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NAS CECIL FIELD, FL
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LONG-TERM MONITORING PLAN FOR OPERABLE UNIT 10 (OU 10) SITE 21 AND SITE 25 AND OPERABLE UNIT 11 (OU 11) SITE 45 NAS CECIL FIELD FL

6/27/2002

TETRA TECH NUS INC

Long-Term Monitoring Plan

Operable Unit 10, Sites 21 and 25 and Operable Unit 11, Site 45

Naval Air Station Cecil Field

Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888
Contract Task Order 0078

June 2002

LONG-TERM MONITORING PLAN

OPERABLE UNIT 10, SITES 21 and 25 AND
OPERABLE UNIT 11, SITE 45

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0078

JUNE 2002

PREPARED UNDER THE SUPERVISION OF:

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Debbie Wroblewski

DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

CERTIFICATION OF TECHNICAL
DATA CONFORMITY

The Contractor, Tetra Tech NUS, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete and accurate and comply with all requirements of this contract.

DATE: June 27, 2002

COMPANY CERTIFICATION AUTHORIZATION NUMBER: 7988
Tetra Tech NUS, Inc.
661 Andersen Drive
Pittsburgh, PA 15220

NAME AND TITLE OF CERTIFYING OFFICIAL: Mark Speranza, P.E.
Task Order Manager

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ACRONYMS

AMSL	Above mean sea level
ARAR	Applicable or Relevant and Appropriate Requirements
BCT	BRAC Cleanup Team
bgs	Below ground surface
BHC	Benzene hexachloride
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Contaminant of concern
CTO	Contract Task Order
EISOPQAM	Environmental Investigations Standard Operating Procedures and Quality Assurance Manual
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FFA	Federal Facilities Agreement
FS	Feasibility Study
GCTL	Groundwater cleanup target level
GIS	Geographic Information System
IRA	Interim Remedial Action
MS/MSD	Matrix spike/matirx spike duplicate
NAS	Naval Air Station
NAVD	National American Vertical Datum
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
OU	Operable Unit
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyl
QA/QC	Quality assurance/quality control
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TRPH	Total recoverable petroleum hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This Long-Term Monitoring Plan for Operable Unit (OU) 10, Sites 21 and 25 and OU 11, Site 45, Naval Air Station (NAS) Cecil Field, Jacksonville, Florida, has been prepared by Tetra Tech NUS, Inc. (TtNUS) for the Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program, Contract Number N62467-94-D-0888, Contract Task Order (CTO) 0078. This plan outlines the requirements and describes the procedures for performing sample collection and analysis activities associated with long-term groundwater monitoring at these sites. This work plan is intended for use in conjunction with the Base-Wide Generic Work Plan for NAS Cecil Field (TtNUS, 1998b) and the Remedial Investigation Field Sampling Plan for Site 36 – Control Tower TCE Plume and Site 37- Hangers 13 and 14 DCE Plume (TtNUS, 1998a).

1.1 OVERVIEW

1.1.1 Site 21

Site 21, the Golf Course Maintenance Area, is approximately 1.5 acres in size, is primarily unpaved, and includes Facilities 238, 370, 371, 397, and 874 and the surrounding area (Figures 1-1 and 1-2). Site activities included the storage and maintenance of golf course maintenance equipment, the cleaning and rinsing of chemical-dispersing equipment, and the preparation of chemical solutions. An Interim Remedial Action (IRA) was conducted at the site in May and June 2001 based on the results of soil sampling and included the excavation and off-site disposal of a total of approximately 3,000 tons of soil contaminated with total recoverable petroleum hydrocarbons (TRPH), arsenic, chlordane, 4,4'-DDT, toxaphene, and dieldrin. The soil removal was conducted to support an industrial reuse. Excavation of an additional 43 cubic yards of soil to support residential reuse is planned for late 2002. The Site 21 Remedial Investigation (RI) focused on groundwater contamination and delineated a small area of groundwater contaminated with chlordane (TtNUS, 2001b). This plume, defined by chlordane concentrations in excess of the Florida Department of Environmental Protection (FDEP) groundwater target cleanup level (GCTL) of 2 µg/L, was approximately 30 feet in diameter and limited to the shallow zone of the surficial aquifer (see Figure 1-3). The selected remedy for Site 21, based on the results of the Feasibility Study (FS), was limited action, which includes institutional controls, natural attenuation, and monitoring (TtNUS, 2001c).

1.1.2 Site 25

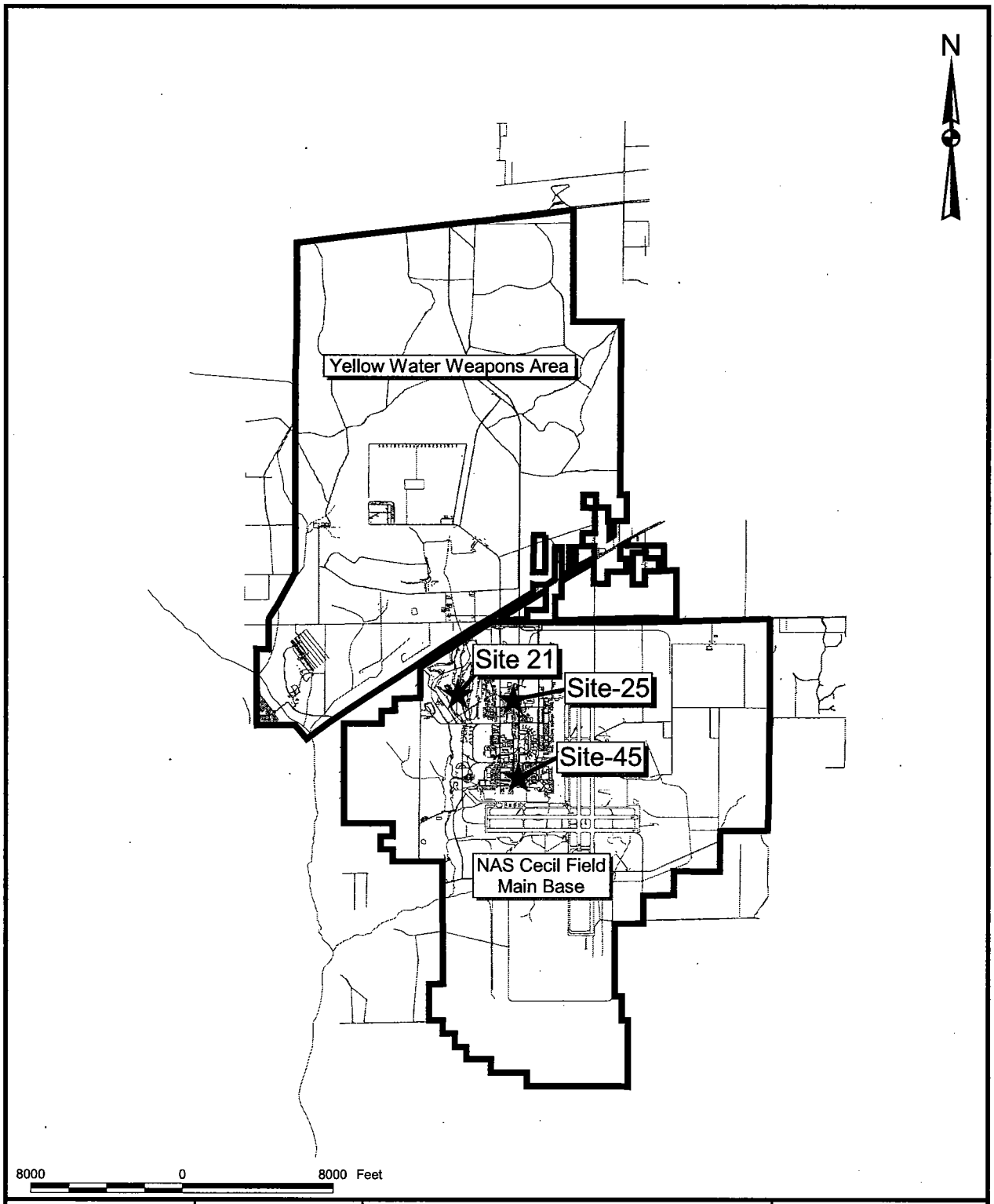
Site 25, the Former Transformer Storage Yard, is located north of Cecil Pines Street (formerly Ninth Street), east of New World Avenue (formerly "D" Avenue) and north of Building 81 in the Transportation

and Fuel Management Compound/Public Works Maintenance area (see Figures 1-1 and 1-4). The site, which includes Buildings 101 and 247 and several oil/water separators (80-OW1, 80-OW2, and 80-OW4), is approximately 0.6 acre in size and is primarily unpaved. An IRA conducted at the site, based on the results of soil sampling, included the excavation and off-site disposal of approximately 1,235 cubic yards of soil contaminated with polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), TRPH, and pesticides. The soil removal was conducted to support an residential reuse. The Site 25 RI delineated the extent of groundwater contaminated with alpha- and beta-benzene hexachloride (BHC). The plume, defined by alpha-BHC and beta-BHC concentrations in excess of their FDEP GCTLs (0.006 and 0.02 µg/L, respectively), was approximately 100 feet in diameter and limited to the shallow zone of the surficial aquifer (see figure 1-5). The selected remedy for Site 25, based on the results of the FS, was limited action, which includes institutional controls, natural attenuation, and monitoring.

