

# **PART I**

## **INSTALLATION RESTORATION PROGRAM TWIN CITIES ARMY AMMUNITION PLANT**

### **1989 ANNUAL MONITORING REPORT FIGURES - VOLUME 3 OF 3**

**Distribution is limited to  
U.S. Government Agencies only for  
protection of privileged information.  
Other requests for the documents  
must be referred to:**

**Commander  
Twin Cities Army Ammunition Plant  
New Brighton, Minnesota  
55112-5000**

**Prepared for:**

**Commander  
Twin Cities Army Ammunition Plant  
ATTN: SMCTC-CO  
New Brighton, Minnesota 55112-5000**

**Commander  
U.S. Army Toxic & Hazardous Materials Agency  
ATTN: CETHA-CO  
Aberdeen Proving Ground, Maryland 21010-5401**

**MAY 1990**

# **PART I**

## **INSTALLATION RESTORATION PROGRAM TWIN CITIES ARMY AMMUNITION PLANT**

### **1989 ANNUAL MONITORING REPORT FIGURES - VOLUME 3 OF 3**

**Distribution is limited to  
U.S. Government Agencies only for  
protection of privileged information.  
Other requests for the documents  
must be referred to:**

**Commander  
Twin Cities Army Ammunition Plant  
New Brighton, Minnesota  
55112-5000**

**Prepared for:**

**Commander  
Twin Cities Army Ammunition Plant  
ATTN: SMCTC-CO  
New Brighton, Minnesota 55112-5000**

**Commander  
U.S. Army Toxic & Hazardous Materials Agency  
ATTN: CETHA-CO  
Aberdeen Proving Ground, Maryland 21010-5401**

**MAY 1990**

**FEDERAL CARTRIDGE COMPANY  
WENCK ASSOCIATES, INC.**

**PART I**  
**INSTALLATION RESTORATION PROGRAM**  
**TWIN CITIES ARMY AMMUNITION PLANT**  
**1989 ANNUAL MONITORING REPORT**

**VOLUME 3**

**LIST OF FIGURES**

**SITE LOCATION MAPS**

- 1.1 Twin Cities Army Ammunition Plant (TCAAP) Location
- 1.2 TCAAP Sites of Contamination Sources

**L-SERIES MAPS, BASE MAPS FOR GROUNDWATER LEVEL DATA**

- 2.1 LA-Series Map, New Brighton Area
- 2.2 LB-Series Map, TCAAP and Vicinity
- 2.3 LC-Series Map, Site K Area
- 2.4 LD-Series Map, Site A Area
- 2.5 LE-Series Map, Southwest Boundary Area

**GROUNDWATER LEVEL MEASUREMENT LOCATION MAPS**

- 3.1.1 Groundwater Level Measurement Locations, Unit 1 Wells, LB-Series
- 3.1.2 Groundwater Level Measurement Locations, Unit 1 Wells, LC-Series
- 3.1.3 Groundwater Level Measurement Locations, Unit 1 Wells, LD-Series
- 3.1.4 Groundwater Level Measurement Locations, Unit 1 Wells, LE-Series
- 3.2.1 Groundwater Level Measurement Locations, Upper Unit 3 Wells, LB-Series
- 3.2.2 Groundwater Level Measurement Locations, Upper Unit 3 Wells, LE-Series
- 3.3.1 Groundwater Level Measurement Locations, Middle Unit 3 Wells, LB-Series
- 3.3.2 Groundwater Level Measurement Locations, Middle Unit 3 Wells, LE-Series
- 3.4.1 Groundwater Level Measurement Locations, Lower Unit 3 Wells, LA-Series
- 3.4.2 Groundwater Level Measurement Locations, Lower Unit 3 Wells, LB-Series
- 3.4.3 Groundwater Level Measurement Locations, Lower Unit 3 Wells, LE-Series
- 3.5.1 Groundwater Level Measurement Locations, Unit 4 Wells, LA-Series
- 3.5.2 Groundwater Level Measurement Locations, Unit 4 Wells, LB-Series
- 3.5.3 Groundwater Level Measurement Locations, Unit 4 Wells, LE-Series

**GROUNDWATER HYDROGRAPHS**

- 4.1 01U525 01U526 01U003 SW Boundary
- 4.2 01U803 01U053 01U062 SW Boundary
- 4.3 01U004 01U640 01U639 01U636 01U634 Site I
- 4.4 01U011 01U035 01U036 01U033 01U034 01U122 Site B/North Boundary
- 4.5 01U012 01U040 01U063 01U039 01U135 01U136 Off West Side Of Site A
- 4.6 01U037 01U038 01U104 01U105 01U109 01U110 Site A

## LIST OF FIGURES

4.7	01U041 01U067 01U022 01U118 01U106 01U107	Site A
4.8	01U043 01U044 01U045 01U046 01U085	South Of Site A
4.9	01U047 01U048 01U052 01U065 01U128	Site I
4.10	01U050 01U051 01U130	SW Boundary Area
4.11	01U524 01U527 01U806	SW Boundary Area
4.12	01U064 01U652 01U667 01U668 01U642	Site I
4.13	01U060 01U098	Site H
4.14	01U072	West Side Of Marsden Lake
4.15	01U100 01U101	Site B
4.16	01U102 01U108 01U350 01U126 01U117	Site A
4.17	01U103 01U120 01U127 01U119 01U133	Site A
4.18	01U115 01U116 01U125 01U901 01U902	Site A
4.19	01U603 01U604 01U605 01U607 01U612 01U613	Site K
4.20	01U615 01U616 01U617 01U601 01U609 01U611	Site K
4.21	01U618 01U619 01U620 01U621 01U623	Site K
4.22	01U624B 01U624C 01U624D	Site K
4.23	01U625A 01U625B 01U625C 01U625D	Site K
4.24	01U626A 01U626B 01U626C 01U626D	Site K
4.25	01U627A 01U627B 01U627C 01U627D	Site K
4.26	01U628A 01U628B 01U628C 01U628D	Site K
4.27	01L816 01U813	West Of SW Boundary
4.28	01U805 01U808 01L811	West Of SW Boundary
4.29	01L821 01L822 01L823	SW Of SW Boundary Area
4.30	03M001 03L001 04U001	SW Boundary Well Nest
4.31	03M002 03L002 04U002	SW Boundary
4.32	03M003 03L003 PJ#003 04U003	SW Boundary
4.33	03M004 03L004 03U005 03M005 03L005	South Boundary
4.34	03U099 03L086 03M505	Site H
4.35	03M007 03L007 04U007 03U008	East Boundary
4.36	03M010 03L010 03U011 03U009 04U510	NW Boundary
4.37	03M012 03L012 04U012	NW Boundary
4.38	03M013 03L013	West Boundary
4.39	03L081 03U094 03U014	Site G Area
4.40	03U087 03U521	Site 129-3
4.41	03U032 03U124 03U113 03L113	Site 129-15 Area
4.42	03M017 03L017	Downgradient Site D
4.43	03M020 03L020 04U020 PJ#074	Downgradient Site G
4.44	03L021 03U671 03U708 04U708	SW Boundary
4.45	03U023 03U082 03U024 03U707	South Of Site A
4.46	03U031 03U075 03U076 03U083	Site C/Site K Area
4.47	03L027 PJ#027 04U027 03L028 03U028	Site I
4.48	03L029 03U674 03U659	Site I Area
4.49	03L080 03U647 03U648 03U658	Site I Area
4.50	03L077 04U077 PJ#310 03U084 03L084	SW Boundary
4.51	03L078 03U079 03L079 03U710 03U703	SW Boundary
4.52	03U089 03U704 03U705 03U706	Site E
4.53	03U090 03U093 03U096 03U018 03L018	Site D Area
4.54	03U026 03U112 03U114	Site F Area
4.55	03U121 03U019	Site F Area
4.56	03U111 03U129	Site 129-5
4.57	03F302 03F303 03F304 03F305	SW Boundary Pumping Wells
4.58	03F306 03F307	SW Boundary Pumping Wells
4.59	PJ#502 PJ#503 PJ#507 PJ#508 PJ#506	SW Boundary
4.60	04U673 03L841 04U841	Hwy 96



## LIST OF FIGURES

4.61	04U701 03U702 04U702 PJ#311	SW Boundary
4.62	04U709 03U711 04U711	SW Boundary
4.63	03M802 03L802 PJ#802 04U802 03U803	SW Boundary
4.64	03U805	SW Boundary
4.65	03M806 03L806 PJ#806 04U806	SW Boundary
4.66	03U811 03L811 03L813 04U847 03U815	North Of Rush Lake
4.67	04U821 04U851 03M843 04U843 03U824	Between Rush And Long Lake
4.68	03L822 03L853	Between Rush And Long Lake
4.69	04U844 03U832 03L832 04U832	NW Of Hwy 694/35W Intersection
4.70	03L854 04U854 03L860 04U860	Along Hwy 35W North of Hwy 694
4.71	04U849 04U850 04U877 04U855	Pike Lake Area
4.72	03L848 04U848 03L859 04U859	Between Rush And Round Lake
4.73	04U861	NW Of Hwy 694/35W Intersection
4.74	04U872 04U875 04U880	Silver Lake Area
4.75	409556 409546 409549 206688	Hwy 694 West Of 35W
4.76	409557 409547 409548	Hwy 35 W North Of Hwy 694

### GROUNDWATER LEVEL CONTOUR MAPS

5.1.1.1	Groundwater Level Contours, Unit 1, LB-Series, Spring Quarter 1989(Q22)
5.1.1.2	Groundwater Level Contours, Unit 1, LB-Series, Summer Quarter 1989(Q23)
5.1.1.3	Groundwater Level Contours, Unit 1, LB-Series, Fall Quarter 1989(Q24)
5.1.2.1	Groundwater Level Contours, Unit 1, LC-Series, Summer Quarter 1989(Q23)
5.1.2.2	Groundwater Level Contours, Unit 1, LC-Series, Fall Quarter 1989(Q24)
5.1.3.1	Groundwater Level Contours, Unit 1, LD-Series, Spring Quarter 1989(Q22)
5.1.3.2	Groundwater Level Contours, Unit 1, LD-Series, Summer Quarter 1989(Q23)
5.1.3.3	Groundwater Level Contours, Unit 1, LD-Series, Fall Quarter 1989(Q24)
5.2.1.1	Groundwater Level Contours, Upper Unit 3, LB-Series, Spring Quarter 1989(Q22)
5.2.1.2	Groundwater Level Contours, Upper Unit 3, LB-Series, Summer Quarter 1989(Q23)
5.2.1.3	Groundwater Level Contours, Upper Unit 3, LB-Series, Fall Quarter 1989(Q24)
5.2.2.1	Groundwater Level Contours, Upper Unit 3, LE-Series, Summer Quarter 1989(Q23)
5.2.2.2	Groundwater Level Contours, Upper Unit 3, LE-Series, Fall Quarter 1989(Q24)
5.3.1.1	Groundwater Level Contours, Middle Unit 3, LB-Series, Spring Quarter 1989(Q22)
5.3.1.2	Groundwater Level Contours, Middle Unit 3, LB-Series, Summer Quarter 1989(Q23)
5.3.1.3	Groundwater Level Contours, Middle Unit 3, LB-Series, Fall Quarter 1989(Q24)
5.4.1.1	Groundwater Level Contours, Lower Unit 3, LB-Series, Spring Quarter 1989(Q22)
5.4.1.2	Groundwater Level Contours, Lower Unit 3, LB-Series, Summer Quarter 1989(Q23)
5.4.1.3	Groundwater Level Contours, Lower Unit 3, LB-Series, Fall Quarter 1989(Q24)
5.4.2.1	Groundwater Level Contours, Lower Unit 3, LE-Series, Summer Quarter 1989(Q23)
5.4.2.2	Groundwater Level Contours, Lower Unit 3, LE-Series, Fall Quarter 1989(Q24)
5.5.1.1	Groundwater Level Contours, Unit 4, LA-Series, Spring Quarter 1989(Q22)
5.5.1.2	Groundwater Level Contours, Unit 4, LA-Series, Summer Quarter 1989(Q23)
5.5.1.3	Groundwater Level Contours, Unit 4, LA-Series, Fall Quarter 1989(Q24)
5.5.2.1	Groundwater Level Contours, Unit 4, LB-Series, Spring Quarter 1989(Q22)
5.5.2.2	Groundwater Level Contours, Unit 4, LB-Series, Summer Quarter 1989(Q23)
5.5.2.3	Groundwater Level Contours, Unit 4, LB-Series, Fall Quarter 1989(Q24)
5.5.3.1	Groundwater Level Contours, Unit 4, LE-Series, Summer Quarter 1989(Q23)
5.5.3.2	Groundwater Level Contours, Unit 4, LE-Series, Fall Quarter 1989(Q24)

### Q-SERIES MAPS, BASE MAPS FOR GROUNDWATER QUALITY DATA

6.1	QA-Series Map, Twin Cities Metropolitan Area
6.2	QB-Series Map, TCAAP and Vicinity
6.3	QC-Series Map, Site K Area

## LIST OF FIGURES

- 6.4 QD-Series Map, Site A Area
- 6.5 QE-Series Map, Southwest Boundary Area

### GROUNDWATER QUALITY SAMPLING LOCATION MAPS

- 7.1.1 Groundwater Quality Sampling Locations, Unit 1 Wells, QB-Series
- 7.1.2 Groundwater Quality Sampling Locations, Unit 1 Wells, QC-Series
- 7.1.3 Groundwater Quality Sampling Locations, Unit 1 Wells, QD-Series
- 7.1.4 Groundwater Quality Sampling Locations, Unit 1 Wells, QE-Series
- 7.2.1 Groundwater Quality Sampling Locations, Upper Unit 3 Wells, QB-Series
- 7.2.2 Groundwater Quality Sampling Locations, Upper Unit 3 Wells, QE-Series
- 7.3.1 Groundwater Quality Sampling Locations, Middle Unit 3 Wells, QB-Series
- 7.4.1 Groundwater Quality Sampling Locations, Lower Unit 3 Wells, QA-Series
- 7.4.2 Groundwater Quality Sampling Locations, Lower Unit 3 Wells, QB-Series
- 7.5.1 Groundwater Quality Sampling Locations, Unit 4 Wells, QA-Series
- 7.5.2 Groundwater Quality Sampling Locations, Unit 4 Wells, QB-Series
- 7.5.3 Groundwater Quality Sampling Locations, Unit 4 Wells, QE-Series

### GROUNDWATER QUALITY DATA PLOTS/ISOCONCENTRATION MAPS

\* : Figures with Isoconcentration Contours

- 8.1.2.2.2 Chromium, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.1.2.2.3 Chromium, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.1.2.2.4 Chromium, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.1.4.2.4 Chromium, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.1.5.2.2 Chromium, Unit 4, QB-Series, Spring Quarter 1989(Q22)
- 8.1.5.2.3 Chromium, Unit 4, QB-Series, Summer Quarter 1989(Q23)
- 8.1.5.2.4 Chromium, Unit 4, QB-Series, Fall Quarter 1989(Q24)
- 8.2.2.2.2 Cadmium, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.2.2.2.3 Cadmium, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.2.2.2.4 Cadmium, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.2.4.2.4 Cadmium, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.2.5.2.2 Cadmium, Unit 4, QB-Series, Spring Quarter 1989(Q22)
- 8.2.5.2.3 Cadmium, Unit 4, QB-Series, Summer Quarter 1989(Q23)
- 8.2.5.2.4 Cadmium, Unit 4, QB-Series, Fall Quarter 1989(Q24)
- 8.3.2.2.2 Mercury, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.3.2.2.3 Mercury, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.3.2.2.4 Mercury, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.3.5.2.2 Mercury, Unit 4, QB-Series, Spring Quarter 1989(Q22)
- 8.3.5.2.3 Mercury, Unit 4, QB-Series, Summer Quarter 1989(Q23)
- 8.3.5.2.4 Mercury, Unit 4, QB-Series, Fall Quarter 1989(Q24)
- 8.4.2.2.2 Lead, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.4.2.2.3 Lead, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.4.2.2.4 Lead, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.4.4.2.4 Lead, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.4.5.2.2 Lead, Unit 4, QB-Series, Spring Quarter 1989(Q22)
- 8.4.5.2.3 Lead, Unit 4, QB-Series, Summer Quarter 1989(Q23)
- 8.4.5.2.4 Lead, Unit 4, QB-Series, Fall Quarter 1989(Q24)
- 8.5.1.2.2 Trichloroethene, Unit 1, QB-Series, Spring Quarter 1989(Q22)
- 8.5.1.4.2 Trichloroethene, Unit 1, QD-Series, Spring Quarter 1989(Q22)
- 8.5.1.5.2 Trichloroethene, Unit 1, QE-Series, Spring Quarter 1989(Q22)
- 8.5.1.2.3 Trichloroethene, Unit 1, QB-Series, Summer Quarter 1989(Q23)
- 8.5.1.4.3 Trichloroethene, Unit 1, QD-Series, Summer Quarter 1989(Q23)

## LIST OF FIGURES

- 8.5.1.5.3 Trichloroethene, Unit 1, QE-Series, Summer Quarter 1989(Q23)
- 8.5.1.2.4 Trichloroethene, Unit 1, QB-Series, Fall Quarter 1989(Q24)
- 8.5.1.4.4\* Trichloroethene, Unit 1, QD-Series, Fall Quarter 1989(Q24)
- 8.5.2.2.1 Trichloroethene, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)
- 8.5.2.2.2 Trichloroethene, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.5.2.5.2 Trichloroethene, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)
- 8.5.2.2.3 Trichloroethene, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.5.2.5.3 Trichloroethene, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)
- 8.5.2.2.4\* Trichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.5.2.5.4 Trichloroethene, Upper Unit 3, QE-Series, Fall Quarter 1989(Q24)
- 8.5.3.2.1 Trichloroethene, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)
- 8.5.3.2.2 Trichloroethene, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.5.3.2.3 Trichloroethene, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.5.3.2.4 Trichloroethene, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.5.4.1.2 Trichloroethene, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)
- 8.5.4.2.2 Trichloroethene, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.5.4.1.3 Trichloroethene, Lower Unit 3, QA-Series, Summer Quarter 1989(Q23)
- 8.5.4.2.3 Trichloroethene, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.5.4.1.4 Trichloroethene, Lower Unit 3, QA-Series, Fall Quarter 1989(Q24)
- 8.5.4.2.4 Trichloroethene, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.5.5.1.1 Trichloroethene, Unit 4, QA-Series, Winter Quarter 1989(Q21)
- 8.5.5.2.1 Trichloroethene, Unit 4, QB-Series, Winter Quarter 1989(Q21)
- 8.5.5.1.2 Trichloroethene, Unit 4, QA-Series, Spring Quarter 1989(Q22)
- 8.5.5.2.2 Trichloroethene, Unit 4, QB-Series, Spring Quarter 1989(Q22)
- 8.5.5.1.3 Trichloroethene, Unit 4, QA-Series, Summer Quarter 1989(Q23)
- 8.5.5.2.3 Trichloroethene, Unit 4, QB-Series, Summer Quarter 1989(Q23)
- 8.5.5.1.4\* Trichloroethene, Unit 4, QA-Series, Fall Quarter 1989(Q24)
- 8.5.5.2.4\* Trichloroethene, Unit 4, QB-Series, Fall Quarter 1989(Q24)
- 8.5.5.5.4 Trichloroethene, Unit 4, QE-Series, Fall Quarter 1989(Q24)
- 8.6.1.2.2 1,1,1-Trichloroethane, Unit 1, QB-Series, Spring Quarter 1989(Q22)
- 8.6.1.4.2 1,1,1-Trichloroethane, Unit 1, QD-Series, Spring Quarter 1989(Q22)
- 8.6.1.5.2 1,1,1-Trichloroethane, Unit 1, QE-Series, Spring Quarter 1989(Q22)
- 8.6.1.2.3 1,1,1-Trichloroethane, Unit 1, QB-Series, Summer Quarter 1989(Q23)
- 8.6.1.4.3 1,1,1-Trichloroethane, Unit 1, QD-Series, Summer Quarter 1989(Q23)
- 8.6.1.5.3 1,1,1-Trichloroethane, Unit 1, QE-Series, Summer Quarter 1989(Q23)
- 8.6.1.2.4 1,1,1-Trichloroethane, Unit 1, QB-Series, Fall Quarter 1989(Q24)
- 8.6.1.4.4 1,1,1-Trichloroethane, Unit 1, QD-Series, Fall Quarter 1989(Q24)
- 8.6.2.2.1 1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)
- 8.6.2.2.2 1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.6.2.5.2 1,1,1-Trichloroethane, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)
- 8.6.2.2.3 1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.6.2.5.3 1,1,1-Trichloroethane, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)
- 8.6.2.2.4 1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.6.2.5.4 1,1,1-Trichloroethane, Upper Unit 3, QE-Series, Fall Quarter 1989(Q24)
- 8.6.3.2.1 1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)
- 8.6.3.2.2 1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.6.3.2.3 1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.6.3.2.4 1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.6.4.1.2 1,1,1-Trichloroethane, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)
- 8.6.4.2.2 1,1,1-Trichloroethane, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.6.4.1.3 1,1,1-Trichloroethane, Lower Unit 3, QA-Series, Summer Quarter 1989(Q23)
- 8.6.4.2.3 1,1,1-Trichloroethane, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.6.4.2.4 1,1,1-Trichloroethane, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.6.5.1.1 1,1,1-Trichloroethane, Unit 4, QA-Series, Winter Quarter 1989(Q21)

## LIST OF FIGURES

8.6.5.2.1	1,1,1-Trichloroethane, Unit 4, QB-Series, Winter Quarter 1989(Q21)
8.6.5.1.2	1,1,1-Trichloroethane, Unit 4, QA-Series, Spring Quarter 1989(Q22)
8.6.5.2.2	1,1,1-Trichloroethane, Unit 4, QB-Series, Spring Quarter 1989(Q22)
8.6.5.1.3*	1,1,1-Trichloroethane, Unit 4, QA-Series, Summer Quarter 1989(Q23)
8.6.5.2.3	1,1,1-Trichloroethane, Unit 4, QB-Series, Summer Quarter 1989(Q23)
8.6.5.1.4*	1,1,1-Trichloroethane, Unit 4, QA-Series, Fall Quarter 1989(Q24)
8.6.5.2.4	1,1,1-Trichloroethane, Unit 4, QB-Series, Fall Quarter 1989(Q24)
8.6.5.5.4	1,1,1-Trichloroethane, Unit 4, QE-Series, Fall Quarter 1989(Q24)
8.7.1.2.2	1,1-Dichloroethene, Unit 1, QB-Series, Spring Quarter 1989(Q22)
8.7.1.4.2	1,1-Dichloroethene, Unit 1, QD-Series, Spring Quarter 1989(Q22)
8.7.1.5.2	1,1-Dichloroethene, Unit 1, QE-Series, Spring Quarter 1989(Q22)
8.7.1.2.3	1,1-Dichloroethene, Unit 1, QB-Series, Summer Quarter 1989(Q23)
8.7.1.4.3	1,1-Dichloroethene, Unit 1, QD-Series, Summer Quarter 1989(Q23)
8.7.1.2.4	1,1-Dichloroethene, Unit 1, QB-Series, Fall Quarter 1989(Q24)
8.7.1.4.4	1,1-Dichloroethene, Unit 1, QD-Series, Fall Quarter 1989(Q24)
8.7.2.2.1	1,1-Dichloroethene, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)
8.7.2.2.2	1,1-Dichloroethene, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
8.7.2.5.2	1,1-Dichloroethene, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)
8.7.2.2.3	1,1-Dichloroethene, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
8.7.2.5.3	1,1-Dichloroethene, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)
8.7.2.2.4	1,1-Dichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
8.7.2.5.4	1,1-Dichloroethene, Upper Unit 3, QE-Series, Fall Quarter 1989(Q24)
8.7.3.2.1	1,1-Dichloroethene, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)
8.7.3.2.2	1,1-Dichloroethene, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)
8.7.3.2.3	1,1-Dichloroethene, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)
8.7.3.2.4	1,1-Dichloroethene, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)
8.7.4.2.2	1,1-Dichloroethene, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)
8.7.4.2.3	1,1-Dichloroethene, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)
8.7.4.2.4	1,1-Dichloroethene, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
8.7.5.2.1	1,1-Dichloroethene, Unit 4, QB-Series, Winter Quarter 1989(Q21)
8.7.5.1.2	1,1-Dichloroethene, Unit 4, QA-Series, Spring Quarter 1989(Q22)
8.7.5.2.2	1,1-Dichloroethene, Unit 4, QB-Series, Spring Quarter 1989(Q22)
8.7.5.1.3*	1,1-Dichloroethene, Unit 4, QA-Series, Summer Quarter 1989(Q23)
8.7.5.2.3	1,1-Dichloroethene, Unit 4, QB-Series, Summer Quarter 1989(Q23)
8.7.5.1.4*	1,1-Dichloroethene, Unit 4, QA-Series, Fall Quarter 1989(Q24)
8.7.5.2.4	1,1-Dichloroethene, Unit 4, QB-Series, Fall Quarter 1989(Q24)
8.7.5.5.4	1,1-Dichloroethene, Unit 4, QE-Series, Fall Quarter 1989(Q24)
8.8.2.2.1	1,1-Dichloroethane, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)
8.8.2.2.2	1,1-Dichloroethane, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
8.8.2.5.2	1,1-Dichloroethane, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)
8.8.2.2.3	1,1-Dichloroethane, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
8.8.2.5.3	1,1-Dichloroethane, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)
8.8.2.2.4	1,1-Dichloroethane, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
8.8.2.5.4	1,1-Dichloroethane, Upper Unit 3, QE-Series, Fall Quarter 1989(Q24)
8.8.3.2.1	1,1-Dichloroethane, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)
8.8.3.2.4	1,1-Dichloroethane, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)
8.8.3.5.4	1,1-Dichloroethane, Middle Unit 3, QE-Series, Fall Quarter 1989(Q24)
8.8.4.2.2	1,1-Dichloroethane, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)
8.8.4.2.3	1,1-Dichloroethane, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)
8.8.4.2.4	1,1-Dichloroethane, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
8.8.5.2.1	1,1-Dichloroethane, Unit 4, QB-Series, Winter Quarter 1989(Q21)
8.8.5.2.2	1,1-Dichloroethane, Unit 4, QB-Series, Spring Quarter 1989(Q22)
8.8.5.2.3	1,1-Dichloroethane, Unit 4, QB-Series, Summer Quarter 1989(Q23)
8.8.5.2.4	1,1-Dichloroethane, Unit 4, QB-Series, Fall Quarter 1989(Q24)

## LIST OF FIGURES

- 8.8.5.5.4 1,1-Dichloroethane, Unit 4, QE-Series, Fall Quarter 1989(Q24)
- 8.9.1.2.2 1,2-Dichloroethene, Unit 1, QB-Series, Spring Quarter 1989(Q22)
- 8.9.1.4.2 1,2-Dichloroethene, Unit 1, QD-Series, Spring Quarter 1989(Q22)
- 8.9.1.2.3 1,2-Dichloroethene, Unit 1, QB-Series, Summer Quarter 1989(Q23)
- 8.9.1.3.3 1,2-Dichloroethene, Unit 1, QC-Series, Summer Quarter 1989(Q23)
- 8.9.1.4.3 1,2-Dichloroethene, Unit 1, QD-Series, Summer Quarter 1989(Q23)
- 8.9.1.2.4 1,2-Dichloroethene, Unit 1, QB-Series, Fall Quarter 1989(Q24)
- 8.9.1.3.4 1,2-Dichloroethene, Unit 1, QC-Series, Fall Quarter 1989(Q24)
- 8.9.1.4.4 1,2-Dichloroethene, Unit 1, QD-Series, Fall Quarter 1989(Q24)
- 8.9.2.2.2 1,2-Dichloroethene, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.9.2.2.3 1,2-Dichloroethene, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.9.2.2.4 1,2-Dichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.9.3.2.2 1,2-Dichloroethene, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.9.3.2.3 1,2-Dichloroethene, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.9.3.2.4 1,2-Dichloroethene, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.9.4.1.2 1,2-Dichloroethene, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)
- 8.9.4.2.2 1,2-Dichloroethene, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.9.4.2.3 1,2-Dichloroethene, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.9.4.1.4 1,2-Dichloroethene, Lower Unit 3, QA-Series, Fall Quarter 1989(Q24)
- 8.9.4.2.4 1,2-Dichloroethene, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.9.5.1.2 1,2-Dichloroethene, Unit 4, QA-Series, Spring Quarter 1989(Q22)
- 8.9.5.2.2 1,2-Dichloroethene, Unit 4, QB-Series, Spring Quarter 1989(Q22)
- 8.9.5.1.3\* 1,2-Dichloroethene, Unit 4, QA-Series, Summer Quarter 1989(Q23)
- 8.9.5.2.3 1,2-Dichloroethene, Unit 4, QB-Series, Summer Quarter 1989(Q23)
- 8.9.5.1.4\* 1,2-Dichloroethene, Unit 4, QA-Series, Fall Quarter 1989(Q24)
- 8.9.5.2.4 1,2-Dichloroethene, Unit 4, QB-Series, Fall Quarter 1989(Q24)
- 8.10.1.2.2 Total VOC's, Unit 1, QB-Series, Spring Quarter 1989(Q22)
- 8.10.1.3.2 Total VOC's, Unit 1, QC-Series, Spring Quarter 1989(Q22)
- 8.10.1.4.2 Total VOC's, Unit 1, QD-Series, Spring Quarter 1989(Q22)
- 8.10.1.5.2 Total VOC's, Unit 1, QE-Series, Spring Quarter 1989(Q22)
- 8.10.1.2.3 Total VOC's, Unit 1, QB-Series, Summer Quarter 1989(Q23)
- 8.10.1.4.3 Total VOC's, Unit 1, QD-Series, Summer Quarter 1989(Q23)
- 8.10.1.5.3 Total VOC's, Unit 1, QE-Series, Summer Quarter 1989(Q23)
- 8.10.1.2.4 Total VOC's, Unit 1, QB-Series, Fall Quarter 1989(Q24)
- 8.10.1.4.4\* Total VOC's, Unit 1, QD-Series, Fall Quarter 1989(Q24)
- 8.10.2.2.1 Total VOC's, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)
- 8.10.2.2.2 Total VOC's, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.10.2.2.3 Total VOC's, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.10.2.2.4\* Total VOC's, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.10.2.5.4 Total VOC's, Upper Unit 3, QE-Series, Fall Quarter 1989(Q24)
- 8.10.3.2.1 Total VOC's, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)
- 8.10.3.2.2 Total VOC's, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.10.3.2.3 Total VOC's, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.10.3.2.4 Total VOC's, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.10.4.1.2 Total VOC's, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)
- 8.10.4.2.2 Total VOC's, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)
- 8.10.4.1.3 Total VOC's, Lower Unit 3, QA-Series, Summer Quarter 1989(Q23)
- 8.10.4.2.3 Total VOC's, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)
- 8.10.4.1.4 Total VOC's, Lower Unit 3, QA-Series, Fall Quarter 1989(Q24)
- 8.10.4.2.4 Total VOC's, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)
- 8.10.5.1.1 Total VOC's, Unit 4, QA-Series, Winter Quarter 1989(Q21)
- 8.10.5.2.1 Total VOC's, Unit 4, QB-Series, Winter Quarter 1989(Q21)
- 8.10.5.1.2 Total VOC's, Unit 4, QA-Series, Spring Quarter 1989(Q22)
- 8.10.5.2.2 Total VOC's, Unit 4, QB-Series, Spring Quarter 1989(Q22)

## LIST OF FIGURES

- 8.10.5.1.3 Total VOC's, Unit 4, QA-Series, Summer Quarter 1989(Q23)
- 8.10.5.2.3 Total VOC's, Unit 4, QB-Series, Summer Quarter 1989(Q23)
- 8.10.5.1.4\* Total VOC's, Unit 4, QA-Series, Fall Quarter 1989(Q24)
- 8.10.5.2.4\* Total VOC's, Unit 4, QB-Series, Fall Quarter 1989(Q24)
- 8.10.5.5.4 Total VOC's, Unit 4, QE-Series, Fall Quarter 1989(Q24)

### REVISIONS TO THE TCAAP 1988 ANNUAL MONITORING REPORT

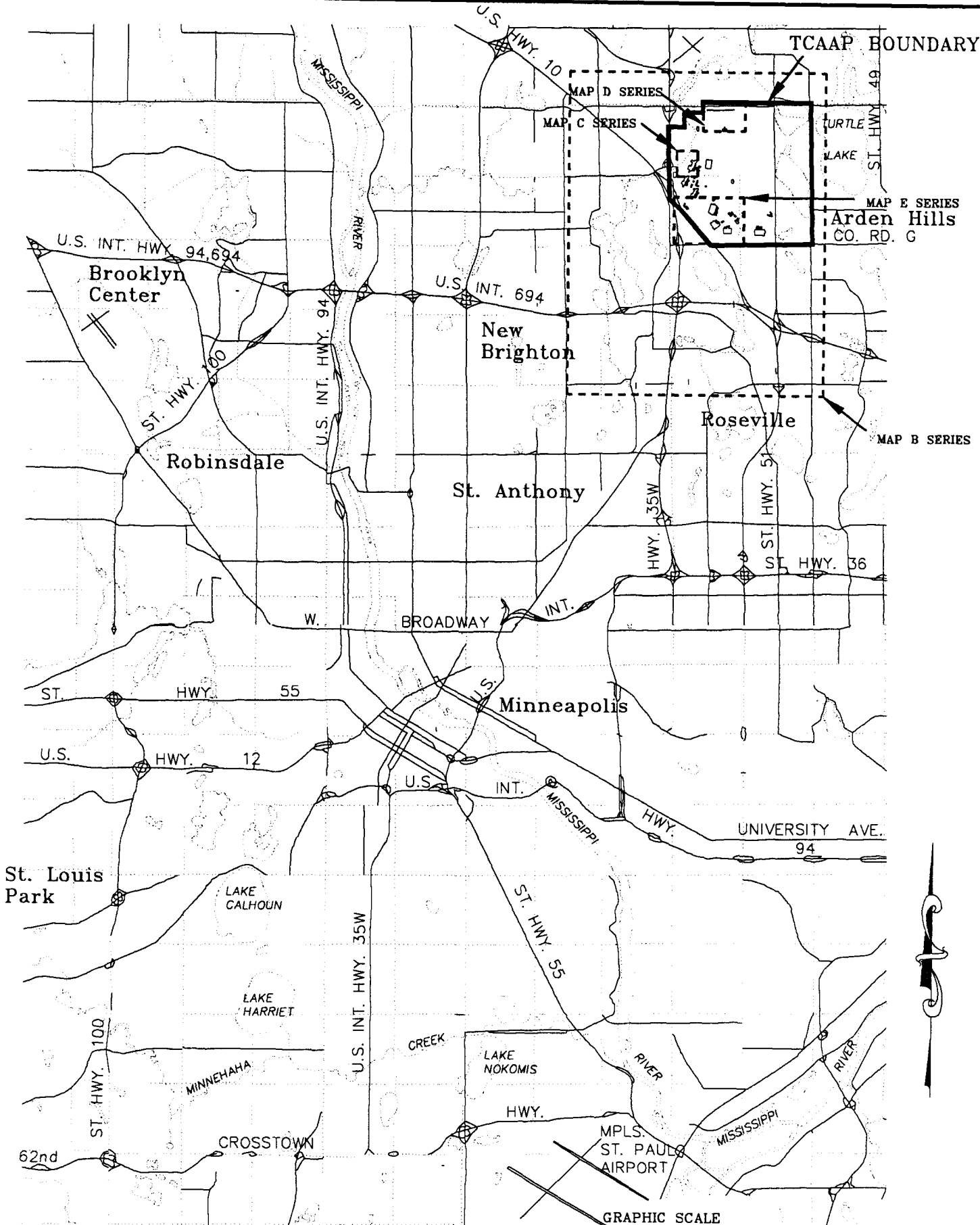
#### GROUNDWATER LEVEL CONTOUR MAPS

- R.1 Unit 1, LB-Series, Fall Quarter 1987(Q16)
- R.2 Unit 1, LB-Series, Winter Quarter 1988(Q17)
- R.3 Unit 1, LB-Series, Spring Quarter 1988(Q18)
- R.4 Unit 1, LB-Series, Summer Quarter 1988(Q19)
- R.5 Unit 1, LB-Series, Fall Quarter 1988(Q20)
- R.6 Unit 1, LC-Series, Fall Quarter 1987(Q16)
- R.7 Unit 1, LC-Series, Winter Quarter 1988(Q17)
- R.8 Unit 1, LC-Series, Spring Quarter 1988(Q18)
- R.9 Unit 1, LC-Series, Summer Quarter 1988(Q19)
- R.10 Unit 1, LC-Series, Fall Quarter 1988(Q20)
- R.11 Unit 1, LD-Series, Fall Quarter 1988(Q20)
- R.12 Unit 3, LB-Series, Fall Quarter 1987(Q16)
- R.13 Unit 3, LB-Series, Winter Quarter 1988(Q17)
- R.14 Unit 3, LB-Series, Spring Quarter 1988(Q18)
- R.15 Unit 3, LB-Series, Summer Quarter 1988(Q19)
- R.16 Unit 3, LB-Series, Fall Quarter 1988(Q20)
- R.17 Unit 4, LB-Series, Fall Quarter 1988(Q20)

#### GROUNDWATER QUALITY ISOCONCENTRATION MAPS

- R.18 Trichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1987(Q16)
- R.19 Total VOC's, Upper Unit 3, QB-Series, Fall Quarter 1987(Q16)
- R.20 Trichloroethene, Unit 4, QB-Series, Fall Quarter 1987(Q16)
- R.21 Total VOC's, Unit 4, QB-Series, Fall Quarter 1987(Q16)

