detected at shallower depths is more likely to contribute to subsurface VOC vapor intrusion in on-site buildings than that detected at greater depths. VOC migration out of groundwater and into the air phase are influenced by the characteristics of the COCs and of the soils. Soils at the ABC site overlaying the affected groundwater are sandy indicating upwards diffusion of subsurface vapors. However, subsurface vapors may move laterally if they encounter impermeable natural or manmade features such as clays or foundations. It should be noted that contaminated soil is not considered to represent a source of VOCs at this site as it was removed in September of 2001. Further details of the soil removal program are presented in Tetra Tech's Initial Remedial Action Report dated December 12, 2001.

Figure 2-3 illustrates the orientation of site buildings to the contaminant plumes. As recommended in USEPA's 2002 Draft guidance, inhabited buildings (i.e. structures with enclosed air space designed for human occupancy including occupational settings) located within 100 feet (horizontally or vertically) of a contaminant plume should be considered as being in close proximity to the contaminant plume, and potentially subject to subsurface vapor intrusion (USEPA, 2002). As currently understood and illustrated in Figure 2-3, contaminated groundwater with TCE concentrations ranging from 3 to 1,000 µg/L underlies the five buildings at the site. All buildings therefore will be included in the site inspection to identify possible indoor air sampling locations.

The former ABC facility is currently operational. Consequently, other sources may also contribute chlorinated VOCs to indoor air. This may include VOCs potentially associated with present site operations. Additionally, offsite sources may contribute chlorinated VOCs to ambient air and indoor air at the former ABC facility. To identify potential onsite operations and offsite sources, and to identify sampling locations for the evaluation of potential subsurface intrusion of chlorinated VOCs from groundwater, a site inspection and data gathering task will be performed.

4.5 ON-SITE INSPECTION

The objectives of the on-site inspection will be to identify proposed sampling locations and to document on-site and off-site conditions that might affect the results of the sampling and analysis. Information collected during the site inspection will be used to develop a site-specific indoor air sampling plan for the former ABC facility. The site inspection will focus on three primary areas: existing and historic site operations; inspection of site buildings; and, outdoor background sampling considerations.

A review of current and historic site operations will be performed to identify VOC-containing chemicals that have been and currently are used at the site. Information will be obtained through a review of available historic information, and through interviews of site personnel regarding past and present work practices including the use, storage, and disposal of VOCs. If available, historic industrial hygiene sampling results will be reviewed for information regarding the types and concentrations of airborne VOCs previously investigated at the site. Information on the location of manufacturing operations and associated equipment, and any historic changes in locations will be requested to document buildings potentially containing residual VOCs.

Visual inspections will be performed in all five on-site buildings. Floor plans and mechanical schematics of each building (if available) will be reviewed as part of this site inspection. This will be performed to understand building size and configuration and to identify features that might enhance subsurface VOC migration or lead to concentration of potential indoor air contaminants. The contaminant plume map will be reviewed to identify portion(s) of the site buildings overlaying the highest groundwater contaminant concentrations. These locations will be noted and identified during the on-site inspection. During the site inspection, physical building and site features that may influence subsurface vapor intrusion will also be noted. This may include features such as cracks and subsurface utility conduits as well as inlets for plumbing or other piping, and drain tiles and sumps. Physical plant and process equipment that might affect sampling results will be identified. This may include building air patterns influenced by

mechanical systems (e.g., heating and cooling systems and boilers, and localized and general exhaust systems), as well as natural ventilation influences. Locations identified as having the highest potential for subsurface vapor intrusion will be selected for "worst case" sampling.

The presence of potential on-site background sources of VOCs will be documented during the site inspection through the use of visual observations and direct-reading monitoring instrumentation. As concentrations of VOCs detected in indoor air may represent typical indoor concentrations of VOCs from existing building occupancies and uses, and not contributions from subsurface vapors, it is important to characterize potential VOC sources within the buildings. Material Safety Data Sheets (MSDSs) will be reviewed to identify the potential presence of VOC-containing chemicals used in site operations. The locations of the VOC-containing chemicals and their use will be recorded. A visual inspection of all accessible areas will be performed and site operations documented in order to identify the potential for transport of VOCs to remote locations that might affect sample results. A limited inspection of the building(s) ventilation system(s) will be performed to identify potential transport pathways for VOCs. This visual evaluation will include (but not be limited to) documentation of common supplies and returns, locations of outside air and makeup air intakes, locations of general and/or localized ventilation and associated exhausts.

Limited ventilation evaluations will be performed during the initial site inspection. These activities may include simple qualitative tasks such as discharging smoke tubes to discern visible air flow patterns in the buildings, as well as some quantitative tasks such as obtaining anemometer readings to determine air flow directions and rates in building areas. These qualitative and quantitative tasks will be performed to aid in identifying targeted locations for proposed indoor air sampling. The intention will be to identify areas where significant mechanical and natural ventilation is limited or absent. Additionally, these actions will be performed to ensure that sample locations are selected in areas that are not likely to be influenced by ongoing operations or activities that could adversely impact the sample results. For example, designated sampling locations should not be downwind of any painting or parts cleaning activities. By obtaining and observing some simple air flow parameters, these types of issues can be better avoided.

These limited ventilation evaluation tasks will also aid in identifying activities that can be accomplished to limit impacts to air sampling that could result from significant ventilation activity. For example, in addition to visibly obvious actions such as identifying doors or windows that can/should be closed during the sampling period, this approach will also aid in identifying any mechanical ventilation systems that should be avoided or deactivated during the sampling period. This will enable a sampling approach that is most likely to simulate "worst case" sampling conditions where any airborne substances would be able to accumulate and be detected. In this approach, if these selected sampling locations yield no detectable airborne contaminations, then it will be possible to conclude that no other locations in the buildings would be impacted by airborne releases.

A direct-reading PID will be used during the site inspection to perform a qualitative screening of proposed sampling locations. The PID will be equipped with a lamp(s) capable of detection within the range of ionization potentials for the contaminants of concern. A PID equipped with a probe strength of greater than 9.45 electronvolts will respond to concentrations of TCE in the air. Any sustained PID readings will be used as a criterion for selecting air sampling locations. The PID will be calibrated according to the manufacturer's instructions each day prior to use and a record of the calibration data maintained in a field log book. A PID may not be sensitive enough to detect VOCs at low concentrations, consequently a negative result will not rule out a location for possible sampling if other factors such as preferential transport pathway, negative pressurization, and limited air changes are present. The PID will also be used to identify potential operations-related sources of VOCs within indoor air. A location with a positive PID response may be ruled out as a sample location if it indicates a possible on-site (i.e. operations-related) source.

During the site inspection, multiple prospective outdoor background sampling locations will be evaluated. The purpose of the outdoor background samples will be to identify those VOC contributions to ambient air not related to groundwater contamination. To identify possible background sample locations, the site boundaries will first be inspected for a suitable location. Using the plume map, a location will be identified that falls outside of the contaminant plume if possible, or is located over an area of low contaminant concentration as far upgradient from the

source as possible. Prospective locations will be screened with a PID for the presence of VOCs. Information on potential on-site and off-site sources of VOCs will be recorded including the presence of other industrial facilities, emission stacks, high vehicular traffic, dry cleaners, and on-site emission sources such as process exhaust. Consideration will also be given to sample security. Prevailing wind directions will also be investigated and noted. Multiple locations will be identified so that when sampling is performed, the sampled location will be positioned upwind of the subject site.

Following completion of onsite inspection activities, the collected information will be evaluated and a detailed site-specific sampling plan will be developed. The sampling plan will identify the number of samples to be collected, the sampling locations, and the purpose of the sample (i.e., characterization versus background). Sampling locations within buildings will be selected that reflect potential worst case vapor intrusion. Additionally, at least one potential ambient (exterior) background will be identified. Selection of worst case location(s) will be based on the information gathered during the site inspection that indicates the highest potential for subsurface vapor intrusion and/or the highest potential for accumulation of indoor air contamination. As previously discussed, this may include factors such as foundation cracks or other conduits that may enhance subsurface vapor migration, negative pressurization, low air changes, orientation to the contaminant plume, and positive PID results. If possible, these sample locations will have the lowest potential for influence from facility operations. To quantify potential contributions of VOCs to indoor air from ambient air (i.e. not related to site operations or groundwater contamination), sample locations will be identified at outdoor on-site locations. As previously discussed, criteria for the selection of outdoor background sample locations will include: lowest potential influence from the contaminant plume and site operations, lowest potential influence from off-site sources such as industrial operations, emission stacks, heavy vehicular traffic, and dry cleaning operations, upwind location, and sample security.

4.6 AIR SAMPLING AND ANALYSIS

Sampling will commence following acceptance of the site-specific sampling plan and authorization to proceed. Sampling will be performed using USEPA Method Toxic Organic 15

(TO-15) for the collection and analysis of VOCs (USEPA, 1999). In accordance with TO-15, individual evacuated Summa canisters will be used to collect all air samples. Summa canisters are specially-treated stainless steel evacuated canisters typically used for the sampling of VOCs. Six-liter Summa canisters equipped with in-line particulate filters and integral controllers to set the rate of filling during sampling will be used. Samples will be collected by opening the valve on the canister, which allows outside air to enter the canister at the rate set by the controller. The controllers are calibrated in the laboratory and shipped to the field. A flow rate will be selected that will leave the Summa canisters under some vacuum at the conclusion of sampling to ensure sufficient driving force to collect a steady flow rate throughout the sampling event. Summa canisters will be certified clean (less than 0.2 parts per billion (ppb) volume of targeted compounds) by the laboratory prior to the performance of sampling in accordance with Section 8.4 of the TO-15 methodology (USEPA, 1999).