1.1.3 Site 45

Site 45, the Steam Generating Plant, is located north of Crossover Street (formerly Second Street) and east of Authority Avenue (formerly "C" Avenue) and includes Buildings 2, 7, 11, and 12 and the surrounding area (see Figures 1-1 and 1-6). The site is primarily unpaved and covers approximately 2 acres. An IRA conducted at the site, based on the results of soil sampling, included the excavation and off-site disposal of approximately 363 cubic yards of soil contaminated with PAHs, TRPH, mercury, and vanadium to support an industrial reuse. The Site 45 RI delineated a vanadium groundwater plume, defined by the FDEP GCTL of 49 µg/L, that was approximately 260 feet by 110 feet in size and limited to the shallow zone of the surficial aquifer (see Figure 1-7). The selected remedy for Site 45, based on the results of the FS, was limited action, which includes institutional controls, natural attenuation, and monitoring.

The objective of long-term groundwater monitoring at Sites 21, 25, and 45 is to evaluate the performance, progress, and effectiveness of the groundwater monitoring portion of the selected remedies for each site. To achieve this objective, the monitoring plan is designed to determine trends in contaminant levels over time and to verify that contaminant reduction is occurring at each site. In the event that data collected under this monitoring program indicate that natural attenuation is insufficient to protect human health and the environment or to prevent plume expansion at any of the sites, a contingency plan will be developed to augment this remedy.



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CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-1 REV: 0

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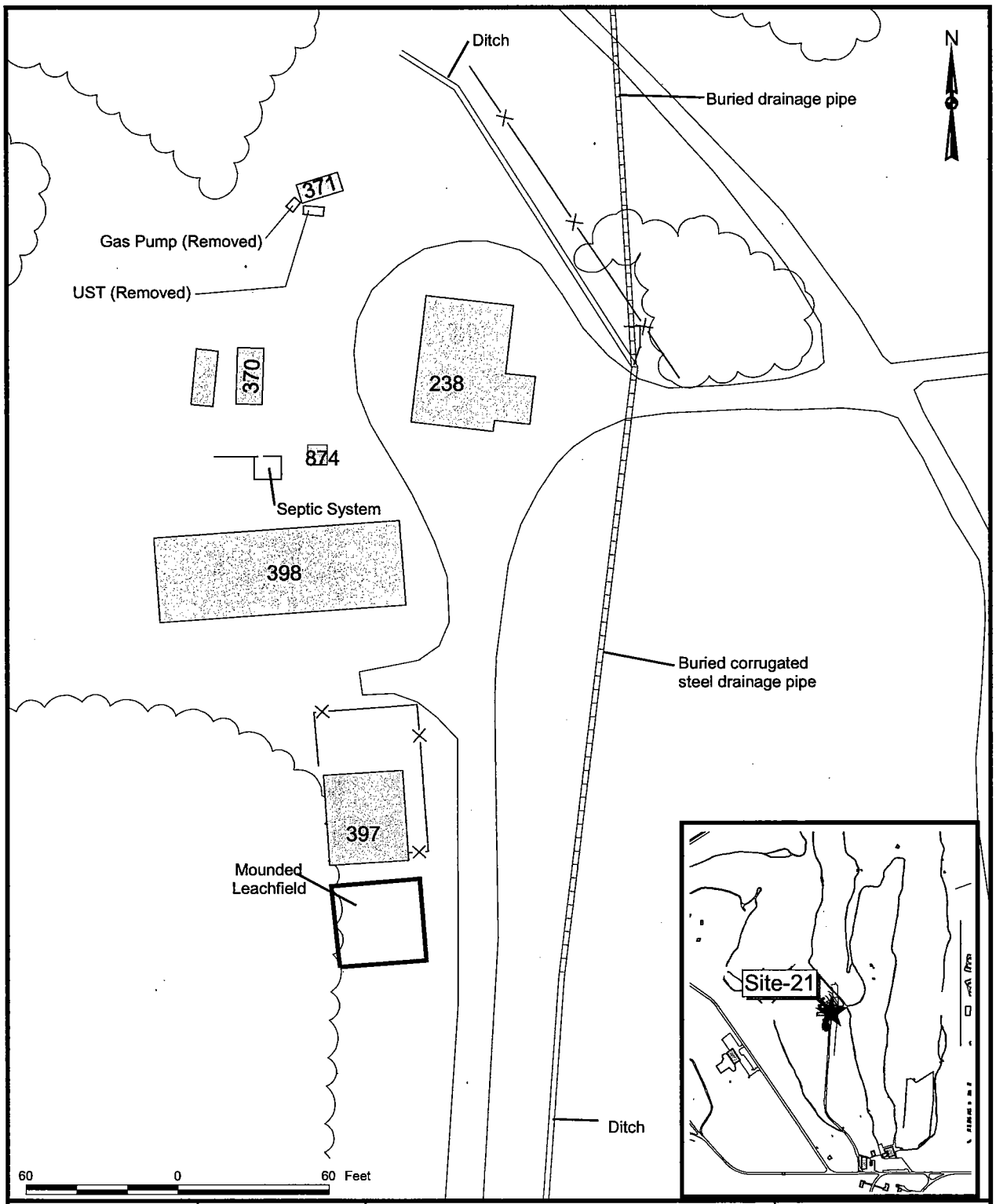

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COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-2 REV 0

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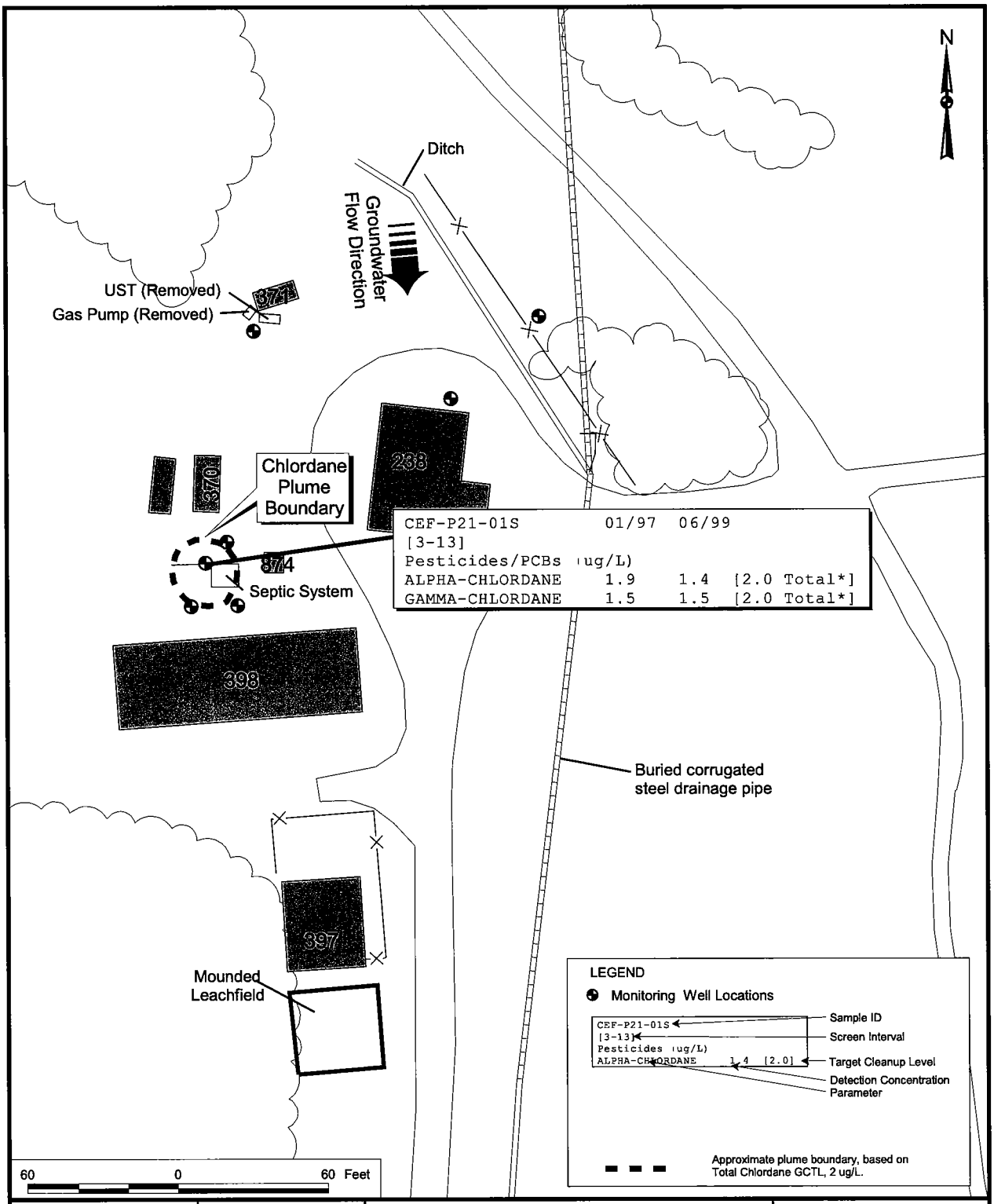