**SECTION 1**  
**SITE LOCATION MAPS**



**TWIN CITIES ARMY AMMUNITION PLANT**

Twin Cities Army Ammunition Plant (TCAAP) Location



**Wenck Associates, Inc.**

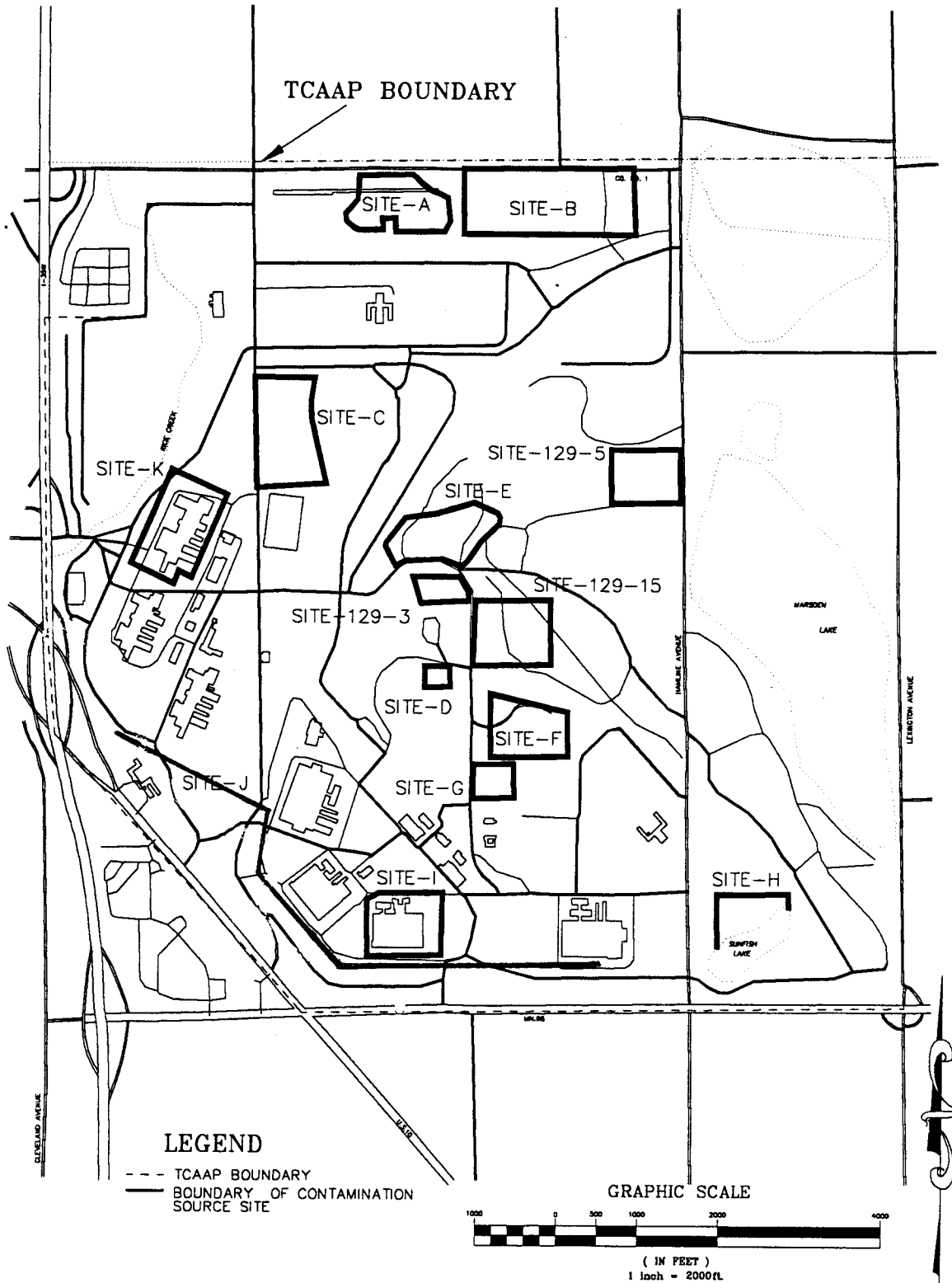
**Consulting Engineers**

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**MAR 1990**

1.1





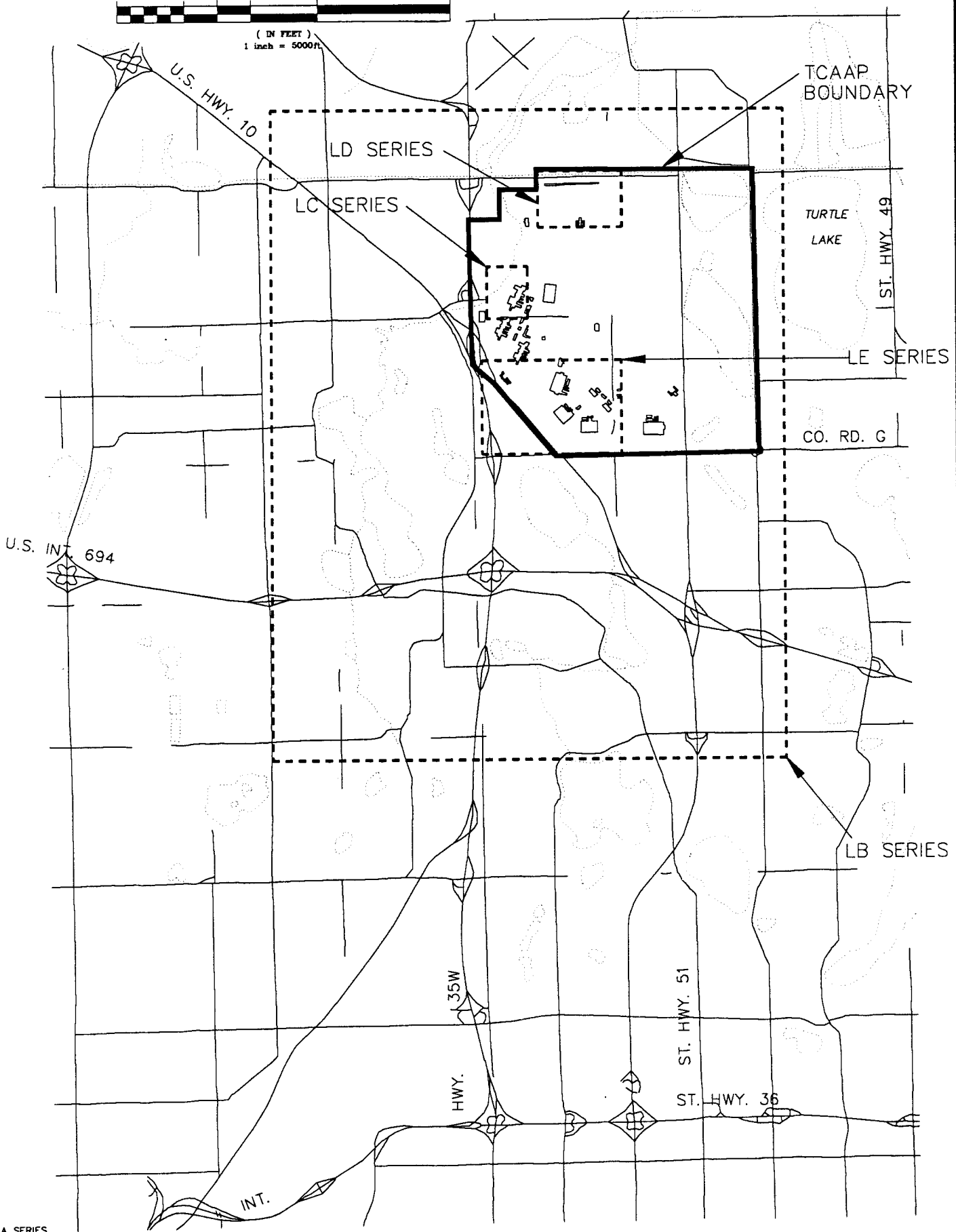
**SECTION 2**

**L-SERIES MAPS, BASE MAPS FOR GROUNDWATER LEVEL DATA**

GRAPHIC SCALE



( IN FEET )  
1 inch = 5000ft.



HEMAP-LA SERIES

TWIN CITIES ARMY AMMUNITION PLANT

LA-Series Map, New Brighton Area



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

2.1

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500 ft.

TCAAP  
BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN  
LAKE

RICE

LONG

RUSH

LAKE

CO. RD. G

LAKE

ROUND  
LAKE

LE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE  
LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HEMAP-LB SERIES

TWIN CITIES ARMY AMMUNITION PLANT

LB-Series Map, TCAAP and Vicinity



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

2.2

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



RICE CREEK

BLDG. 103

TWIN CITIES ARMY AMMUNITION PLANT

LC-Series Map, Site K Area



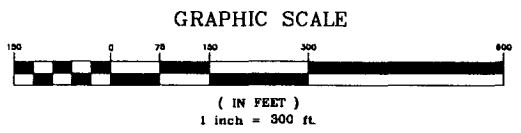
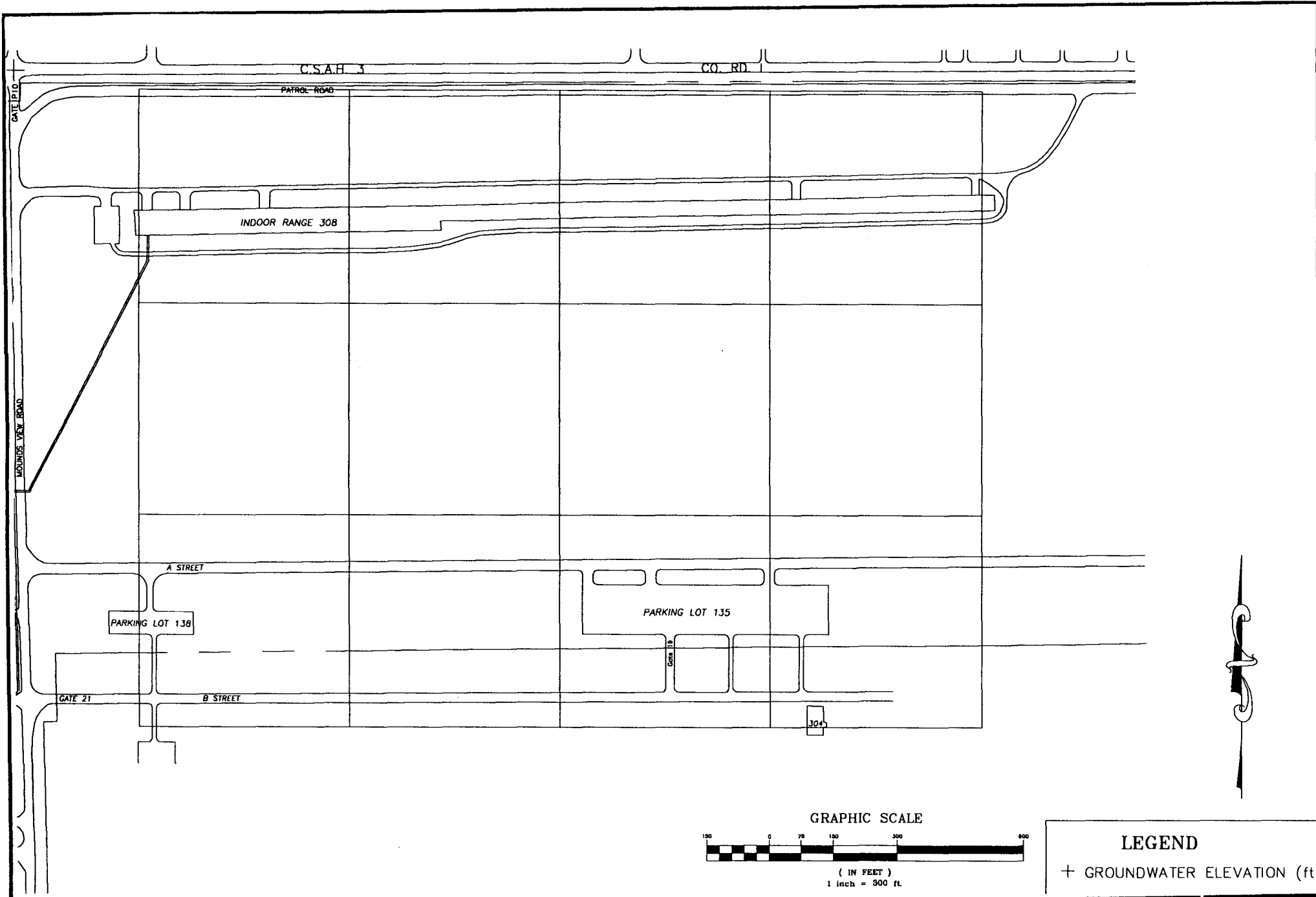
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

2.3



**LEGEND**  
+ GROUNDWATER ELEVATION (ft)

**TWIN CITIES ARMY AMMUNITION PLANT**

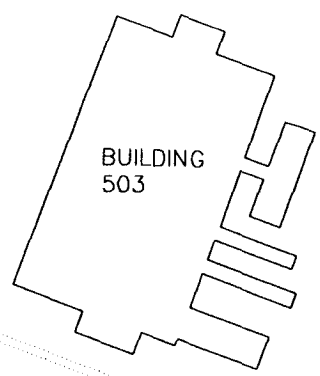
LD-Series Map, Site A Area



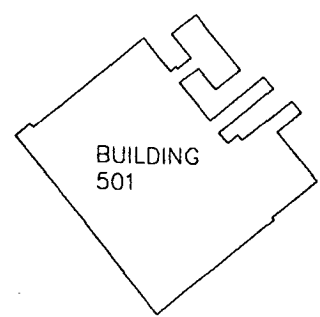
**Consulting Engineers**  
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359  
Wenck Associates, Inc.

**MAR 1990**

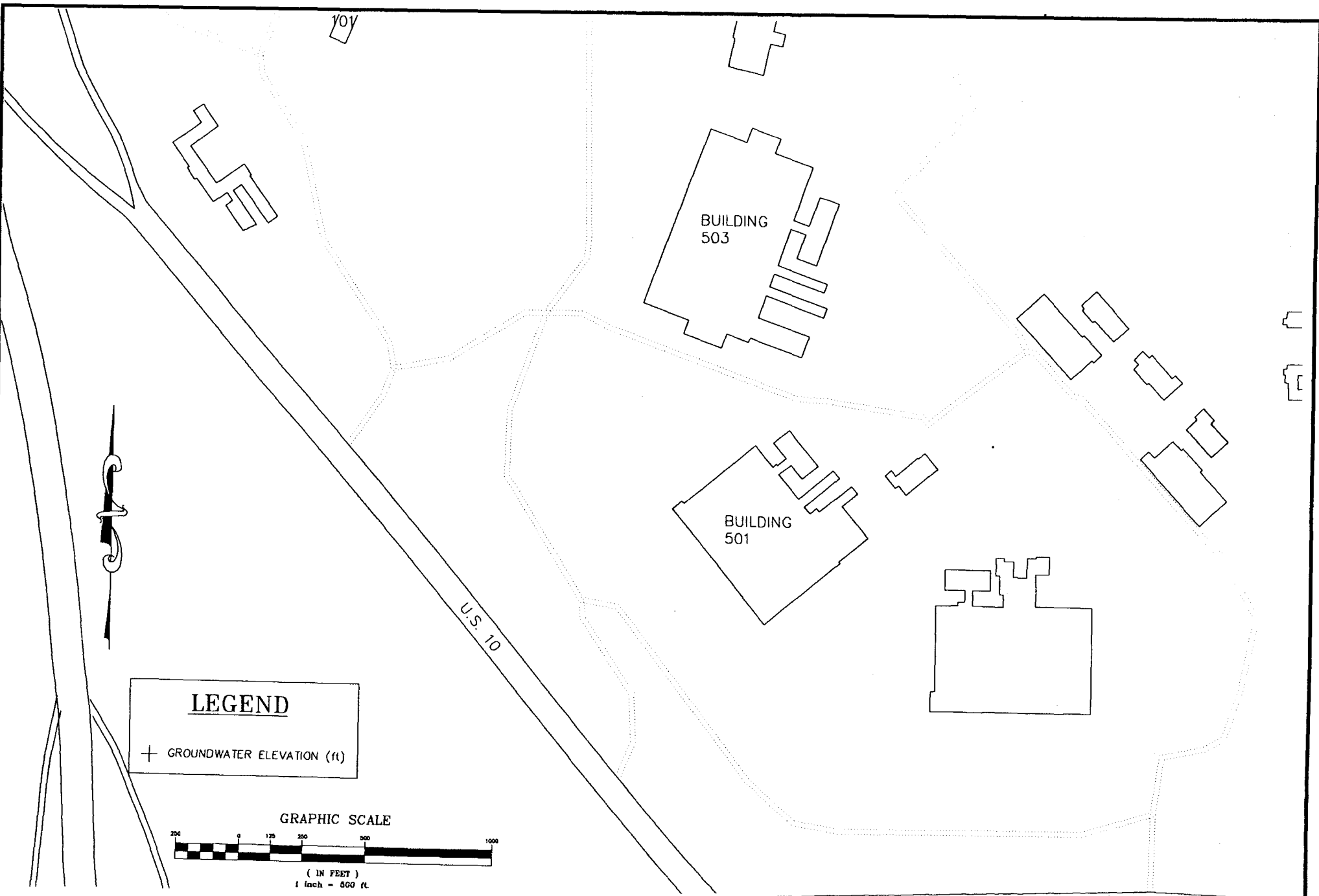
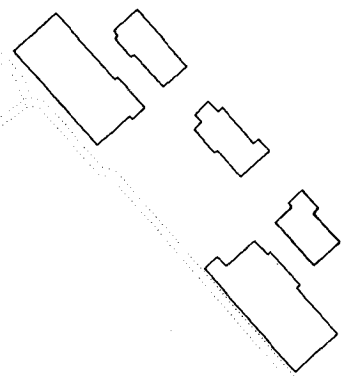
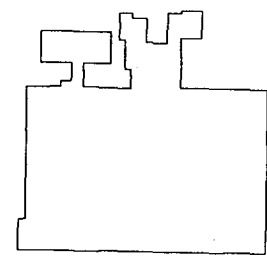
YOY



BUILDING 503

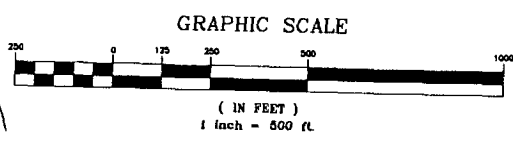


BUILDING 501



**LEGEND**

+ GROUNDWATER ELEVATION (ft)



**TWIN CITIES ARMY AMMUNITION PLANT**

LE-Series Map, Southwest Boundary Area

**Wenck Associates, Inc.**  
Consulting Engineers  
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**MAR 1990**

2.5

**SECTION 3**

**GROUNDWATER LEVEL MEASUREMENT LOCATION MAPS**



LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

LD SERIES

TCAAP BOUNDARY

CO. RD. I

01U901 01U902

01U039 01U122 01U033

01U135 01U034 01U100

01U040 01U041 01U022

01U063 01U044

01U043

01U085

01U045

01U046

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

01L813 01U813

01L816

01L811

01U808

RUSH

LAKE

01L821

01L822

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

01L823

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

MAP HE1U99.PRN -LB SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Measurement Locations, Unit 1 Wells, LB-Series



Wenck Associates, Inc.

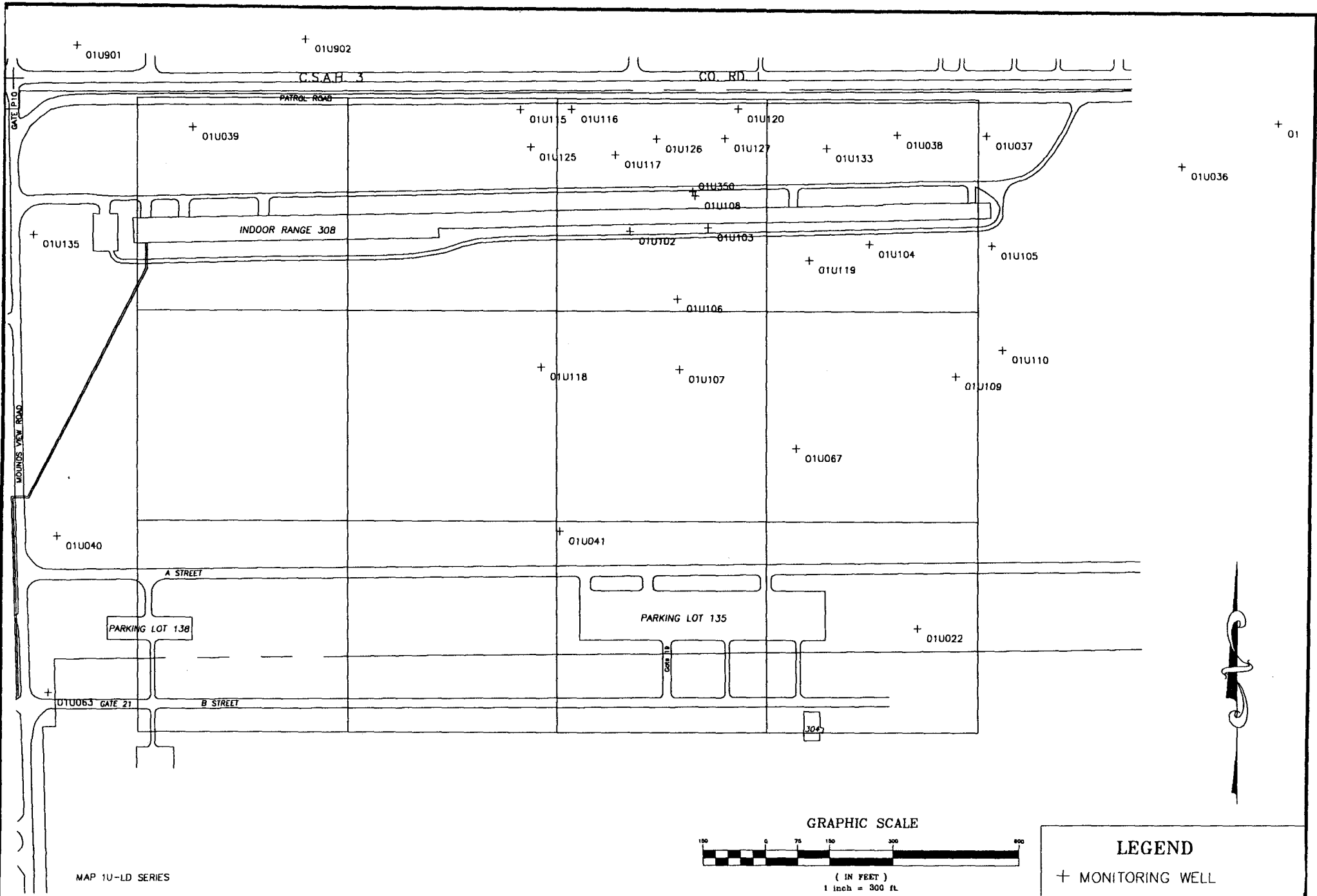
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

3.1.1





MAP 1U-LD SERIES

GRAPHIC SCALE



( IN FEET )  
1 inch = 300 ft.

<b>LEGEND</b>
+ MONITORING WELL

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Measurement Locations, Unit 1 Wells, LD-Series



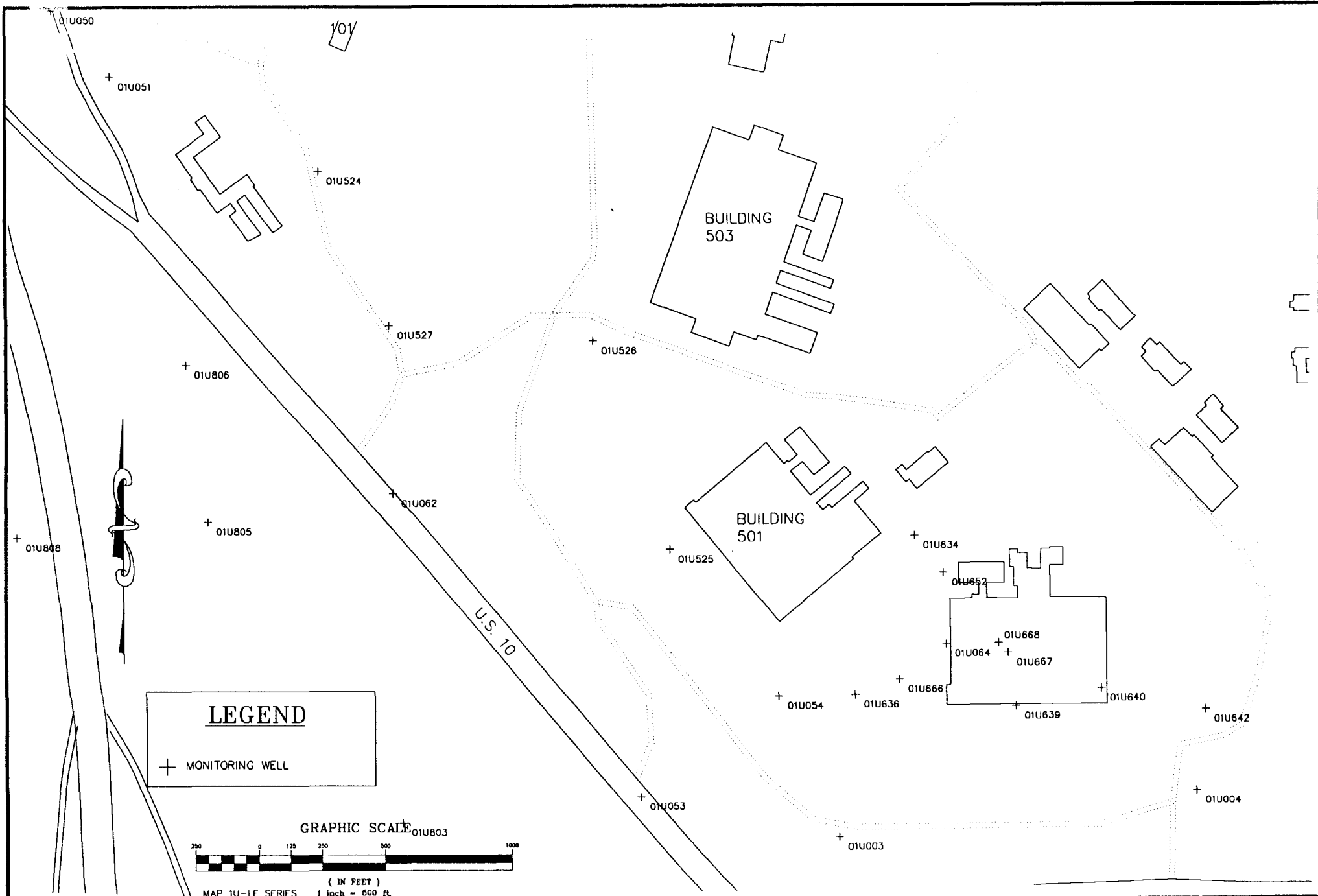
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

3.1.3



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Measurement Locations, Unit 1 Wells, LE-Series



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

3.1.4

LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY 10

U.S. INT. HWY. 35W

03U012

03U011

03U010

03U023

03U022

03U082

03U024

03U070

03U025

03U076

03U097

03U129

03U083

03U074

03U075

03U111

03U088

03U089

03U087

03U086

03U096

03U090

03U093

03U018

03U017

03U016

03U015

03U014

03U013

03U012

03U011

03U010

03U009

03U008

03U007

03U006

03U005

03U004

03U003

03U002

03U001

03U000

03U000

03U000

03U000

03U000

03U000

03U000

03U000

03U000

03U000

03U000

CO. RD. H

CREEK

RICE

LONG

03U815

RUSH

LAKE

03U817

03U816

03U815

03U814

03U813

03U812

03U811

03U810

03U809

03U808

03U807

03U806

03U805

03U804

03U803

03U802

03U801

03U800

03U800

03U800

03U800

03U800

03U800

03U800

03U800

03U800

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

MAP HE3U99.PRN - B SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Measurement Locations, Upper Unit 3 Wells, LB-Series



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

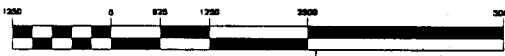
3.2.1



LEGEND

MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500 ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

03M012

03M010

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. H

CREEK

03M013

03M001

RICE

03M017

03M028

03M509

03M007

LONG

RUSH

03M006

03M002

03M008

03M509

03M005

03M505

CO. RD. G

03M843

03M802

03M003

03M004

03M005

LE SERIES

LAKE

LAKE

03M848

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

409556

409557

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

43M99-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Measurement Locations, Middle Unit 3 Wells, LB-Series



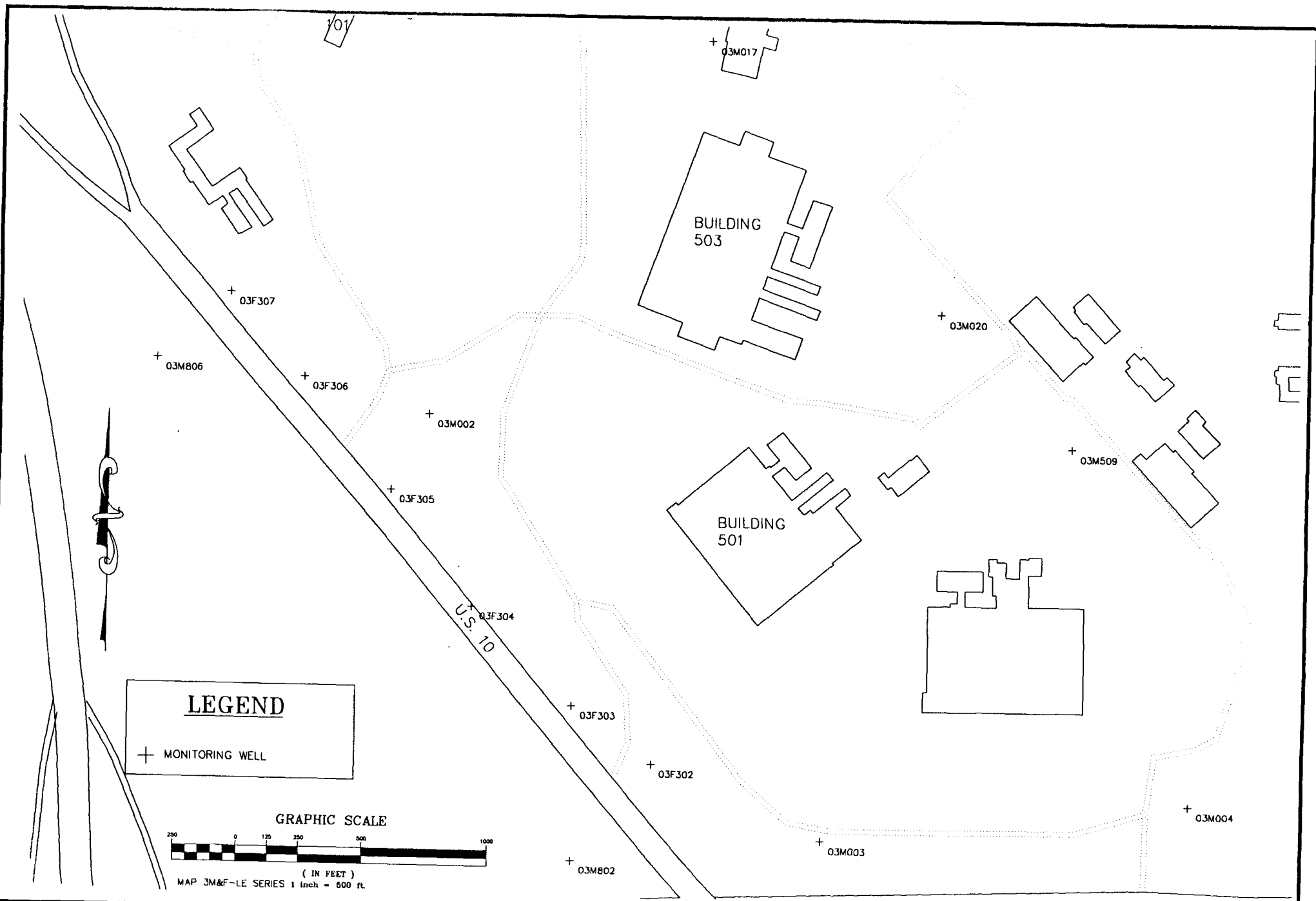
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

3.3.1



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Measurement Locations, Middle Unit 3 Wells, LE-Series



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

3.3.2





LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

03L012

03L010

03L523

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. H

CREEK

RICE

03L001

03L091

03L113

03L137

03L018

03L138

03L014

03L081

03L813

03L811

03L077

03L020

03L027

03L027

03L028

03L080

03L856

03L809

03L002

03L022

03L028

03L029

03L086

03L007

LONG

RUSH

03L078

03L079

03L003

03L005

CO. RD. G

03L841

03L673

LE SERIES

03L853

03L848

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

LAKE

03L822

03L859

03L848

ROUND LAKE

409597

03L861

03L854

03L860

U.S. INT. 694

03L305

409546

03L832

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

HE3L99-1 B

TWIN CITIES ARMY AMMUNITION PLANT



Consulting Engineers

MAR 1990

Groundwater Level Measurement Locations, Lower Unit 3 Wells, LB-Series

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

3.4.2





LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

04U012

04U510+

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

PJ#504

PJ#501

PJ#502

04U001

PJ#313

PJ#503

PJ#311

04U808

04U077

04U709

04U708

PJ#506

PJ#507

PJ#074

04U020

04U027

04U007+

CO. RD. G

LONG

RUSH

LAKE

LE SERIES

04U855

04U843

04U841

04U873

LAKE

04U821

04U848

04U859

04U845

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

409549

04U849

191942

04U844

04U844

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U857

04U845

04U854

04U860

04U861

04U854

04U860

04U860

04U860

04U860

04U860

04U860

04U860

04U860

04U860

04U860

04U860

04U860

VALENTINE LAKE

ST. HWY. 51

U.S. INT. 694

CO. RD. E

04U877

500891

04U851

U.S. INT. 694

04U850

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

04U845

MAP HE4U99.PRN - B SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Measurement Locations, Unit 4 Wells, LB-Series



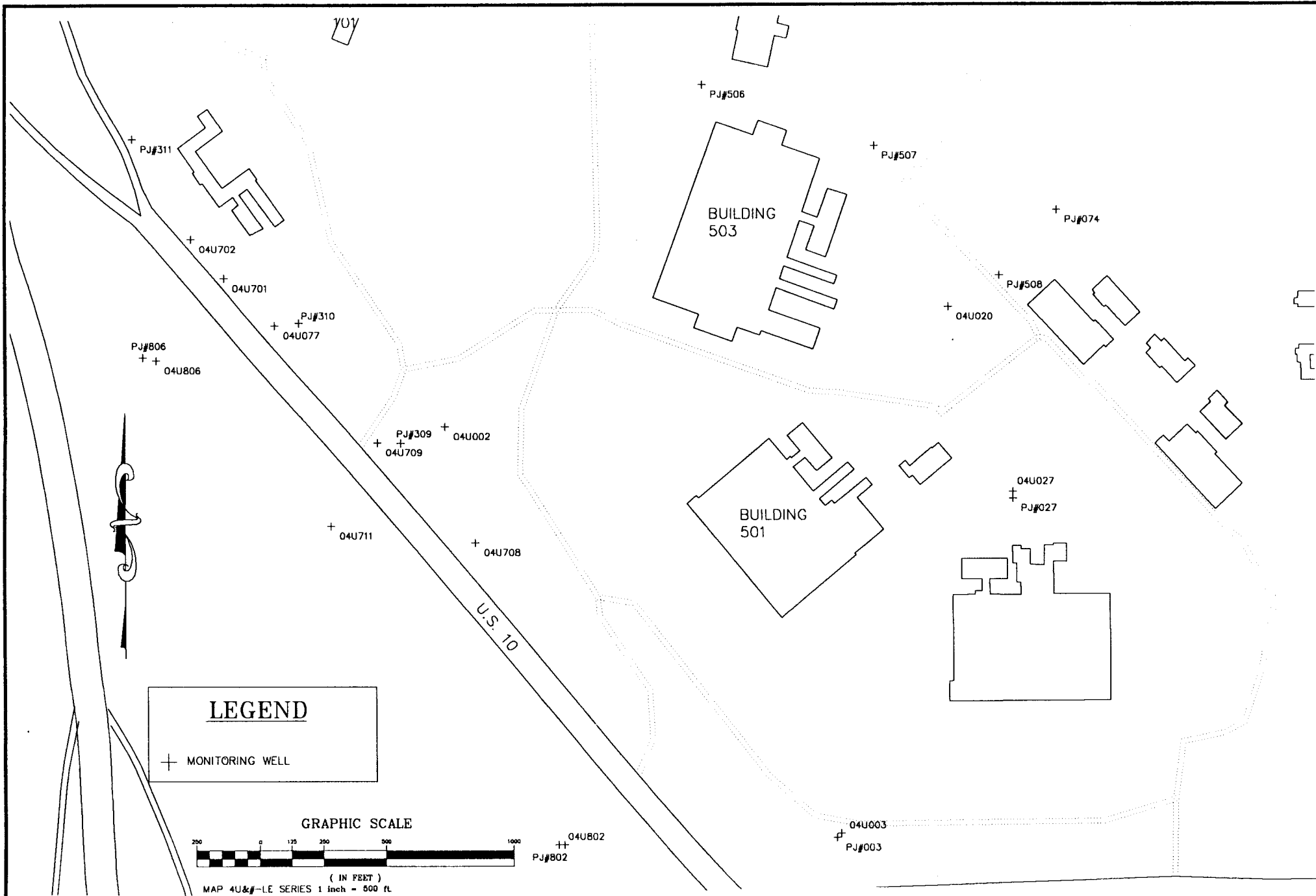
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

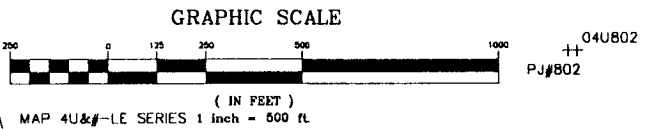
MAR 1990

3.5.2



**LEGEND**

+ MONITORING WELL



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Measurement Locations, Unit 4 Wells, LE-Series