If possible, interior sampling locations will be isolated (i.e. windows and doors shut) for a period of 12 to 24 hours before the samples are collected. Each canister will collect an uninterrupted 24 hour sample. Sampling canisters will be elevated to an approximate height of 5 feet above the floor or ground surface to estimate normal breathing zone height. Each sample location will be routinely inspected during the sampling period to assure appropriate operation of the sampling devices, sample integrity, and to document conditions within the sampled area that might affect the results. It is anticipated that at a minimum, one sample will be collected in each building, Some buildings may have more than one sample collected based on the results of the data gathering and site inspection tasks.

The collected samples will be submitted for analysis using GC/MS with cryogenic concentration as described in Sections 9 and 10 of EPA Method TO-15 (USEPA, 1999). This method will be used because of the low reporting limits and the large number of VOCs that can be analyzed. Method reporting limits for chlorinated VOCs may typically range from 0.2 to 0.5 ppb depending on the laboratory and equipment used.

Summa canisters used for sample collection will be shipped and stored at ambient temperatures. All appropriate chain-of-custody documentation will be completed for each sample. Analysis of

the samples will be performed within the required maximum holding time of 30 days from collection. Detailed information on collection of duplicate samples, blanks, laboratory, methods, calibration criteria, project required reporting limits, and quality control acceptance criteria will be presented in a project-specific Quality Assurance document.

4.7 DOCUMENTATION

A bound field logbook with consecutively number pages will be assigned for specifically for this project. All entries will be recorded in indelible black ink. Any corrections or modifications to logbook entries will be require that the entrant cross out erroneous data with a single line and dating and initialling the entry. At the end of each workday, the responsible sampler will sign the logbook pages and any unused portions of logbook pages will be crossed out, signed, and dated. At a minimum, the logbook will contain the following information:

- Project name and location
- Date and time
- Personnel in attendance
- Ambient environmental conditions
- Work performed
- Field observations
- Sampling performed, including specifics such as location, type of sample, type of analyses, and sample identification
- Field analyses performed, including results, instrument checks, problems, and calibration records for field instruments
- Descriptions of deviations from the work plan
- Problems encountered and corrective action taken
- Identification of field quality control samples
- Quality control activities
- Verbal or written instructions
- Activities within the sampling areas

- Activities that might bias the results of the sampling

4.8 QUALITY ASSURANCE/QUALITY CONTROL

In conjunction with the development of the Site-Specific Indoor Air Sampling Plan, a Quality Assurance Project Plan (QAPP) will be drafted. The QAAP will follow USEPA Requirements for Quality Assurance Project Plans (QA/R-5). USEPA, Washington, D.C. 2001. The QAAP will identify the data quality objectives of the investigation consistent with procedures detailed in Guidance for the Data Quality Objectives Process (G-4) USEPA, Washington, D.C. 2000. The QAPP will address laboratory Quality Assurance and Quality Control (QA/QC). Laboratory QA/QC will be in accordance with USEPA's Method TO-15 (USEPA, 1999). Additionally, the analytical laboratory will be certified by the State of Florida for the performance of TO-15 analyses. Data validation methodology will also be addressed in the QAPP and will be in accordance with USEPA's Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA-540/R-99-008 PB99-963506 October 1999).

4.9 REPORTING

Upon completion of the field work, laboratory analysis, and data validation, a letter report summarizing the results of the investigation will be prepared for submittal to the FDEP. The report will include a complete summary of the sample results as well as scaled figures showing the sample locations. Field logs, chain-of-custody forms, and analytical reports will be included in Appendices of the report. All analytical data will be reported in ppb and in weight-per-volume units such as micrograms-per-cubic meter ($\mu g/m^3$). Key aspects of the report will include:

- Results from indoor air sampling locations by building
- Results of background sample analyses
- Comparison of indoor air sample results to background results
- Comparison of indoor air samples across buildings
- Comparison of contaminant plume concentrations and indoor air concentrations

A discussion of uncertainties associated with the investigation will be provided. Areas of potential uncertainty may include: accuracy of historic information, sample location selection, sampling and analytical methodology, effects of ambient environmental conditions, potential seasonal variations, and characterization of on-site and off-site background contributions. Based on observations recorded in the field during the sampling events, the data interpretation and identified uncertainties, a conclusion will be provided regarding the presence or absence of detectable concentrations of groundwater COCs in indoor air at the former ABC facility at the time of sampling.

Section 5
References

1. Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition Compendium Method TO-15 Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS) Center for Environmental Research Information Office of Research and Development U.S. Environmental Protection Agency Cincinnati, Ohio 45268 January 1999 (EPA/625/R-96/010b).

2. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils (Docket ID No. RCRA-2002-0033 Federal Register: November 29, 2002 (Volume 67, Number 230)

3. Florida Department of Environmental Protection, Petroleum Contamination Site Cleanup Criteria, Chapter 62-770, FAC, May 26, 1999.

4. Florida Department of Environmental Protection, Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, FAC, May 26, 1999.

5. Florida Department of Environmental Protection, Draft Rule, Contaminated Site Cleanup Criteria, Chapter 62-780, FAC, July 16, 2004.

6. Southwest Florida Water Management District, Final Report, ROMP TR7-2 ONECO Monitor Well Site, Manatee County, Florida, Drilling and Testing, January 1995.

7. State of Florida Department of Environmental Protection Consent Order OGC File No. 04-1328 Executed July 29, 2004

8. Tetra Tech, Inc., Final Phase I Environmental Assessment, Former American Beryllium Company. February 7, 1997.

9. Tetra Tech, Inc., Contamination Discovery Report, Building #5, Former American Beryllium Company. July 7, 2000.

10. Tetra Tech, Inc., Contamination Assessment Plan, Former American Beryllium Company. September 25, 2000.

11. Tetra Tech, Inc., Contamination Assessment Report, Former American Beryllium Company. May 2003.

12. Tetra Tech, Inc., Contamination Assessment Report, Former American Beryllium Company. April 30, 2001.

13. Tetra Tech, Inc., Initial Remedial Action Report, Former American Beryllium Company, December 12, 2001.

14. Tetra Tech, Inc., Interim Data Report and Contamination Assessment Plan Addendum #2, Former American Beryllium Company, September 13, 2002.

Appendix A

Technos Geophysical Logging Report

TECHNOS INC.

Technos, Inc.
Consultants in Applied Earth Sciences
Specialists in Site Characterization
10430 Northwest 31st Terrace
Miami, FL 33172-1200

Phone: 305-718-9594
Fax: 305-718-9621
Email: info@Technos-Inc.com
Website: www.Technos-Inc.com

July 13, 2004

Mr. Phil Skorge
Tetra Tech, Inc.
401 E. Ocean Blvd.
Long Beach, CA 90802

Dear Mr. Skorge:

Enclosed are three copies of our letter report documenting the TV and geophysical logging of potable water wells located in Tallevast, Florida. A copy of the TV logging videotape has been included. I have also enclosed a copy of the invoice for this work.

It was a pleasure working with you on this project. If you have any questions about the logging or need further assistance, please don't hesitate to call.

Sincerely,

Daniel W. Casto

Daniel W. Casto
Geophysicist

TECHNOS INC.

Report
Logging of Potable Water Wells
In Tallevast, Florida

for
Tetra Tech, Inc.
Long Beach, California

July 13, 2004
Technos Project No. 04-158

BACKGROUND

Tetra Tech, Inc. contracted Technos, Inc. to conduct television (TV) and geophysical logging of potable water wells within a community located in Tallevast, Florida as part of an ongoing groundwater study. The purpose of the logging was to determine the locations of screened intervals within the well casings and possible presence of bentonite mud seals surrounding the well casings. Fieldwork was carried out in two mobilizations. The first series of field days took place between June 30th and July 2nd, 2004. The second series took place between July 6th and July 8th, 2004. A total of 5 fieldwork days were required to complete the work.

APPROACH

TV logging was initially proposed for visual inspection of the current well conditions and to locate the screened intervals within the casings for all accessible wells. The geophysical logging was initially limited to natural gamma in order to define possible bentonite mud seals surrounding the well casing.

TV logging was performed in the first three wells that were encountered: Wells #1, #2 and #3 (see Table 1 for locations). Upon reviewing the TV logs for Wells #1, #2 and #3, it was determined that these wells consist of steel casing to a depth of approximately 30 feet below grade. Wells #1 and #3 have open-hole conditions below the casing to

depths of approximately 171 and 91 feet, respectively. The TV logs show highly deteriorated steel casing and did not indicate a clear, sharp transition between the cased and open-hole portions within these wells. There were no clear indications of screened intervals found in any of the TV logs.

With the belief that the remaining wells may be of similar construction and in order to better define the bottom of the steel casing, a decision was made to abandon the TV logging and add additional geophysical logging to the project. In particular, an induction conductivity probe was used define the bottom of the casing where steel casing was present at the surface. For wells cased with PVC, a caliper probe was used to define the bottom of casing. The use of the geophysical logs in lieu of the TV logs saved much field time and provided the desired well construction information.

A total of 22 wells in the area were logged (Table 1). The use of the induction and natural gamma probes was included in all accessible wells to provide geologic information of the area. The caliper log was used in select wells only. All depths reported in the logs are referenced to ground surface.

TV LOGGING

A Rees Instrument R93 high-resolution, black-and-white, down-hole video camera was used to directly observe conditions within the wells. This camera is equipped with variable iris and focus as well as its own built-in lighting system. An axial lens was initially used to view the conditions of the borehole and/or casing as the camera was lowered down the hole. However, the axial lens did not provide an adequate image due to the lack of reflected light from the casing below the water level within Wells #1 and #2. A radial lens was used to gain a better image of the well casing.

Television images were recorded continuously on Digital-8 format videotape as the camera moved down the wells. The borehole number (1st two fields of a number string)

and depth in meters (fields 8 through 11) are shown in the center of the screen. It should be noted that the tenth field of the string (which is always zero) is actually the decimal place holder (e.g. “1200500290200000” is hole #12 at a depth of 29.2 meters).