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CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-3 REV: 0

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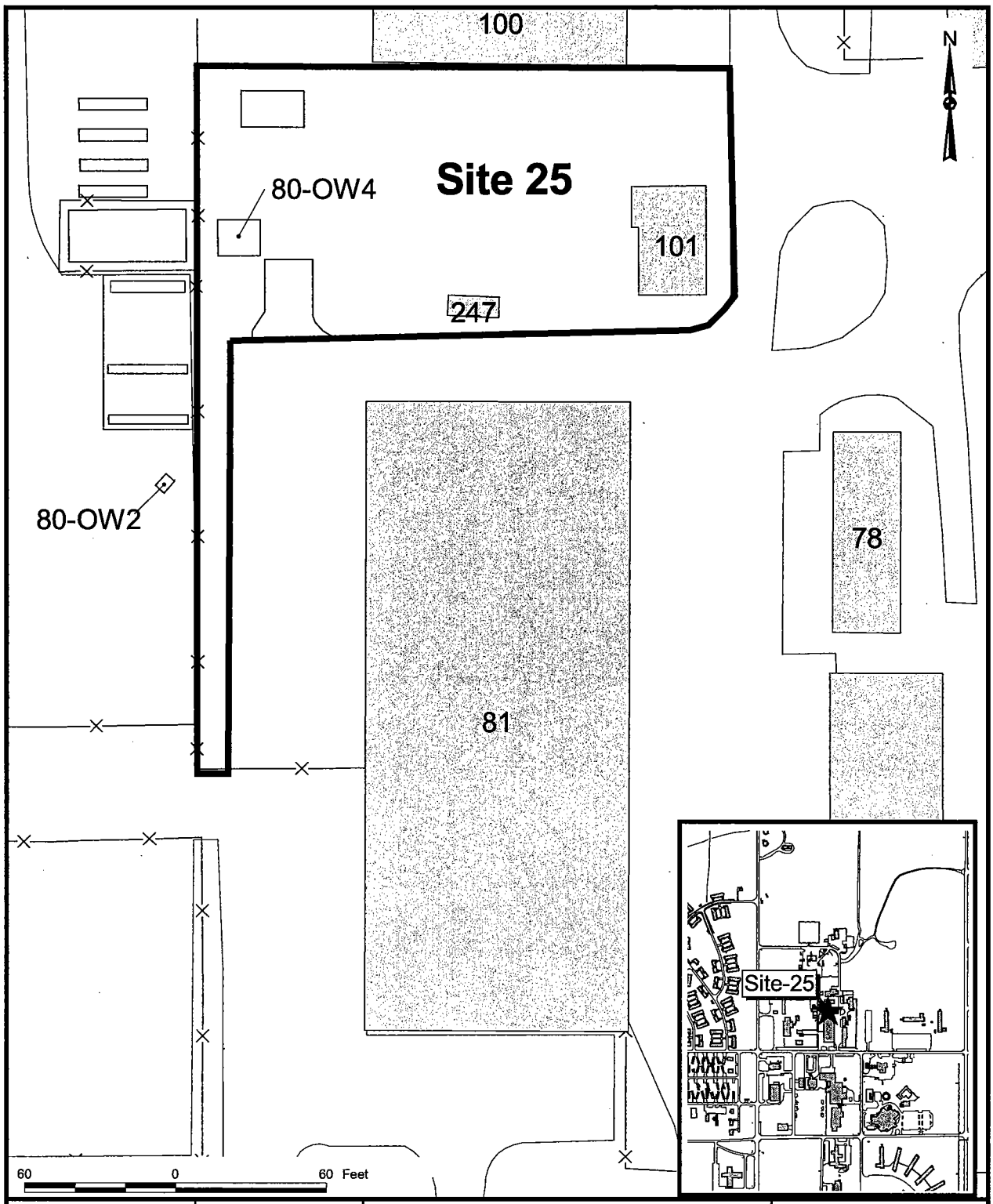

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CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-4 REV: 0

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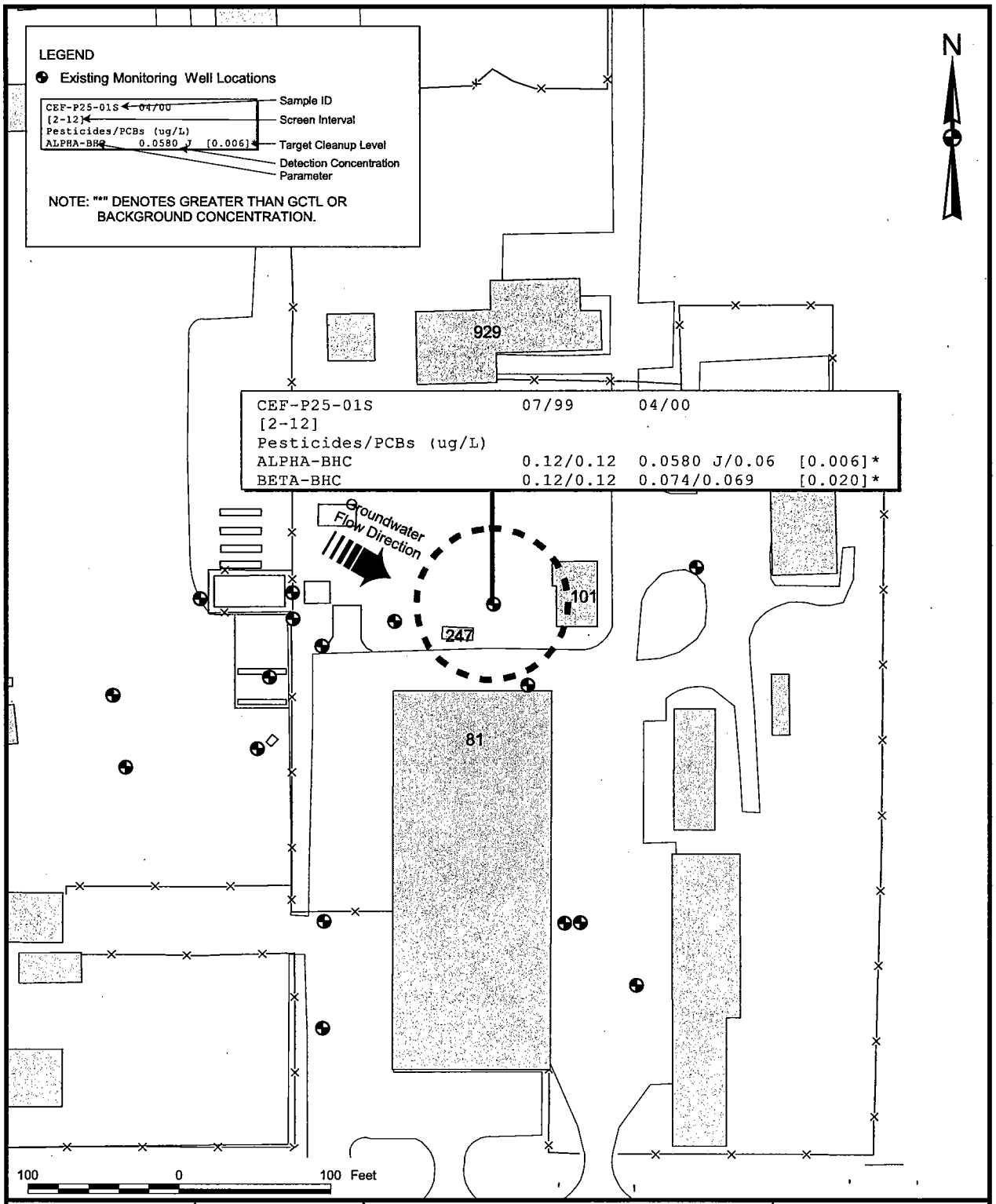