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

3.5.3

**SECTION 4**

**GROUNDWATER HYDROGRAPHS**

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

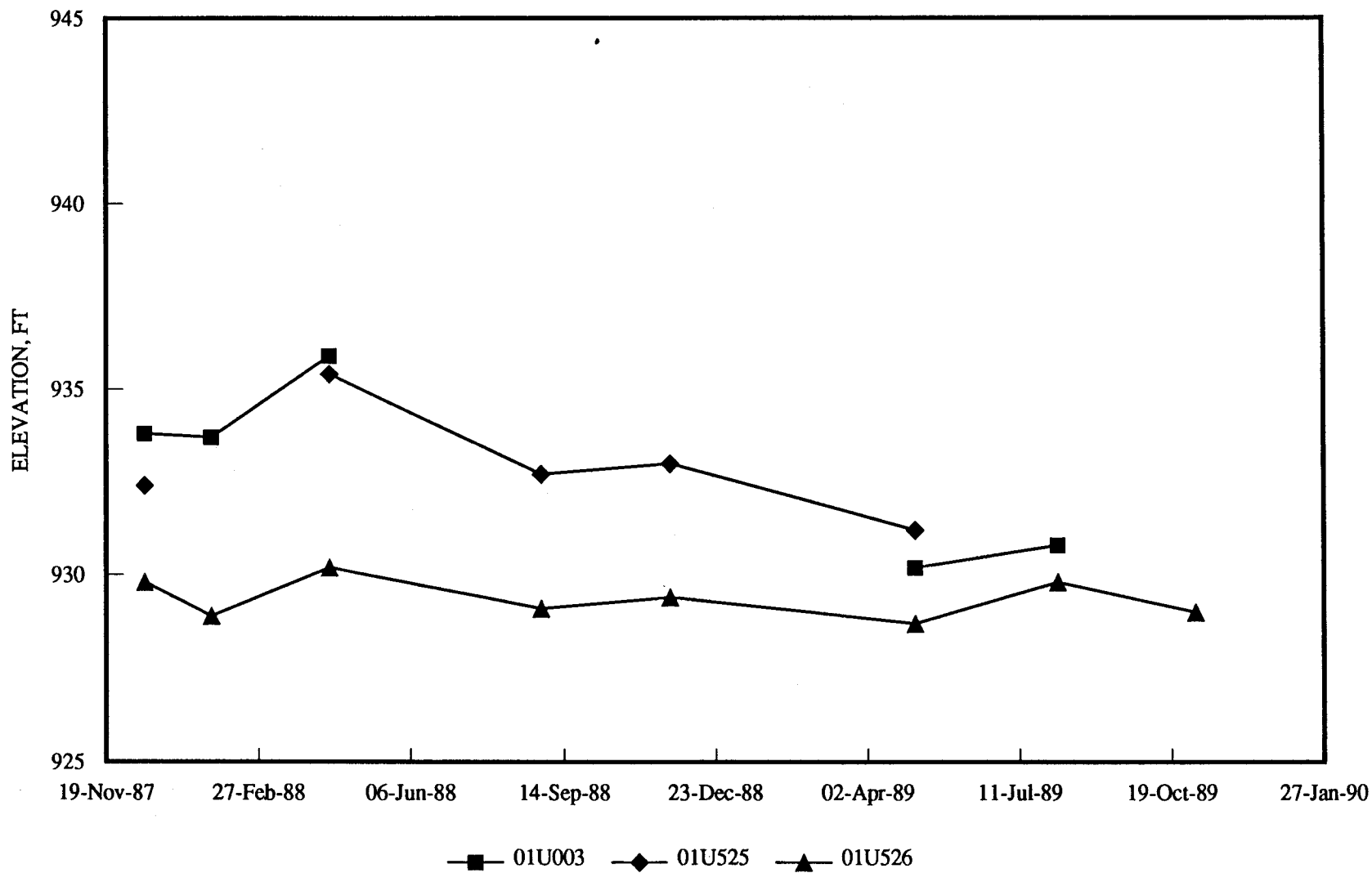


Figure 4-1, SW BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

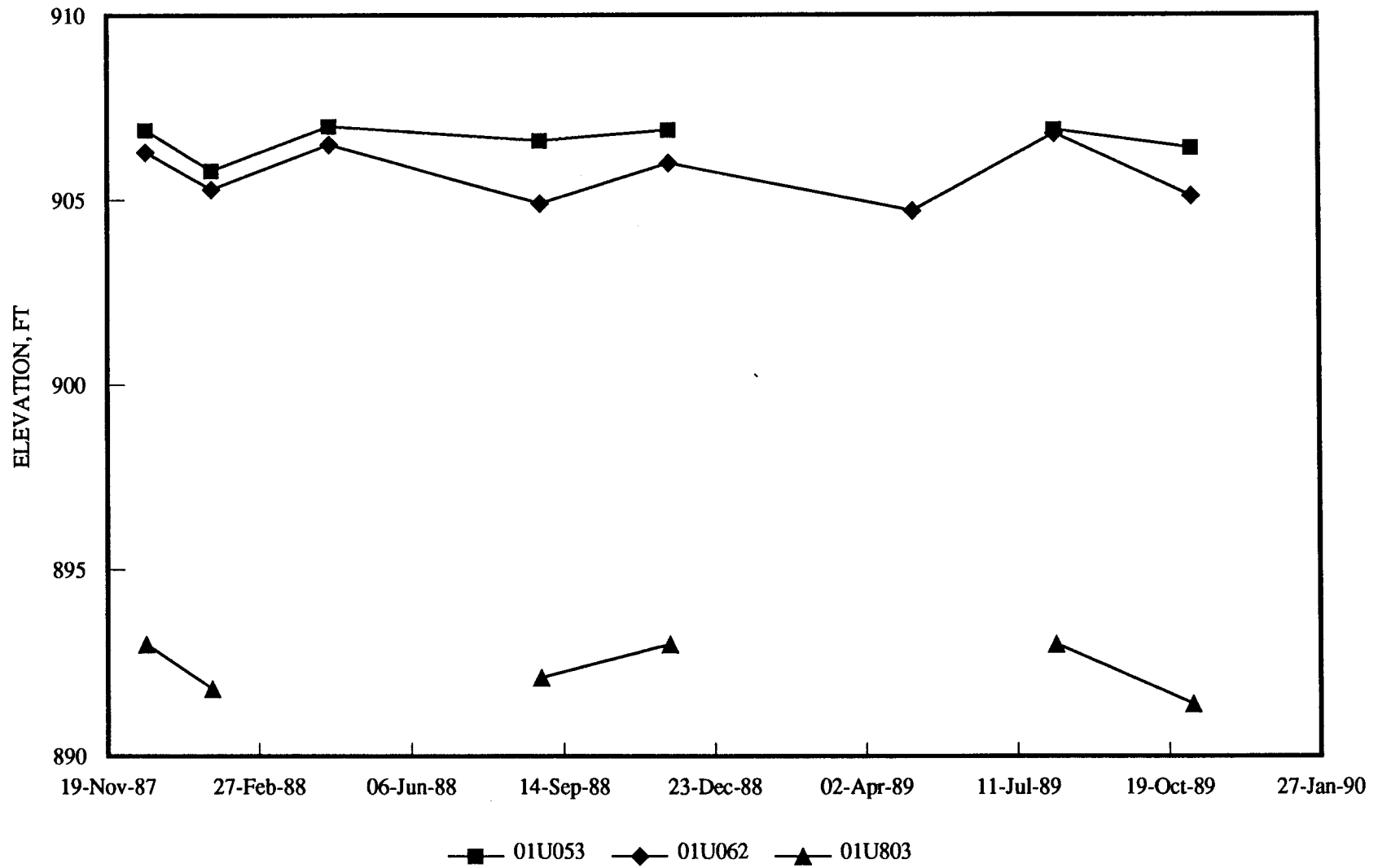


Figure 4-2, SW BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

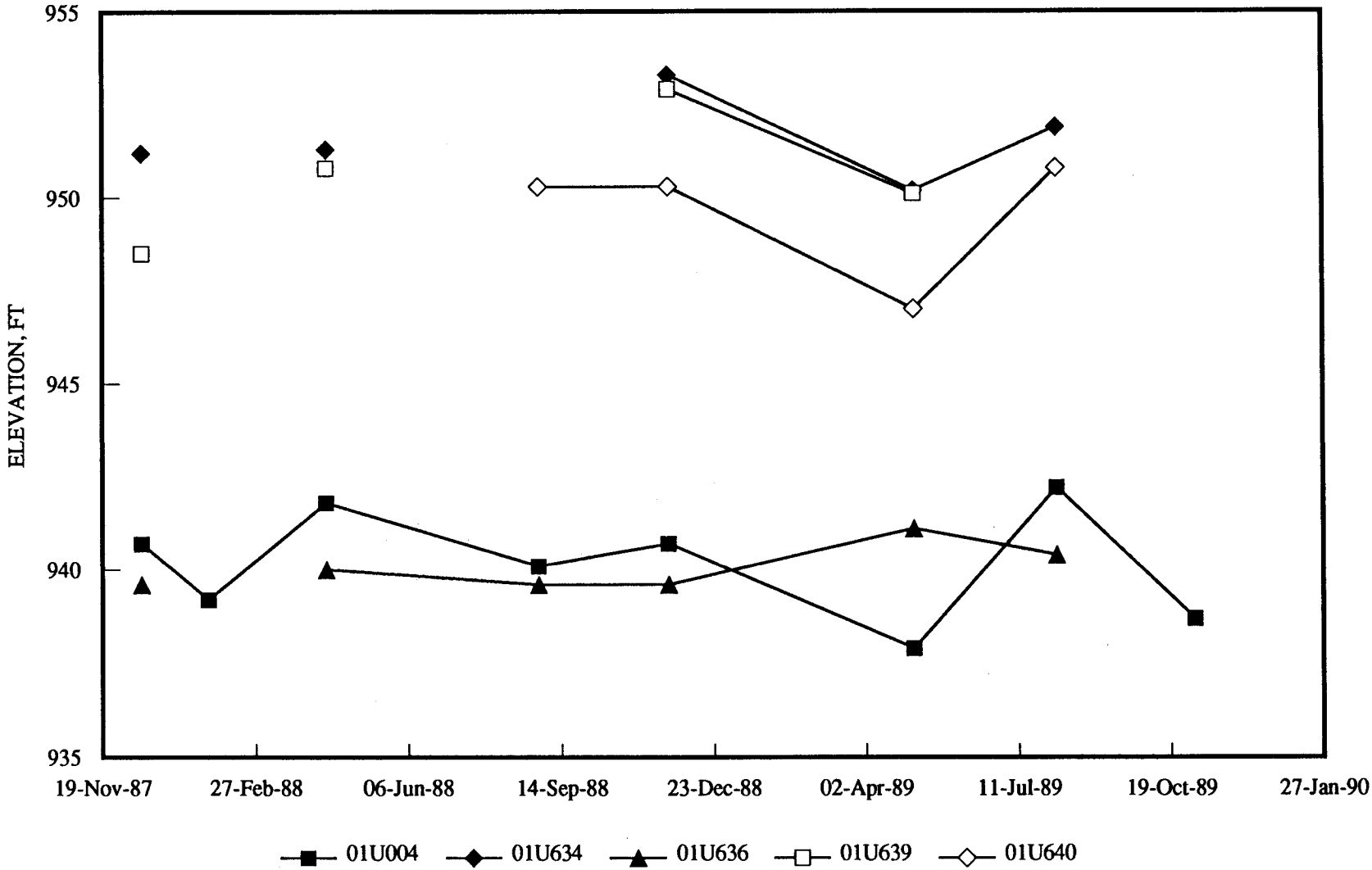


Figure 4-3, SITE I, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

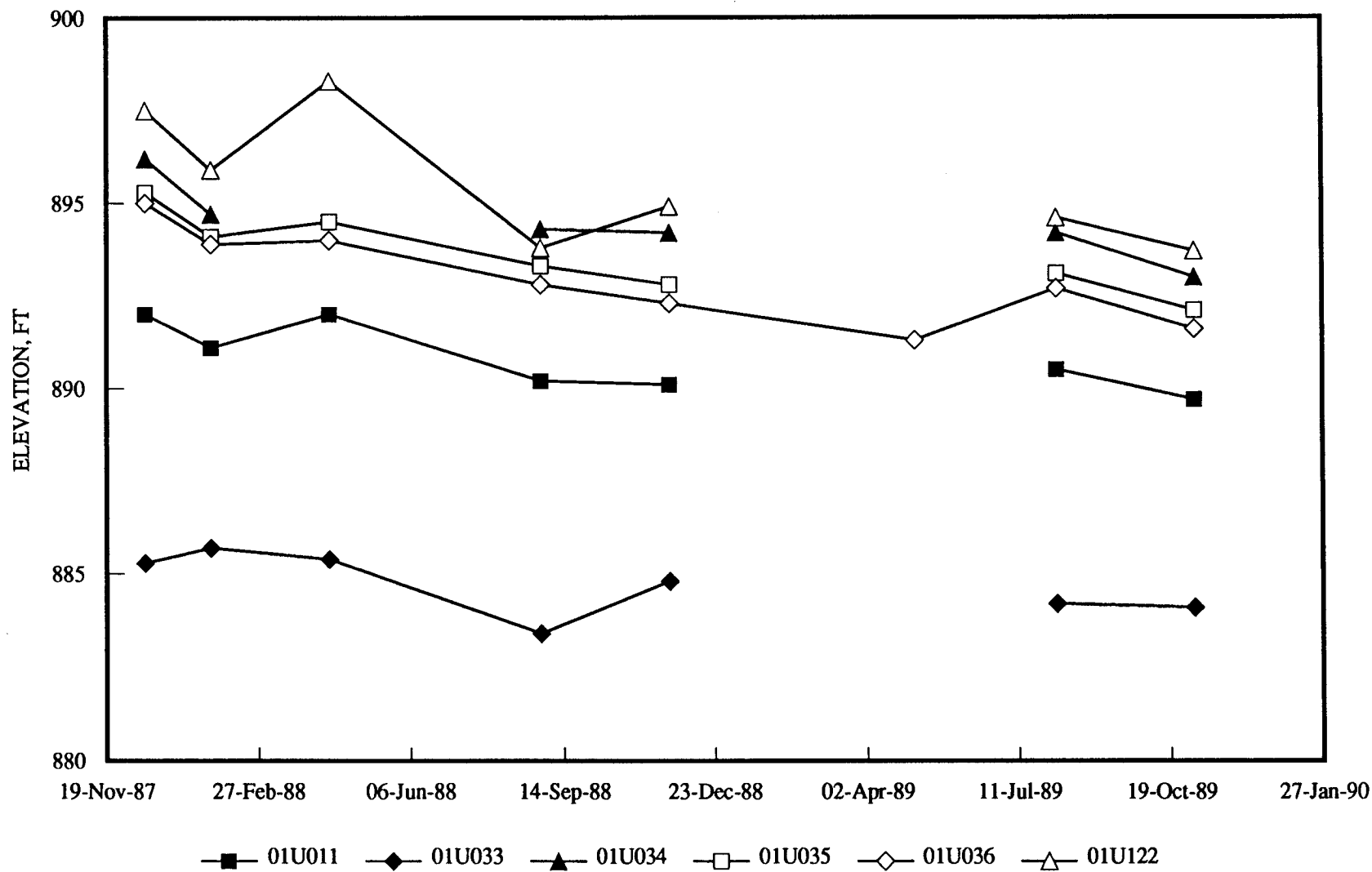


Figure 4-4, SITE B/NORTH BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

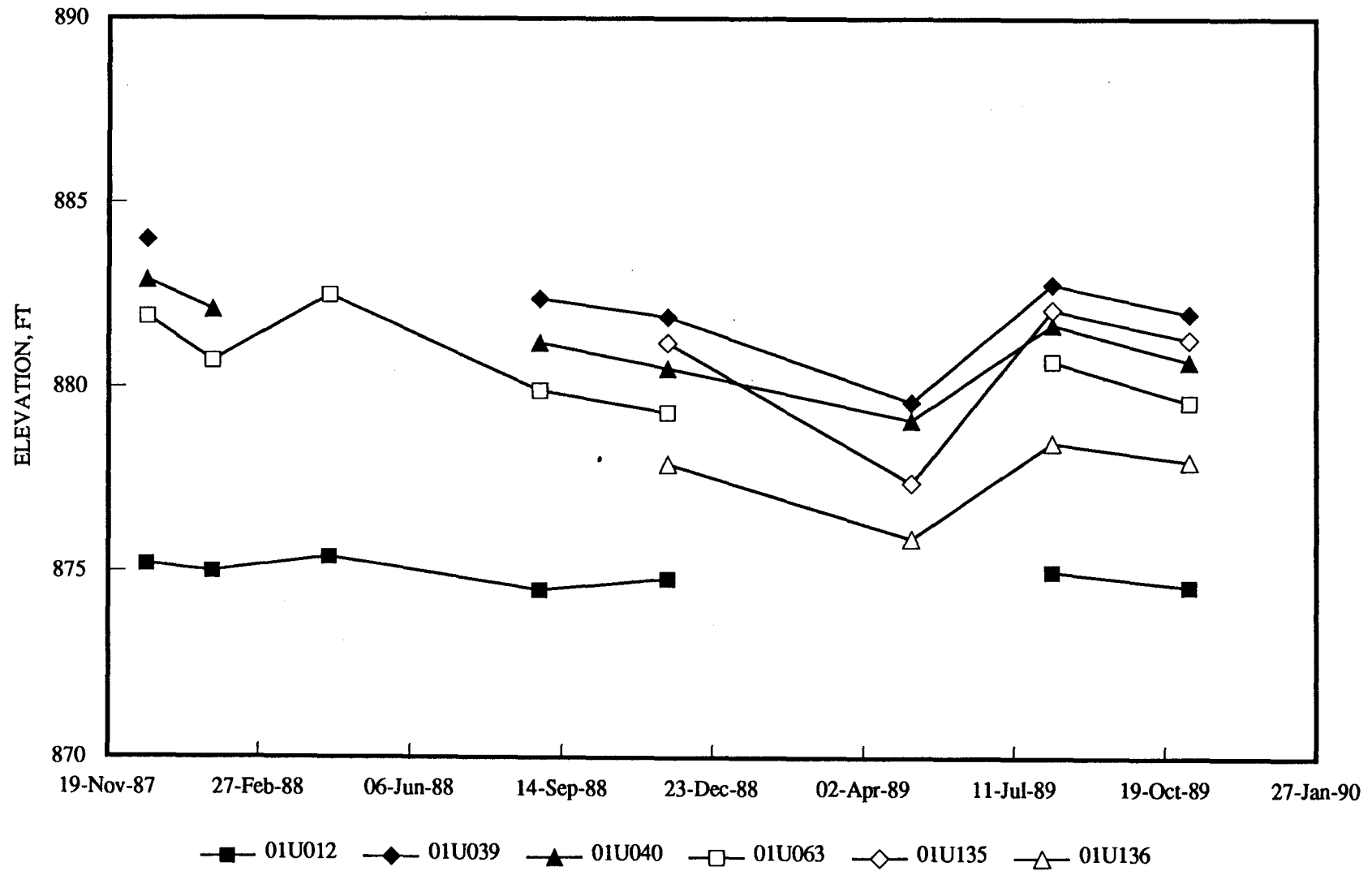


Figure 4-5, OFF WEST SIDE OF SITE A, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

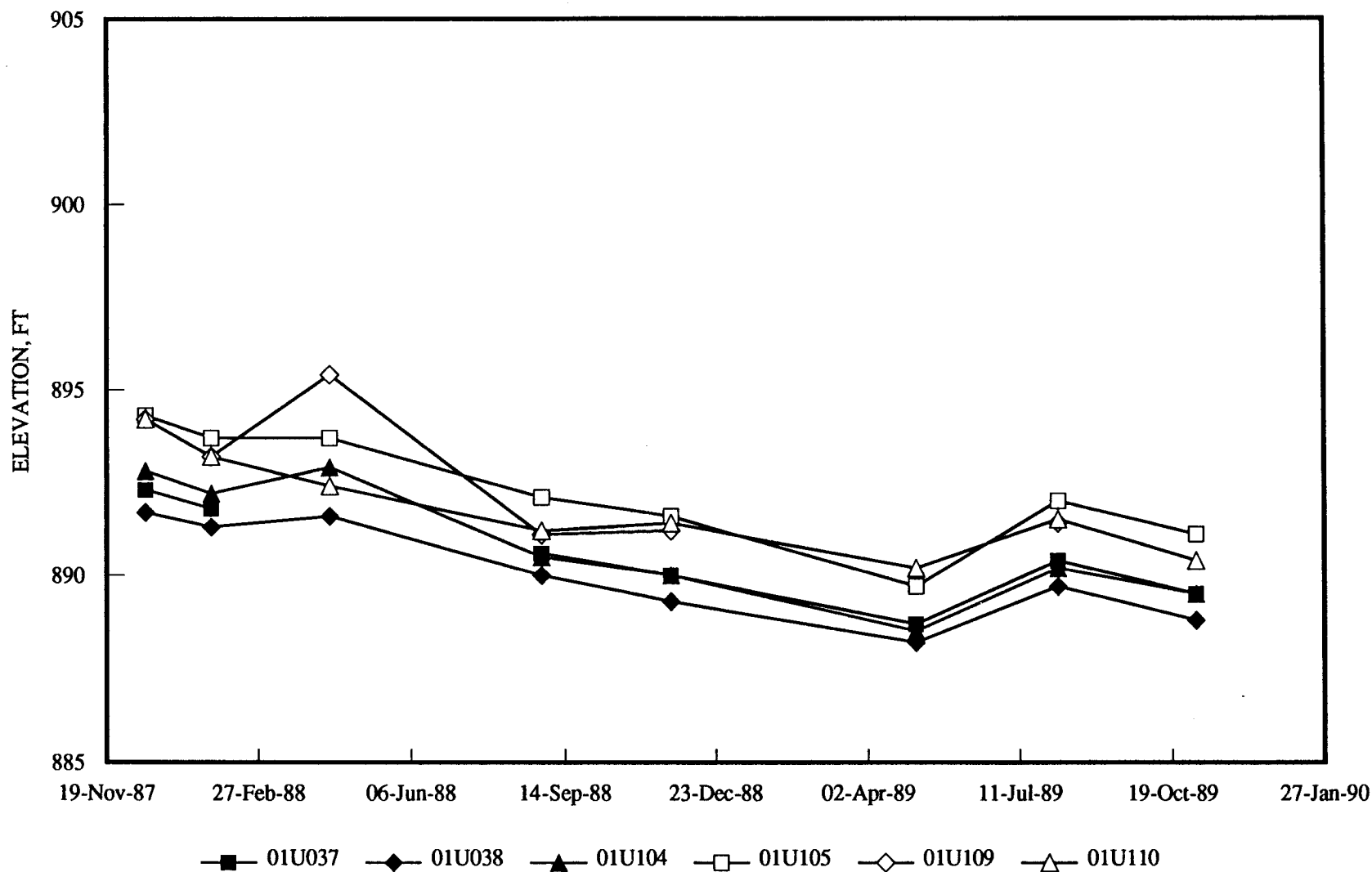


Figure 4-6, SITE A, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

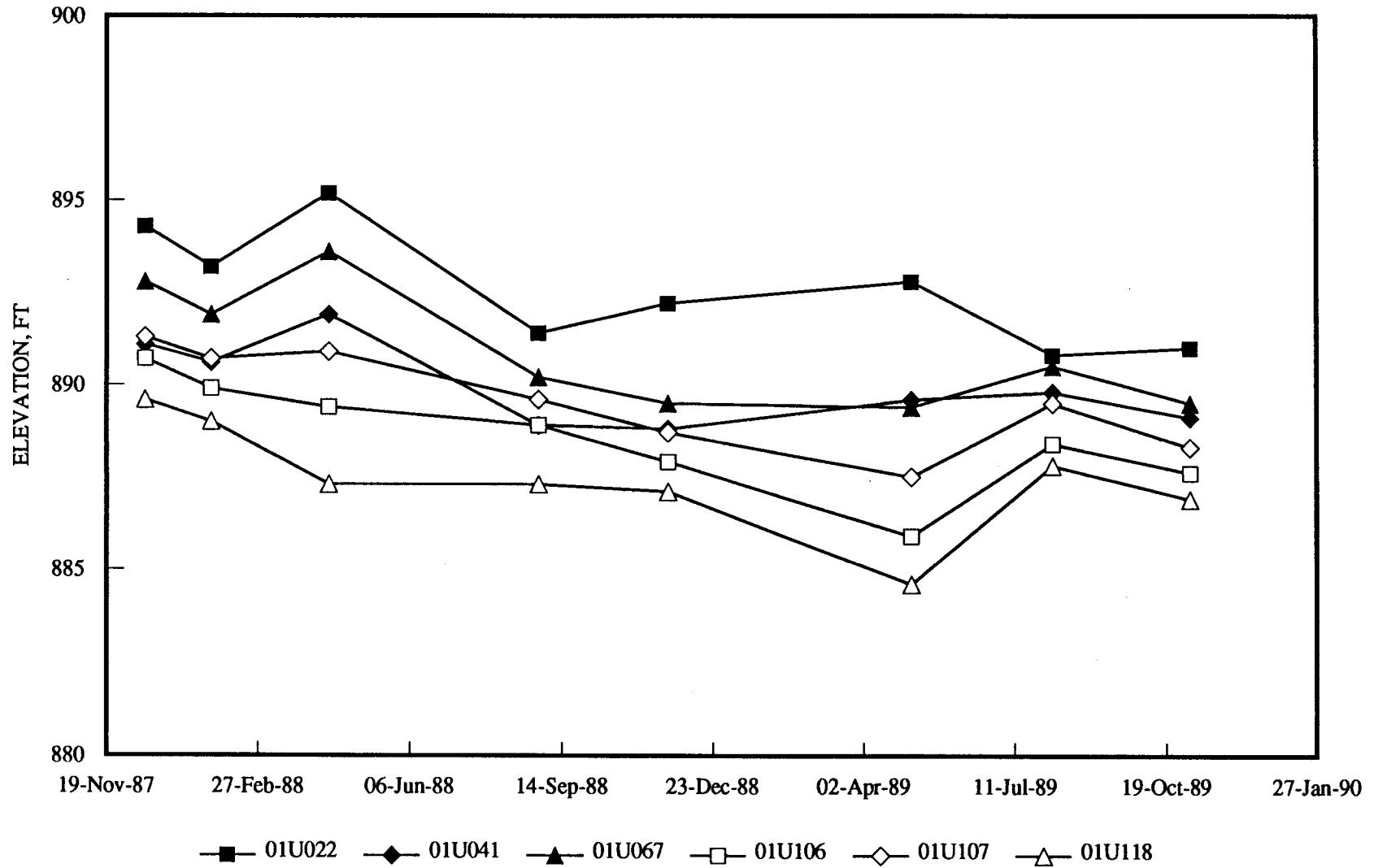


Figure 4-7, SITE A, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

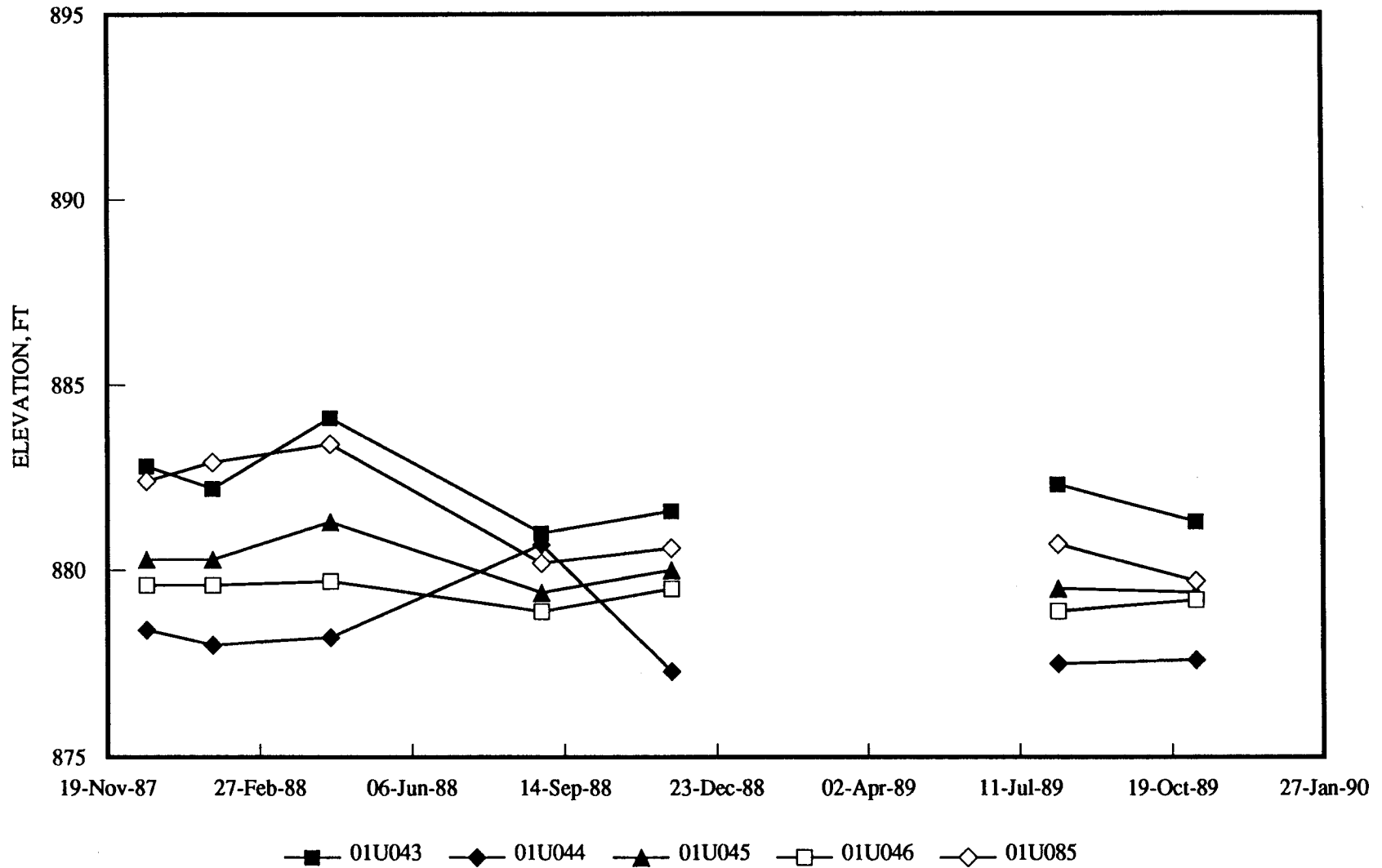


Figure 4-8, SOUTH OF SITE A, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

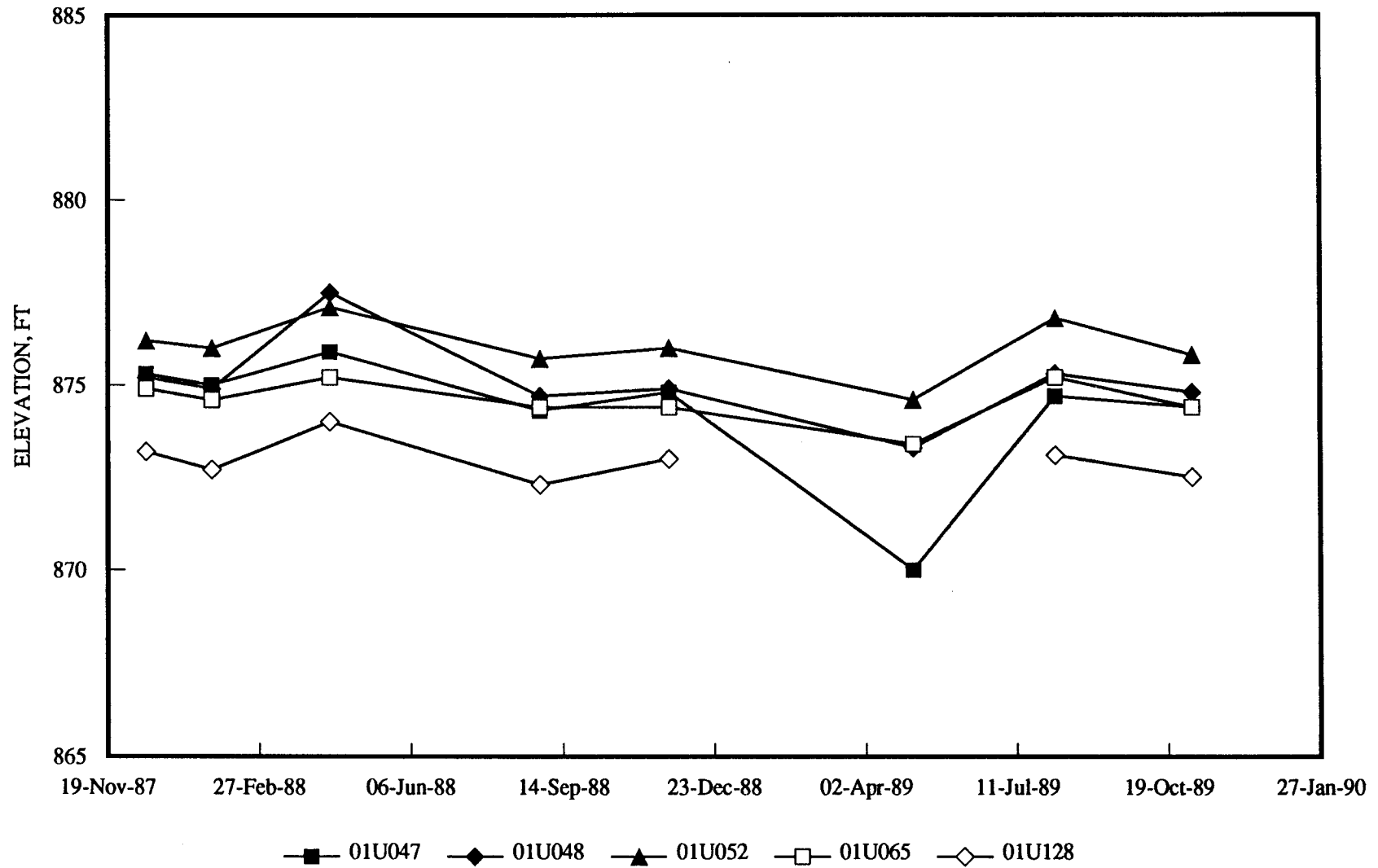


Figure 4-9, SITE I, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

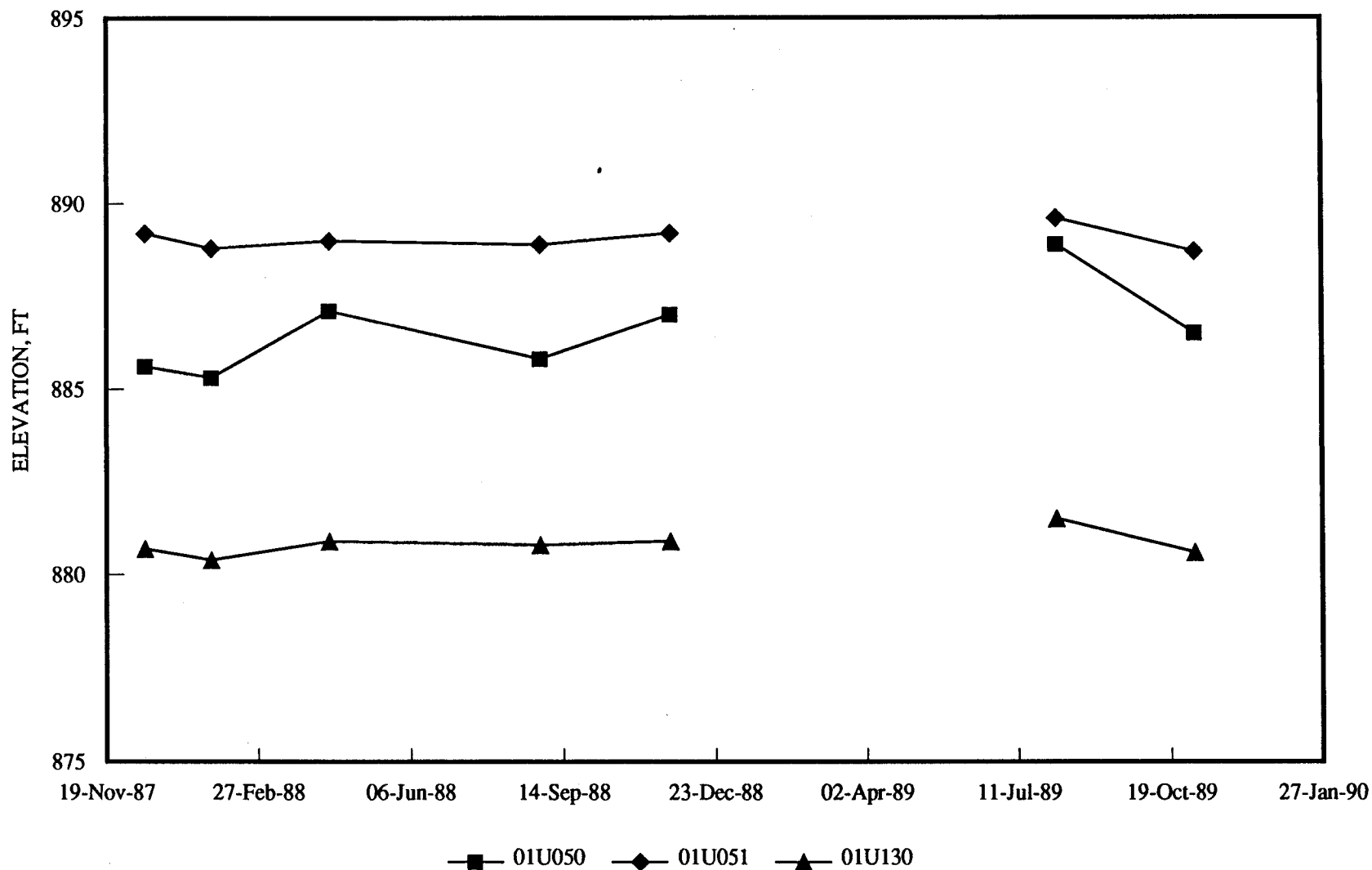


Figure 4-10, SW BOUNDARY AREA, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