GEOPHYSICAL LOGGING

Natural Gamma Log

A natural gamma probe measures the amount of natural gamma radiation that is emitted by rocks and unconsolidated materials surrounding the borehole. The chief use of natural gamma logs is the identification of lithology and stratigraphic correlation. In particular, the gamma log is useful for evaluating the presence, variability and integrity of clays and shales. The gamma log can be used in open or cased holes above and below the water table.

Gamma logs were recorded with a Mt. Sopris Instrument Co., Inc. MGX II logging system with a natural gamma combination probe. This probe measures natural gamma radiation and has a radius of investigation of about 6 to 12 inches from the borehole wall. The measured response is in units of counts per second (cps). The probe was lowered to the bottom of each well and logged upward at approximately 15 feet per minute (fpm). The data were digitally recorded and plotted using WellCAD.

Induction (Conductivity) Log

Electrical conductivity measurements were made using an induction probe that measures conductivities to a radius of about 2.5 feet from the probe. This log provides continuous data through a PVC-cased or open borehole both above and below the water table. Above the water table, the log responds to soil and rock conductivities plus the degree of moisture present and the specific conductance of the moisture. Below the water table, the log responds to soil and rock conductivity plus the saturated pore fluids. The specific conductance of the pore fluid will often have the dominant effect on the

measurement. Within steel casing, the induction probe yields anomalously low values (typically << 0) and does not provide geologic data.

The induction logs were digitally recorded as the probe moved up the boreholes at approximately 15 fpm. The induction log measures conductivity in units of milliSiemens per meter (mS/m). The data were plotted using WellCAD.

Caliper Log

A caliper probe was run in select wells to provide information on casing or borehole diameter changes. A caliper log provides the well diameter as a function of depth, and indicates breaks in the casing and changes in the open-hole diameter below the casing.

The caliper log data were collected with a Mt. Sopris Instrument Co., Inc. MGX II logging system and standard three-arm caliper probe. The caliper log responds to borehole diameter changes in units of inches. The data were digitally recorded and plotted using WellCAD.

RESULTS

The TV logs are included with this report in VHS format. Hardcopies of the geophysical logs for each well are also included with this report. Table 1 summarizes the findings for each well.

TV Logging

TV logging was performed in Wells #1, #2 and #3 (see Table 1 for locations). The axial (downward looking) lens did not provide a clear view of the steel casing due to heavy corrosion and consequent lack of reflected light below the water level. A radial (side looking) lens was added to the TV logging to gain a better image of the casing. The TV logs for Wells #1, #2 and #3 show steel casing to a depth of approximately 30 feet below grade. Well #2 extends to a total depth of 30 feet and is cased to total depth. Wells #1 and #3 show open-hole below the steel casing to depths of 170.6 and 90.8 feet, respectively. The steel casing in all three wells appears to be highly corroded and in many instances appears to have holes or has disintegrated into pieces.

Geophysical Logging

The induction logs for the steel-cased wells clearly show the bottom of the casings in those wells where the induction probe could pass into open borehole (e.g. Well #1). In those wells cased with PVC, the caliper logs clearly show the bottom of casing (Wells #11 and #13).

The natural gamma logs show a highly variable subsurface due to variations in clay content. The larger spikes in the natural gamma logs (>>100 cps) likely represent phosphates that are prevalent in the local geology. The lack of observed screened intervals and the suspected well construction preclude the use of bentonite mud seals surrounding the well casings. Also, the ability to distinguish the presence of mud seals from the natural variations in the local geology would be greatly limited due to the high counts observed throughout the natural gamma logs.

General Well Conditions

The TV logs show open-hole conditions (where the borehole remained open) below highly deteriorated steel casing but did not indicate a clear, sharp transition between the cased and open-hole portions within these wells. Due to the severely corroded steel, no clear indications of screened intervals were found in the TV logs.

Apart from Well #6, where casing extends to a depth of 63 feet, the casing depths for the remaining wells, as determined from the geophysical logs, range from 28 to 40 feet below grade (Table 1). The caliper logs reveal that the borehole diameter is close in size to the casing diameter (e.g. Well #3), indicating that the casings were driven into the borehole during well installation.

Wells #2 and #21 are relatively shallow and have steel casing to their total depths (Table 1). Based upon the conditions of the steel casings seen in the TV logs, Wells #2 and #21 are likely recharged through breaches in the casings. The conditions of Well #16 are unknown due to a blockage within the 2" casing that prevented both geophysical logging probes from passing through the casing any deeper than 24 feet.

CONCLUSIONS

A total of 22 wells were inspected (Table 1). The wells range in depth from 26.2 to 233.1 feet. All but two wells are driven-steel cased (Well #11 and #13 are driven-PVC cased) with open-hole conditions below the casing where the borehole has remained open. Overall, the steel-cased wells appear to be in poor and deteriorating conditions.

Due to the severely corroded steel, no clear indications of screened intervals were observed in the TV logs. The well construction (i.e. open-hole below driven casing) precludes the use of bentonite seals, and no such seals were identified within the natural gamma logs.

Table 1
Summary of Findings for Logged Wells

Well ID	Well Location	Total Depth (feet)	Casing Material	Casing Depth (feet)	Remarks
#1	7519 18th ST E	170.6	4” steel	28	
#2	7716 17th ST CT E	30.0	3” steel	T.D.	casing present to T.D.; no screen evident in TV log
#3	7624 16th ST E	90.8	2” steel	31	caliper log shows very tight (2”) borehole below casing
#4	7615 18th ST E	69.0	3” steel	28	
#5	7619 18th ST E	105.8	2” steel	36	
#6	7611 18th ST E	102.2	3” steel	63	metal (possible dropped casing) present at ~70 feet
#7	7609 18th ST E	153.1	6” steel	28	possible metal at ~96 feet
#8	7604/7608 16th ST E	74.5	2” steel	30	nat gam probe blocked at 20 feet
#9	7616 16th ST E	97.2	3” steel	34	
#10	1710 76th AVE DR E	65.0	2” steel	31	nat gam probe blocked near surface
#11	7609 16th ST E	129.5	4” PVC	30	metal at ~100 feet; noisy caliper probe
#12	7621 16th ST E	233.1	4” steel	36	metal at ~157 feet
#13	7603 19th ST E	95.2	3” PVC	32	
#14	1507 Tallevast RD	84.0	2” steel	29	nat gam probe blocked near surface
#15	1811 Tallevast RD	77.5	2” steel	31	nat gam probe blocked at 24 feet
#16	7515 18th ST E	unknown	2” steel	unknown	induction & nat gam probes blocked at ~24 feet
#17	2003 Tallevast RD	142.7	3” steel	34	metal between ~110 and 120 feet; metal at bottom of hole
#18	1864 Tallevast RD	126.9	3” steel	37	
#19	7624 19th ST E	114.0	3.25” steel	31	
#20	1804 Tallevast RD	211.0	8”(?) steel	40	2” access opens into larger (unknown) diameter casing
#21	1712 Tallevast RD	26.2	2” steel	T.D.	nat gam probe blocked at 19 feet; casing present to T.D.
#22	1615 Tallevast RD	171.7	3” steel	36	