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COST/SCHEDULE-AREA			APPROVED BY DATE
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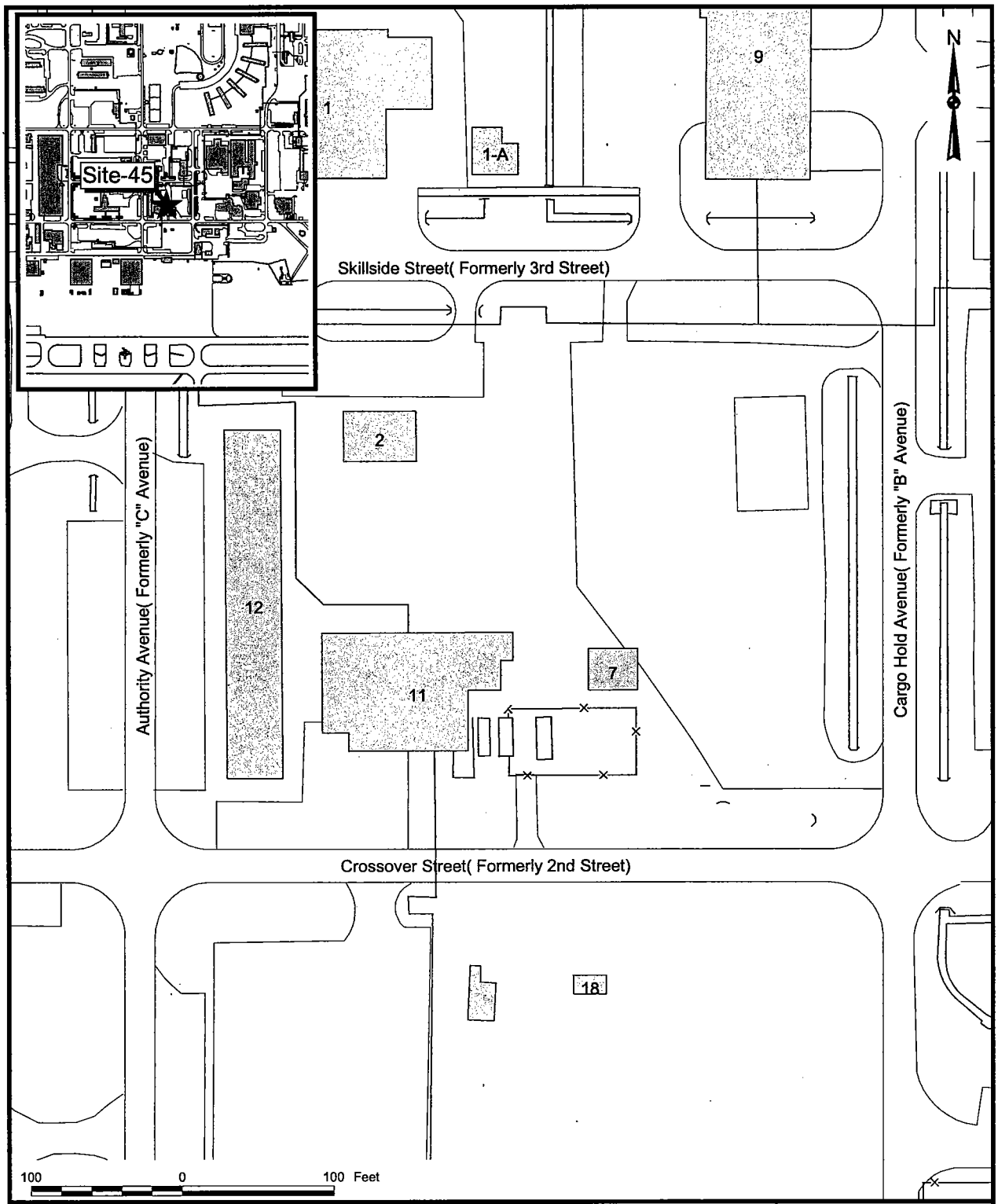

DRAWN BY MJJ	DATE 25Mar02	SITE MAP, SITE 45 OU10, SITES 21 AND 25 AND OU11, SITE 45 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 0039
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COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-6 REV 0

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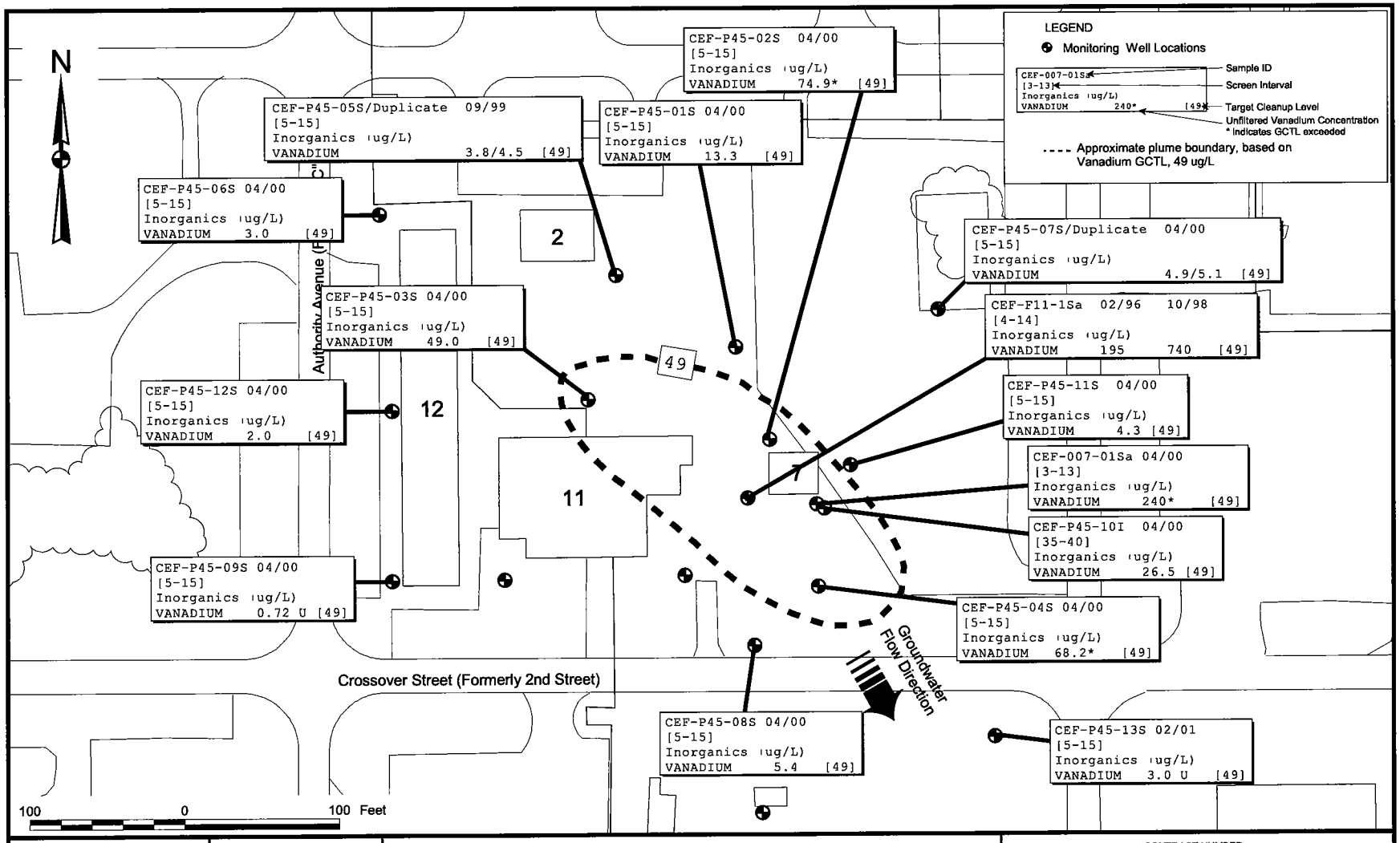

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CHECKED BY DATE		APPROVED BY DATE
COST/SCHEDULE-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 1-7 REV 0

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2.0 FIELD OPERATIONS

The locations of long-term monitoring well for Sites 21, 25, and 45 are presented in Figures 2-1, 2-2, and 2-3, respectively. Well construction information for these wells is presented in Table 2-1. The rationale for selection of these wells and analyses to be performed are presented in Table 2-2. Analytical requirements are summarized in Table 2-3.

2.1 LONG-TERM SAMPLING AND ANALYSIS

Groundwater will be sampled and analyzed to verify that the contaminant mass and mobility are being effectively reduced. A synoptic round of water-level measurements will be collected at each site during each sampling event at the monitoring wells to be sampled and other wells as listed in Table 2-4.

Samples will be collected and analyzed in accordance with the Remedial Investigation Field Sampling Plan for Site 36 – Control Tower TCE Plume and Site 37 – Hangars 13 and 14 DCE Plume (TtNUS, 1998a). Site 45 groundwater samples for total and dissolved vanadium. Samples for dissolved analysis are to be filtered through a 1-micron cartridge filter.

Changes in the monitoring program, including changes in analyses, wells, and sampling frequency, will be considered at least annually based on evaluation of the data and concurrence by the Base Realignment and Closure (BRAC) Cleanup Team (BCT). It is anticipated that the number of wells sampled in future sampling events may be reduced, depending on the results of the first year of monitoring. Following the review of the results of the future sampling events, it may be possible to reduce the number of wells to a representative set that will be retained for monitoring for the duration of the project. Monitoring results will be tabulated and presented to the BCT in annual reports. If natural attenuation is determined to be occurring at an unacceptable rate, or if data indicate then further remedial measures may be considered.

During the first 5-year period, sampling and analysis of the long-term monitoring well network at Sites 21 and 25 will be semi-annually for the next 3 years and then annually thereafter. Long-term monitoring at Site 21 will include sampling and analysis of groundwater from two wells for total chlordane. At Site 25, three wells will be sampled and analyzed for alpha- and beta-BHC. For Site 45, sampling frequency will be annual. At Site 45, seven wells will be sampled for total and dissolved vanadium (see Table 2-2).