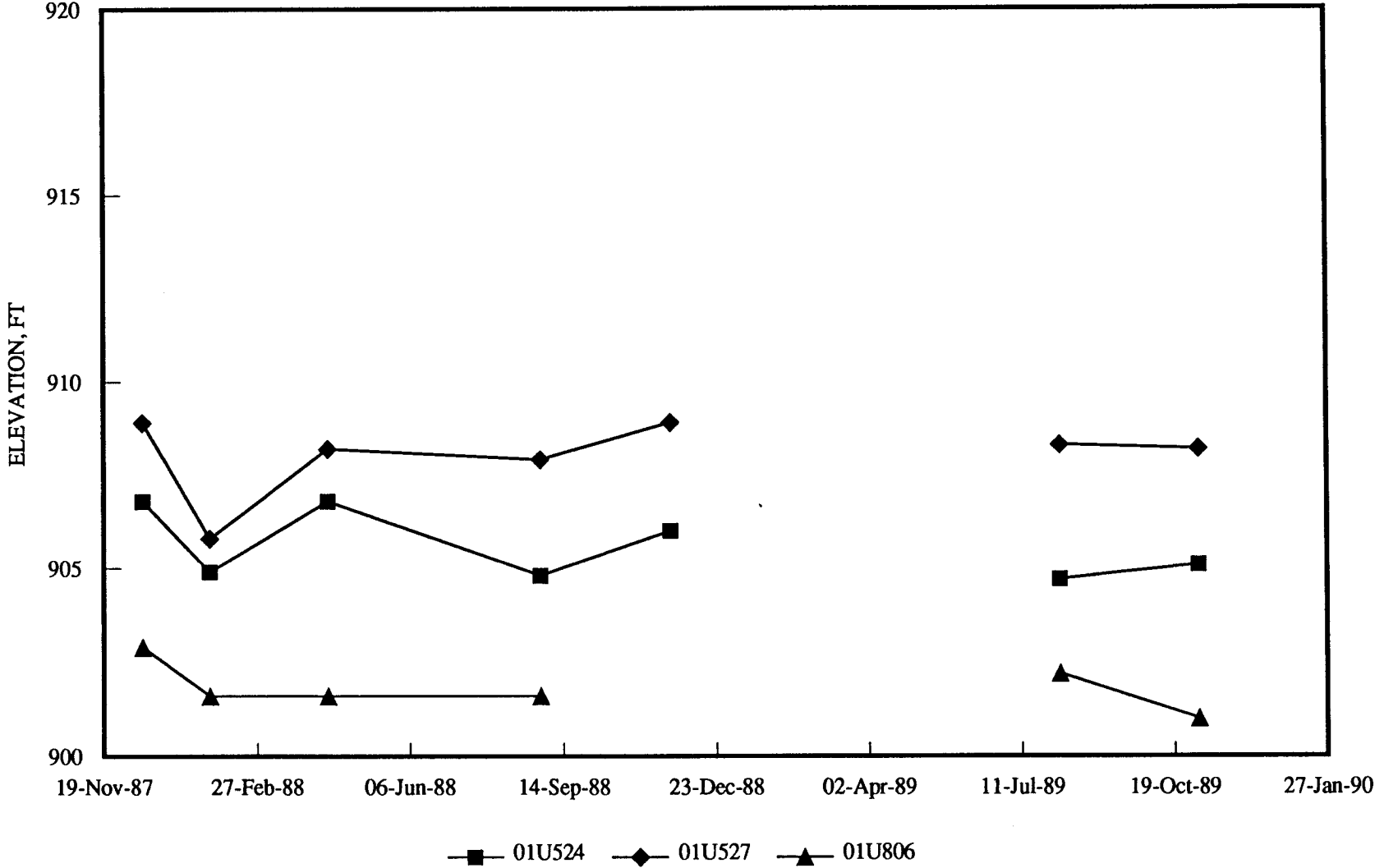


Figure 4-11, SW BOUNDARY AREA, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

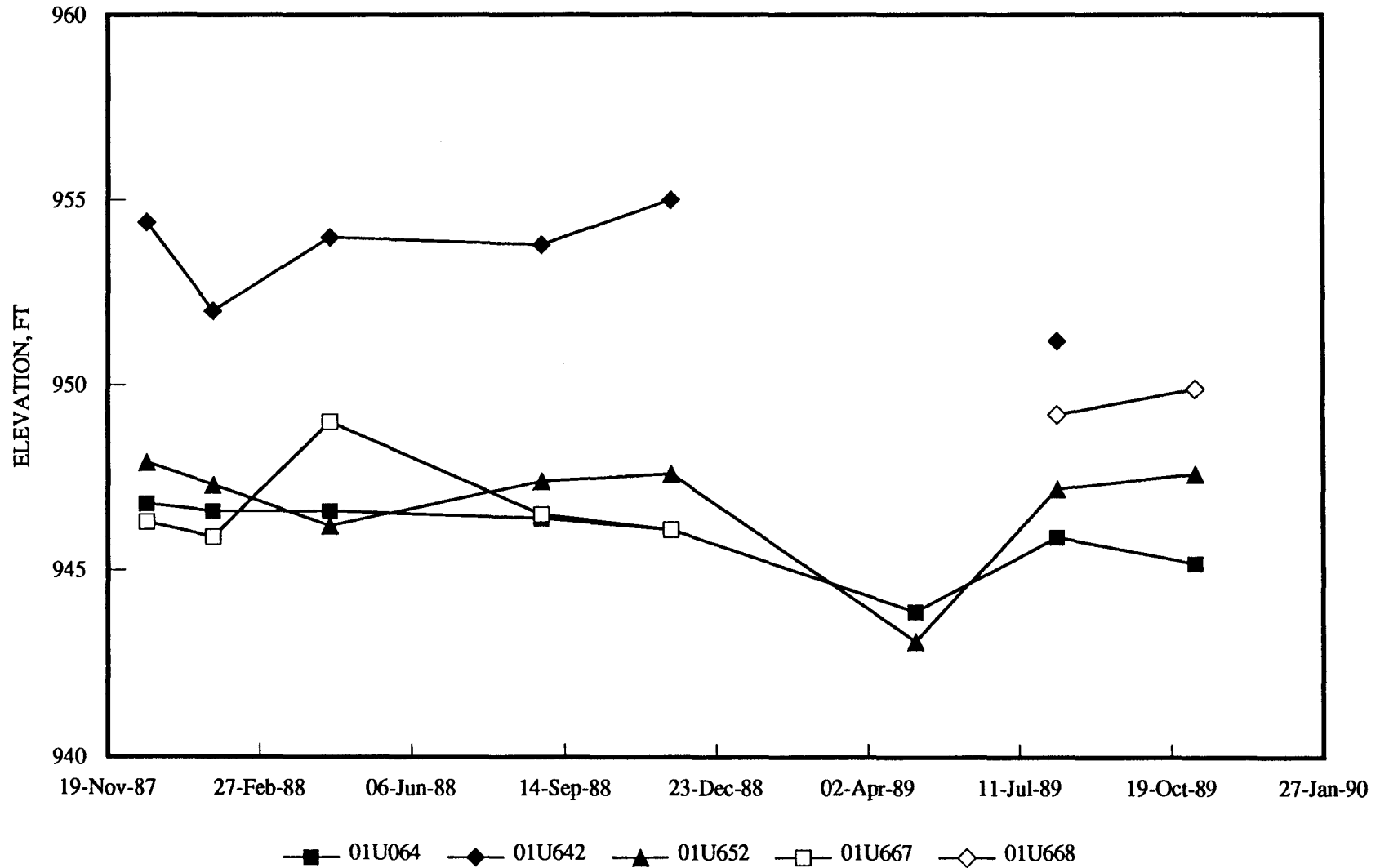


Figure 4-12, SITE I, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

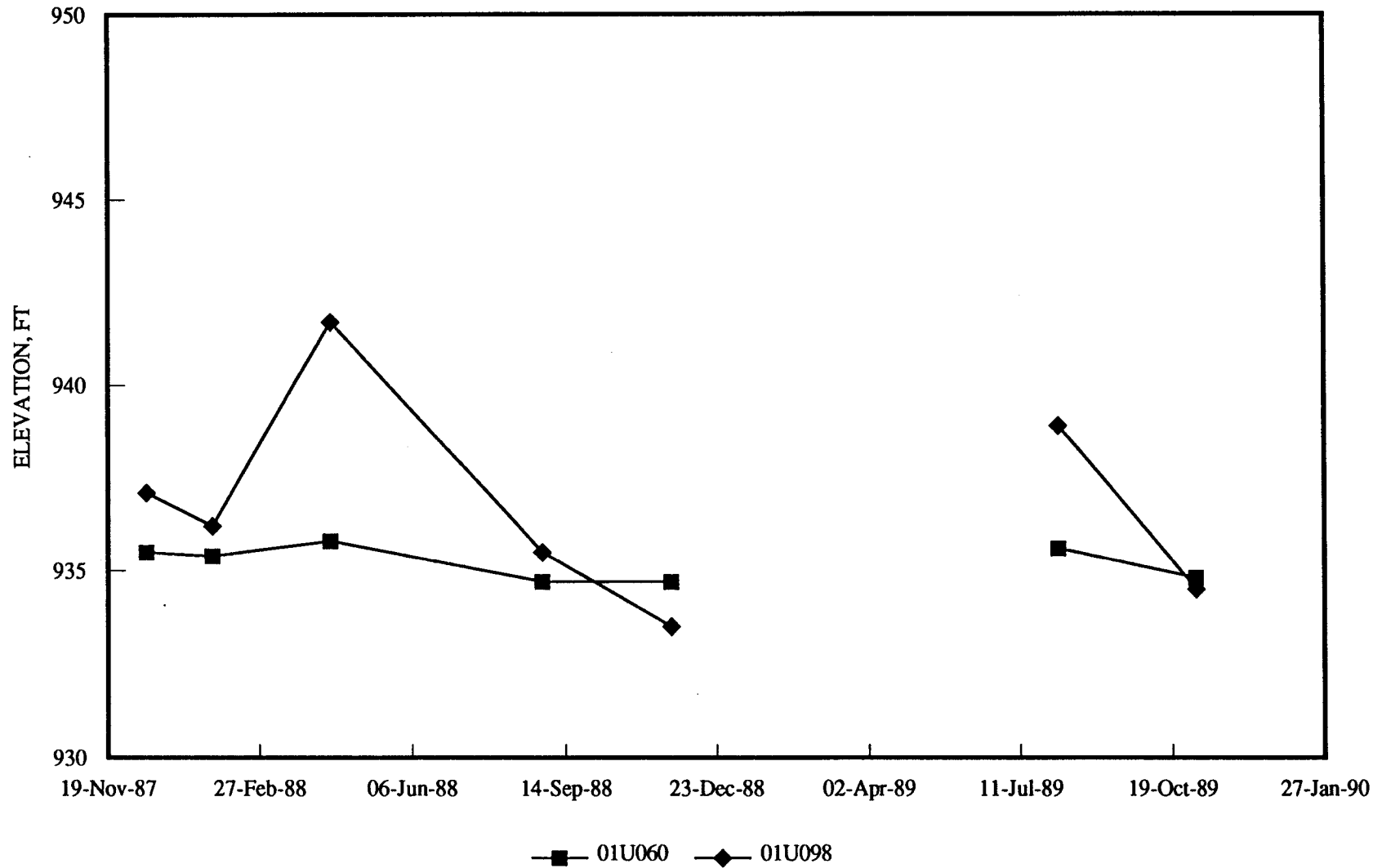


Figure 4-13, SITE H, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

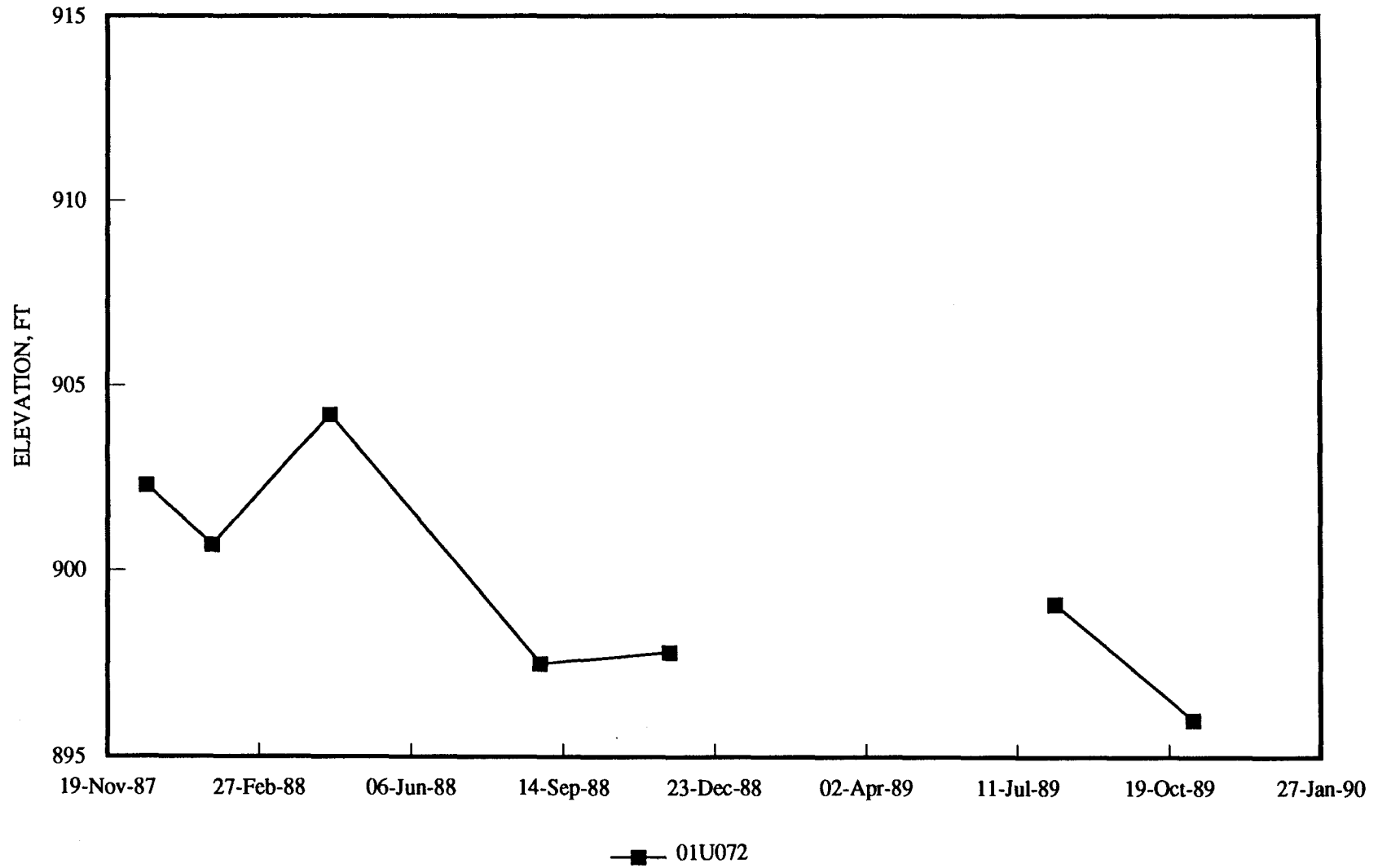


Figure 4-14, WEST SIDE OF MARSDEN LAKE,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