*All depths are reference to ground surface

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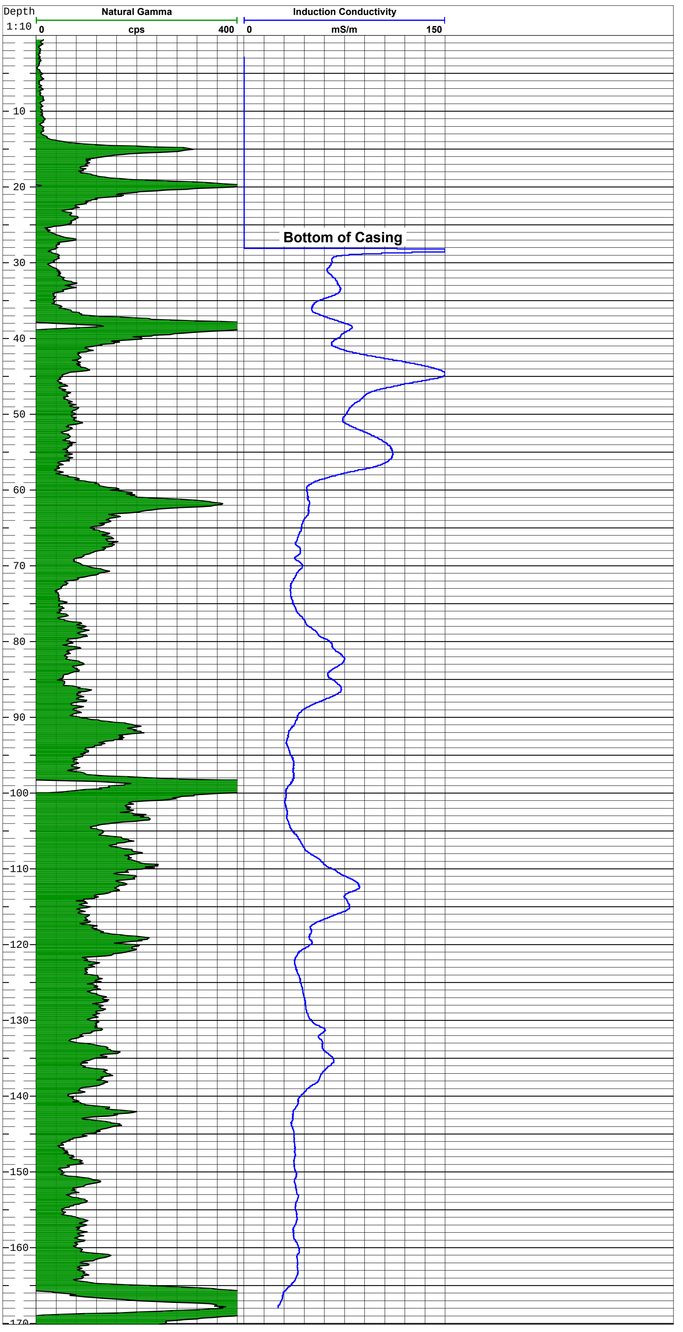
Project #:	04-158	**Boring Name:**	Well #01
Site Location:	Tallevast, Florida	**Boring Location:**	7519 18th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	12.5"
Depth Reference:	grade	**Casing Depth:**	~28 feet
Reference Elev.:	n/a	**Hole Depth:**	170.6 feet
Casing Diameter:	4"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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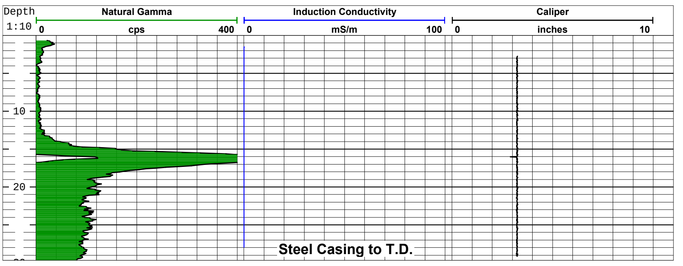
Project #:	04-158	**Boring Name:**	Well #02
Site Location:	Tallevast, Florida	**Boring Location:**	7716 17th ST CT E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	4"
Depth Reference:	grade	**Casing Depth:**	T.D.
Reference Elev.:	n/a	**Hole Depth:**	30.0 feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction, caliper	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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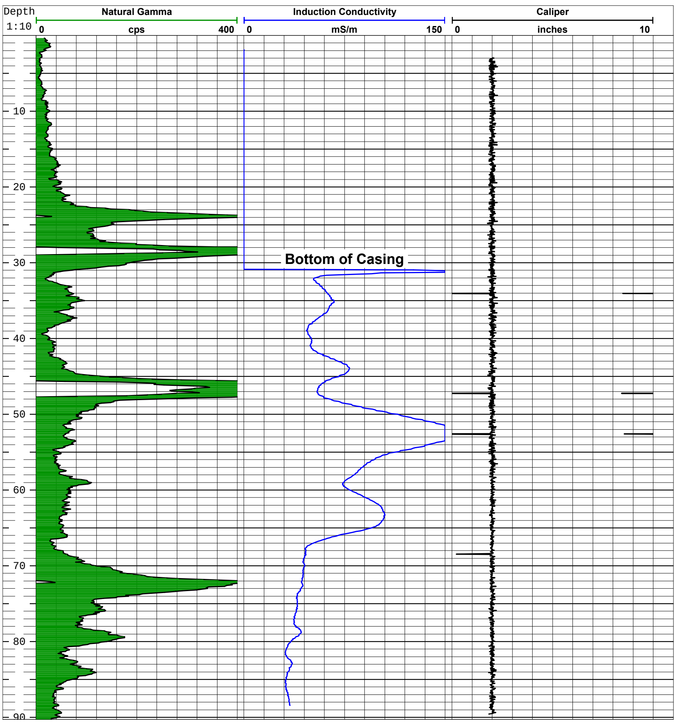
Project #:	04-158	**Boring Name:**	Well #03
Site Location:	Tallevast, Florida	**Boring Location:**	7624 16th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-4.5"
Depth Reference:	grade	**Casing Depth:**	~31 feet
Reference Elev.:	n/a	**Hole Depth:**	90.8 feet
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction, caliper	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m, inches		

Filename(s):

Comments:



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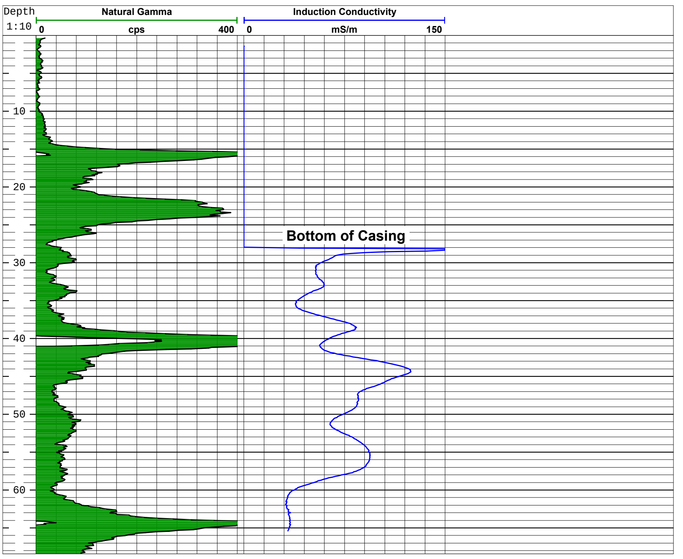
Project #:	04-158	**Boring Name:**	Well #04
Site Location:	Tallevast, Florida	**Boring Location:**	7615 18th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-10"
Depth Reference:	grade	**Casing Depth:**	~28 feet
Reference Elev.:	n/a	**Hole Depth:**	69.0 feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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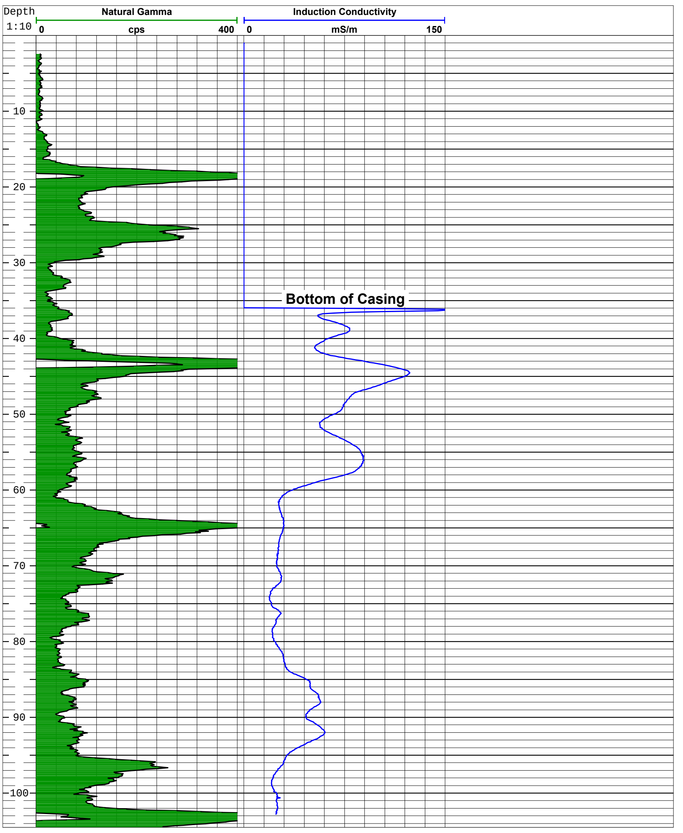
Project #:	04-158	**Boring Name:**	Well #05
Site Location:	Tallevast, Florida	**Boring Location:**	7619 18th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-8"
Depth Reference:	grade	**Casing Depth:**	~36 feet
Reference Elev.:	n/a	**Hole Depth:**	105.8 feet
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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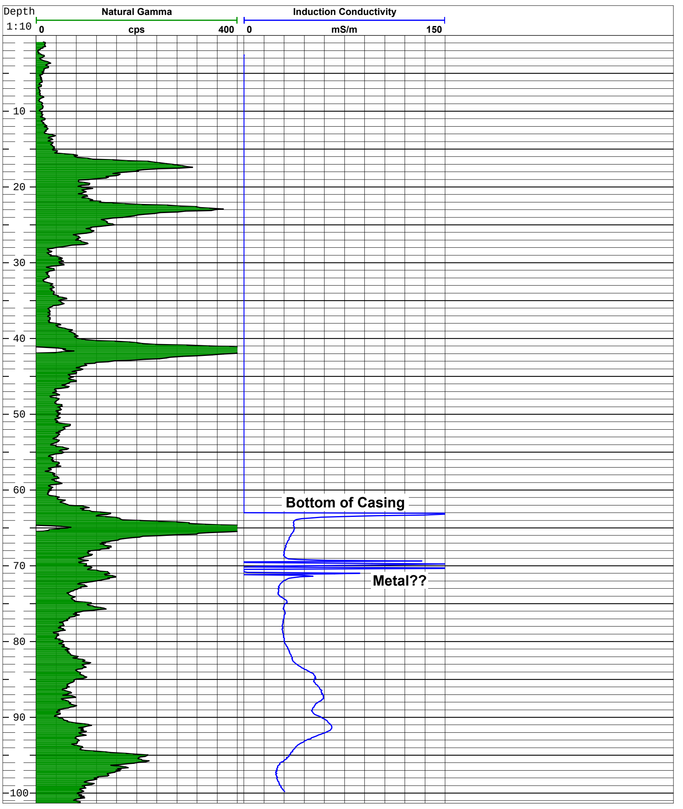
Project #:	04-158	**Boring Name:**	Well #06
Site Location:	Tallevast, Florida	**Boring Location:**	7611 18th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-16"
Depth Reference:	grade	**Casing Depth:**	~63 feet
Reference Elev.:	n/a	**Hole Depth:**	102.2 feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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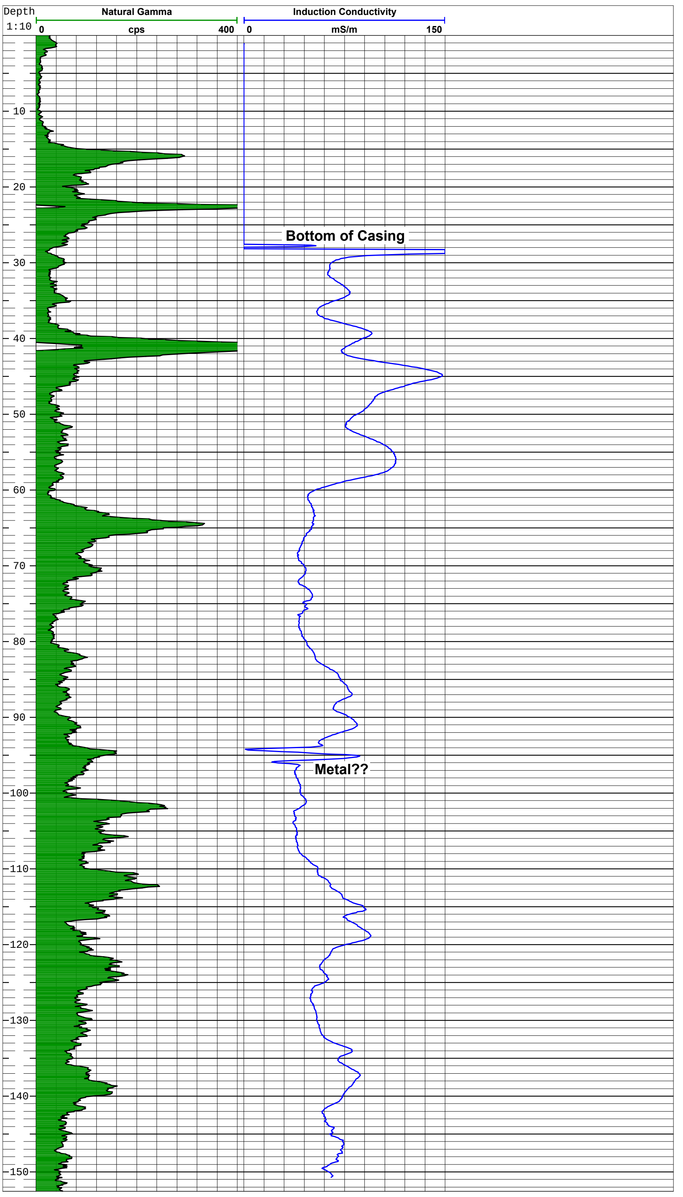
Project #:	04-158	**Boring Name:**	Well #07
Site Location:	Tallevast, Florida	**Boring Location:**	7609 18th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	4"
Depth Reference:	grade	**Casing Depth:**	~28 feet
Reference Elev.:	n/a	**Hole Depth:**	153.1 feet
Casing Diameter:	6"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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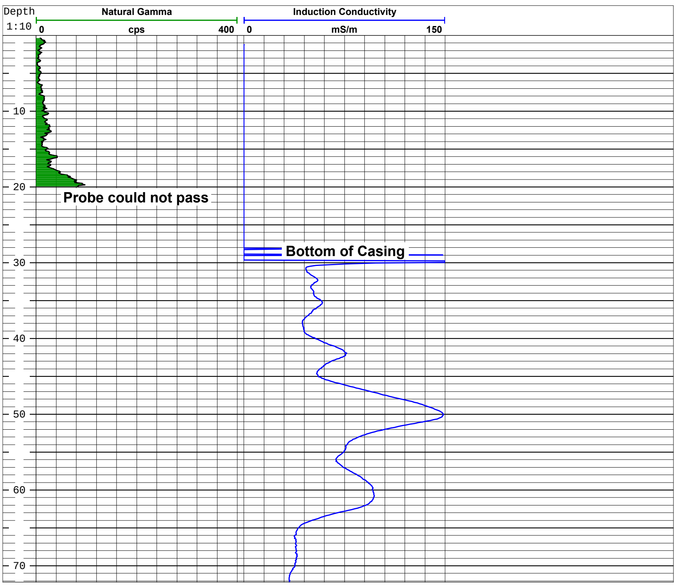
Project #:	04-158	**Boring Name:**	Well #08
Site Location:	Tallevast, Florida	**Boring Location:**	7604/7608 16th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	18.5"
Depth Reference:	grade	**Casing Depth:**	~30 feet
Reference Elev.:	n/a	**Hole Depth:**	74.5 feet
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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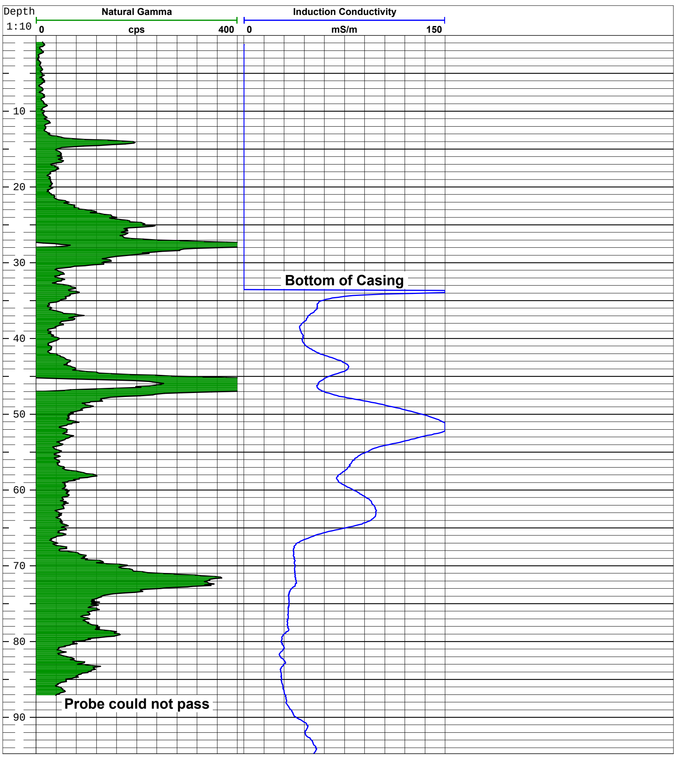
Project #:	04-158	**Boring Name:**	Well #09
Site Location:	Tallevast, Florida	**Boring Location:**	7616 16th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-16"
Depth Reference:	grade	**Casing Depth:**	~34 feet
Reference Elev.:	n/a	**Hole Depth:**	97.2feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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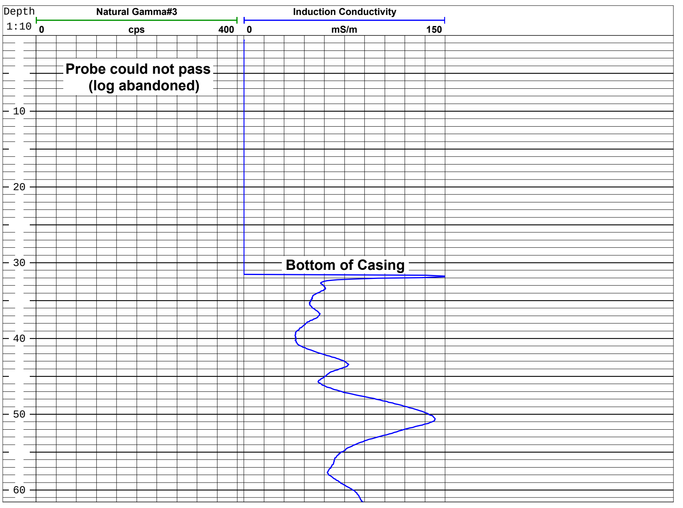
Project #:	04-158	**Boring Name:**	Well #10
Site Location:	Tallevast, Florida	**Boring Location:**	1710 76th AVE DR E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	6"
Depth Reference:	grade	**Casing Depth:**	~31 feet
Reference Elev.:	n/a	**Hole Depth:**	64.0 feet
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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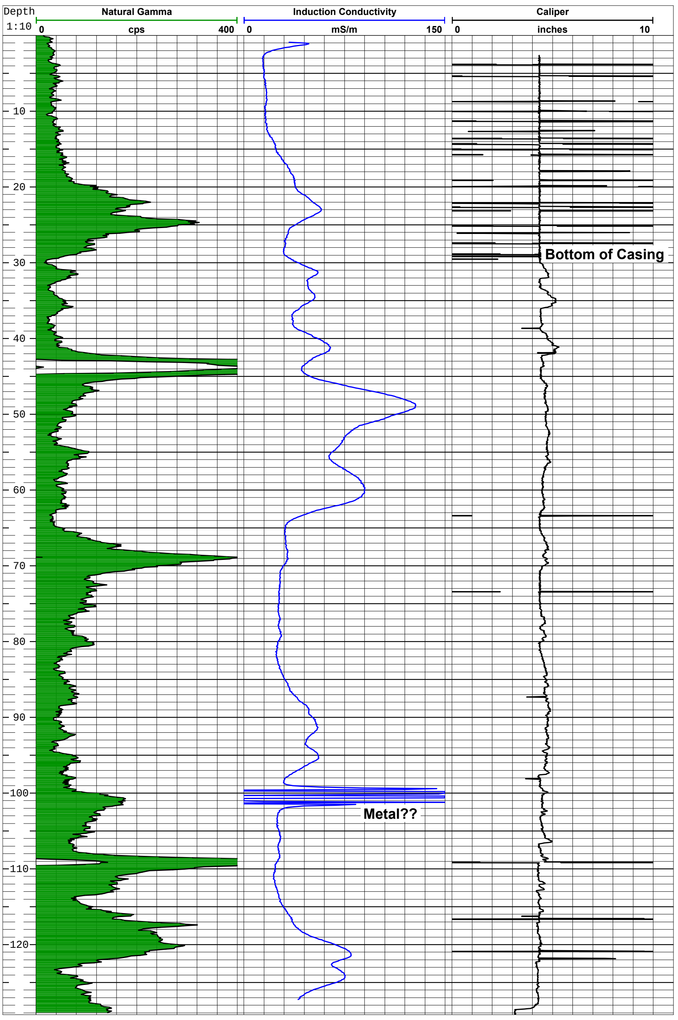
Project #:	04-158	**Boring Name:**	Well #11
Site Location:	Tallevast, Florida	**Boring Location:**	7609 16th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	8"
Depth Reference:	grade	**Casing Depth:**	~30 feet
Reference Elev.:	n/a	**Hole Depth:**	129.5 feet
Casing Diameter:	4"	**Water Level:**	unknown
Casing Material:	PVC		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction, caliper	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m, inches		

Filename(s):

Comments: *NOTE: Caliper log calibration is slightly off and has superimposed system noise.