2.2 SAMPLE NUMBERS

Each sample is to be assigned a unique sample identification number. Sample numbers will use existing well numbers and generally follow the convention that has been established for NAS Cecil Field:

The nomenclature established for this investigation is as follows:

1		2		3		4
AAA-ENN	-	AA	-	NNAA	-	ANN
Site Location and Site Number		Media		Sample Location		Sample Round

1 Site Location:

CEF- NAS Cecil Field

Site Designation:

P21 - Site 21

P25 - Site 25

080 - Site 25

081 - Site 25

P45 - Site 45

F11 - Site 45

007 - Site 45

2 Media types:

GW - Groundwater

GF - Groundwater Filtered (applies to filtered metals only)

DU - Duplicate

DF - Filtered Groundwater Duplicate

3 Sampling location by media type:

The existing two-number and one- or two-letter (NNAA) well designations will be used. For example, for well CEF-F11-01Sa, CEF-GW-F11-01Sa will be used.

4 The monitoring well sampling event (ANN) is as follows:

L01 = Long-term monitoring event one

L02 = Long-term monitoring event two, etc.

TABLE 2-1

MONITORING WELL CONSTRUCTION DATA
OPERABLE UNIT 10, SITES 21, 25, AND 45
LONG-TERM MONITORING PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Monitoring Well	Date Installed	Total Depth (in feet bgs)	Screened Interval (in feet bgs)	Ground Surface Elevation (in feet amsl)	Top of casing Elevation (in feet amsl)
SITE 21					
CEF-P21-01S*	Jan-97	13	3 - 13	76.10	76.09
CEF-P21-08S**	Jul-02	13	2 - 12	73.90	73.71
SITE 25					
CEF-P25-01S	Aug-99	12	2 - 12	77.80	77.57
CEF-081-02S	Oct-96	15	5 - 15	78.47	78.41
CEF-081-03S	Oct-96	15	5 - 15	78.50	78.18
SITE 45					
CEF-P45-02S	Jul-99	15	5 - 15	76.20	75.89
CEF-P45-03S	Jul-99	15	5 - 15	77.29	77.06
CEF-P45-04S	Jul-99	15	5 - 15	76.50	76.49
CEF-P45-08S	Apr-00	15.5	5 - 15	77.00	76.80
CEF-P45-13S	Jan-01	16	5 - 15	76.60	76.30
CEF-F11-01Sa	Dec-95	15	4 - 14	76.50	76.37
CEF-007-01Sa	Dec-95	14	3 - 13	76.40	76.12

Elevation is referenced to 1988 National American Vertical Datum (NAVD).
NA = Not available.
bgs = Below ground surface.
amsl = Above mean sea level.
* Formerly referred to as Sample 90G00101/CEF-AOI21-1S.
** Installed after the completion of the Remedial Investigation and draft Feasibility Study (TtNUS, 2001d).
Wells included are only those to be sampled as part of the long-term monitoring plan.

TABLE 2-2

MONITORING WELL SELECTION RATIONALE AND ANALYTICAL SAMPLING
OPERABLE UNIT 10, SITES 21, 25, AND 45
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Monitoring Well	Rationale	Analysis		
		Total Chlordane	alpha and beta-BHC*	Vanadium**
SITE 21				
CEF-P21-01S	Source area - to monitor trends in the area of highest concentrations	X	-	-
CEF-P21-08S	Downgradient - to monitor potential downgradient plume migration	X	-	-
SITE 25				
CEF-P25-01S	Source area - to monitor trends in the area of highest concentrations	-	X	-
CEF-081-02S	Downgradient - to monitor potential downgradient plume migration	-	X	-
CEF-081-03S	Downgradient - to monitor potential downgradient plume migration	-	X	-
SITE 45				
CEF-P45-02S	Source area - to monitor trends in the area of highest concentrations	-	-	X
CEF-P45-03S	Source area - to monitor trends in the area of highest concentrations	-	-	X
CEF-P45-04S	Source area - to monitor trends in the area of highest concentrations	-	-	X
CEF-P45-08S	Downgradient - to monitor potential downgradient plume migration	-	-	X
CEF-P45-13S	Downgradient - to monitor potential downgradient plume migration	-	-	X
CEF-F11-01Sa	Source area - to monitor trends in the area of highest concentrations	-	-	X
CEF-007-01Sa	Source area - to monitor trends in the area of highest concentrations	-	-	X

* alpha- and beta-Benzene hexachloride.

** Total and dissolved vanadium. Samples for dissolved analysis will be filtered in the field using a 1-micron cartridge filter.

TABLE 2-3

SUMMARY OF ANALYTICAL REQUIREMENTS FOR CONTAMINANTS OF CONCERN
LONG-TERM MONITORING
OPERABLE UNIT 10, SITES 21 AND 25 AND OPERABLE UNIT 11, SITE 45
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

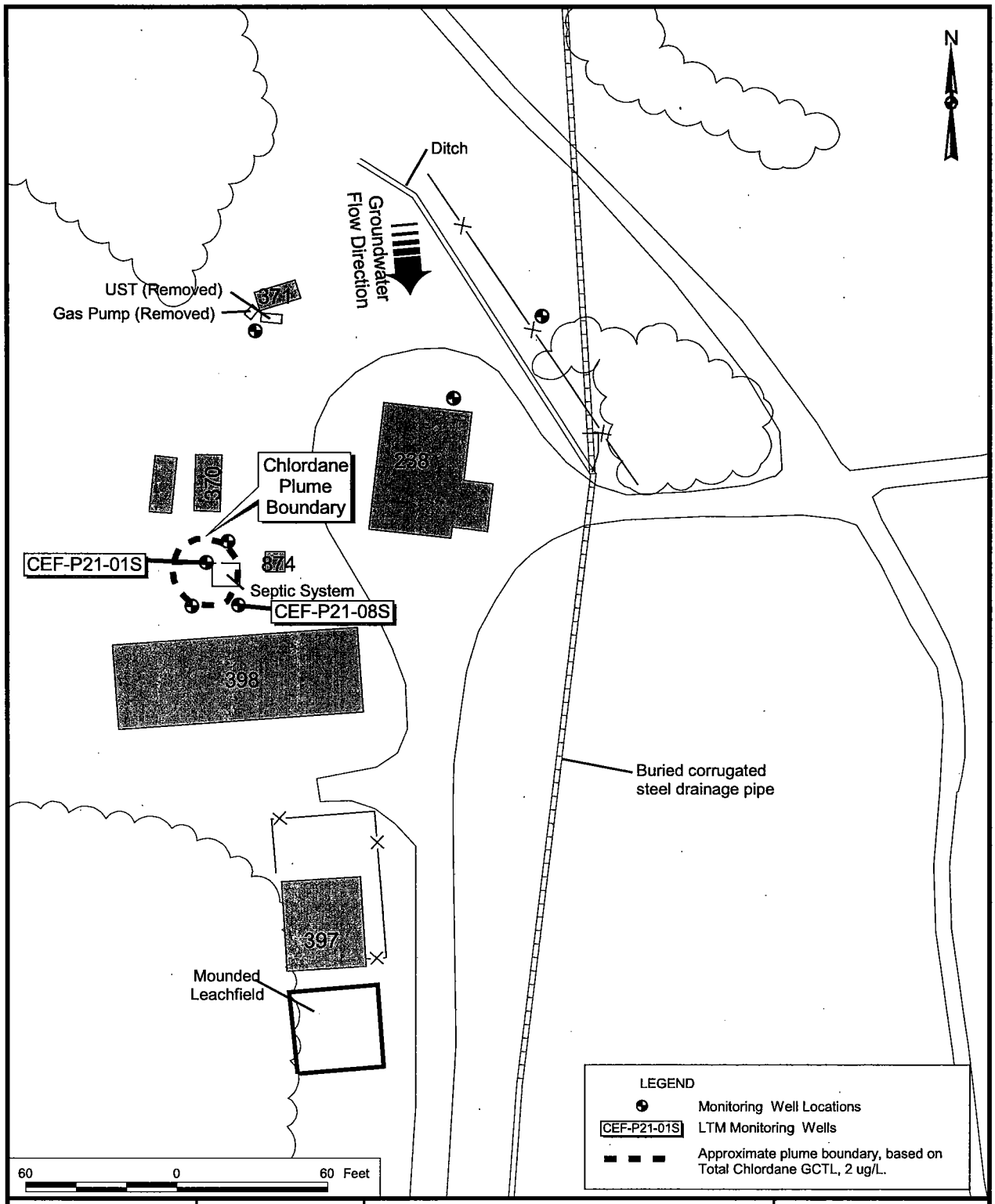
Parameter	Bottleware	Preservation	Maximum Holding Time	Analytical Methodology
SITE 21				
Chlordane	1 1-liter glass	Cool to 4°C	7 days to extraction, 40 days to analysis	SW-846 8081A
SITE 25				
alpha- and beta-BHC	1 1-liter glass	Cool to 4°C	7 days to extraction, 40 days to analysis	SW-846 8081A
SITE 45				
Vanadium total and filtered	1000 ml glass or polyethylene	Cool to 4°C, HNO_3 to pH <2	180 days to analysis	SW-846 6010B

BHC = Benzene hexachloride.
Dissolved vanadium samples to be filtered in the field by passing sample through a 1-micron cartridge filter.