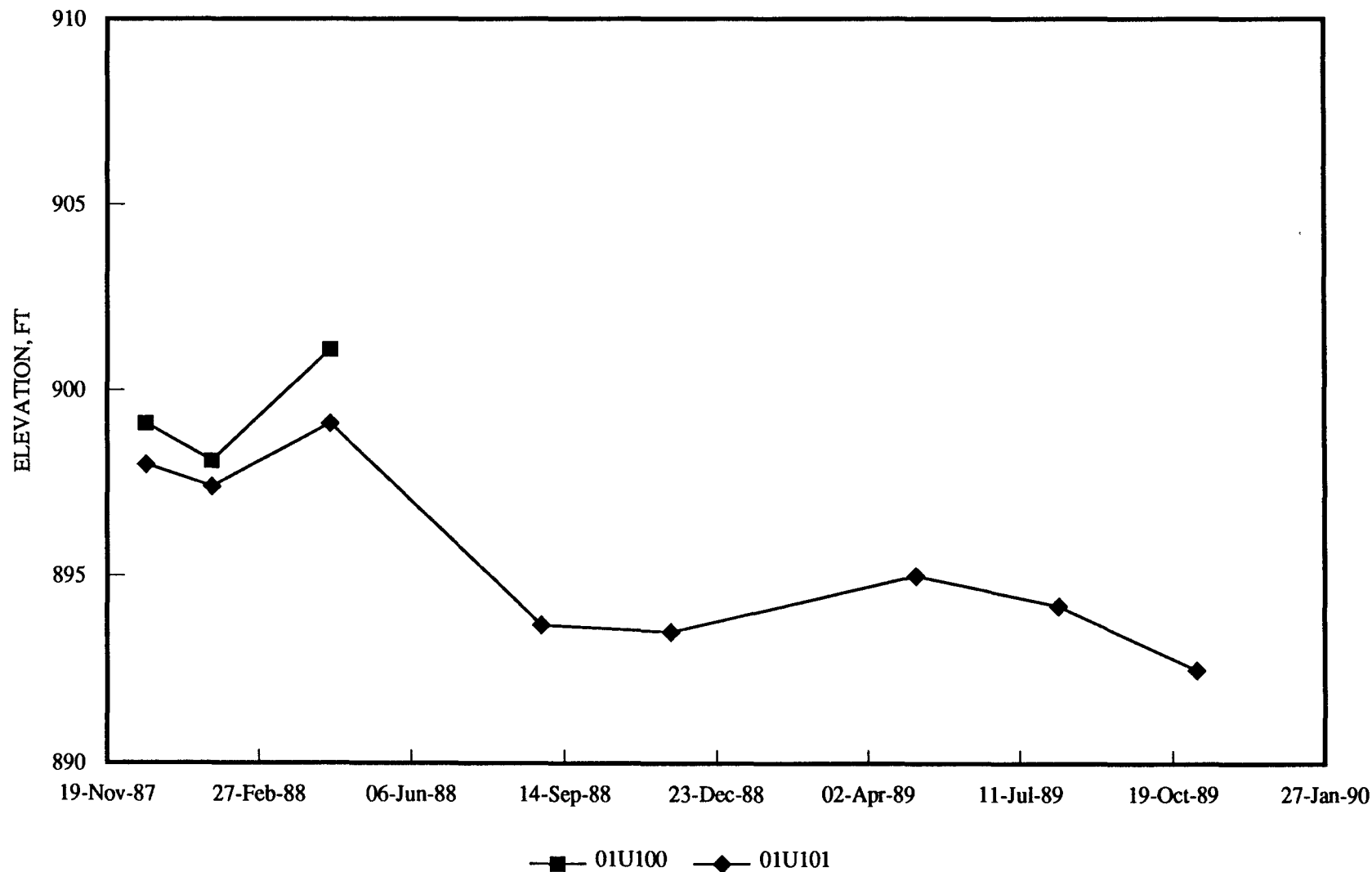


Figure 4-15, SITE B, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

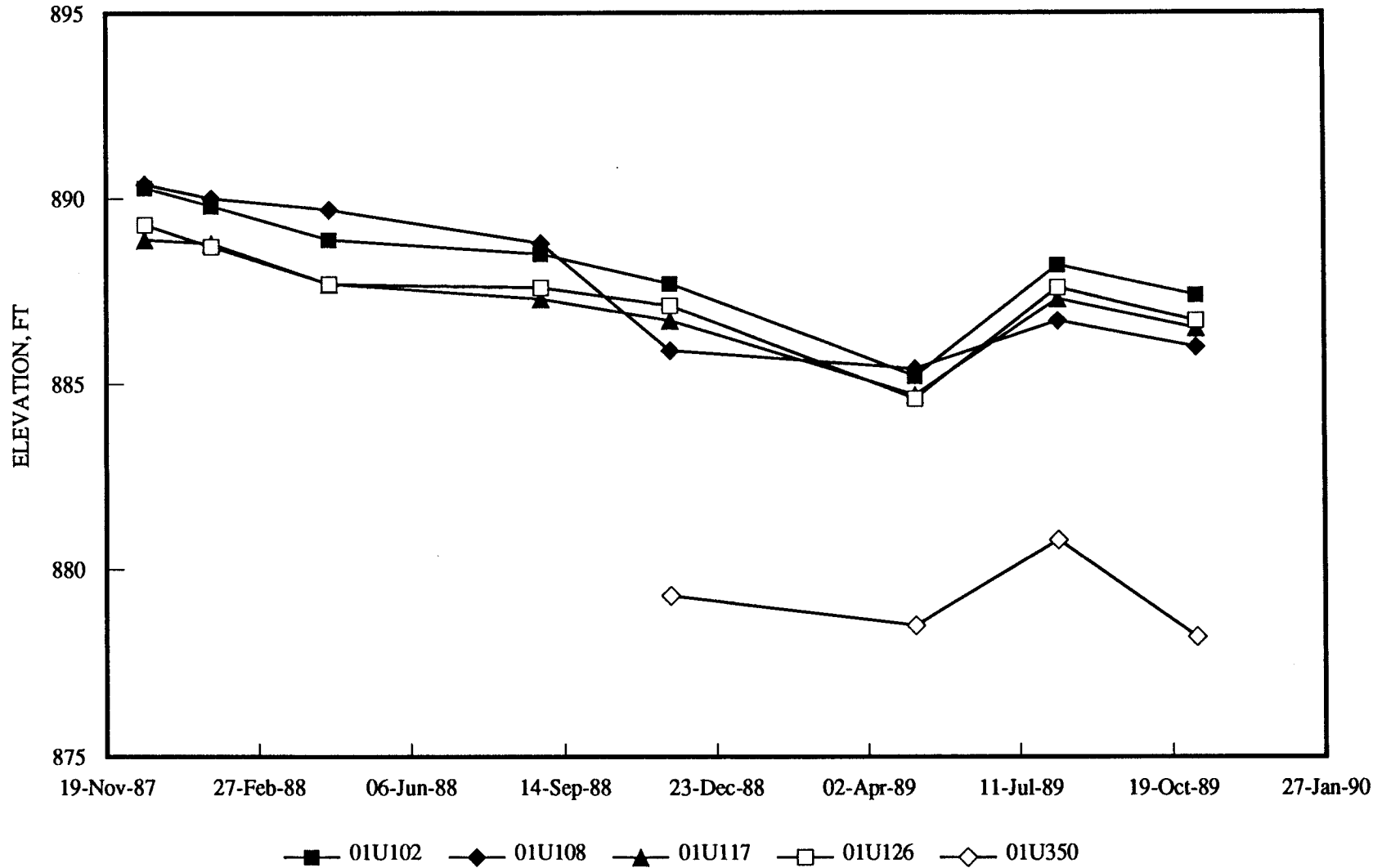


Figure 4-16, SITE A, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

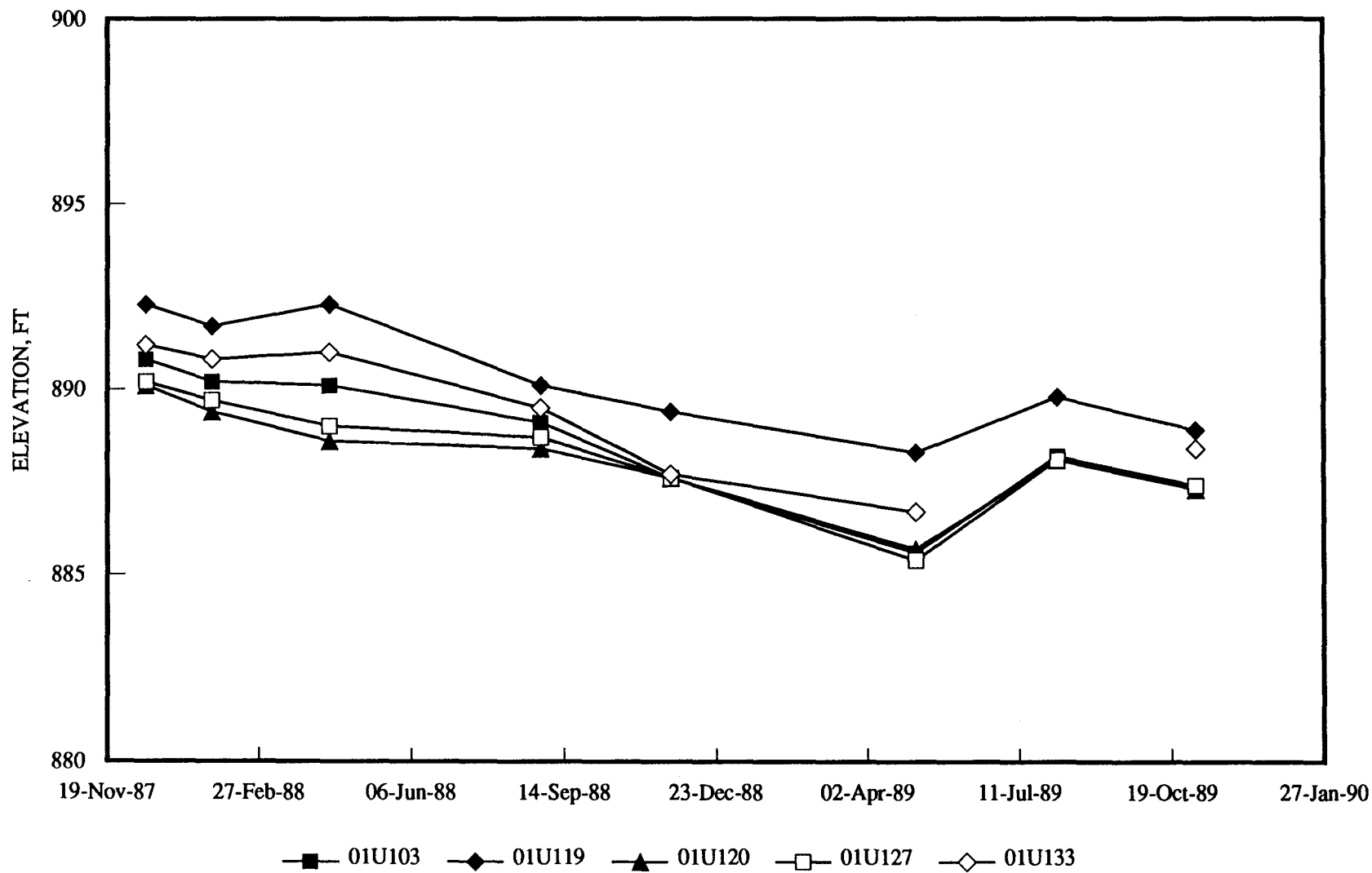


Figure 4-17, SITE A, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

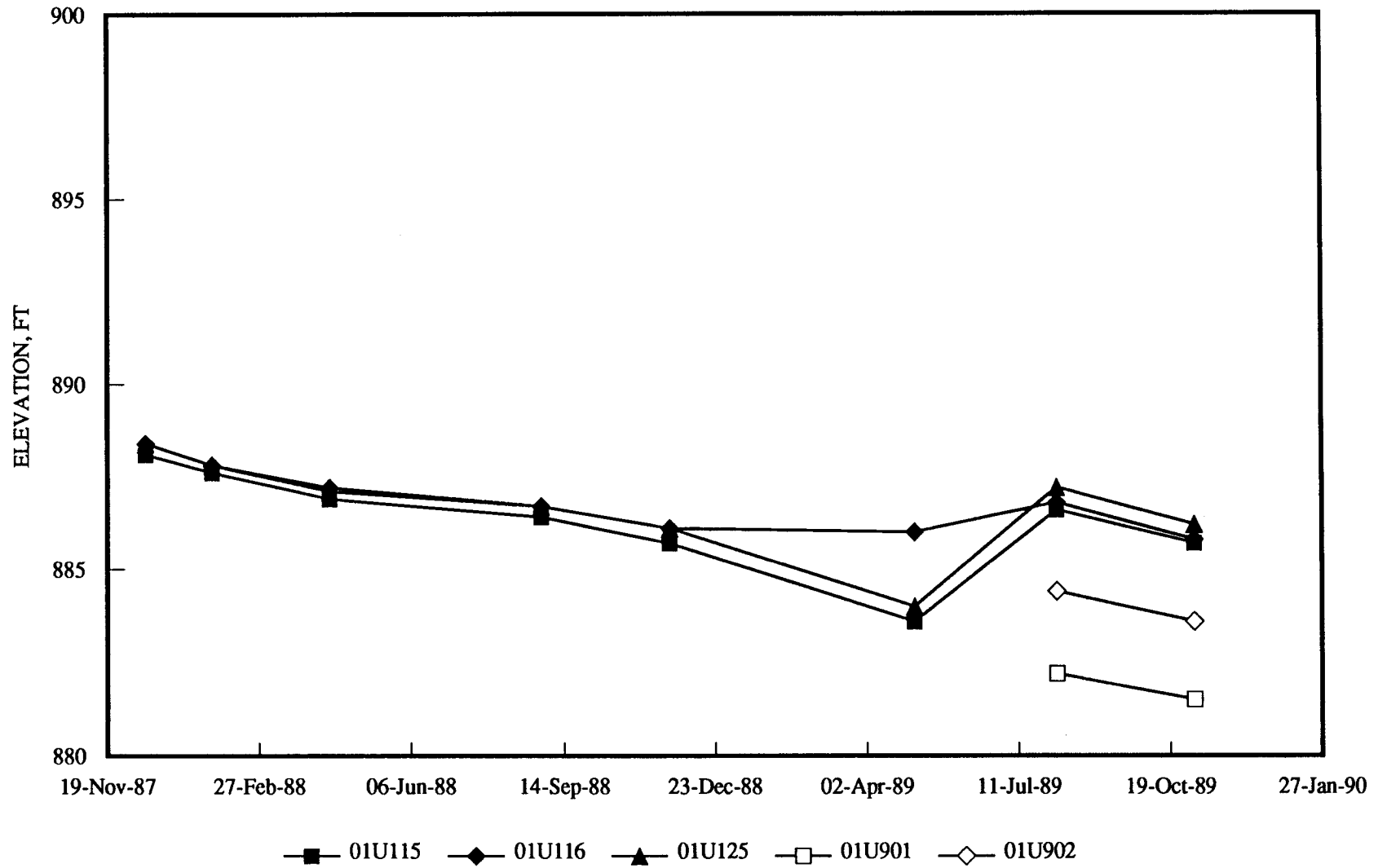


Figure 4-18, SITE A, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

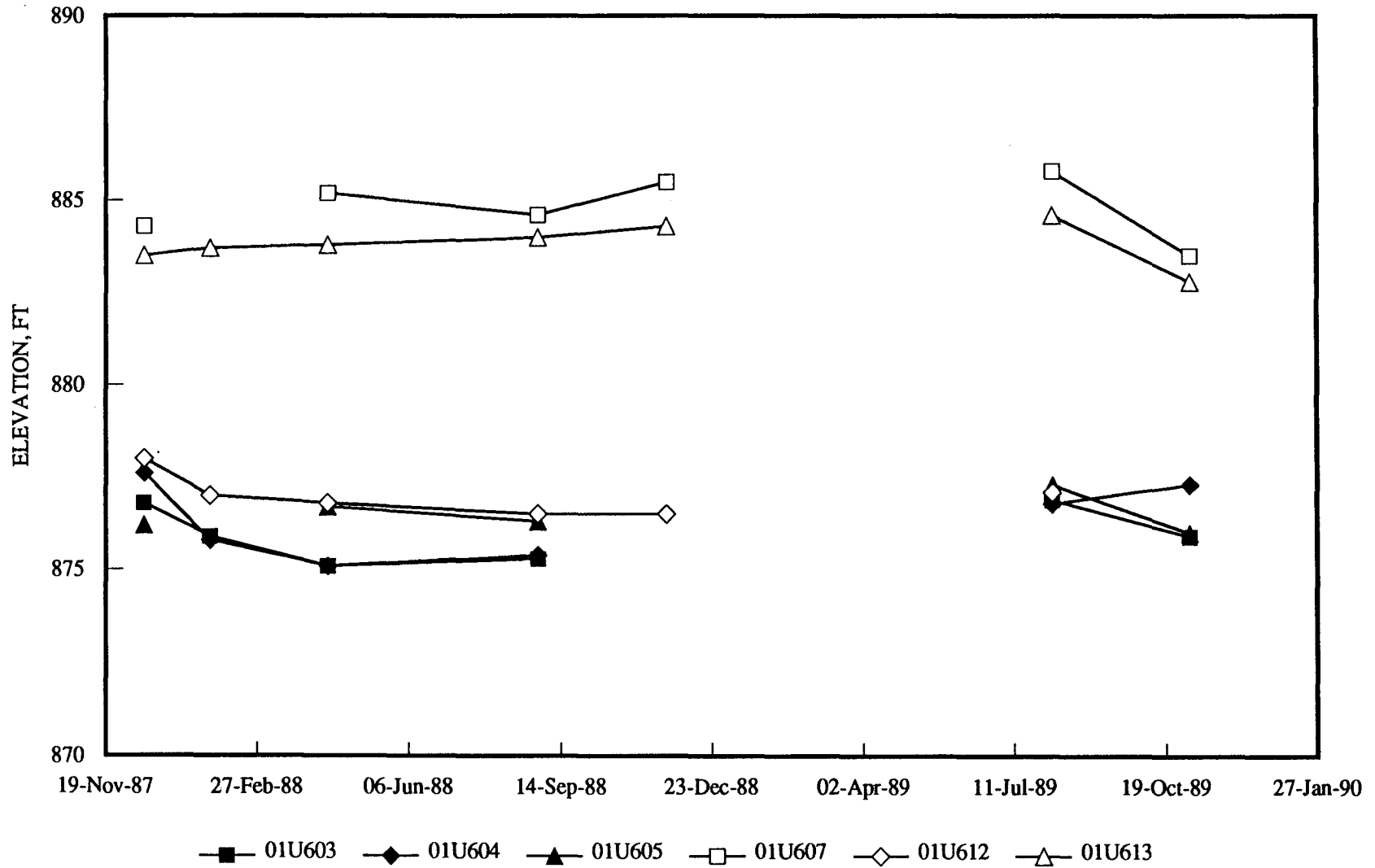


Figure 4-19, SITE K, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

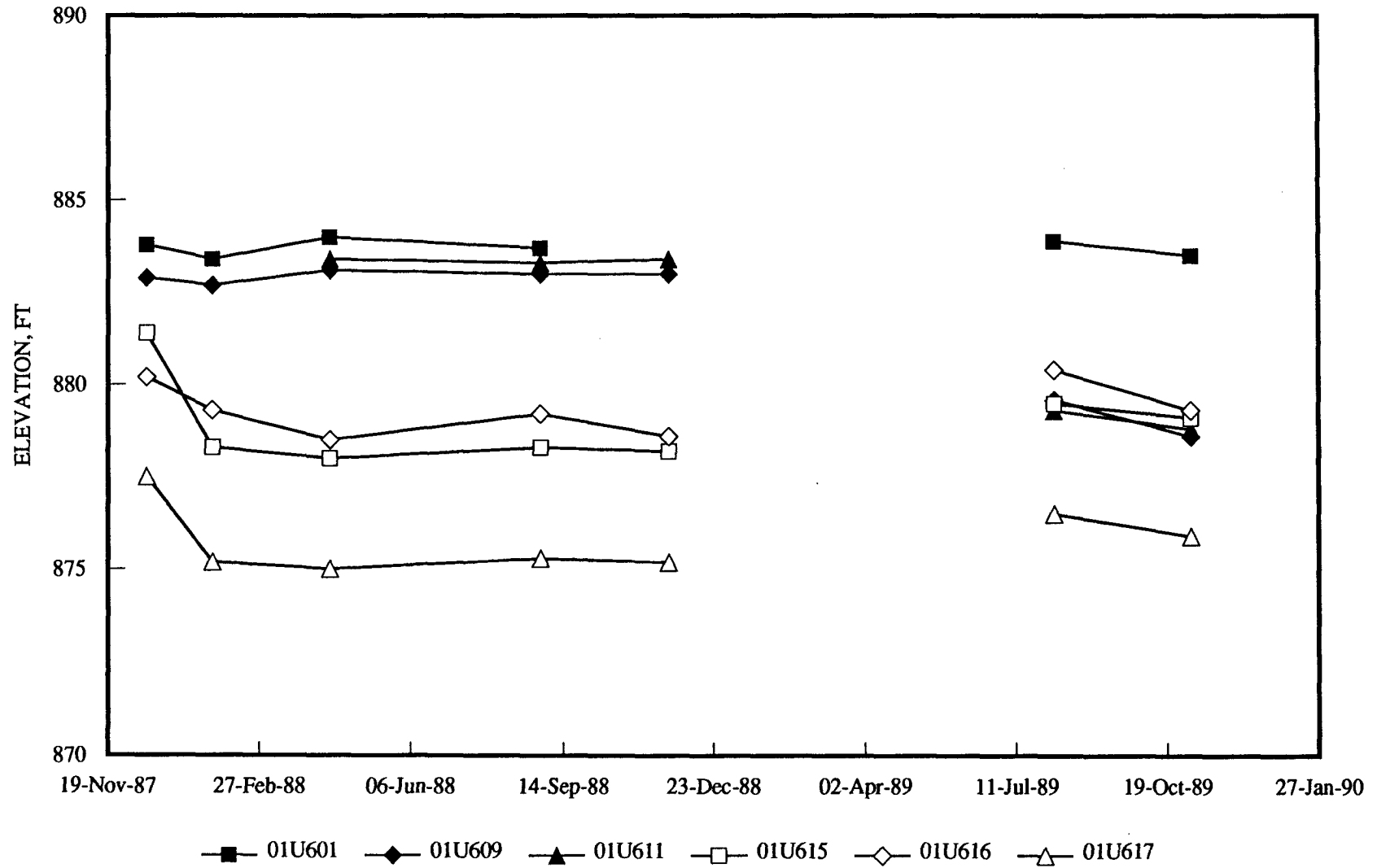


Figure 4-20, SITE K, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

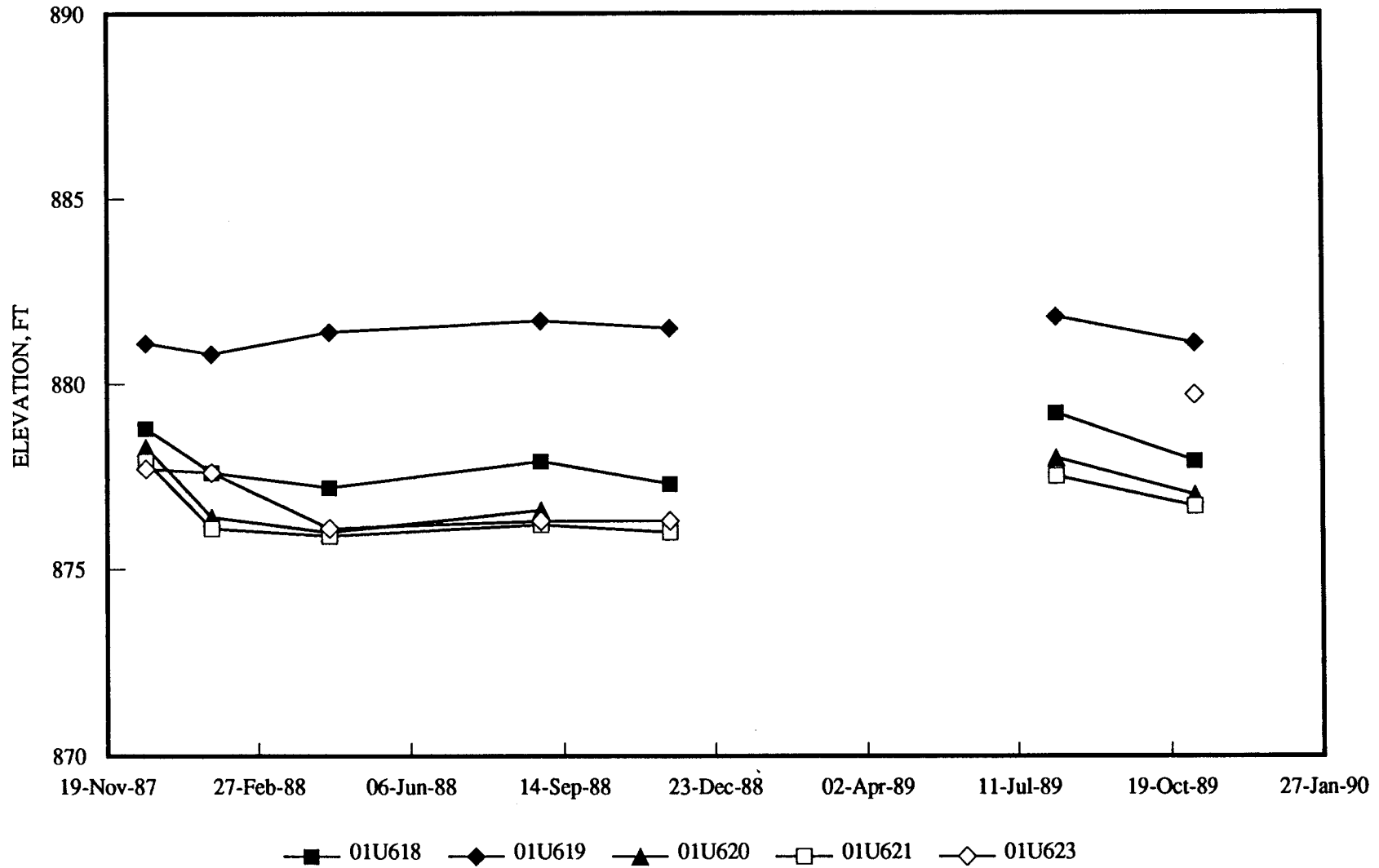


Figure 4-21, SITE K, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

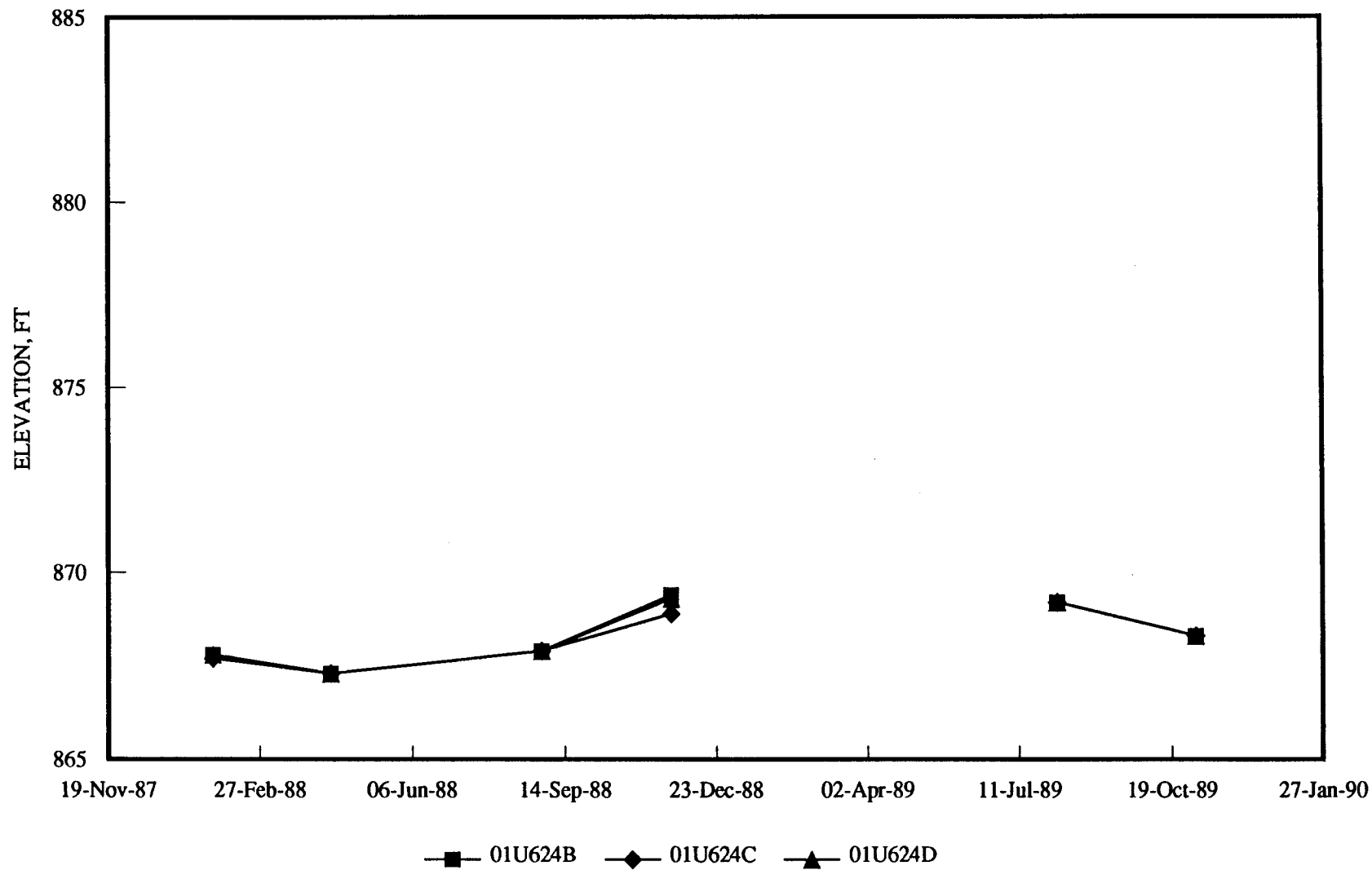


Figure 4-22, SITE K, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

## TWIN CITIES ARMY AMMUNITION PLANT

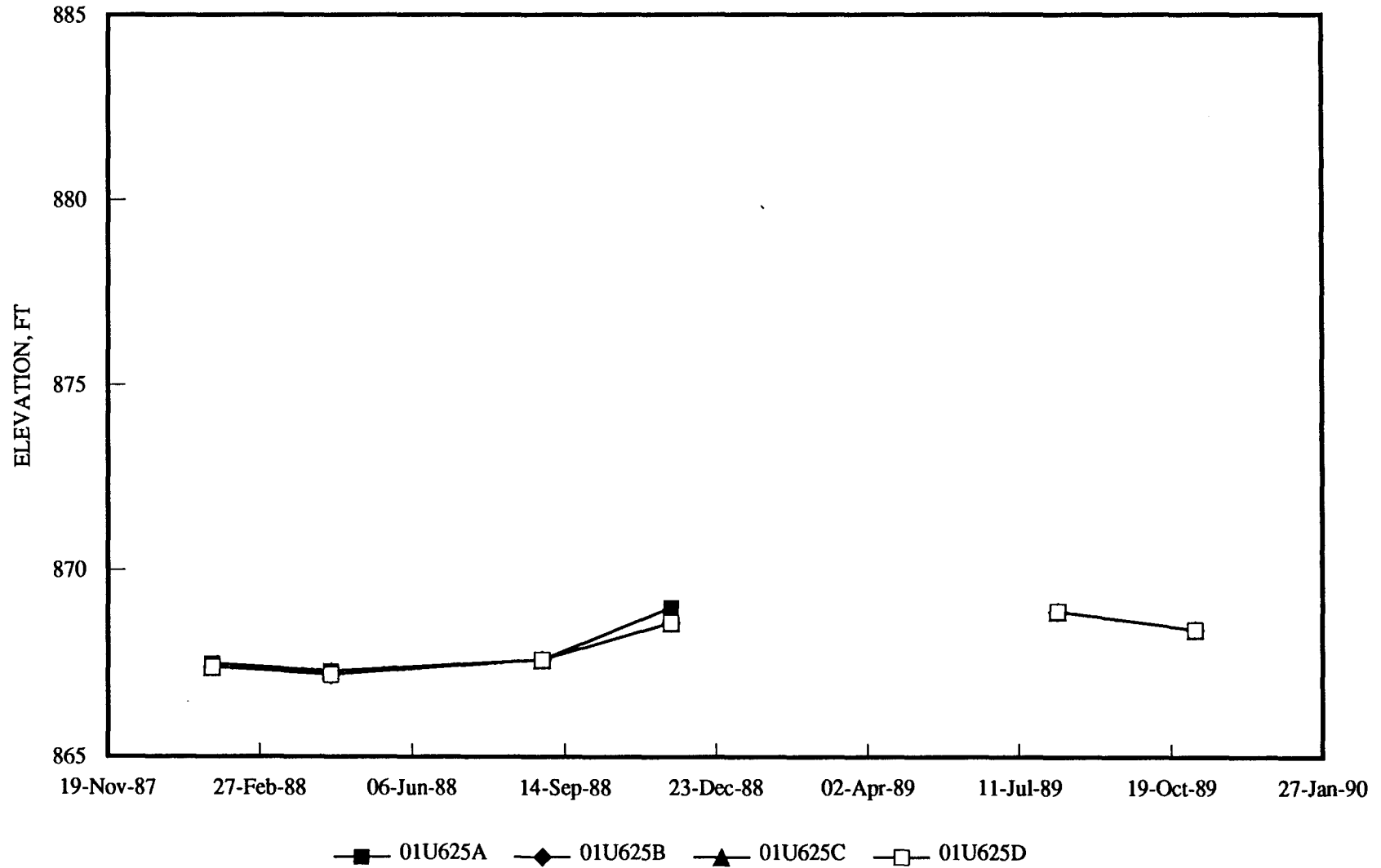


Figure 4-23, SITE K, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

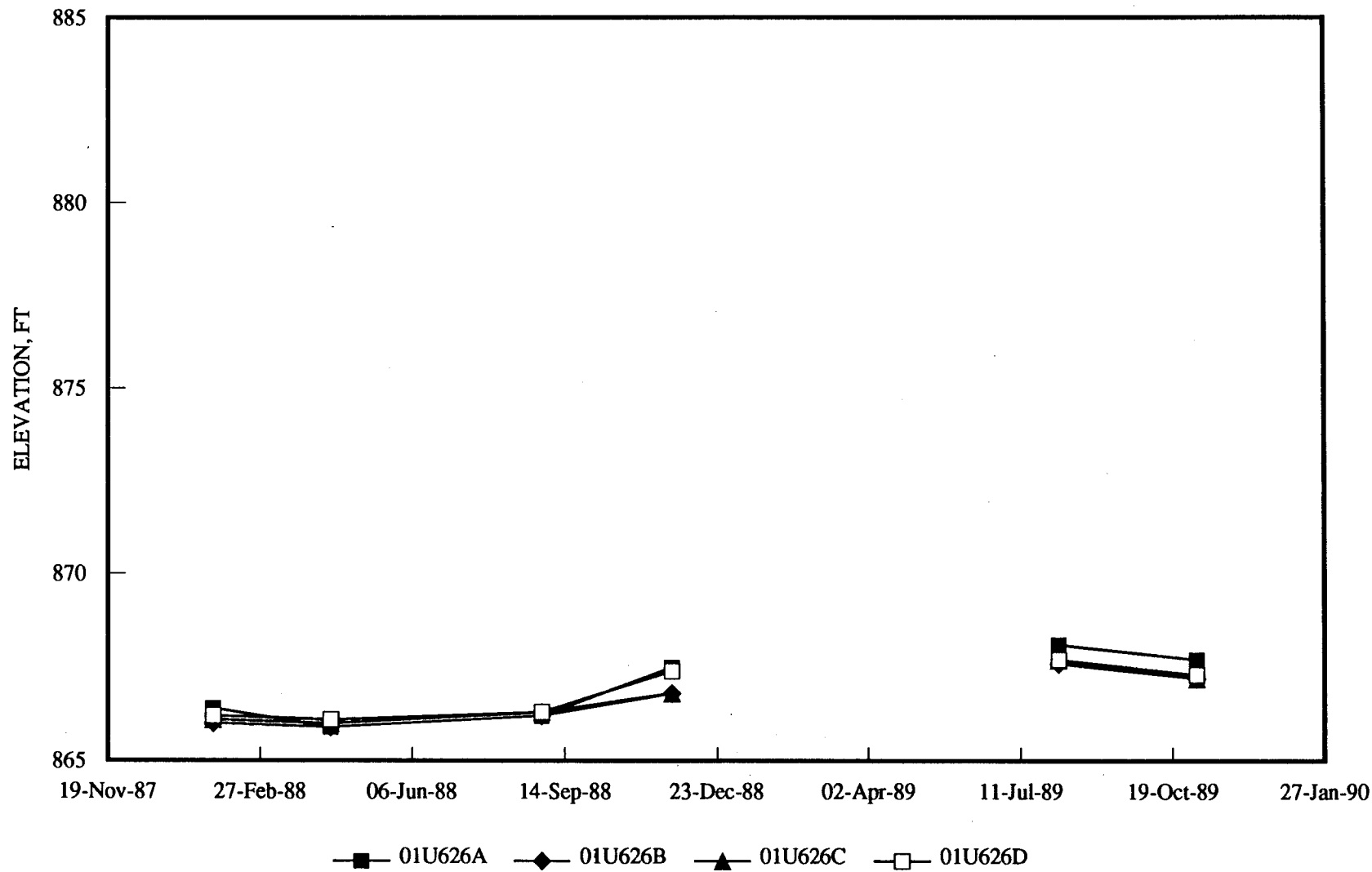


Figure 4-24, SITE K, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

## TWIN CITIES ARMY AMMUNITION PLANT

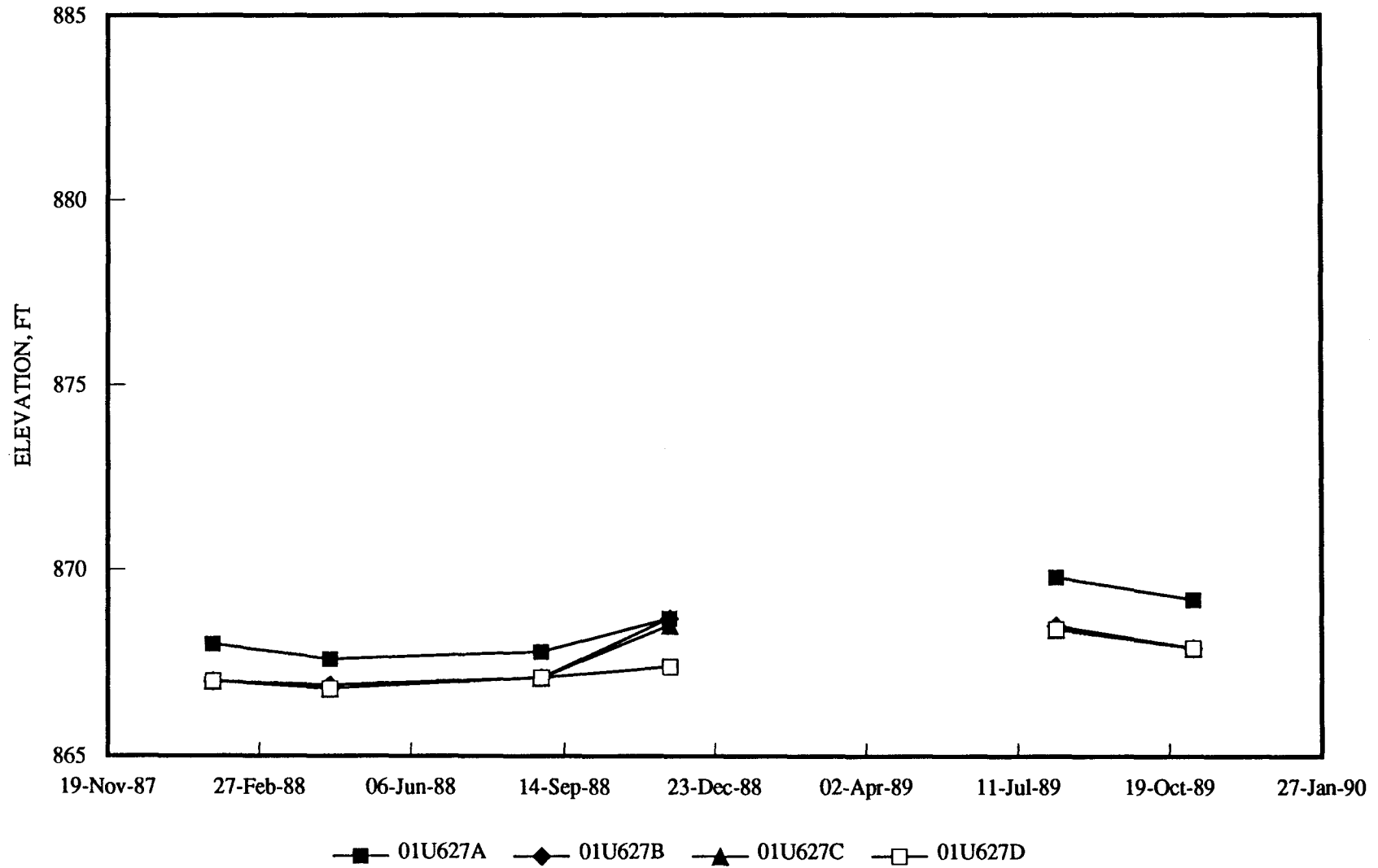


Figure 4-25, SITE K,  
WENCK ASSOCIATES, INC.

March 1990



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

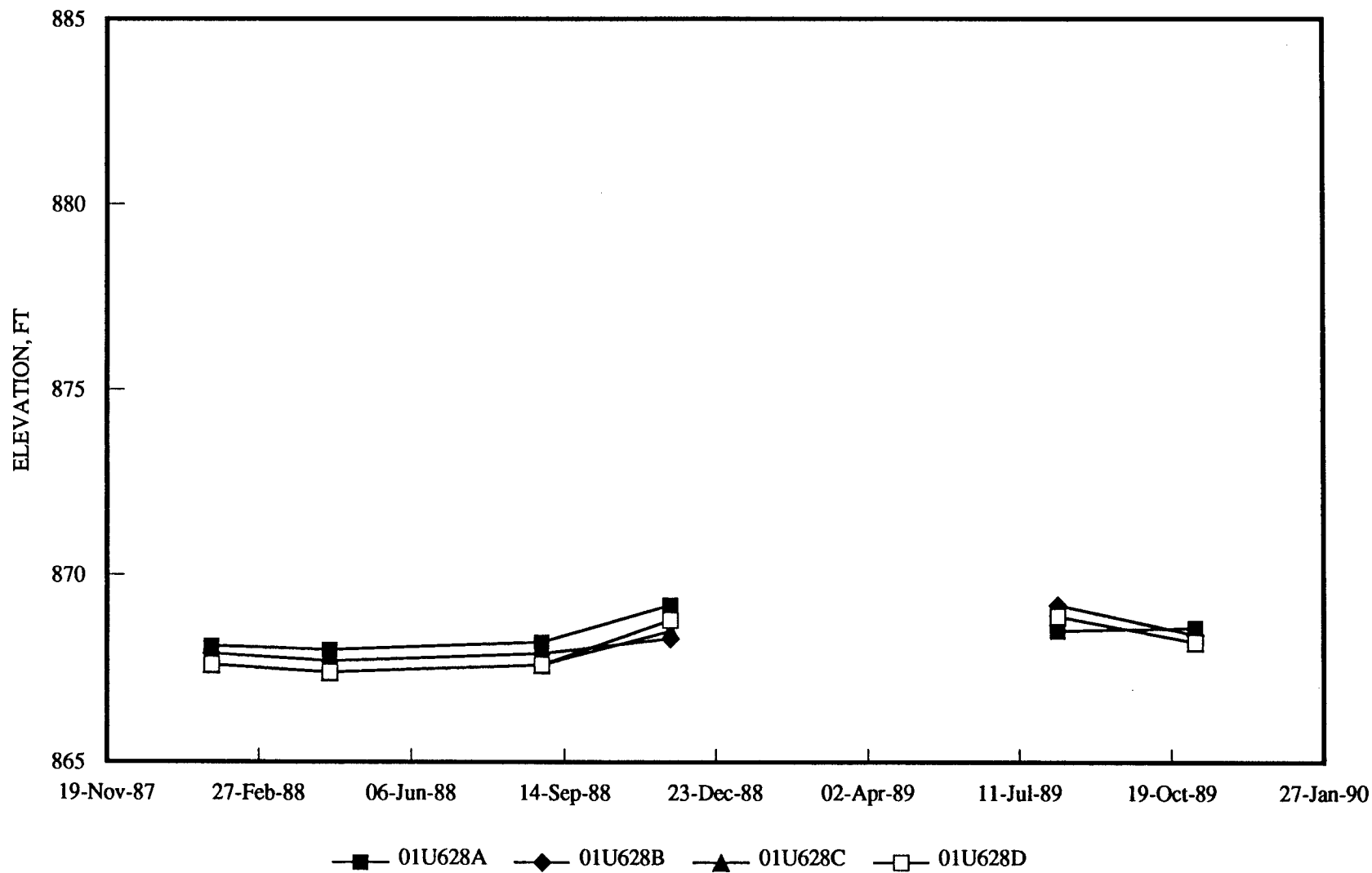


Figure 4-26, SITE K, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

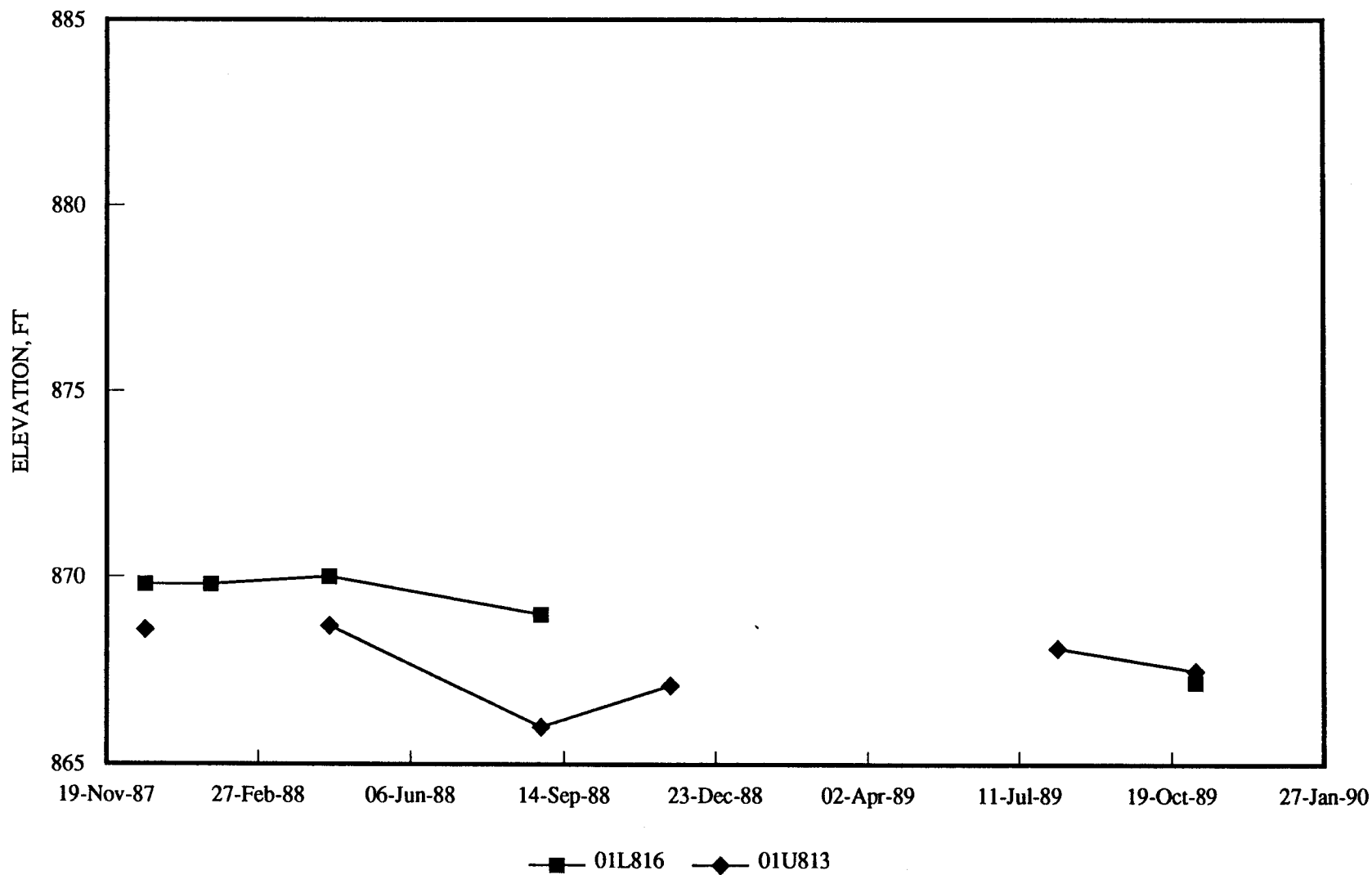


Figure 4-27, WEST OF SW BOUNDARY,  
WENCK ASSOCIATES, INC.

—■— 01L816 —◆— 01U813

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

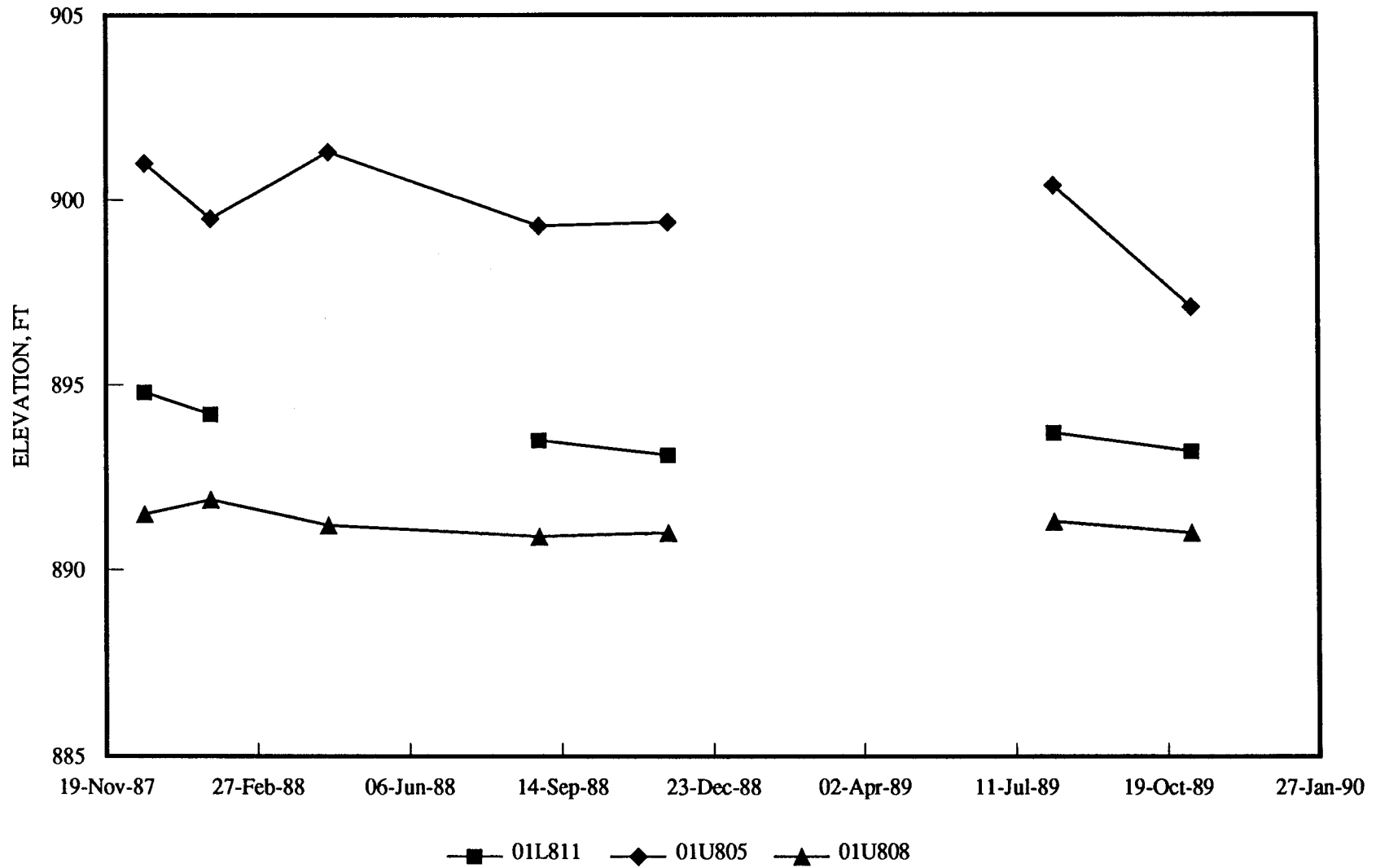


Figure 4-28, WEST OF SW BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

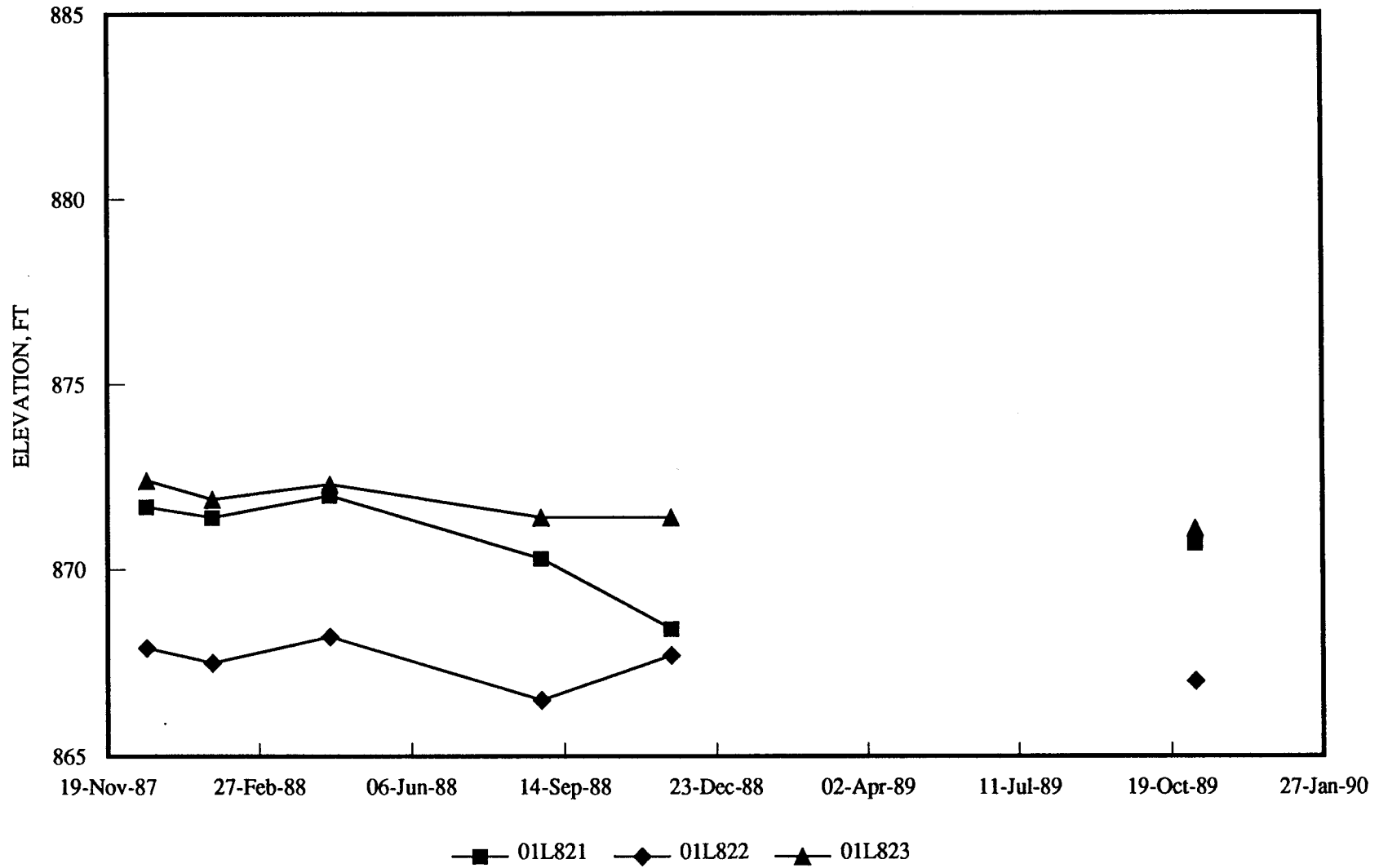


Figure 4-29, SOUTHWEST OF SW BOUNDARY AREA, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

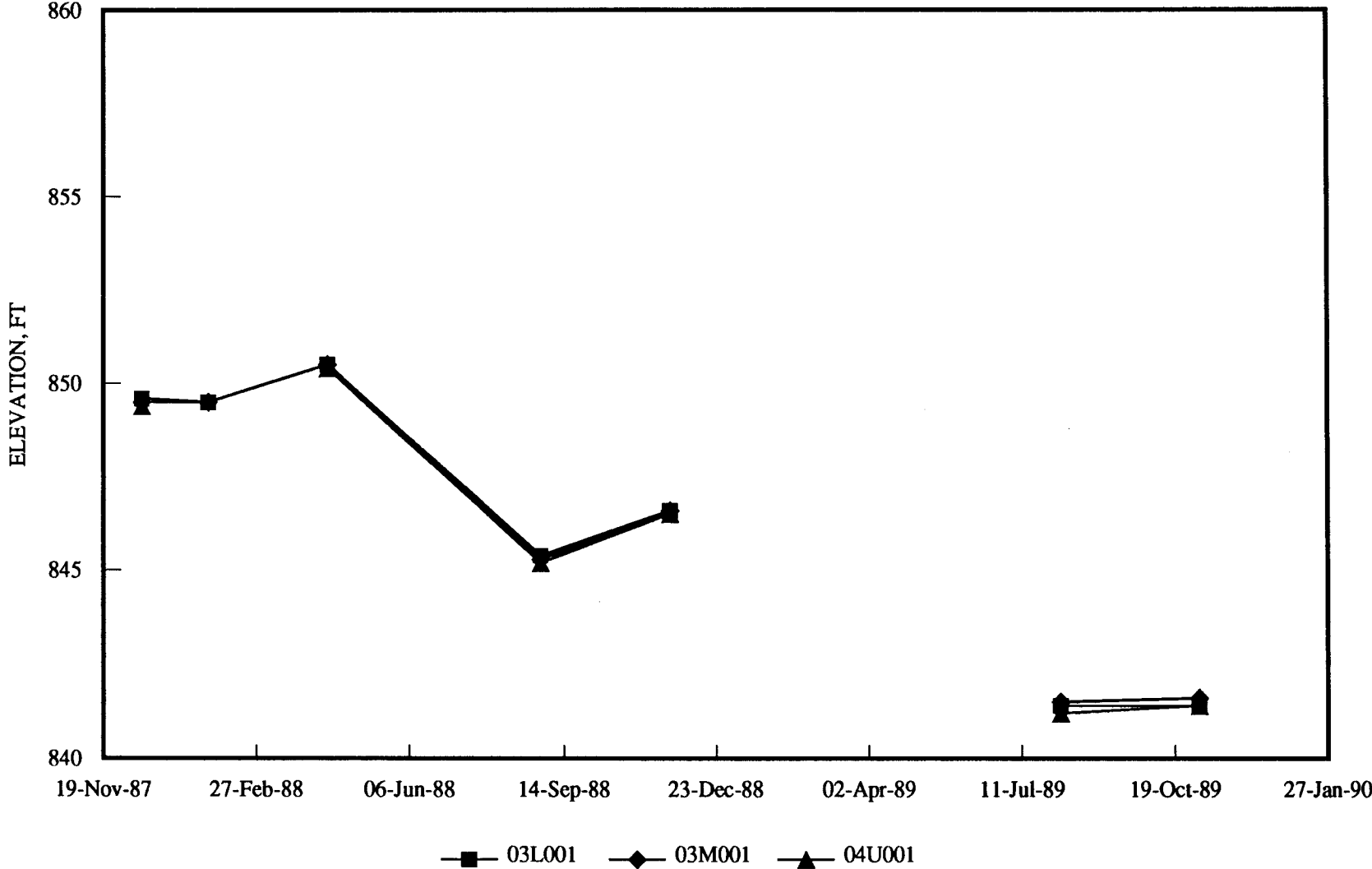


Figure 4-30, SOUTHWEST BOUNDARY WELL NEST, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