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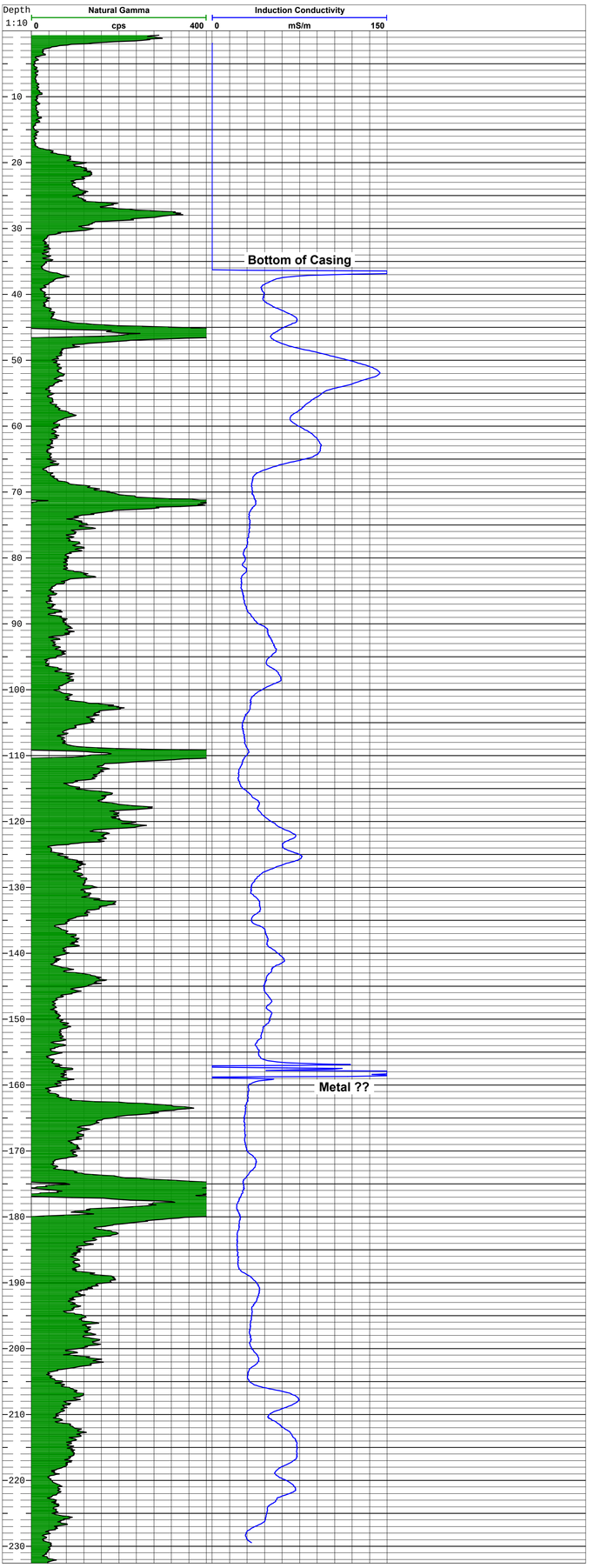
Project #:	04-158	**Boring Name:**	Well #12
Site Location:	Tallevast, Florida	**Boring Location:**	7621 16th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	4"
Depth Reference:	grade	**Casing Depth:**	~36 feet
Reference Elev.:	n/a	**Hole Depth:**	233.1 feet
Casing Diameter:	4"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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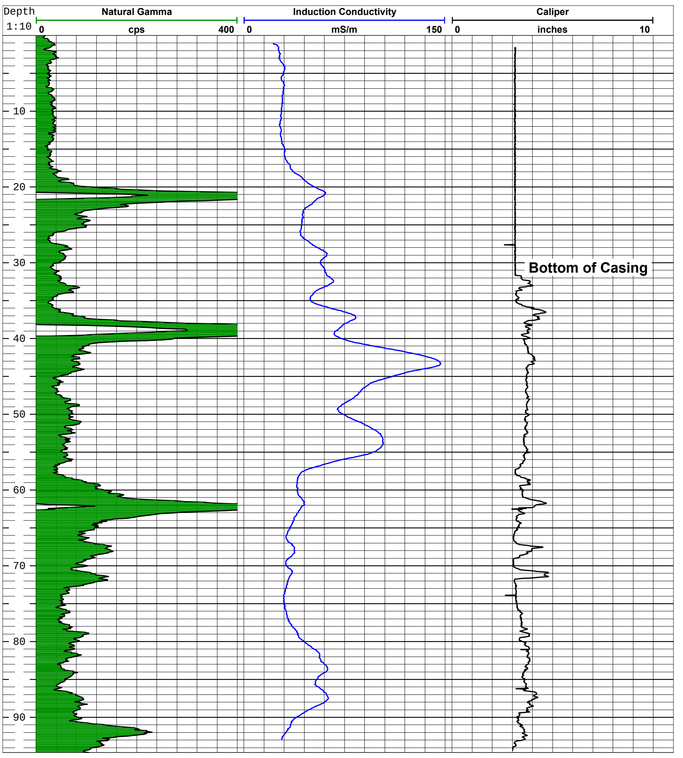
Project #:	04-158	**Boring Name:**	Well #13
Site Location:	Tallevast, Florida	**Boring Location:**	7603 19th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-4.5"
Depth Reference:	grade	**Casing Depth:**	~32 feet
Reference Elev.:	n/a	**Hole Depth:**	95.2 feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	PVC		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction, caliper	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m, inches		

Filename(s):

Comments:



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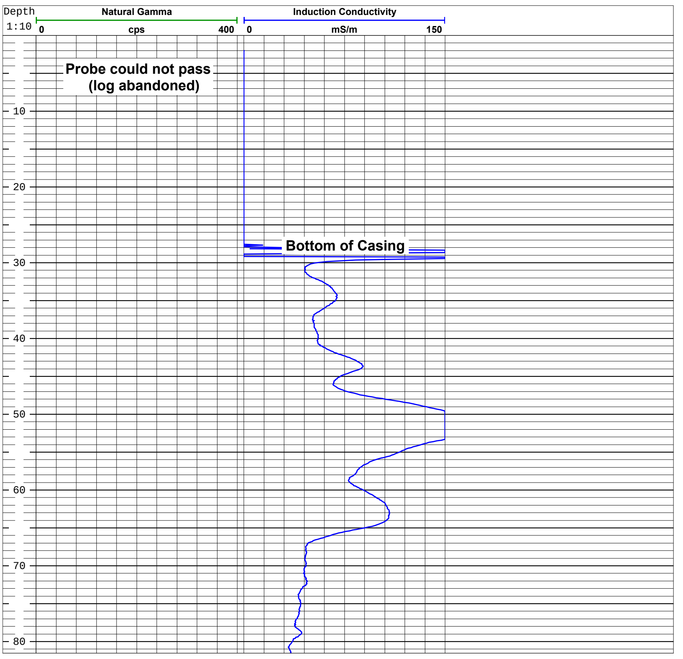
Project #:	04-158	**Boring Name:**	Well #14
Site Location:	Tallevast, Florida	**Boring Location:**	1507 Tallevast RD
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	13.5"
Depth Reference:	grade	**Casing Depth:**	~29 feet
Reference Elev.:	n/a	**Hole Depth:**	84.0 feet
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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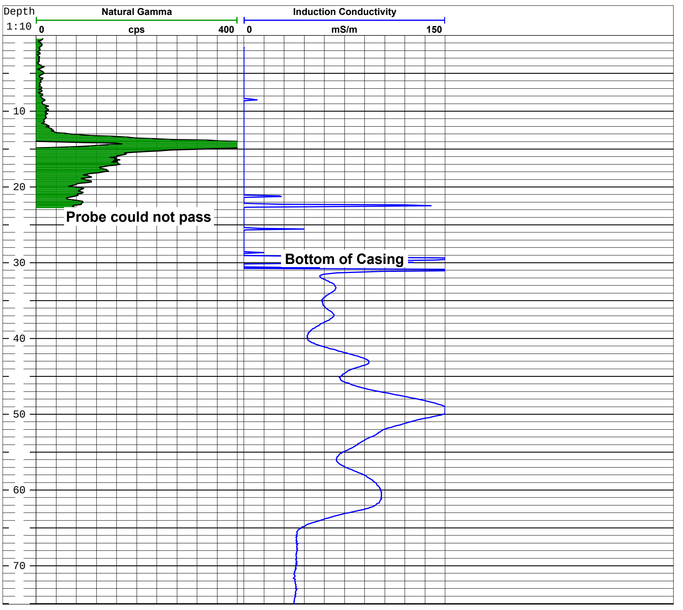
Project #:	04-158	**Boring Name:**	Well #15
Site Location:	Tallevast, Florida	**Boring Location:**	1811 Tallevast RD
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-10"
Depth Reference:	grade	**Casing Depth:**	~31 feet
Reference Elev.:	n/a	**Hole Depth:**	77.5 feet
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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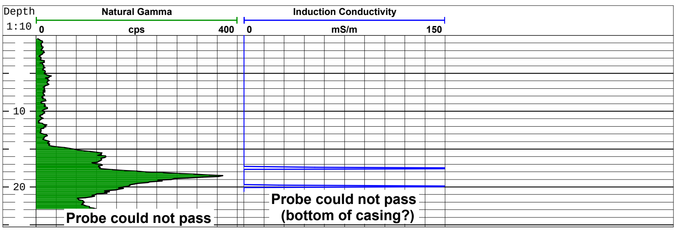
Project #:	04-158	**Boring Name:**	Well #16
Site Location:	Tallevast, Florida	**Boring Location:**	7515 18th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-3"
Depth Reference:	grade	**Casing Depth:**	unknown
Reference Elev.:	n/a	**Hole Depth:**	unknown
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



TECHNOS INC.