TABLE 2-4

WELLS AT WHICH WATER LEVEL MEASUREMENTS ONLY WILL BE TAKEN
OPERABLE UNIT 10, SITES 21 and 25 and OPERABLE UNIT 11, SITE 45
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

SITE 21	SITE 25	SITE 45
CEF-P21-01S	CEF-080-03S	CEF-P45-01S
CEF-P21-03S	CEF-080-12S	CEF-P45-05S
CEF-P21-05S	CEF-080-13S	CEF-P45-06S
CEF-P21-06S	CEF-081-02S	CEF-P45-07S
CEF-P21-07S	CEF-081-03S	CEF-P45-08S
CEF-P21-08S	CEF-081-04S	CEF-P45-09S
	CEF-081-06S	CEF-P45-12S
	CEF-081-07S	CEF-P45-13S
	CEF-081-08S	CEF-007-01Sa
		CEF-F11-01Sa
		CEF-F11-01Sb
		CEF-F11-02Sb



DRAWN BY: MJJ	DATE: 25Mar02	SITE 21	CONTRACT NUMBER: 0039
CHECKED BY:	DATE:	LONG-TERM GROUNDWATER MONITORING WELLS	APPROVED BY: DATE:
COST/SCHEDULE-AREA:		OU10, SITES 21 AND 25 AND	APPROVED BY: DATE:
SCALE: AS NOTED		OU11, SITE 45	DRAWING NO.: FIGURE 2-1 REV: 0
		NAVAL AIR STATION CECIL FIELD	
		JACKSONVILLE, FLORIDA	

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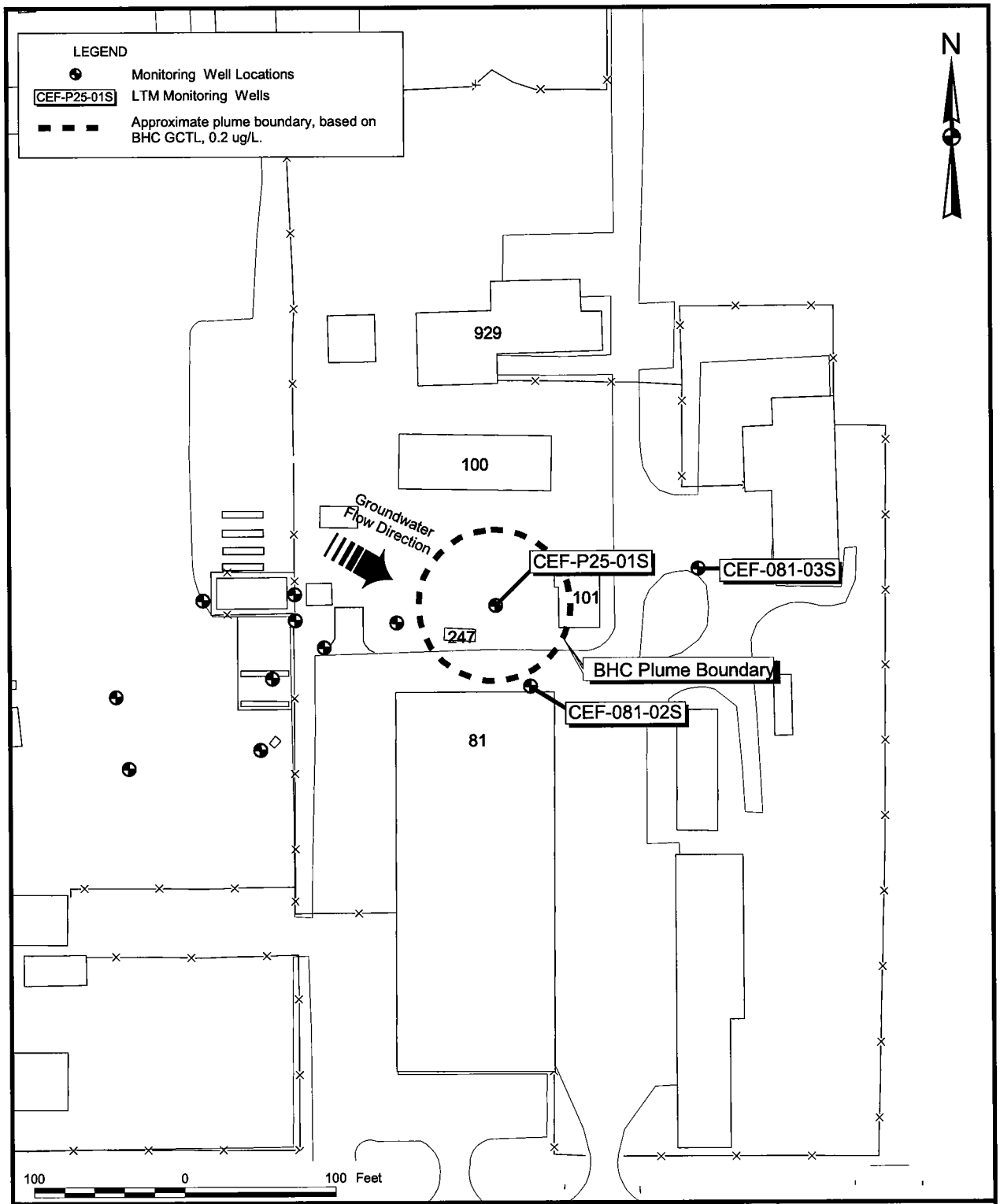

DRAWN BY: MJJ	DATE: 25Mar02	SITE 25 LONG-TERM GROUNDWATER MONITORING WELLS OU10, SITES 21 AND 25 AND OU11, SITE 45 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 0039
CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 2-2 REV: 0

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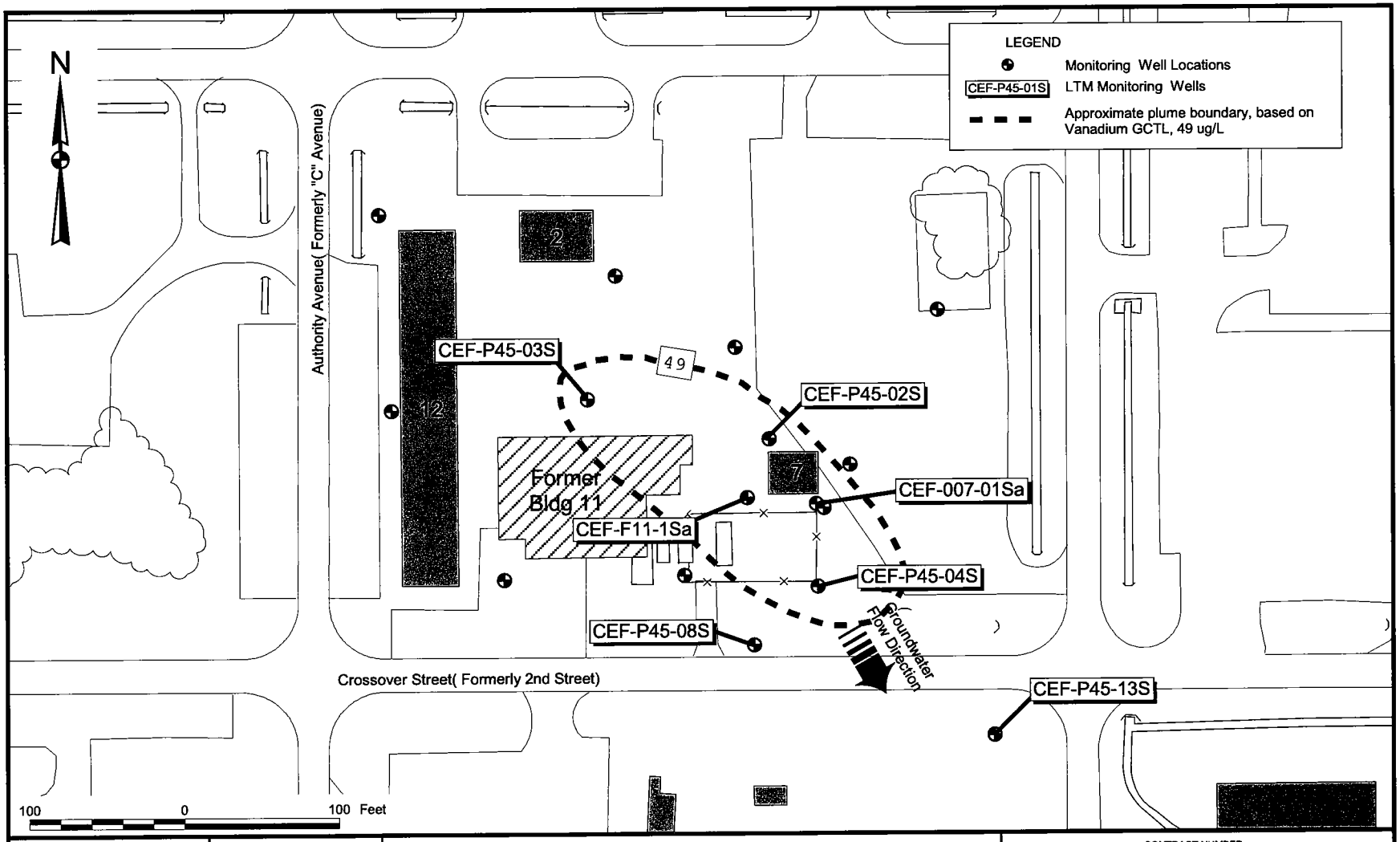