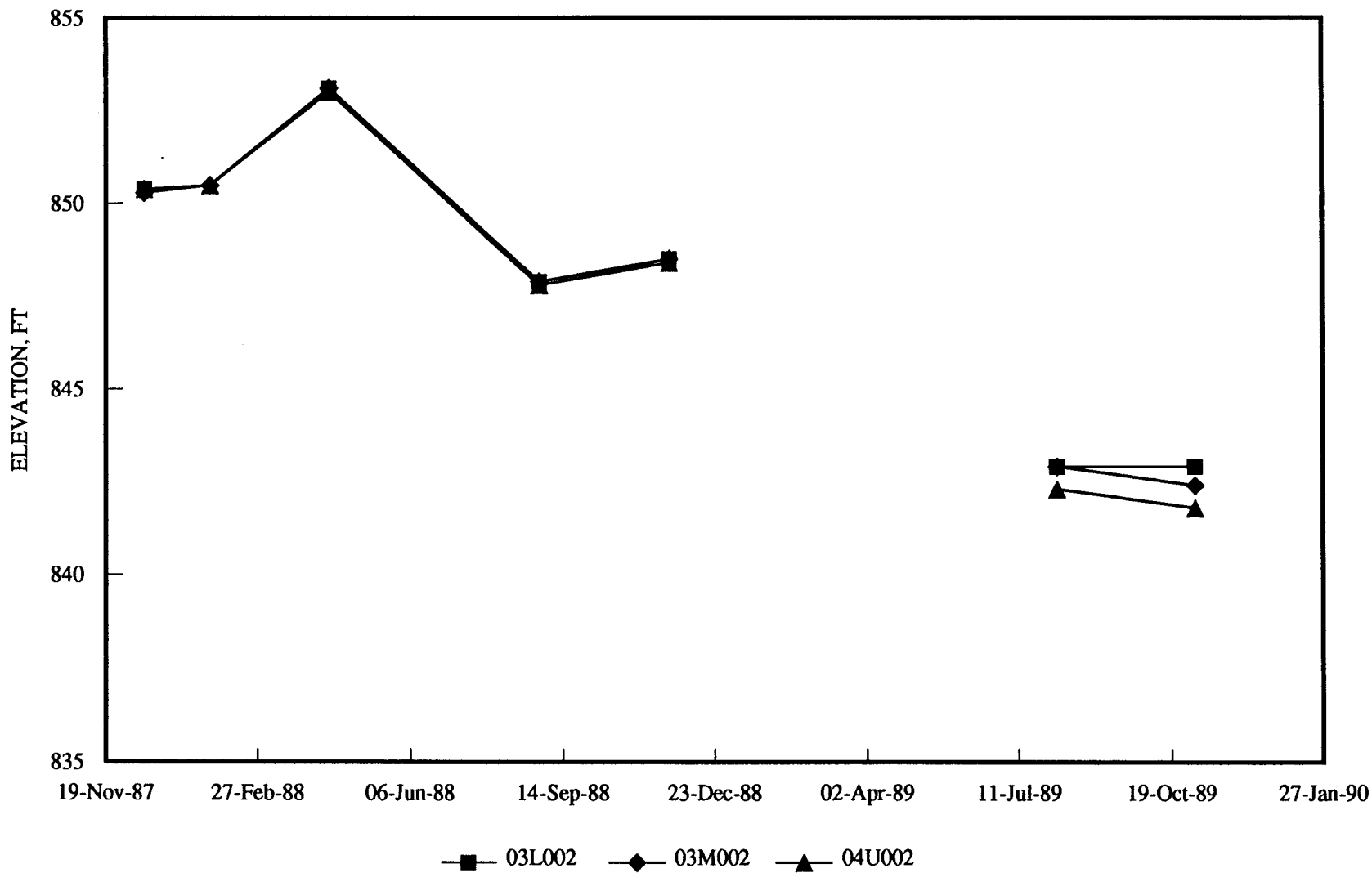


Figure 4-31, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

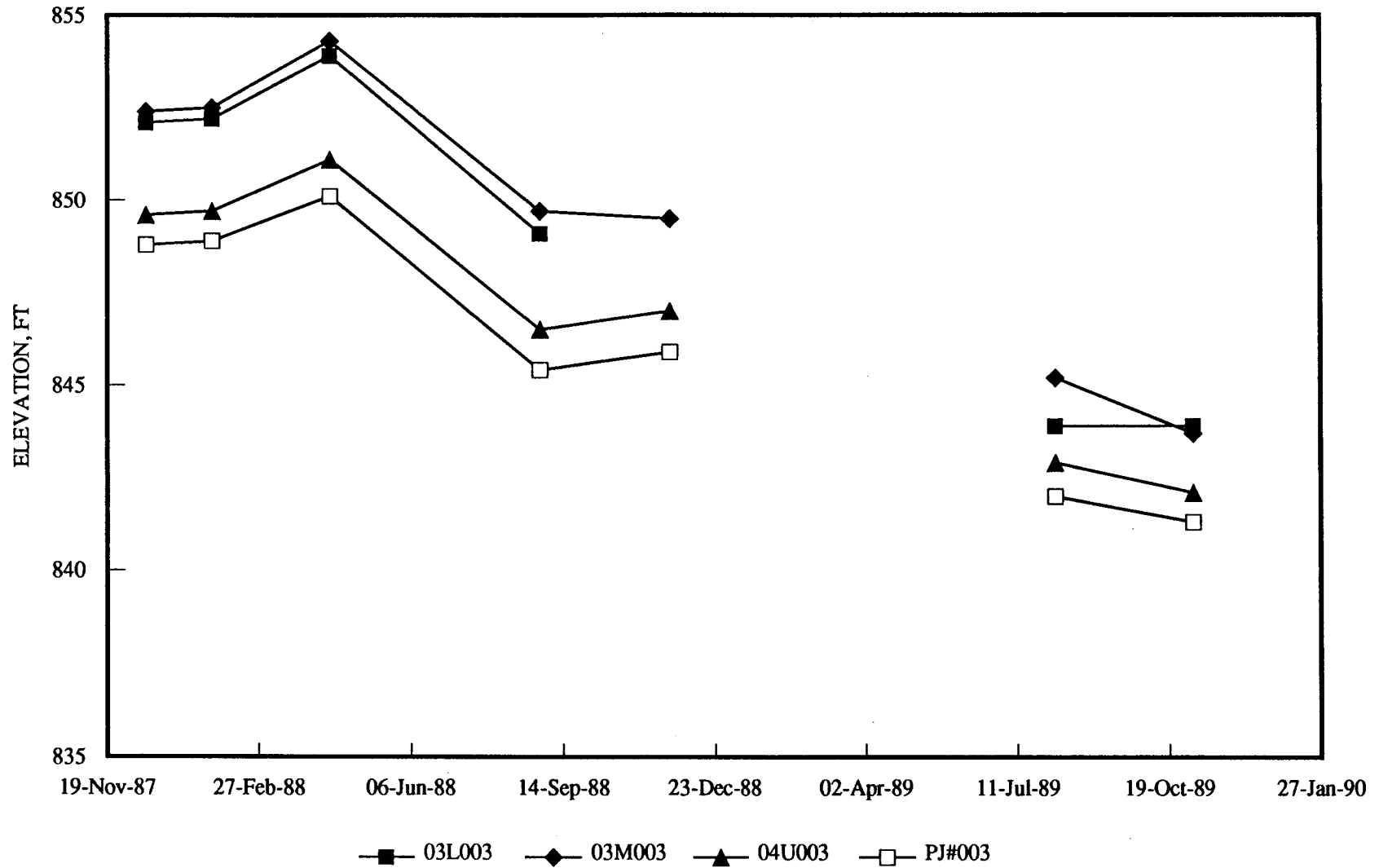


Figure 4-32, SOUTHWEST BOUNDARY,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

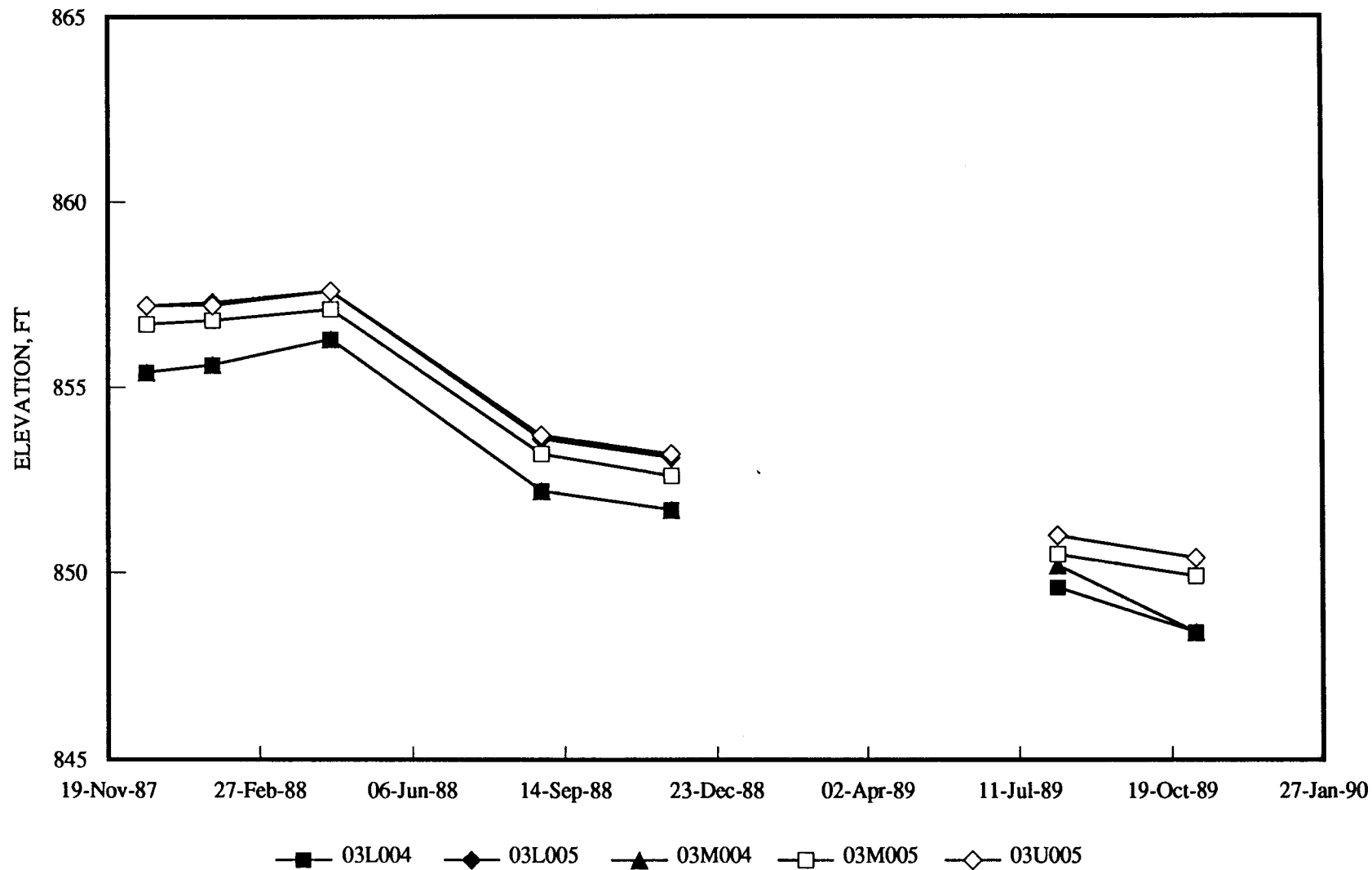


Figure 4-33, SOUTH BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

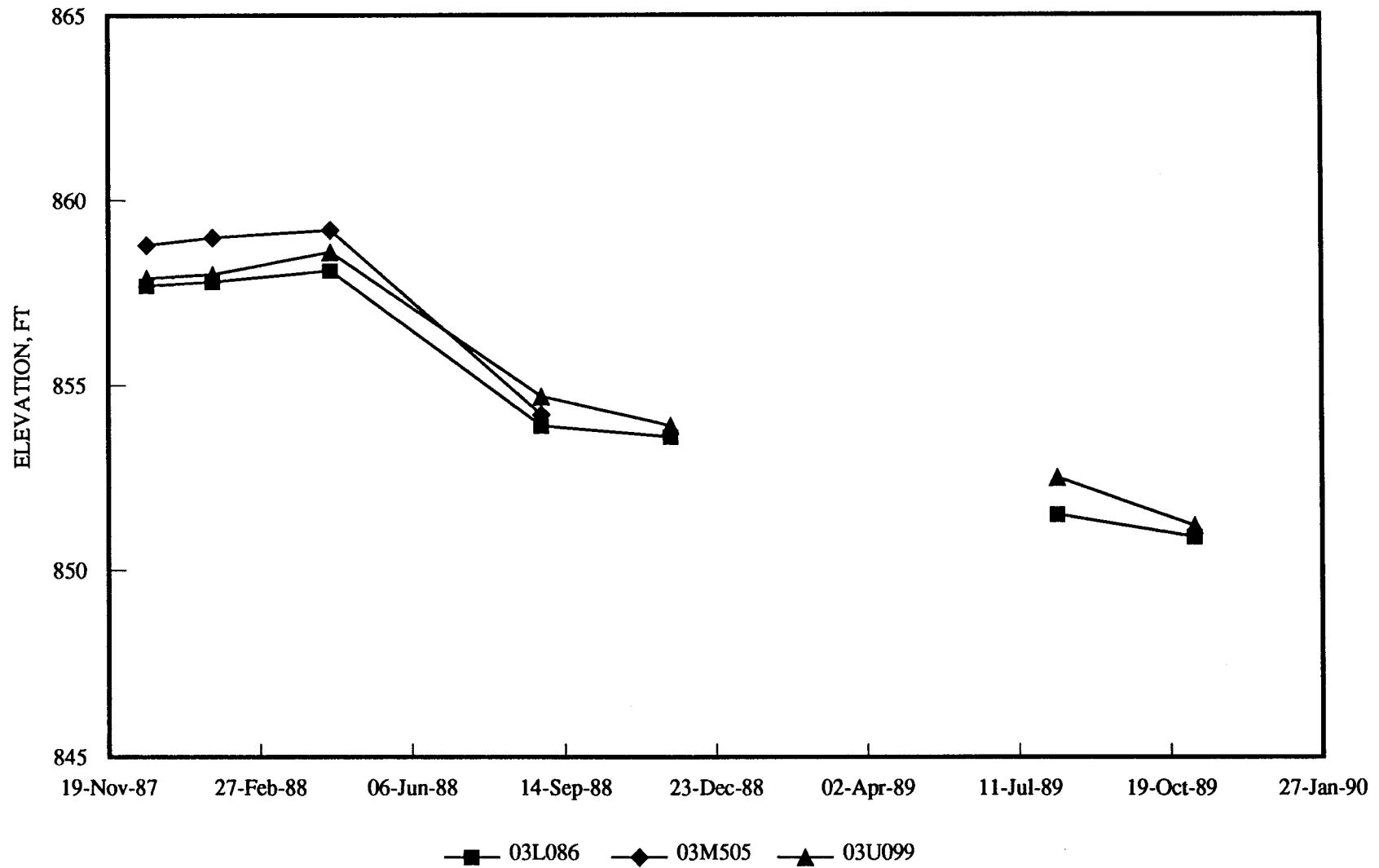


Figure 4-34, SITE H, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

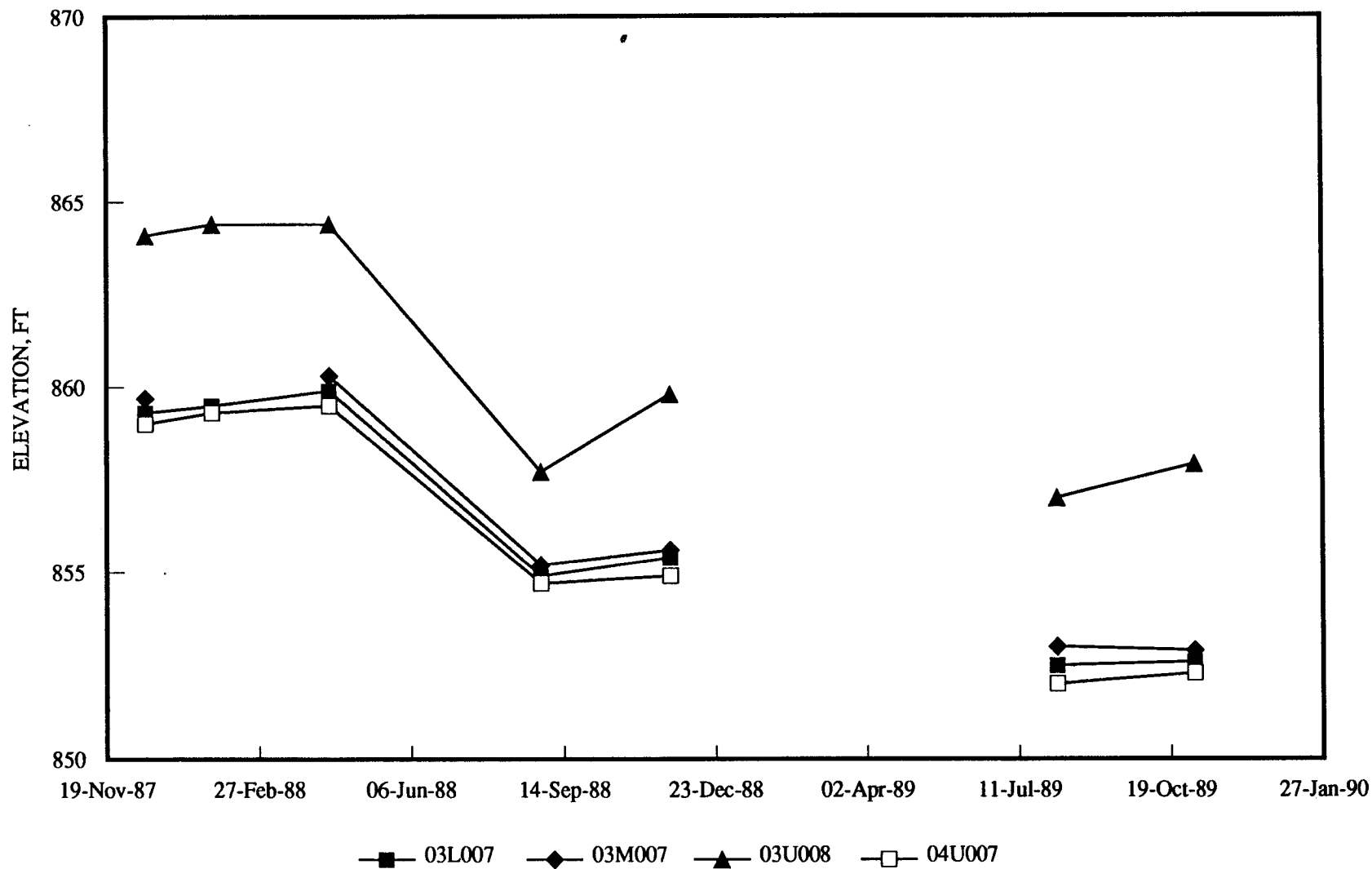


Figure 4-35, EAST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

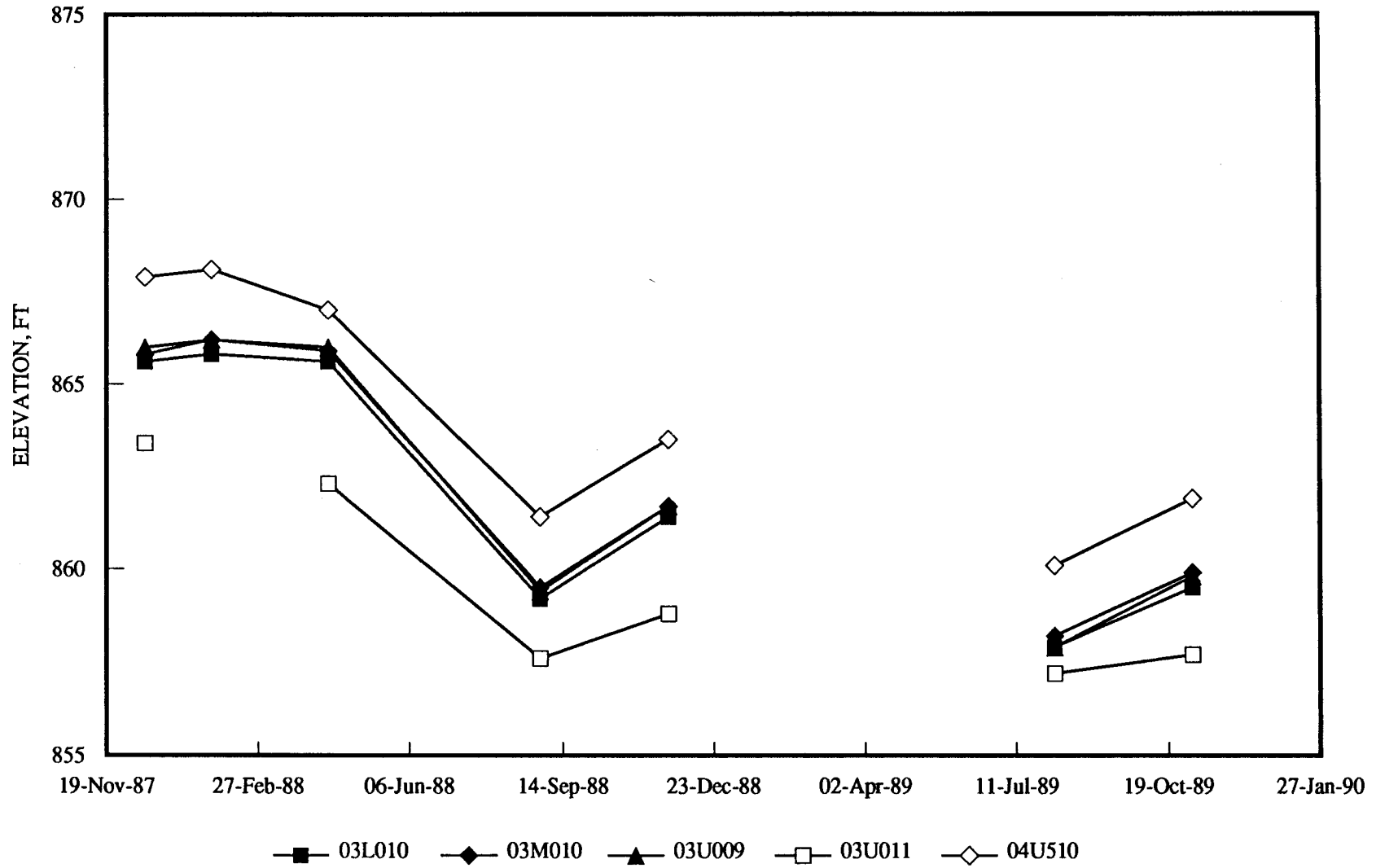


Figure 4-36, NORTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

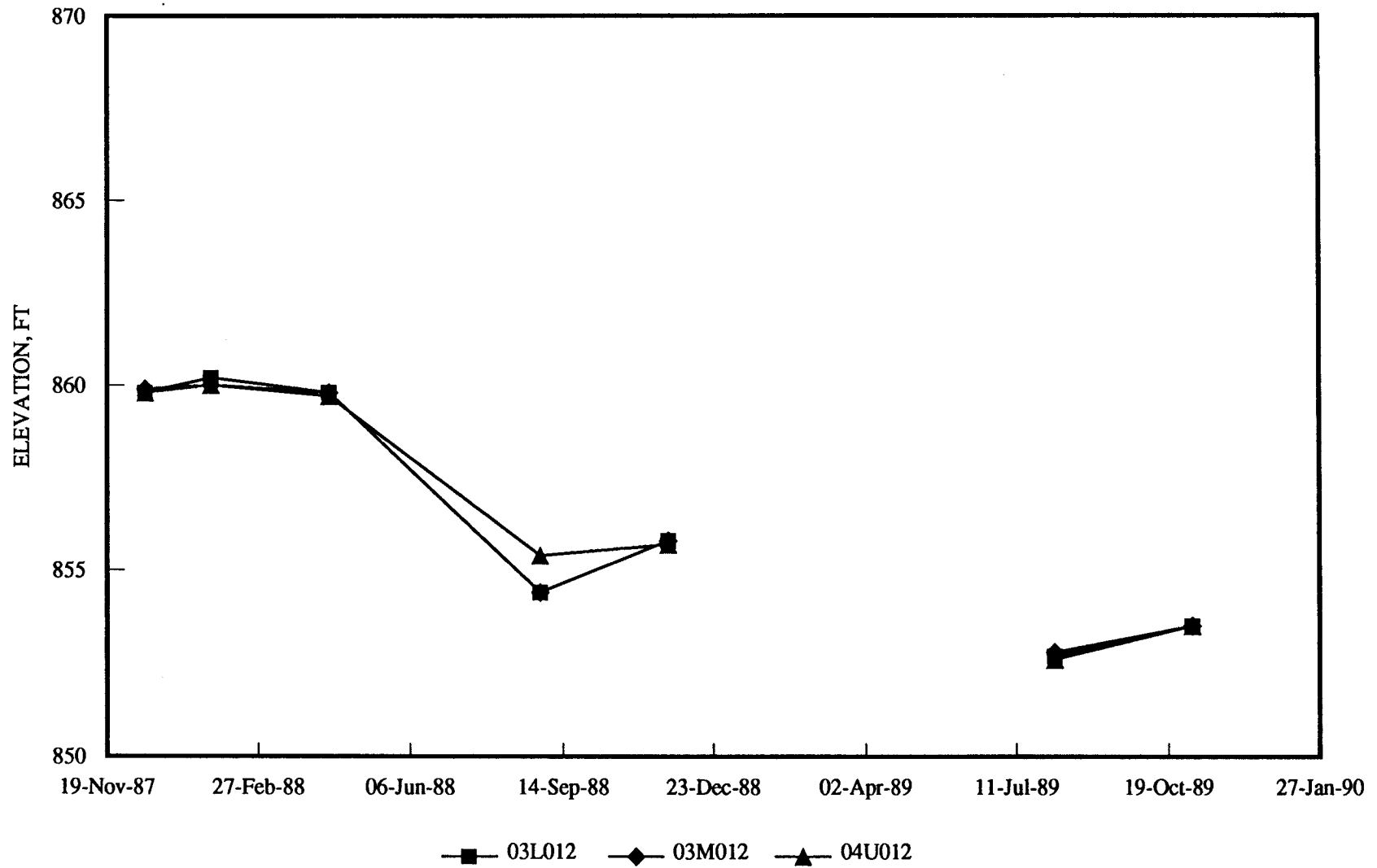


Figure 4-37, NORTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

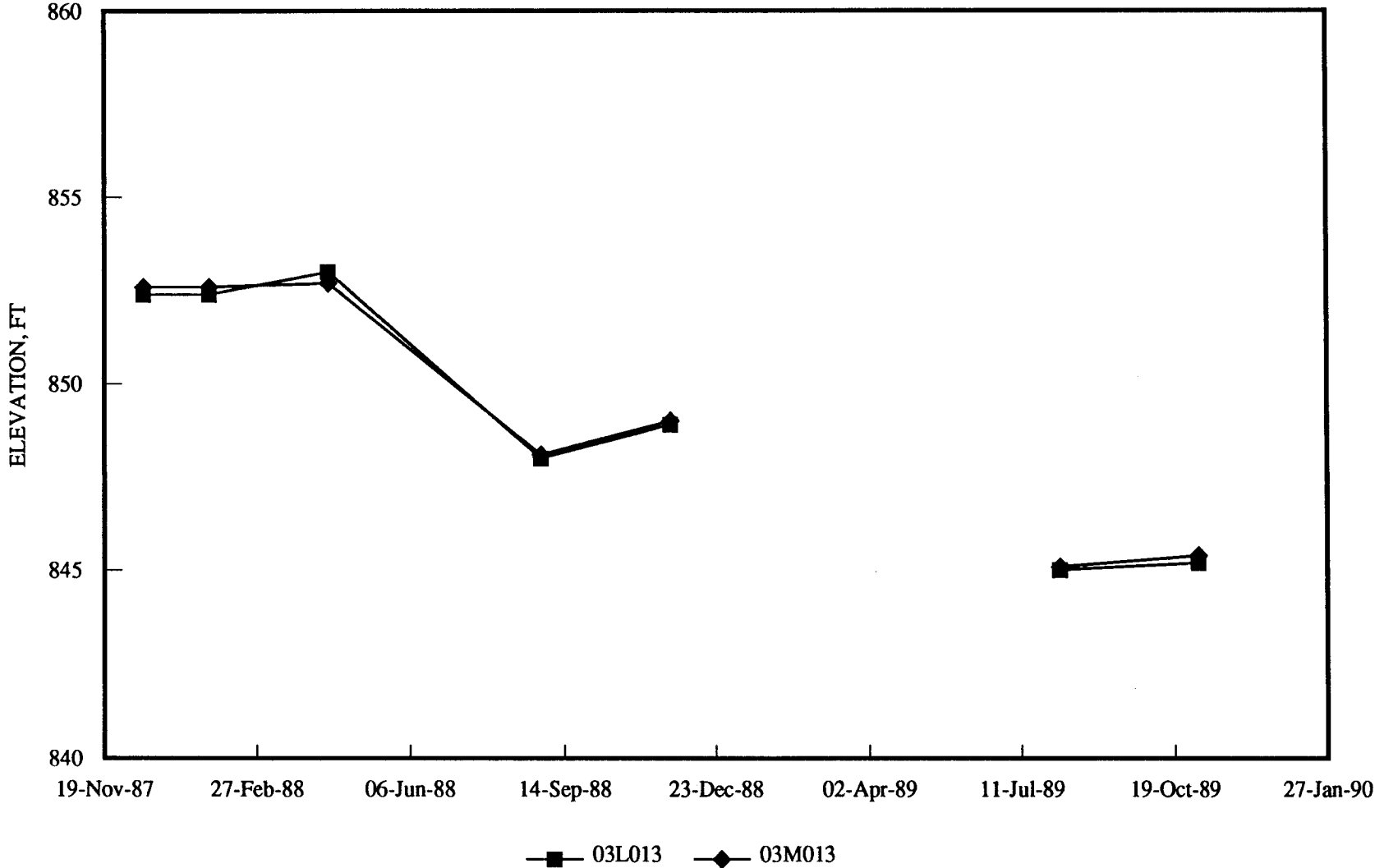


Figure 4-38, WEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

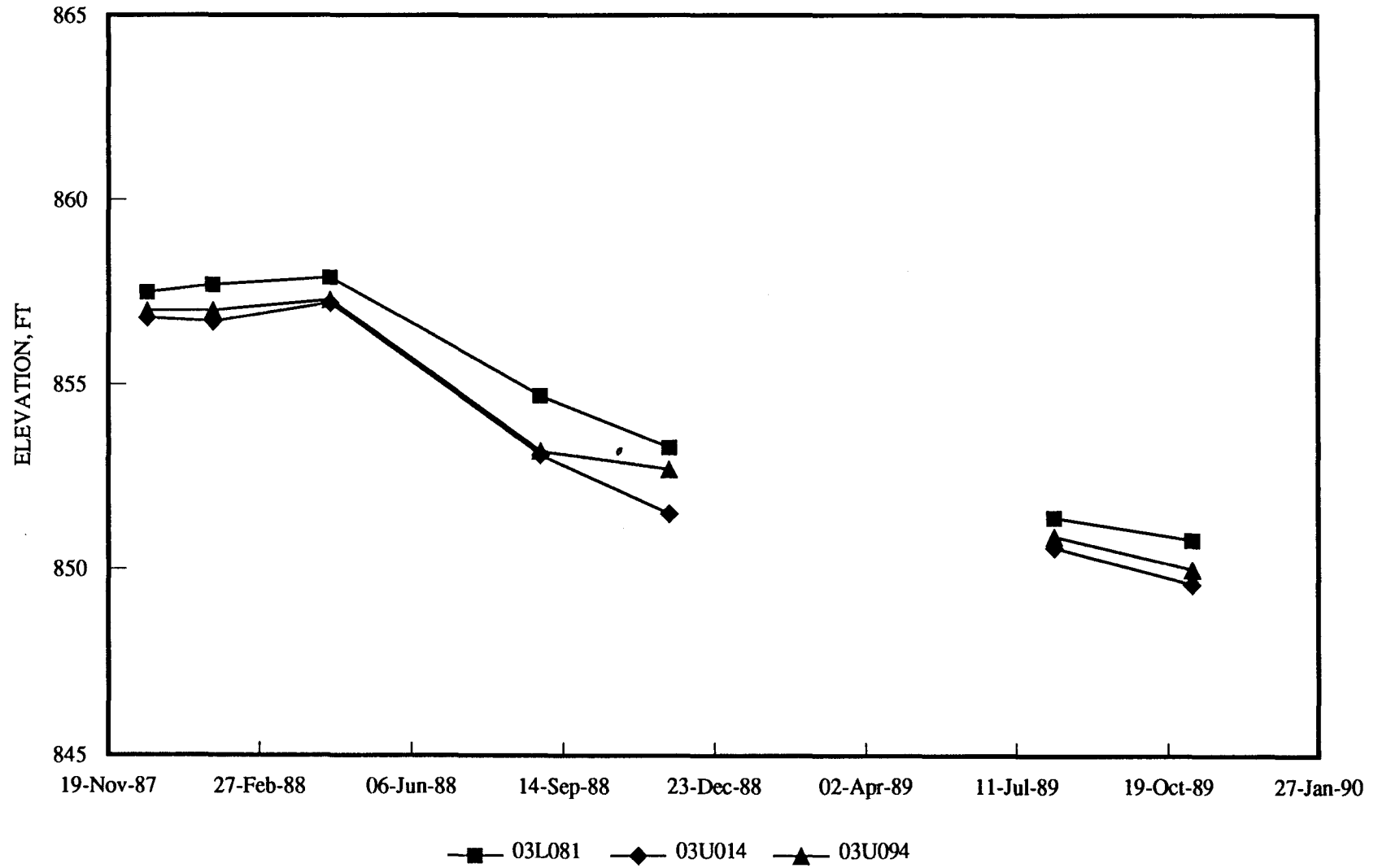


Figure 4-39, SITE G AREA,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

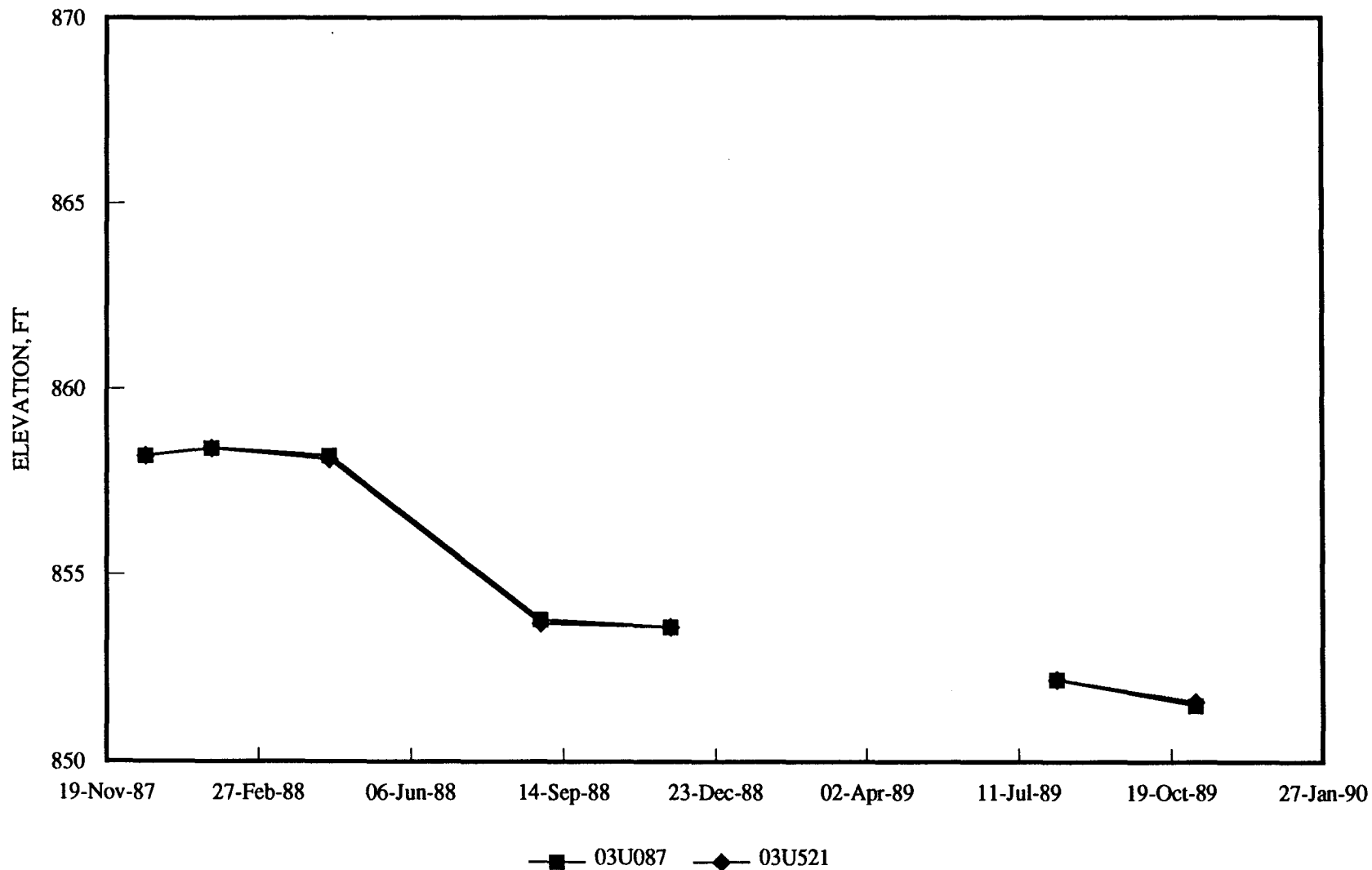


Figure 4-40, SITE 129-3,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

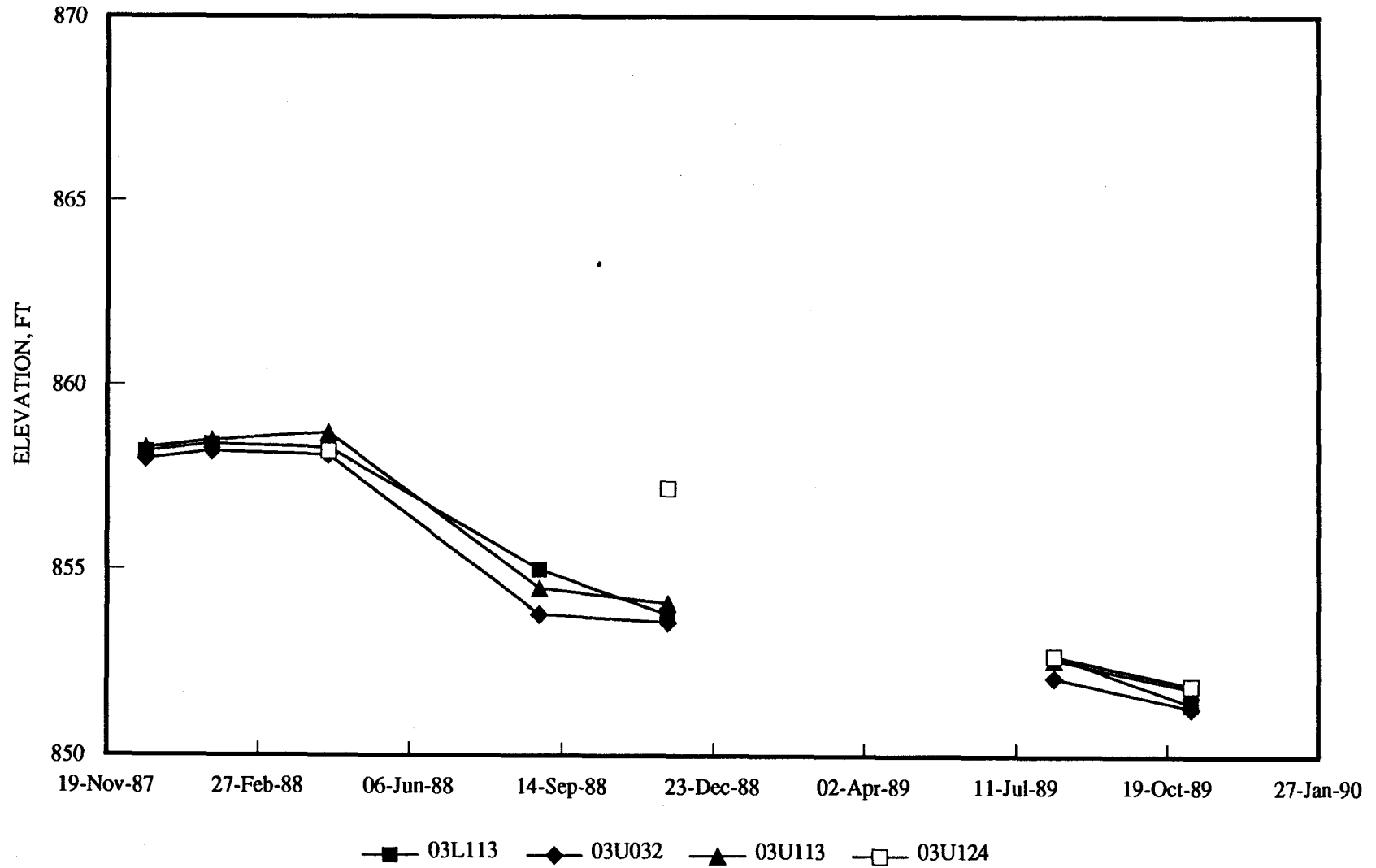


Figure 4-41, SITE 129-15 AREA, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