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Miami, FL 33172
Phone: (305) 718-9594
FAX: (305) 718-9621
Email: info@technos-inc.com

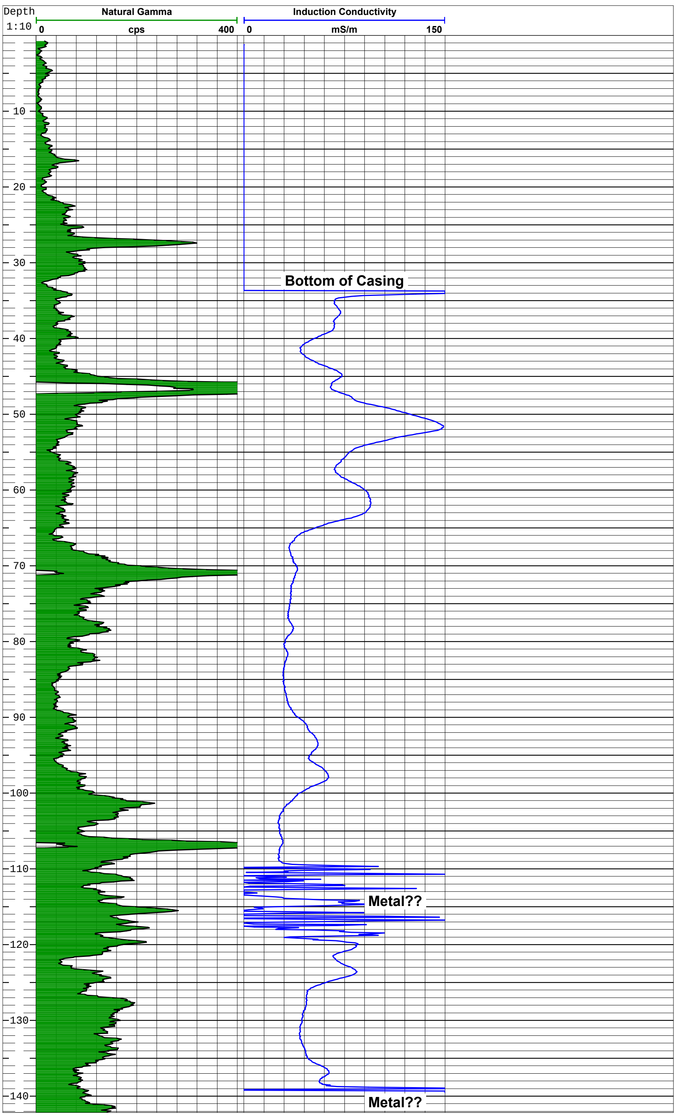
Project #:	04-158	**Boring Name:**	Well #17
Site Location:	Tallevast, Florida	**Boring Location:**	2003 Tallevast RD
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-17"
Depth Reference:	grade	**Casing Depth:**	~34 feet
Reference Elev.:	n/a	**Hole Depth:**	142.7 feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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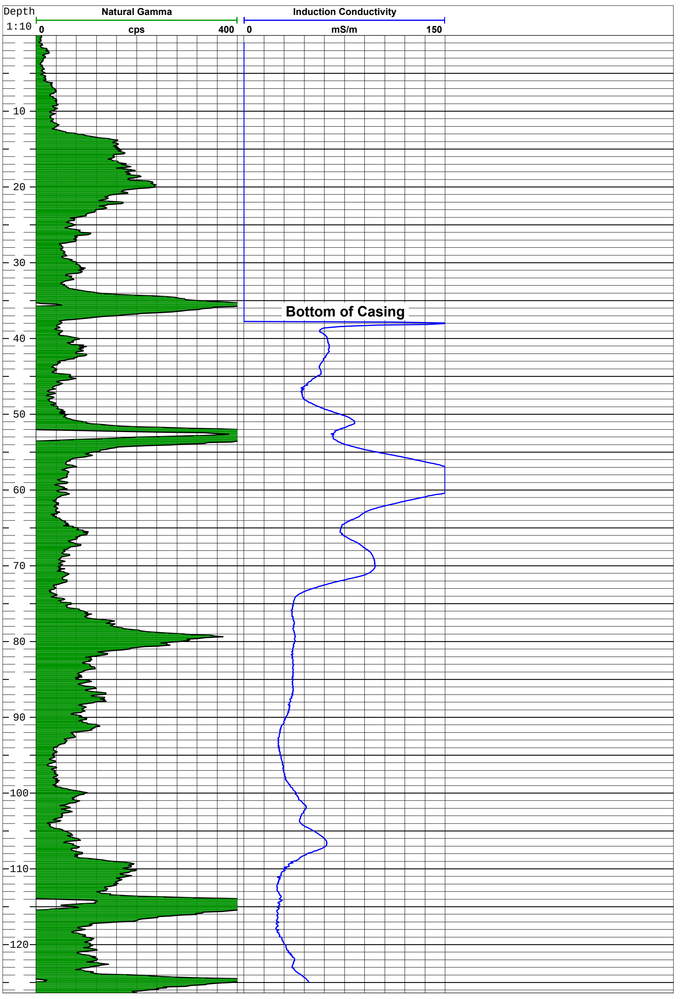
Project #:	04-158	**Boring Name:**	Well #18
Site Location:	Tallevast, Florida	**Boring Location:**	1864 Tallevast RD
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	2.5"
Depth Reference:	grade	**Casing Depth:**	~37 feet
Reference Elev.:	n/a	**Hole Depth:**	126.9 feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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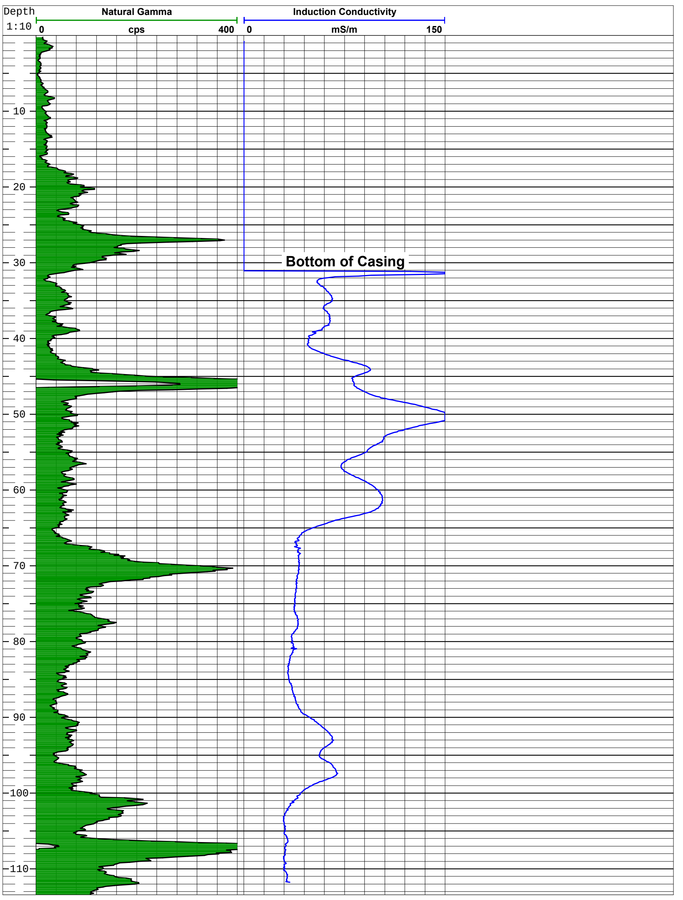
Project #:	04-158	**Boring Name:**	Well #19
Site Location:	Tallevast, Florida	**Boring Location:**	7624 19th ST E
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	3"
Depth Reference:	grade	**Casing Depth:**	~31 feet
Reference Elev.:	n/a	**Hole Depth:**	114.0 feet
Casing Diameter:	3.25"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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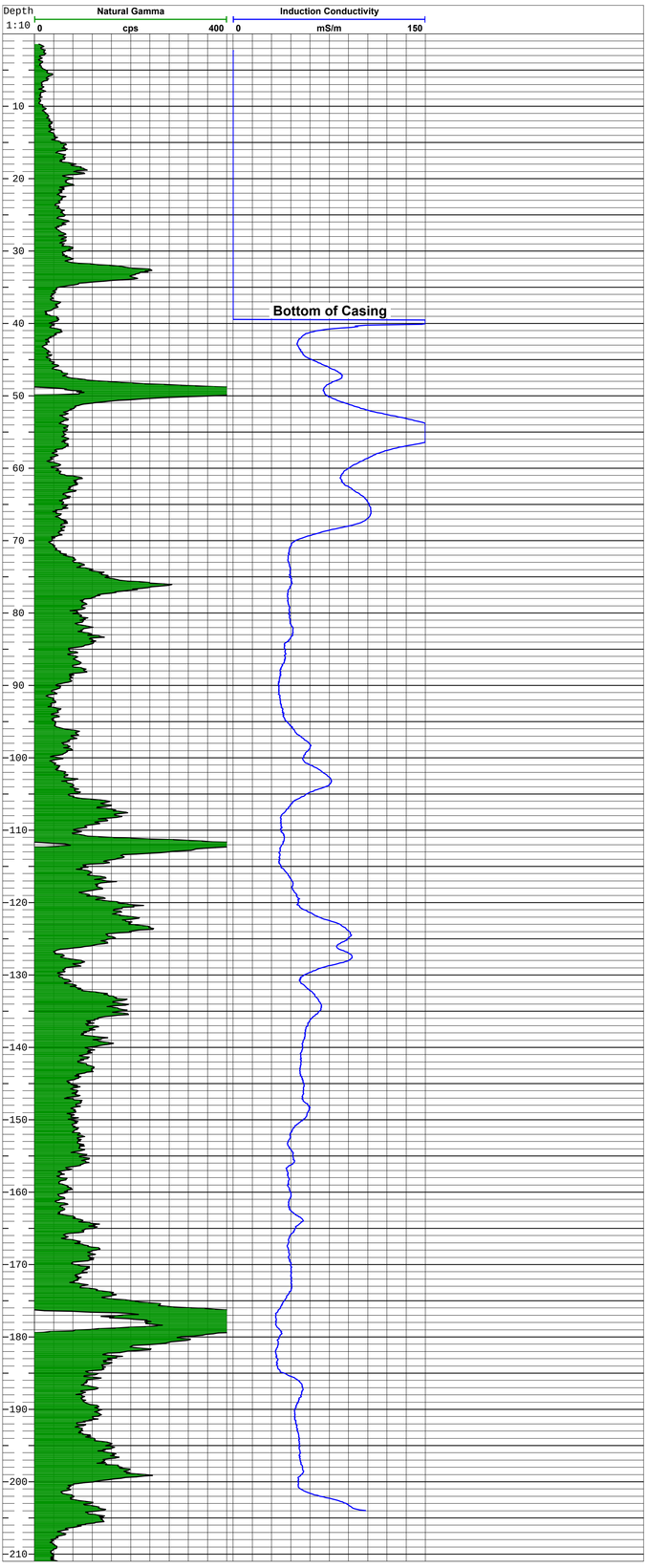
Project #:	04-158	**Boring Name:**	Well #20
Site Location:	Tallevast, Florida	**Boring Location:**	1804 Tallevast RD
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	0"
Depth Reference:	grade	**Casing Depth:**	~40 feet
Reference Elev.:	n/a	**Hole Depth:**	211.0 feet
Casing Diameter:	unknown (possibly 8")	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