DRAWN BY: MJJ	DATE: 25Mar02	SITE 45 LONG-TERM GROUNDWATER MONITORING WELLS OU10, SITES 21 AND 25 AND OU11, SITE 45 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 0039
CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 2-3 / REV: 0

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3.0 QUALITY ASSURANCE/QUALITY CONTROL

To reduce sources of error during implementation of the work outlined in this document, as well as during long-term monitoring, all activities will be carried out in accordance with the Base-Wide Generic Work Plan (TtNUS, 1998b) for NAS Cecil Field.

Quality assurance/quality control (QA/QC) samples that are typically collected have been modified for Cecil Field. Specifically, no trip blanks, field blanks, or rinsate blanks are required. Duplicates are to be collected at a rate of 10 percent of the total samples collected. Matrix spike/matrix spike duplicate (MS/MSD) samples are to be collected at a rate of five percent of the total samples collected.

4.0 EVALUATION CRITERIA

4.1 GROUNDWATER

The primary evaluation criterion to determine the effectiveness of natural attenuation will be a decrease in the concentrations of contaminants of concern (COCs) detected in the groundwater. Remediation will be deemed to have been achieved when the concentrations of all contaminants have reached the cleanup goals.

5.0 LONG-TERM MONITORING REPORTS

Upon completion of each round of sampling, a brief data summary report will be prepared for the BCT that documents the investigative activities that were performed and presents the analytical data generated during that sampling event for each site. Comprehensive annual monitoring reports will be prepared for the sites that present the analytical data for the year and provide recommendations for the next year's sampling program.

Analytical results will be put into the NAS Cecil Field Geographic Information System (GIS) database.

6.0 FIVE-YEAR REVIEWS

Five-year reviews will be conducted at OU 10, Sites 21 and 25 and OU 11, Site 45 in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 121(c) and the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), Section 300.430(f)4(ii).

6.1 BACKGROUND

Five-year reviews are conducted at sites where remedial action results in hazardous substances, pollutants, or contaminants remaining on site. Remedial action at Sites 21, 25, and 45 does not immediately remove all contaminants from the sites; therefore, residual contaminants will remain until natural attenuation has been successfully completed.

Typically, the United States Environmental Protection Agency (U.S. EPA) conducts 5-year reviews; however, the Navy, as the lead agency, will be conducting these reviews. The next review is scheduled for 2004.

6.2 PURPOSE

Five-year reviews are conducted to evaluate whether or not the remedies selected in the Record of Decision (ROD) remain protective of human health and the environment.

6.3 EXECUTION

The 5-year review process will consist of the following:

- Review of background documents concerning Sites 21, 25, and 45, including long-term monitoring reports.
- Identification and review of new regulatory standards that may have been promulgated since the signing of the ROD or since the previous 5-year review.
- Site visits to conduct a visual inspections.
- Preparation of 5-year review reports, including conclusions and recommendations for future actions as may be required.

6.4 REPORTING

A report will be prepared and submitted by the Navy for each site at the end of each 5-year review period. The 5-year review reports will include the following elements:

- An introduction, including a summary of site characteristics.
- A brief discussion of Remedial Action Objectives (RAOs) and discussion of the Applicable or Relevant and Appropriate Requirements (ARARs).
- A description of monitoring and maintenance activities at the site.
- A presentation of monitoring results, including an evaluation of changes in monitoring parameters.
- An evaluation of how well the selected remedy has protected human health and the environment, including a formal statement of protectiveness of human health and the environment, a determination of remaining risks, and an analysis of potential deterioration of the remedy.
- A presentation of cost incurred.
- A summary description of the site visit.
- Documentation of areas of noncompliance, as may apply.
- Recommendations for future response actions, as may be required.

REFERENCES

TtNUS (Tetra Tech NUS, Inc.), 1998a. Remedial Investigation Field Sampling Plan for Site 36 – Control Tower TCE Plume and Site 37 – Hangars 13 and 14 DCE Plume. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

TtNUS, 1998b. Base-Wide Generic Work Plan for Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, October.

TtNUS, 1999. Remedial Investigation Report for Site 36 – Control Tower TCE Plume and Site 37 – Hangars 13 and 14 DCE Plume. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

TtNUS, 2000, Remedial Investigation for Site 45 – Steam Generating Plant, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, December.

TtNUS, 2001a, Remedial Investigation for Site 25 – Former Transformer Storage Yard, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, February.

TtNUS, 2001b, Remedial Investigation for Site 21 – Golf Course Maintenance Area, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, February.

TtNUS, 2001c, Draft Feasibility Study Report for Operable Unit 10, Site 21 – Golf Course Maintenance Area, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, February.

TtNUS, 2001d. Phase XIV Well Installation Work Plan, Site 21, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, July.

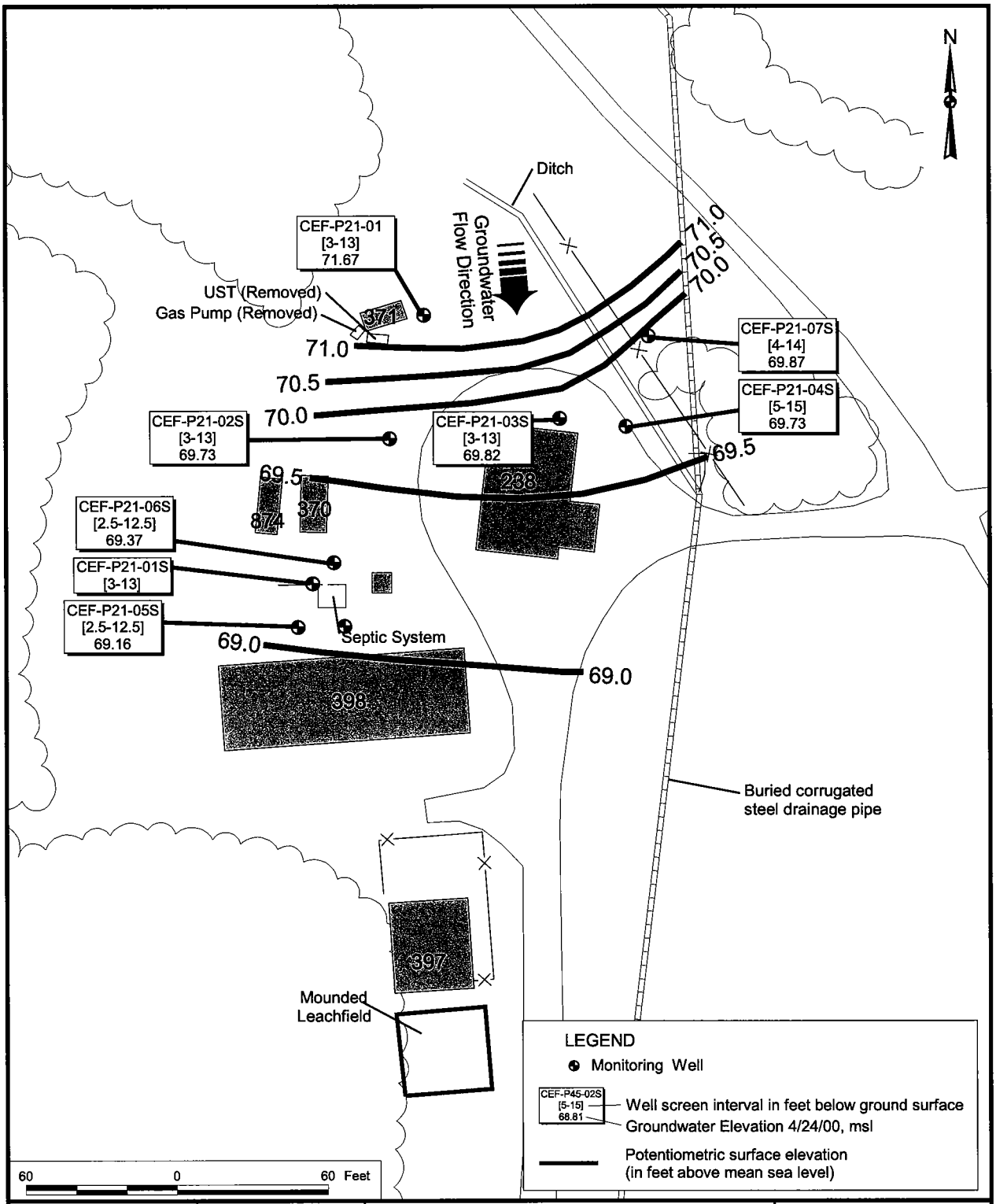
TtNUS, 2001e, Feasibility Study Report for Site 45 – Steam Generating Plant, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

TtNUS, 2001f, Feasibility Study for Site 25 – Former Transformer Storage Yard, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, October.