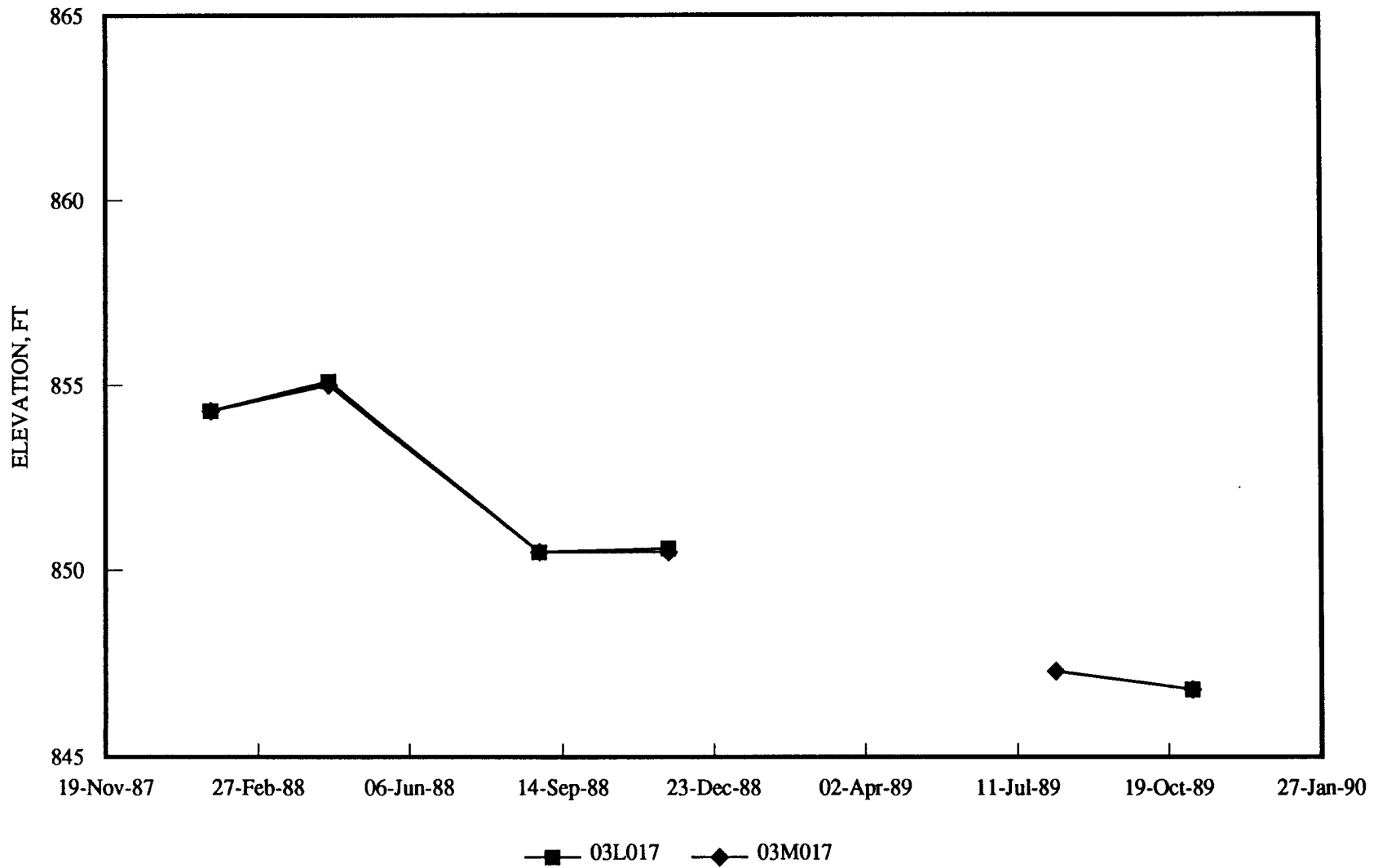


Figure 4-42, DOWNGRADIENT SITE D,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

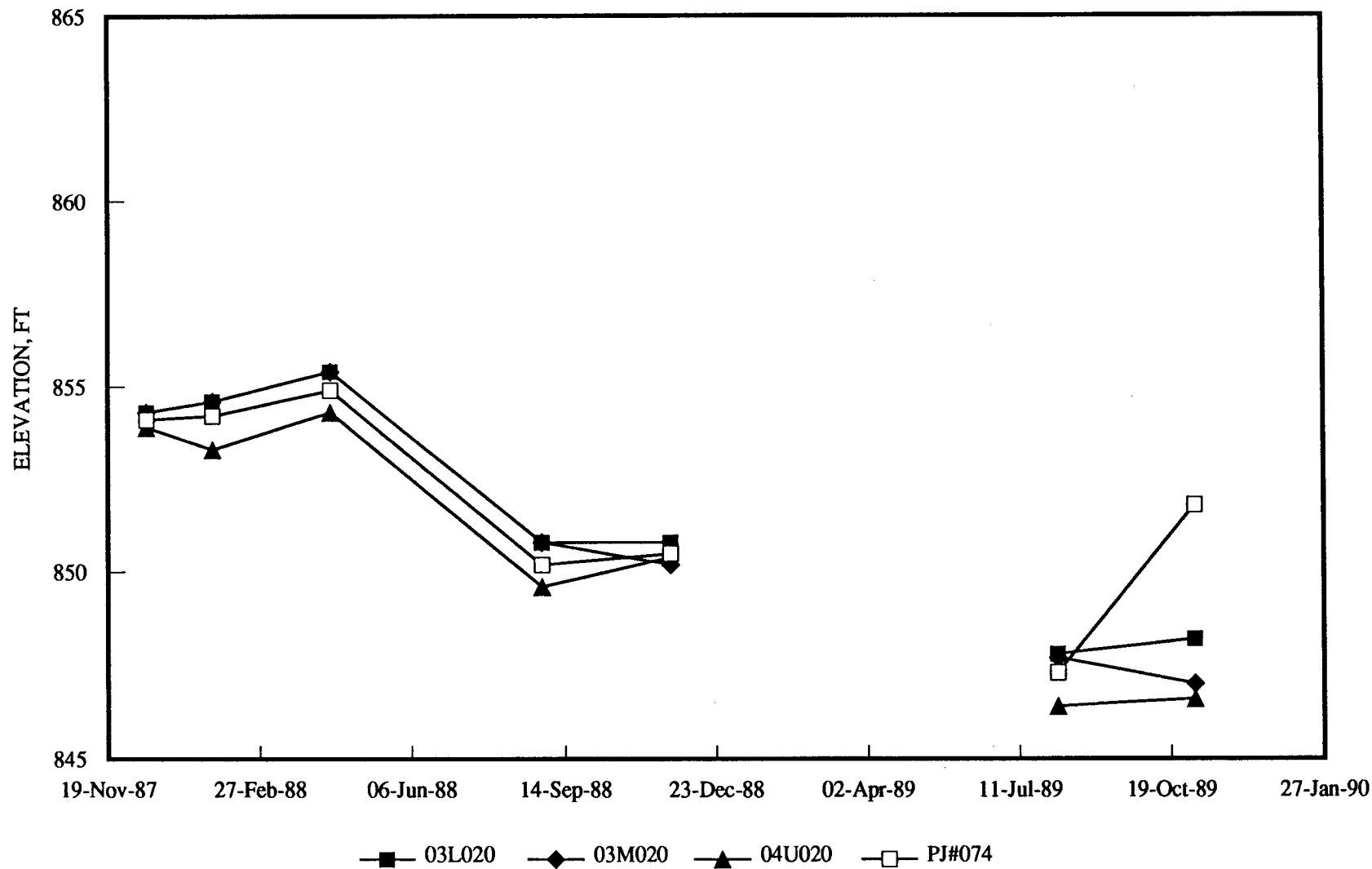


Figure 4-43, DOWNGRADIENT SITE G, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

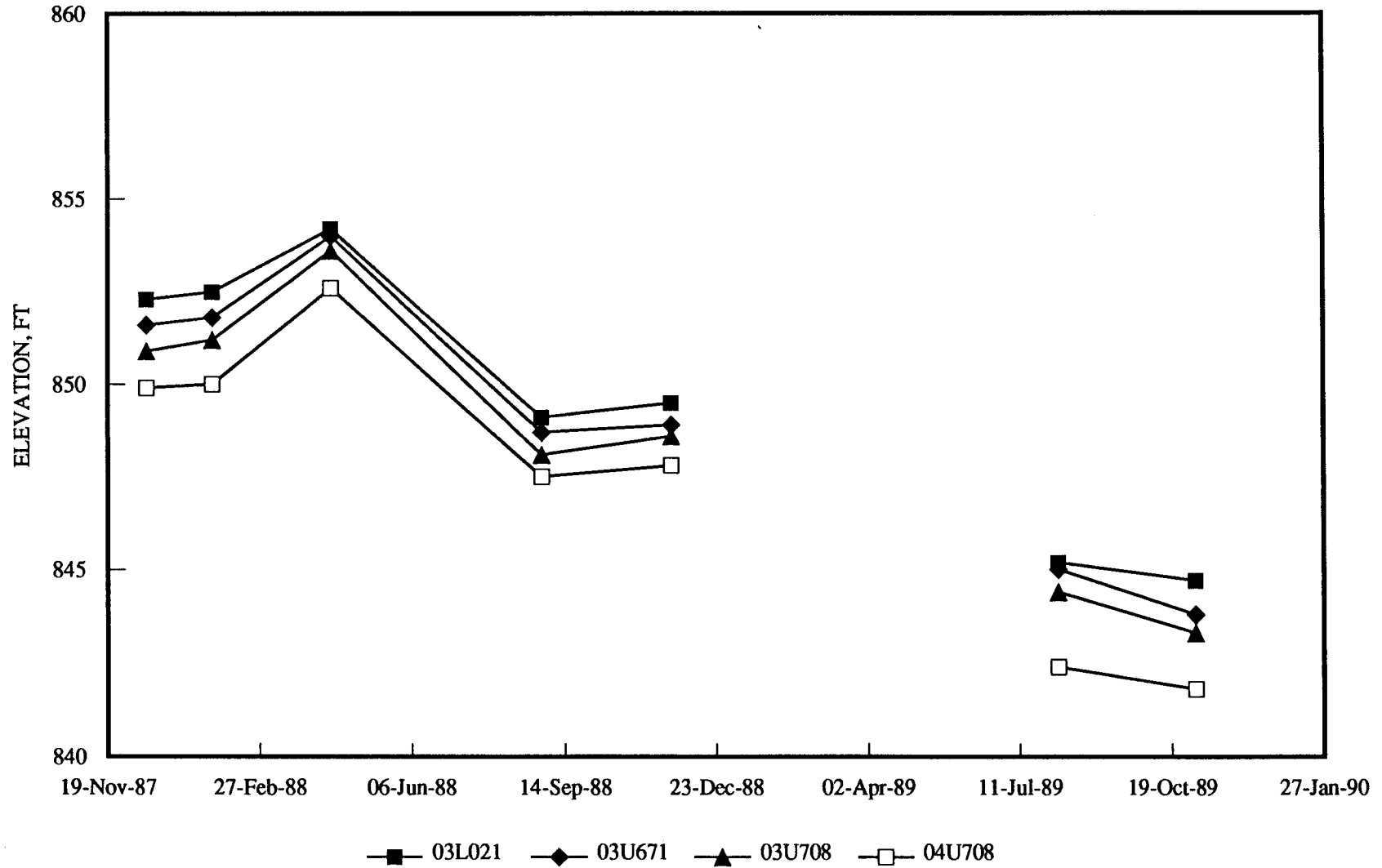


Figure 4-44, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

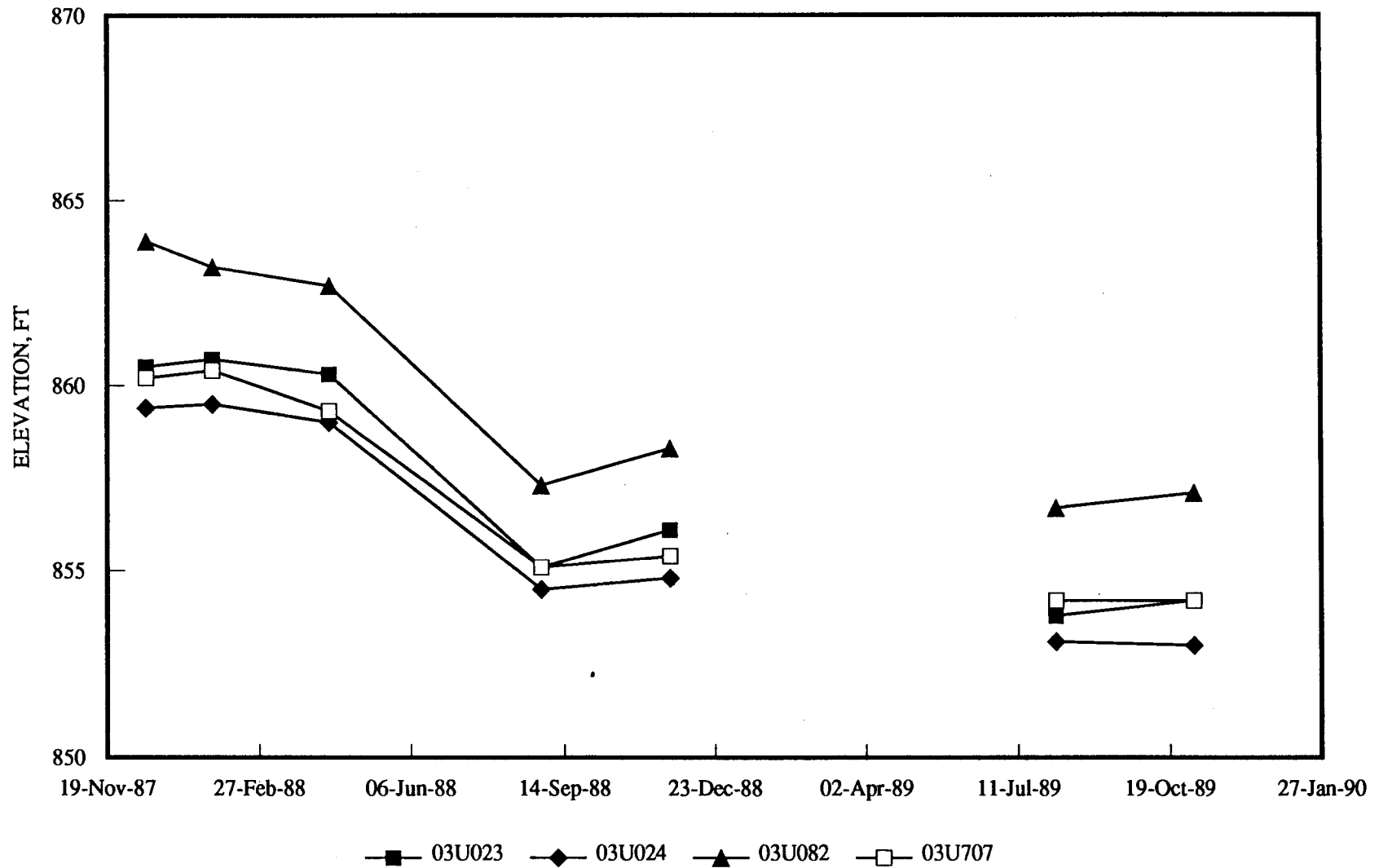


Figure 4-45, SOUTH OF SITE A, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

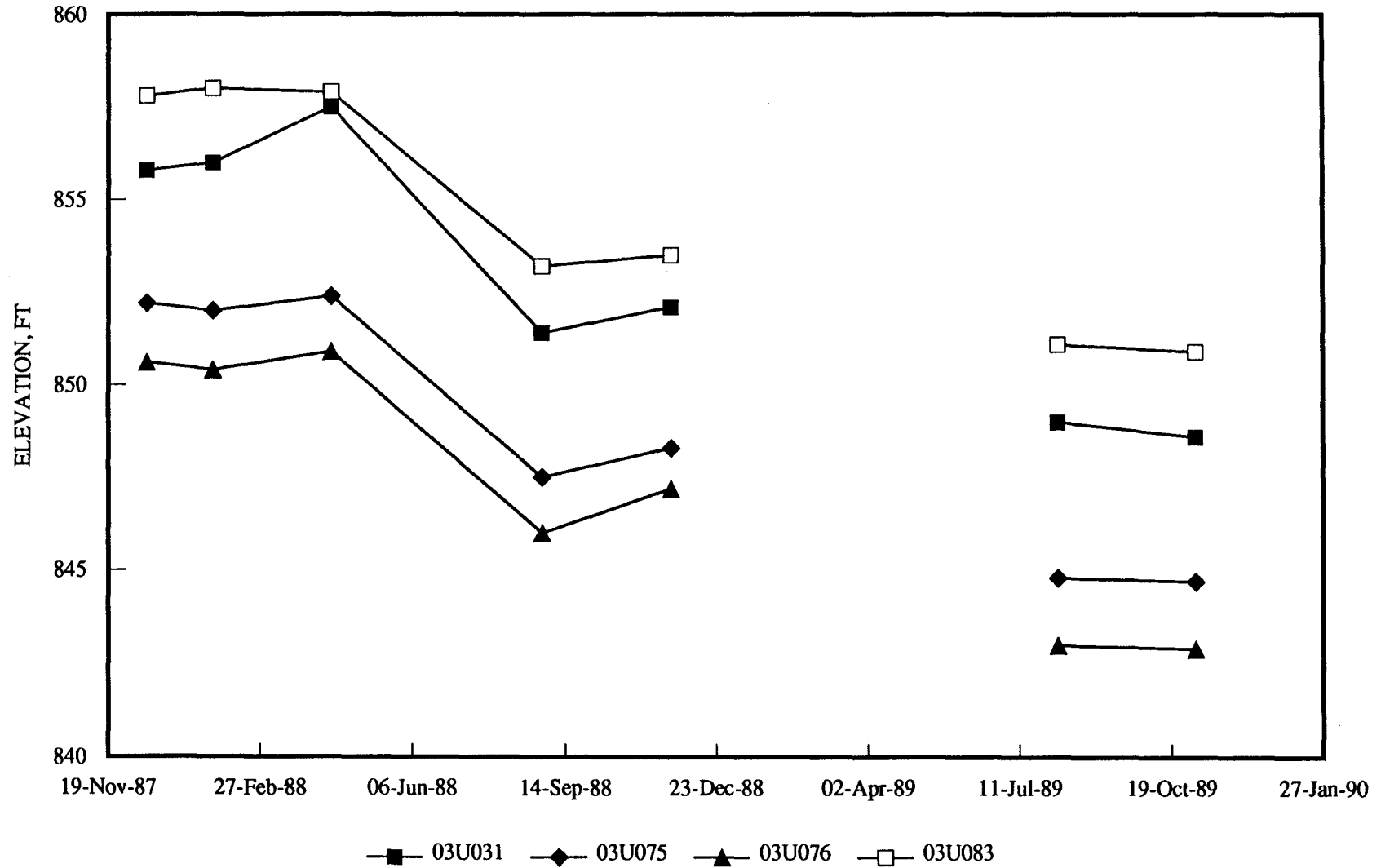


Figure 4-46, SITE C/SITE K AREA, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

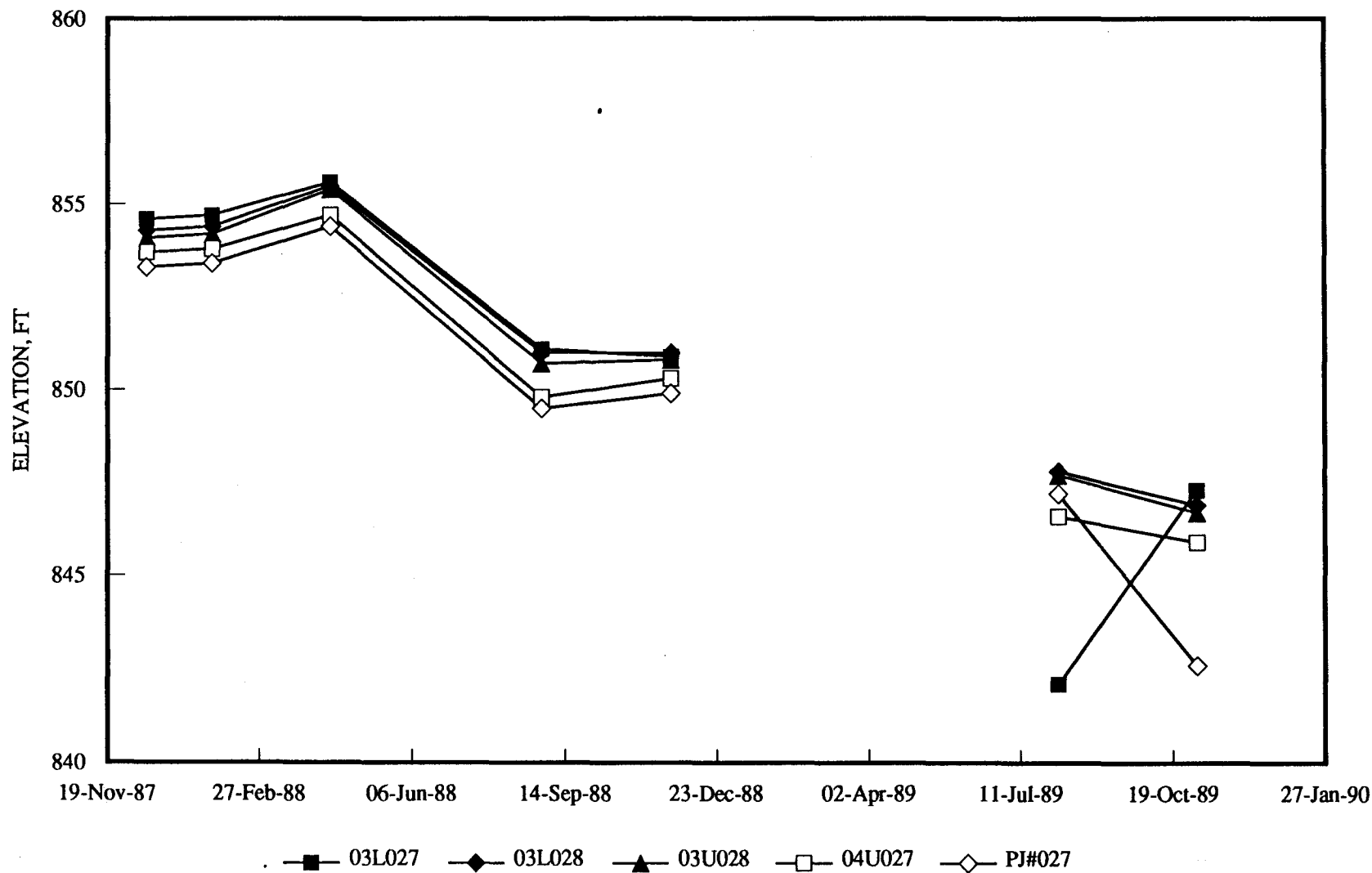


Figure 4-47, SITE I, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

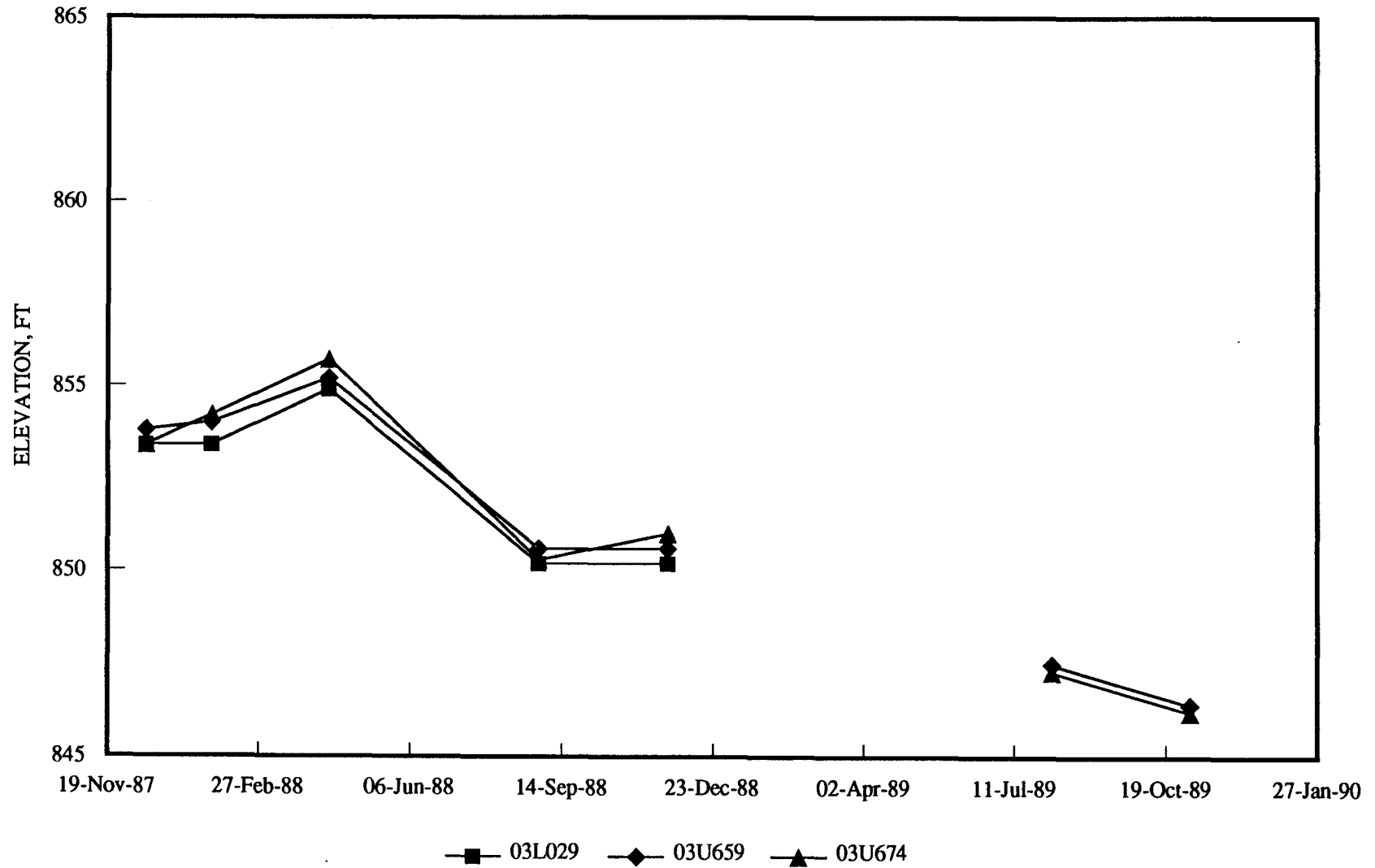


Figure 4-48, SITE I AREA,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

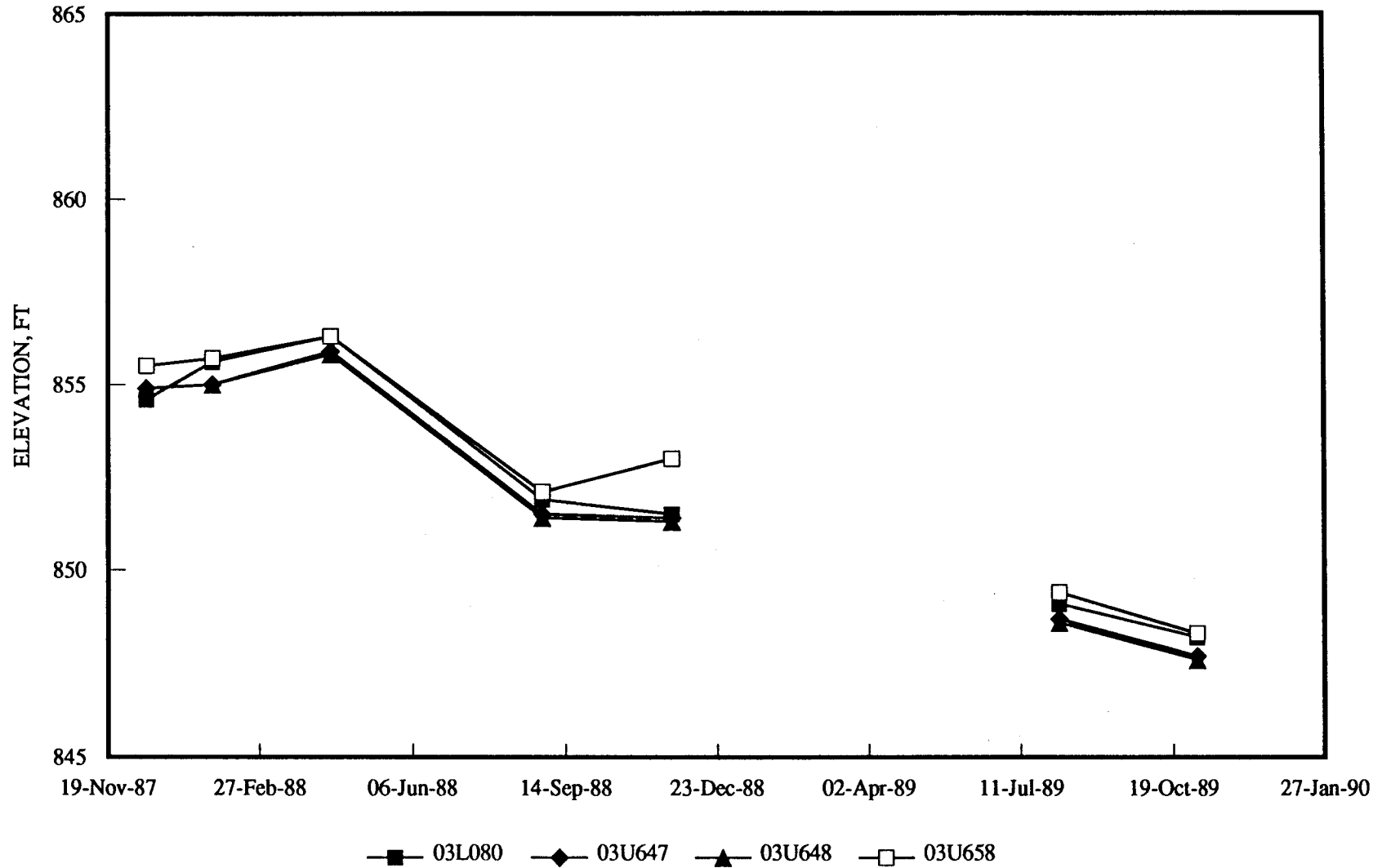


Figure 4-49, SITE I AREA,  
WENCK ASSOCIATES, INC.