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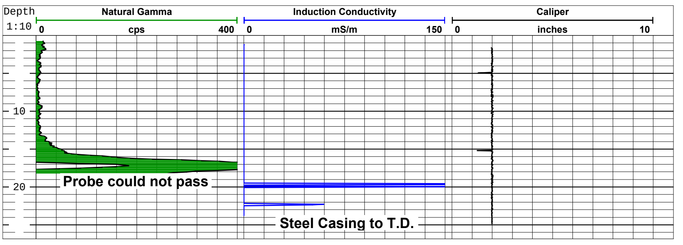
Project #:	04-158	**Boring Name:**	Well #21
Site Location:	Tallevast, Florida	**Boring Location:**	1712 Tallevast RD
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	-17"
Depth Reference:	grade	**Casing Depth:**	T.D.
Reference Elev.:	n/a	**Hole Depth:**	26.2 feet
Casing Diameter:	2"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction, caliper	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m, inches		

Filename(s):

Comments:



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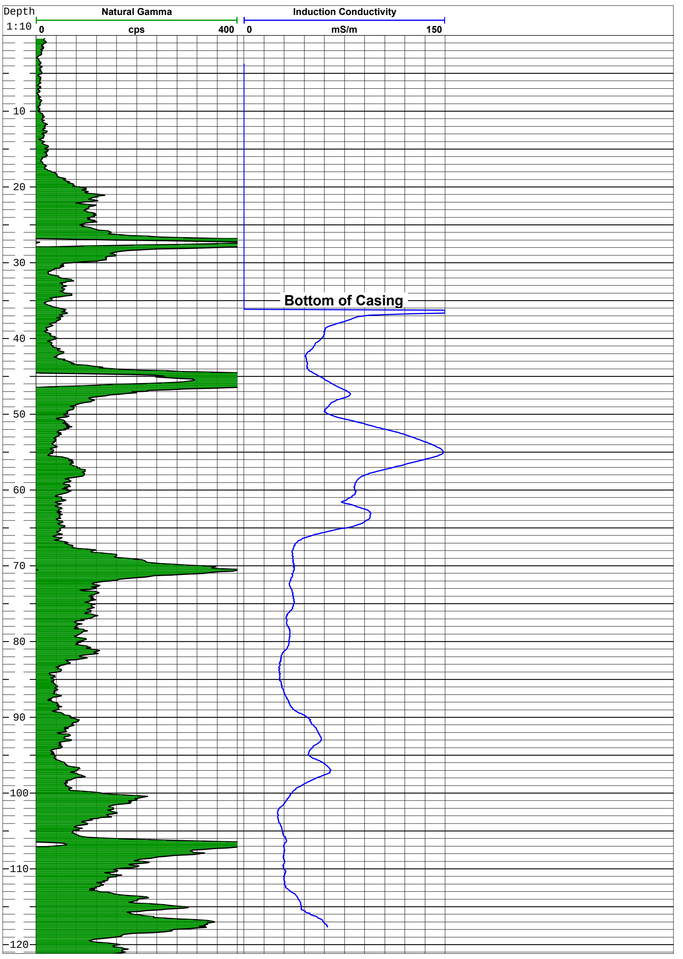
Project #:	04-158	**Boring Name:**	Well #22
Site Location:	Tallevast, Florida	**Boring Location:**	1615 Tallevast RD
Client:	Tetra Tech, Inc.	**Operator:**	D.C.
Date:	07/09/2004		

Depth Units:	feet	**Casing Stickup:**	2"
Depth Reference:	grade	**Casing Depth:**	~36 feet
Reference Elev.:	n/a	**Hole Depth:**	121.7 feet
Casing Diameter:	3"	**Water Level:**	unknown
Casing Material:	steel		

Logging System:	Mount Sopris MGXII	**Log UP/DOWN:**	up
Logs:	natural gamma, induction	**Logging Speed:**	~15 ft/min
Measurement Units:	cps, mS/m		

Filename(s):

Comments:



Appendix B

Figure 10 from July 2004 FDEP SIS Report

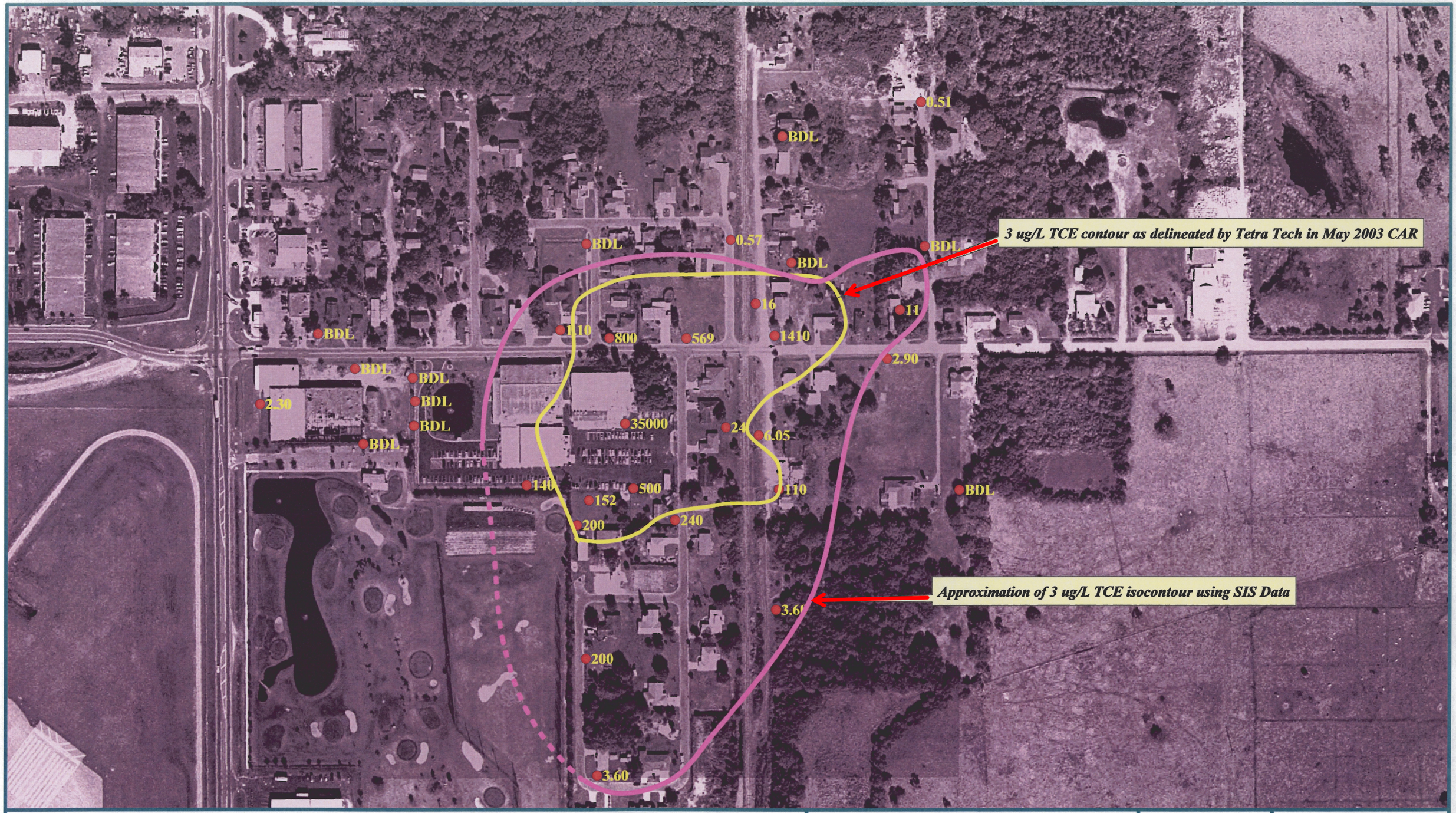


Figure 10: Trichloroethene at the Base of the Surficial Aquifer
Tallevast Community
Tallevast, Manatee County, Florida

SIS Deep Screen Point Location
Trichloroethene Result in Micrograms per Liter
BDL: Below Detection Limit
0 135 270 540 Feet

N W E S

DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA
The Investigation Section