U. S. EPA (United States Environmental Protection) Region IV, 1996. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, May.

APPENDIX A

GROUNDWATER POTENTIOMETRIC SURFACE MAPS



DRAWN BY MJJ	DATE 02Oct00	POTENTIOMETRIC SURFACE MAP SITE 21 REMEDIAL INVESTIGATION REPORT NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 0039
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE A-1 REV 1

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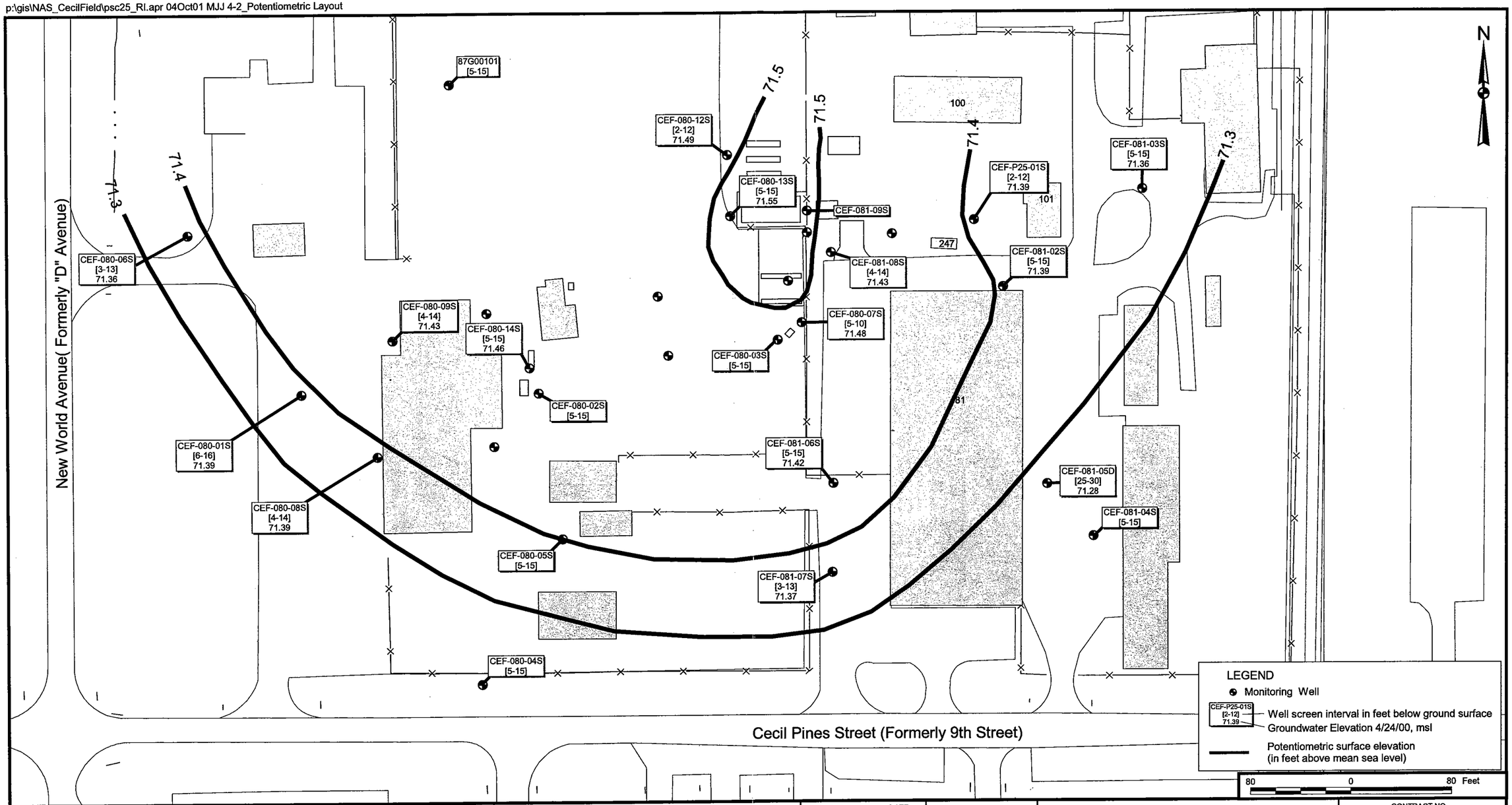

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
MJJ	15Feb00
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	AS NOTED

POTENTIOMETRIC SURFACE MAP
SITE 25
REMEDIAL INVESTIGATION REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NO.	0039
APPROVED BY	DATE
APPROVED BY	DATE
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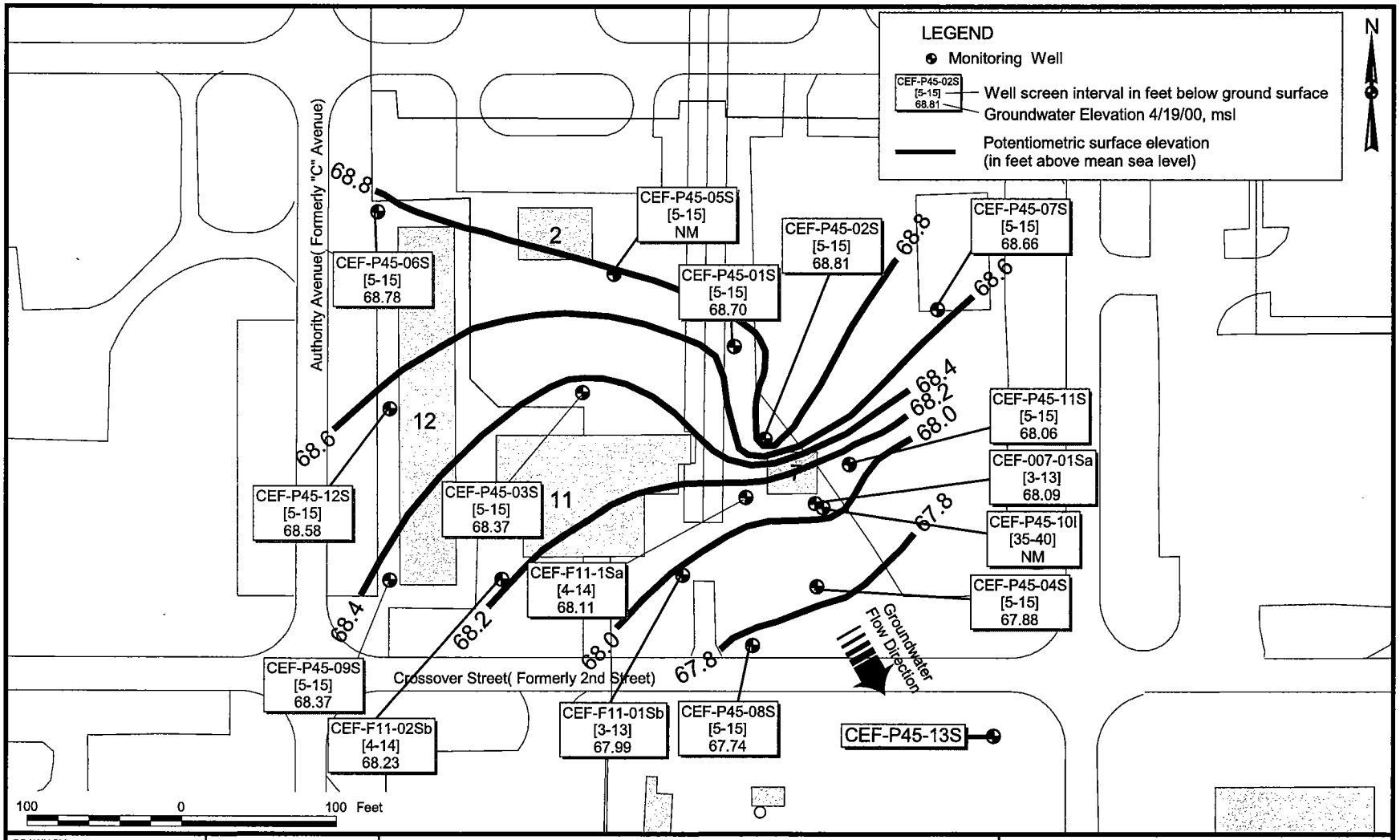
REV.	1



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CHECKED BY	DATE	CONTRACT NUMBER: 0039
COST/SCHEDULE-AREA		APPROVED BY / DATE
SCALE: AS NOTED		APPROVED BY / DATE
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