March 1990



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

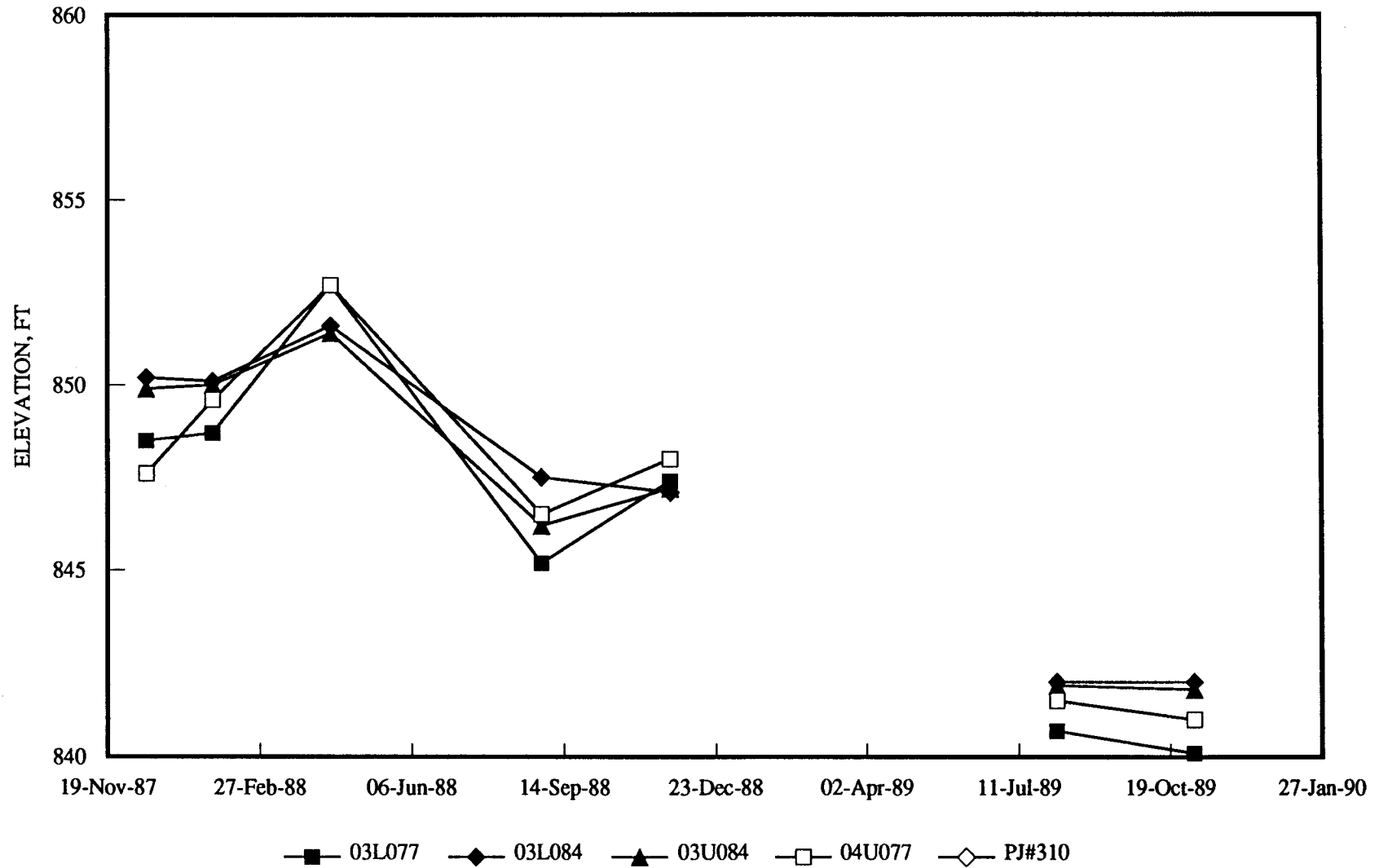


Figure 4-50, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

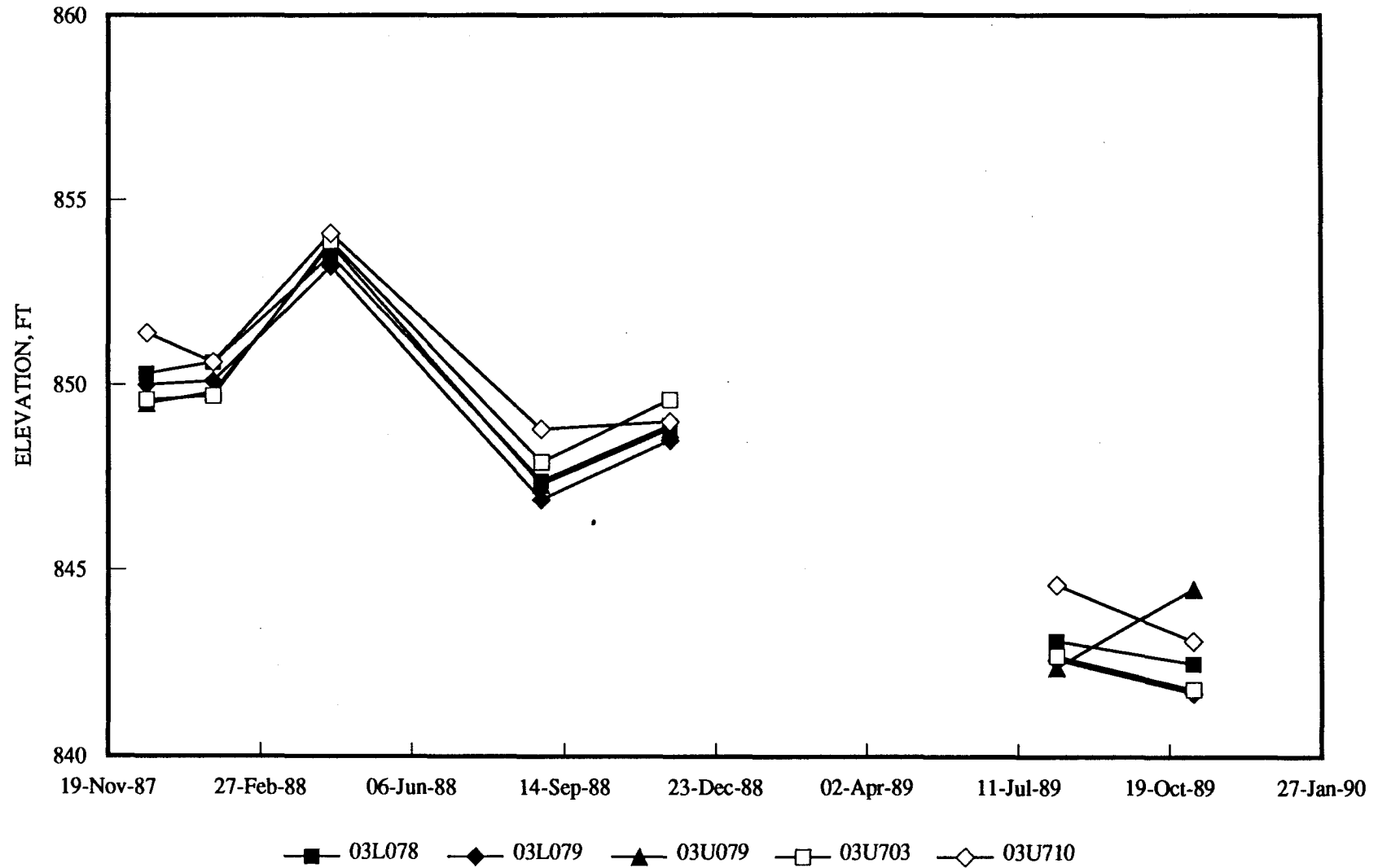


Figure 4-51, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

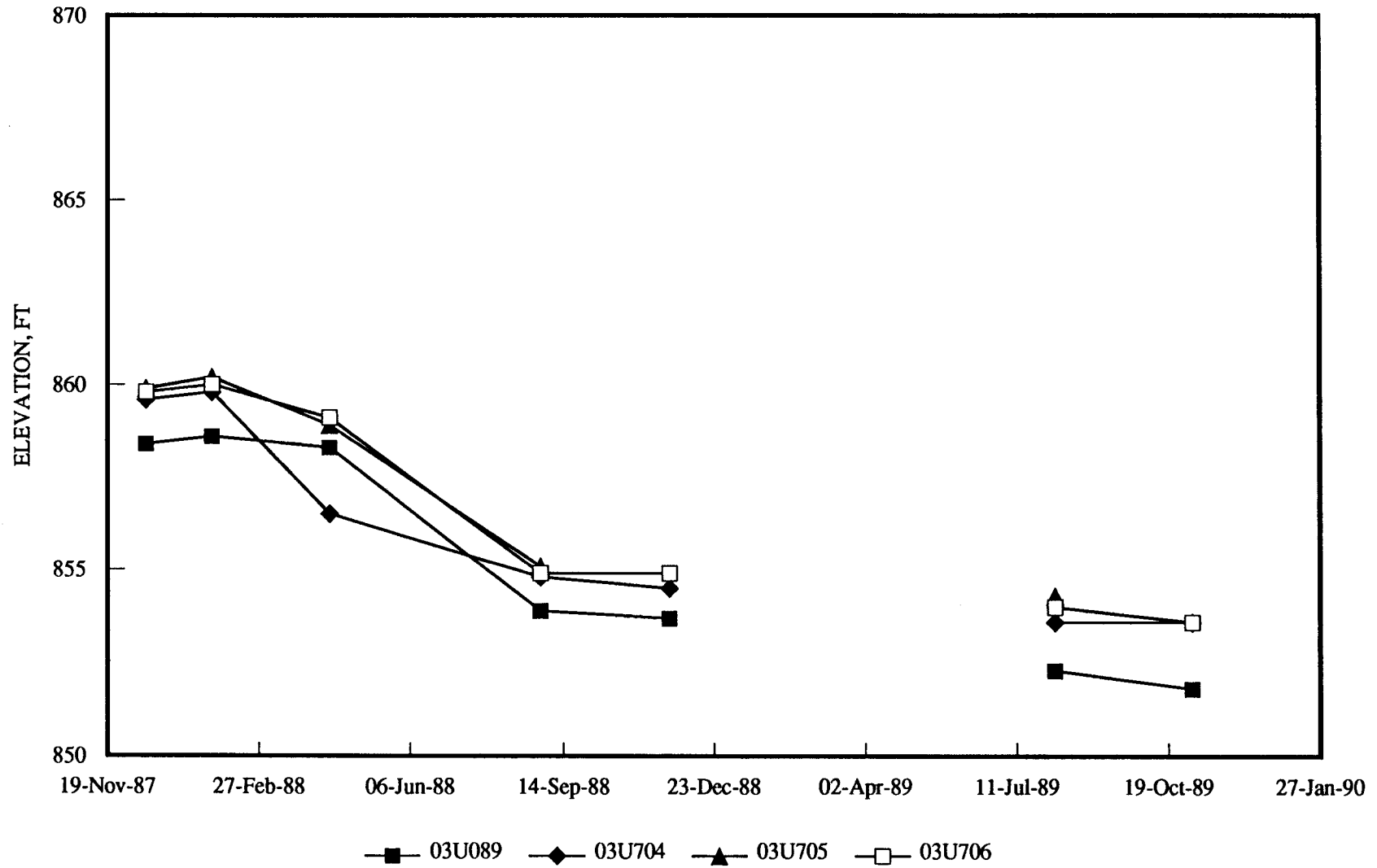


Figure 4-52, SITE E, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

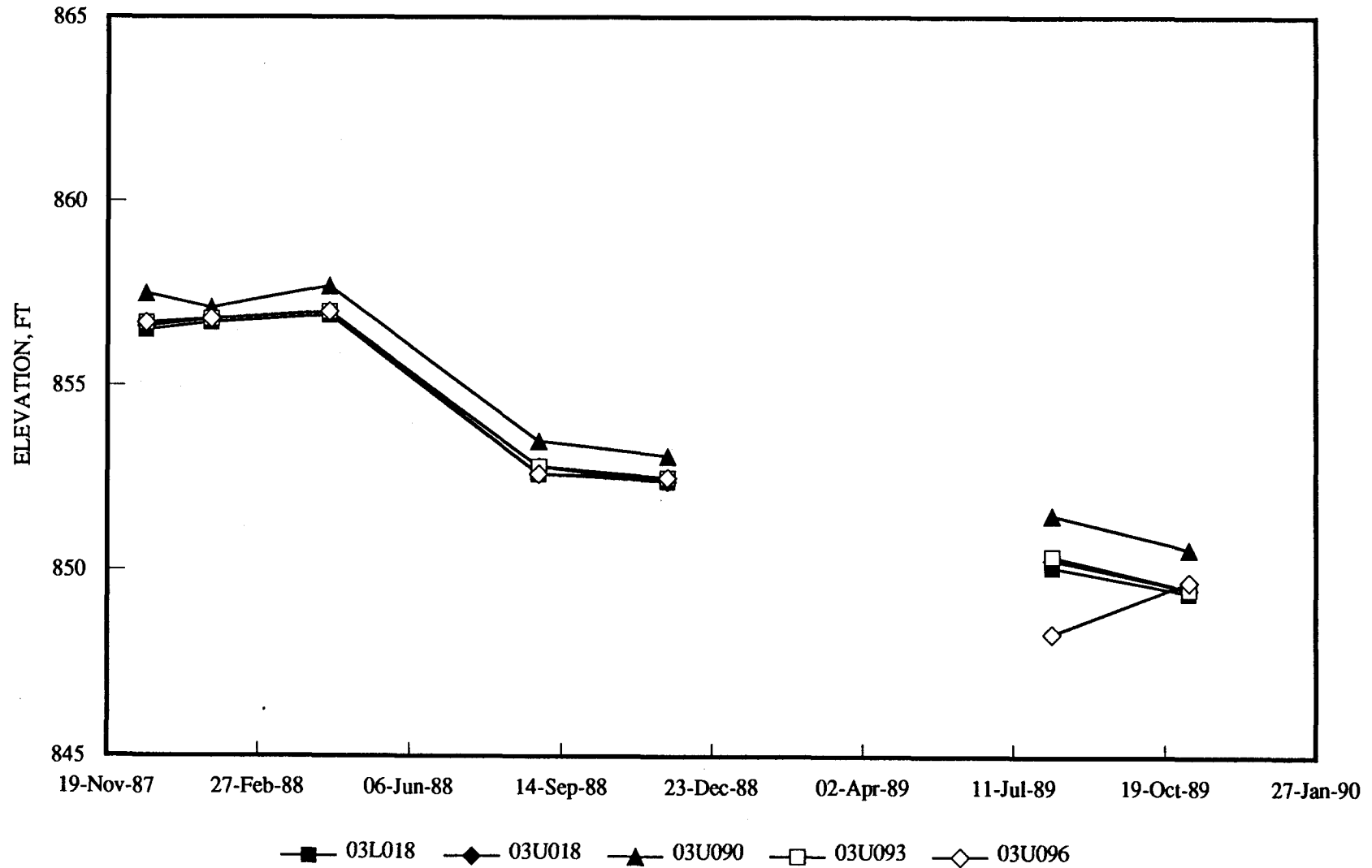


Figure 4-53, SITE D AREA, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

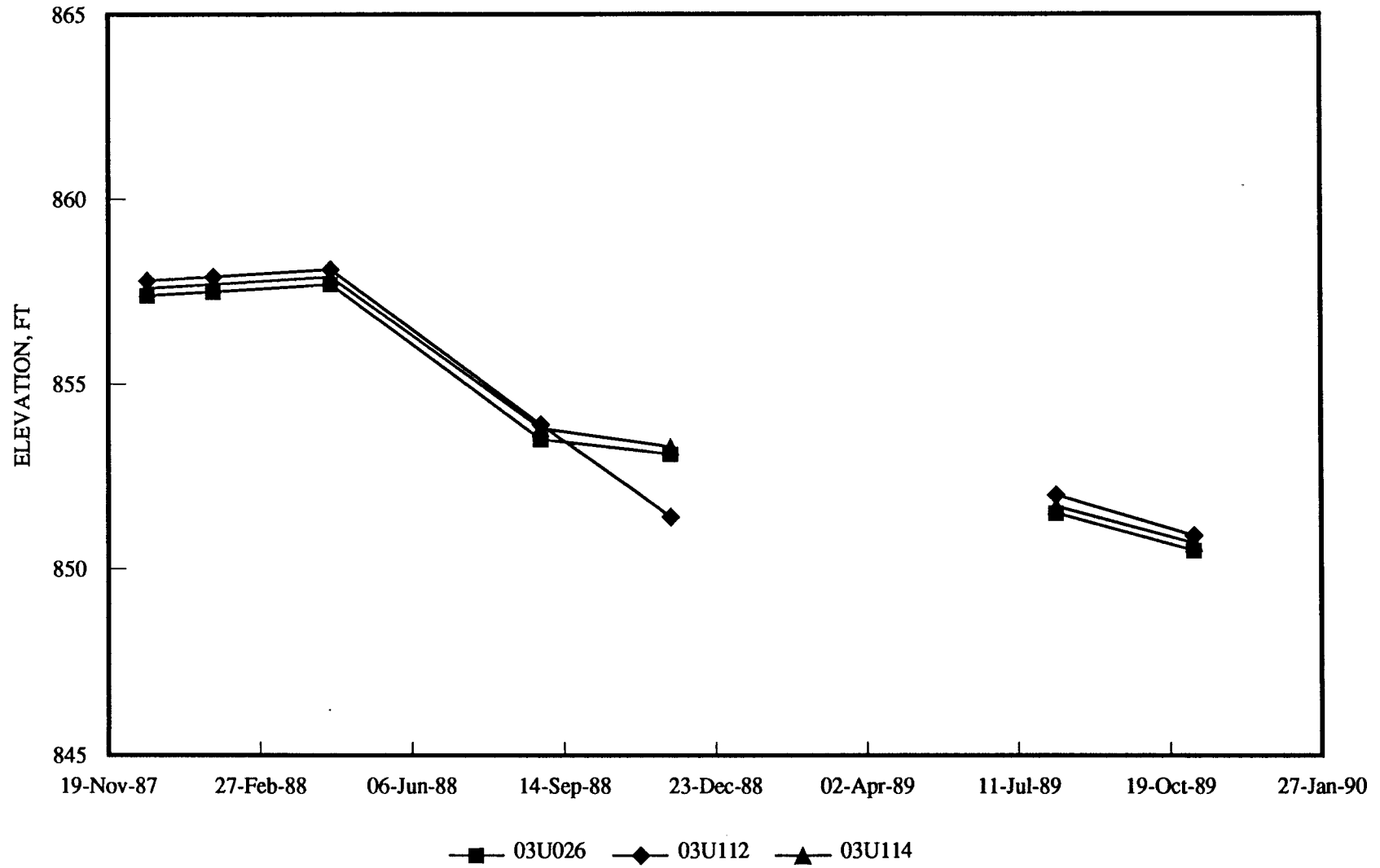


Figure 4-54, SITE F AREA,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

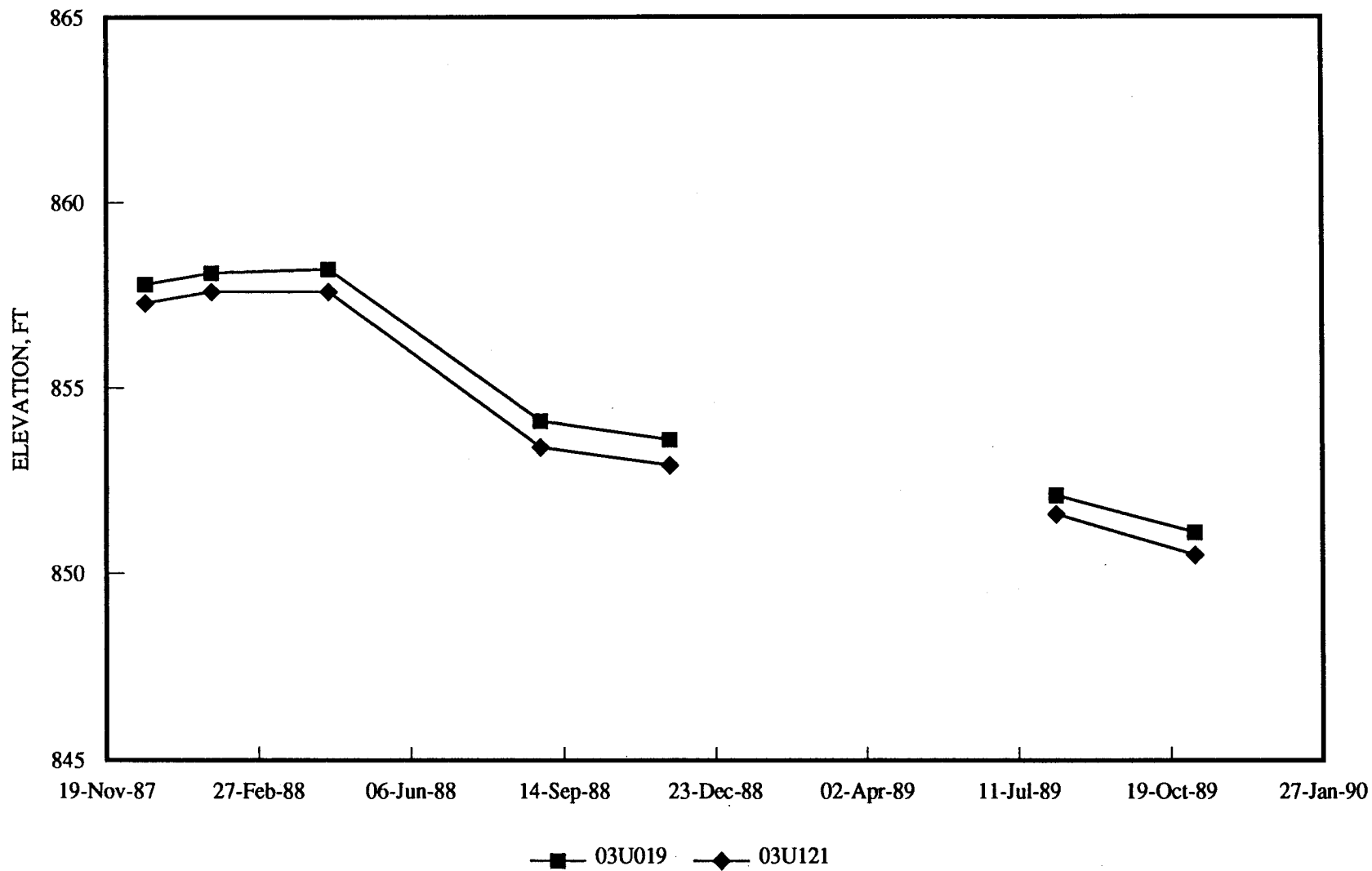


Figure 4-55, SITE F AREA, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

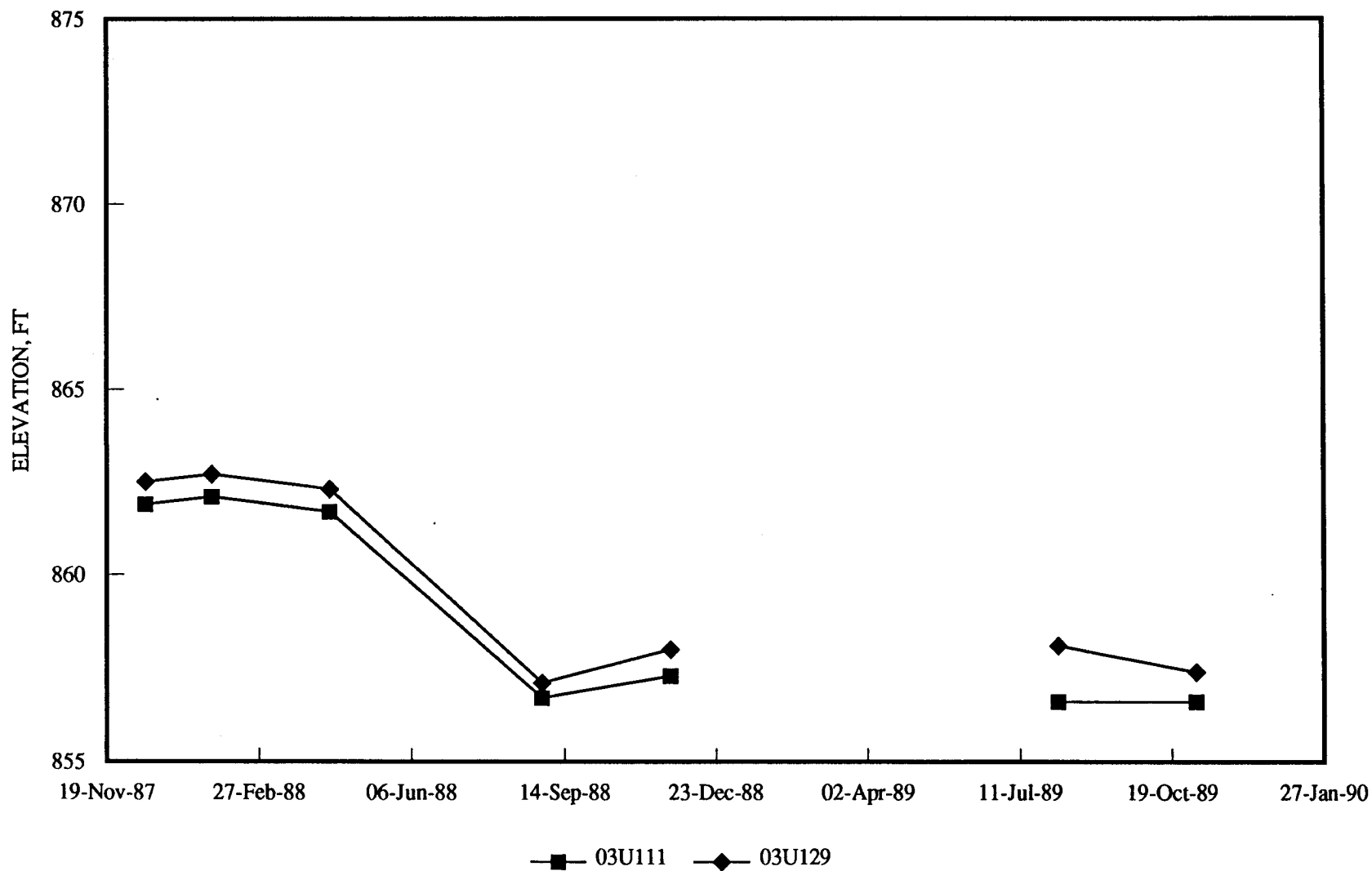


Figure 4-56, SITE 129-5, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

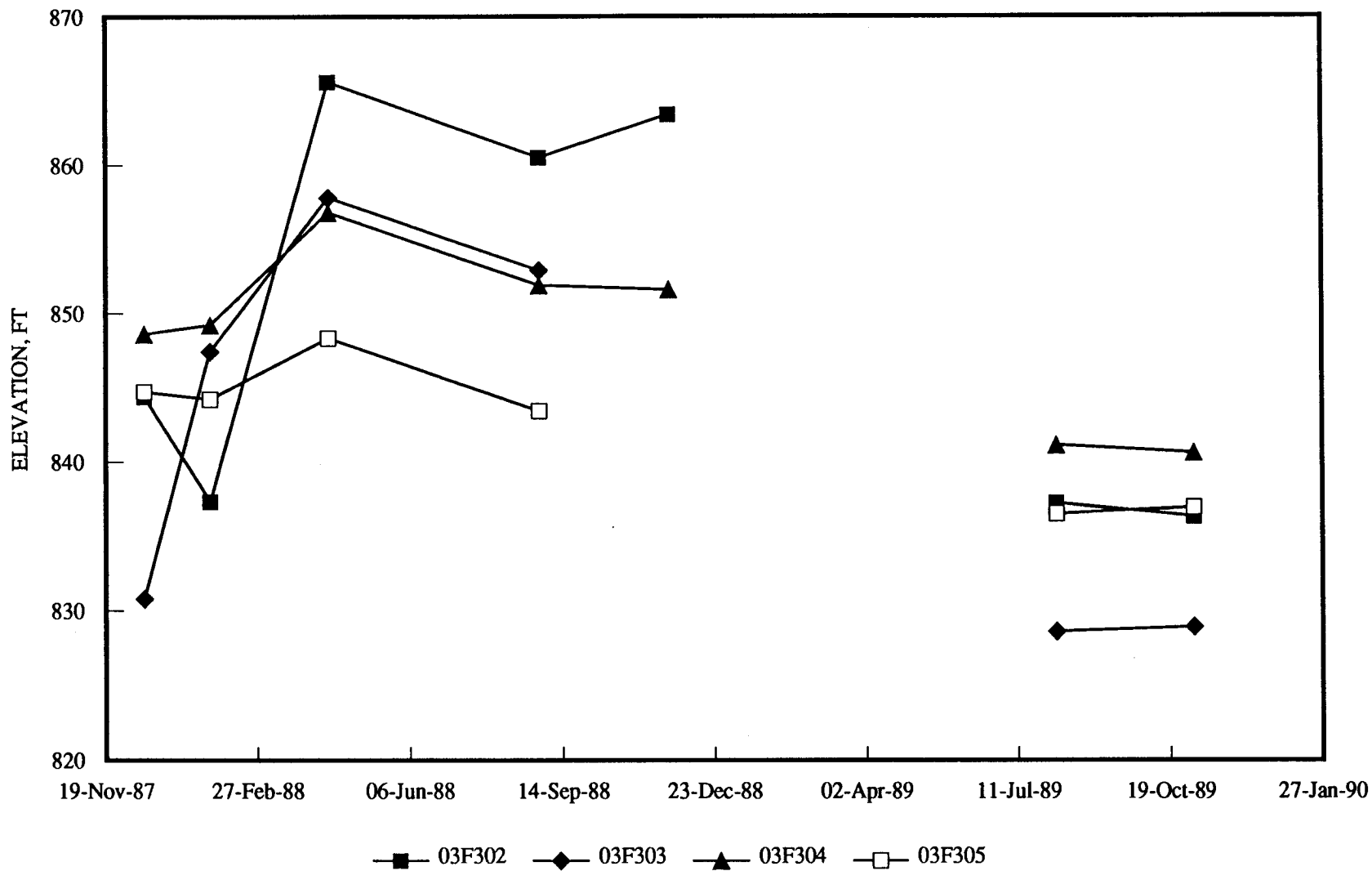


Figure 4-57, SOUTHWEST BOUNDARY PUMPING WELLS, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

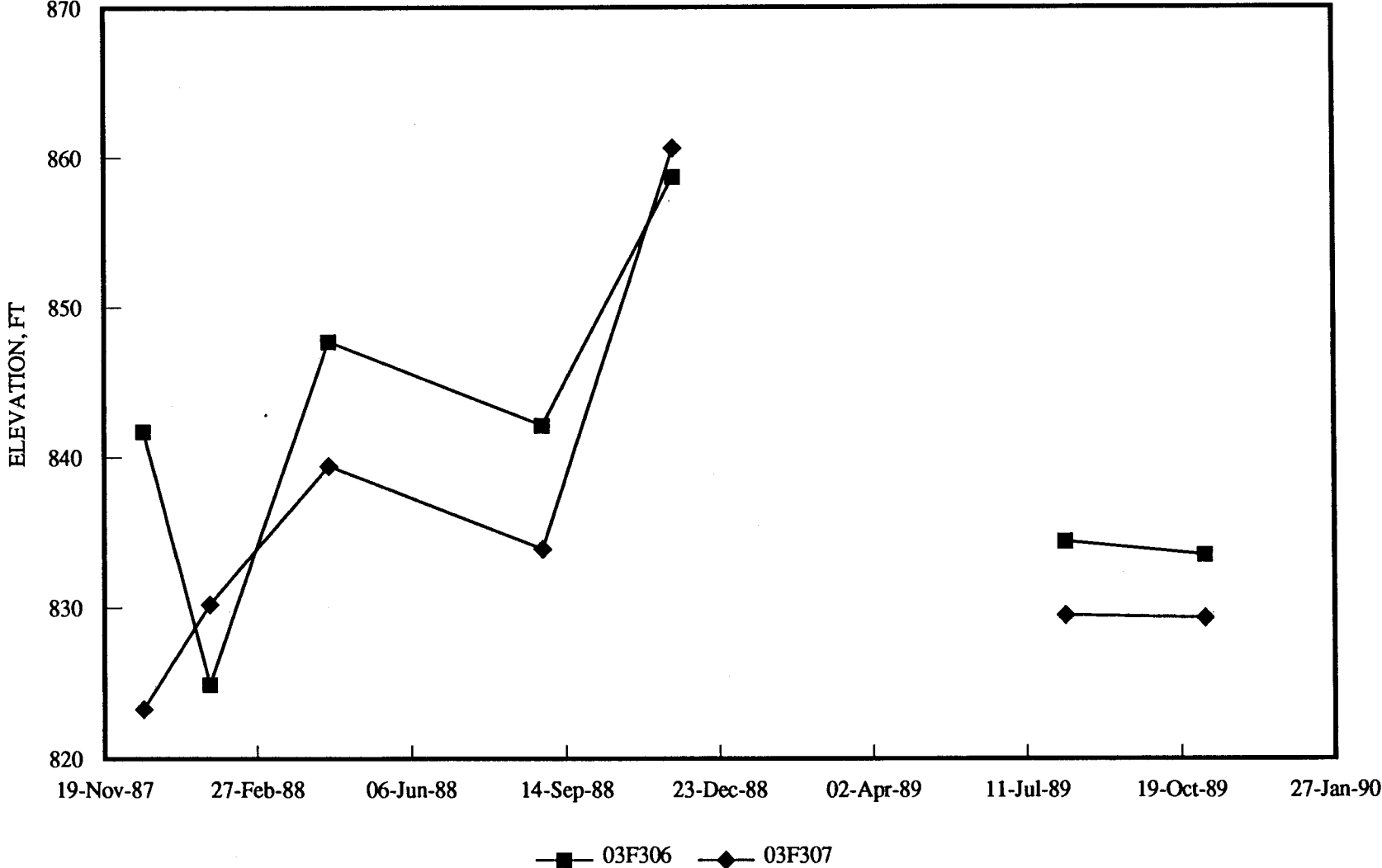


Figure 4-58, SOUTHWEST BOUNDARY PUMPING WELLS, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

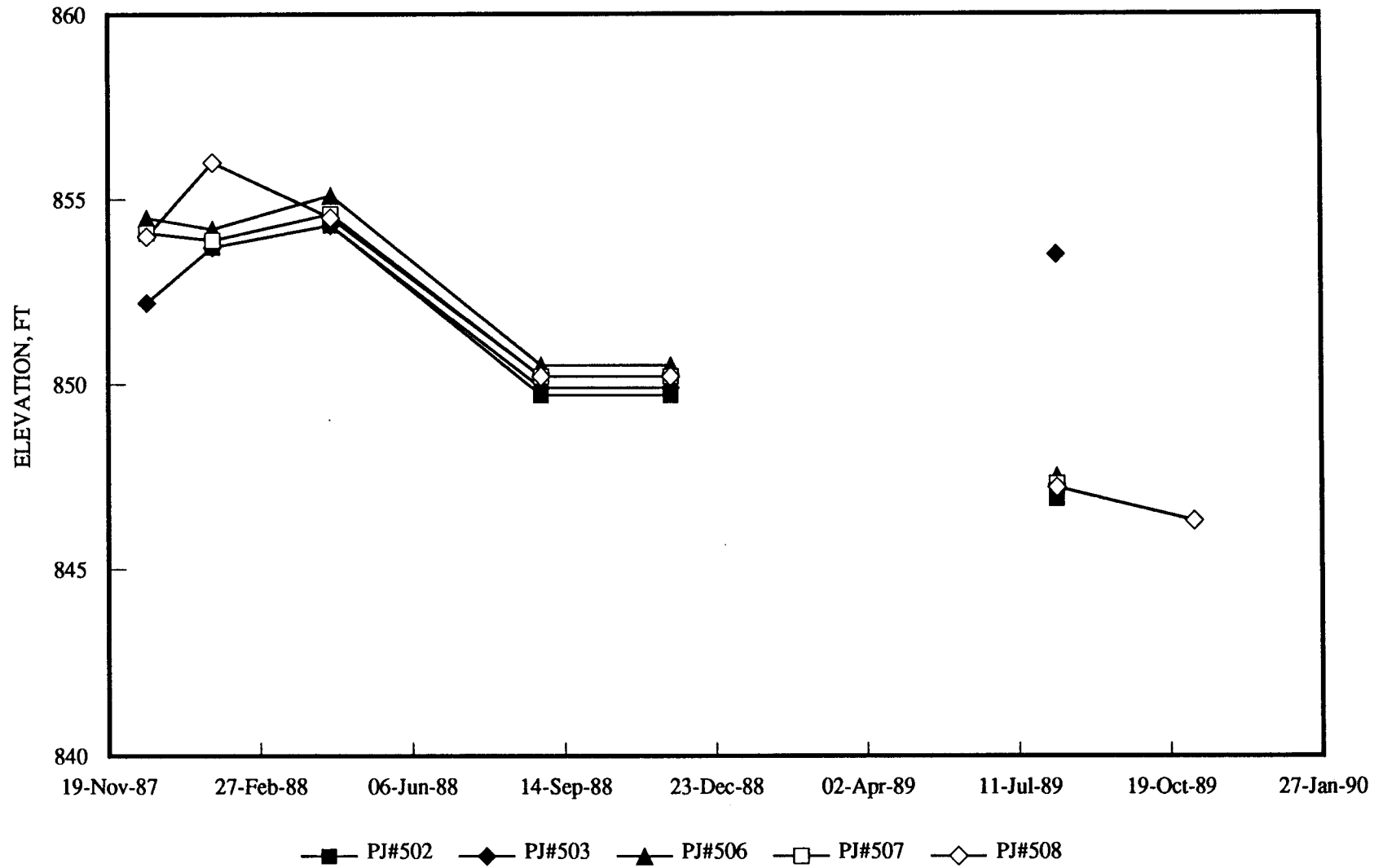


Figure 4-59, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

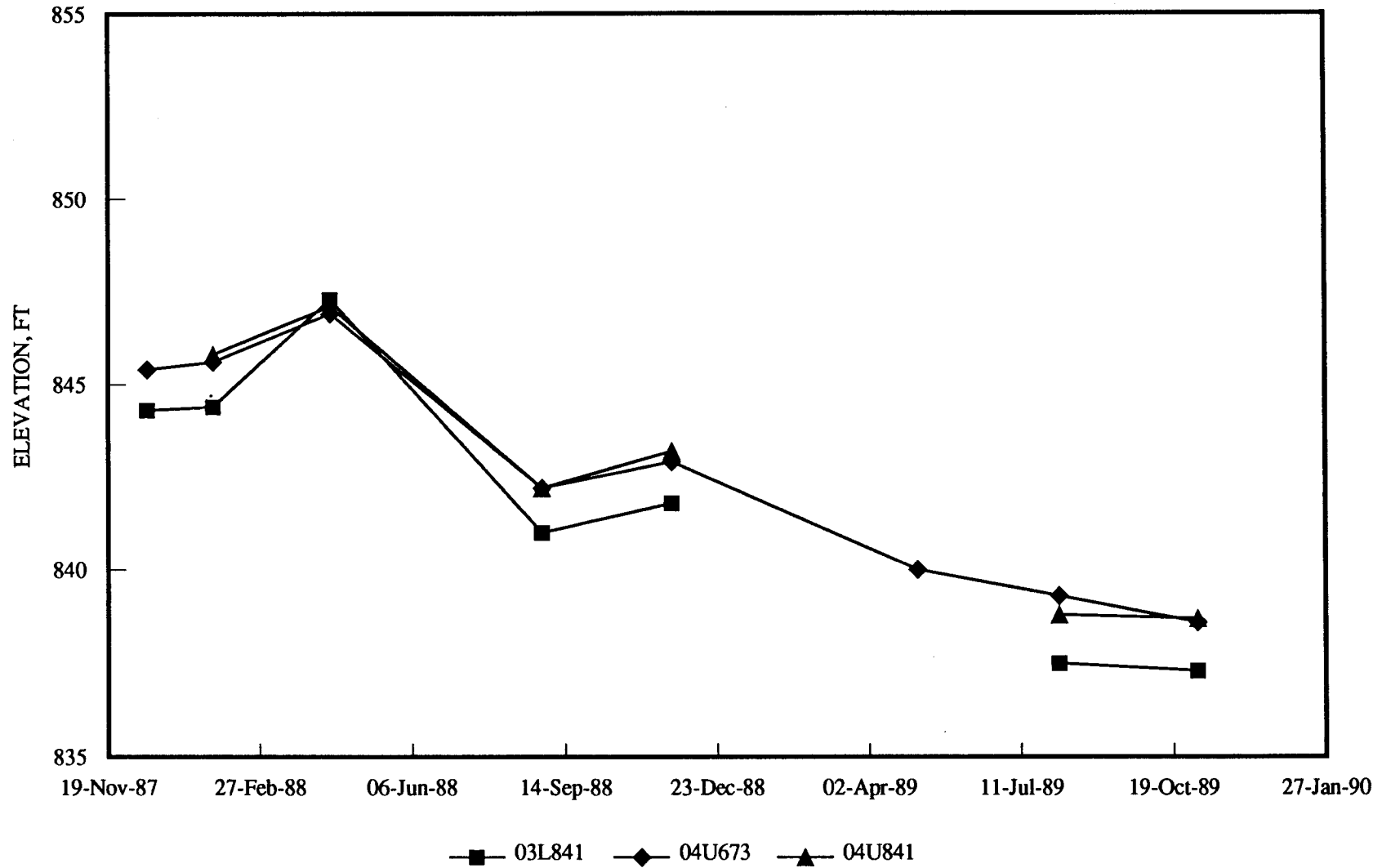


Figure 4-60, HIGHWAY 96,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

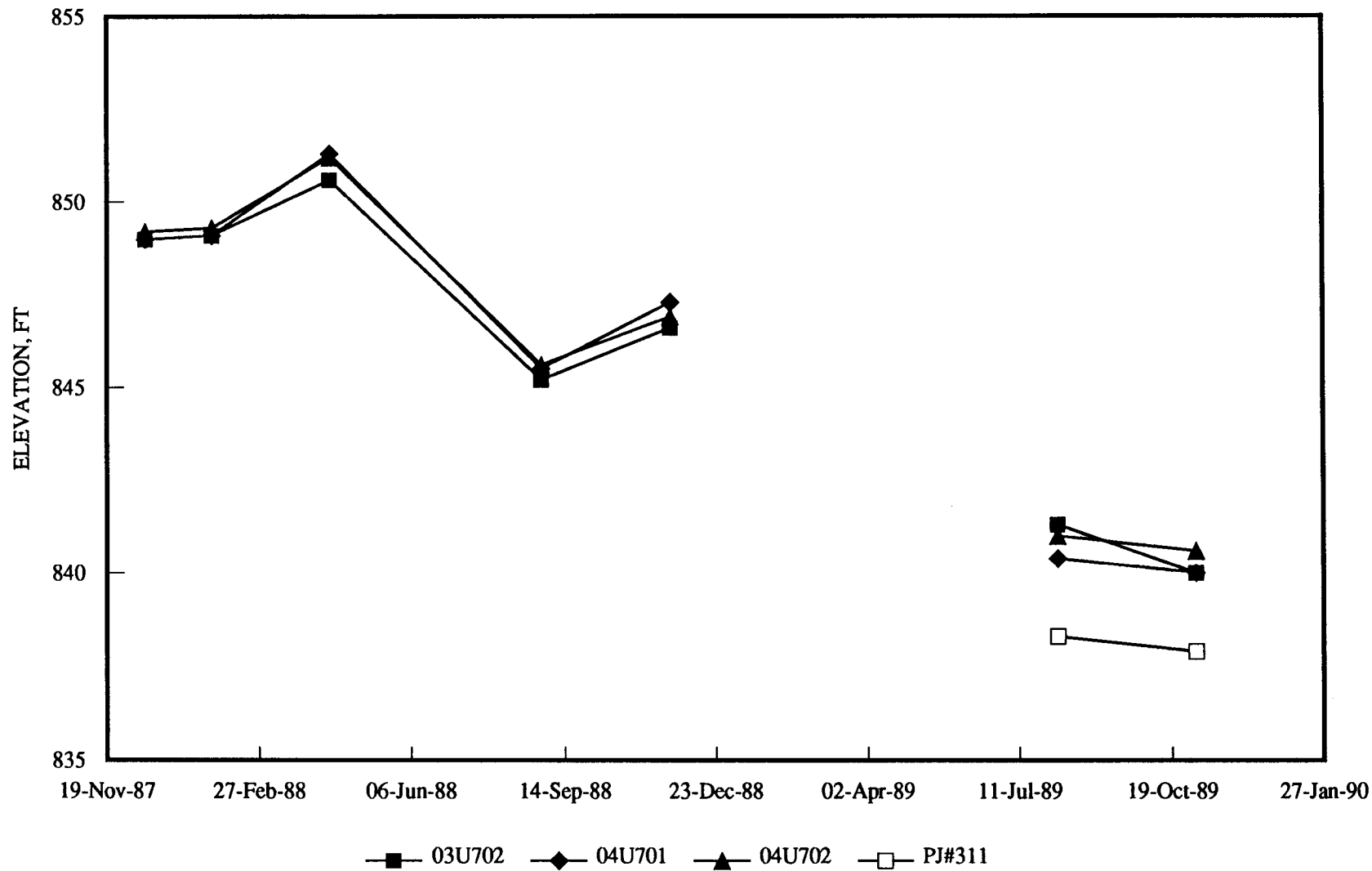


Figure 4-61, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

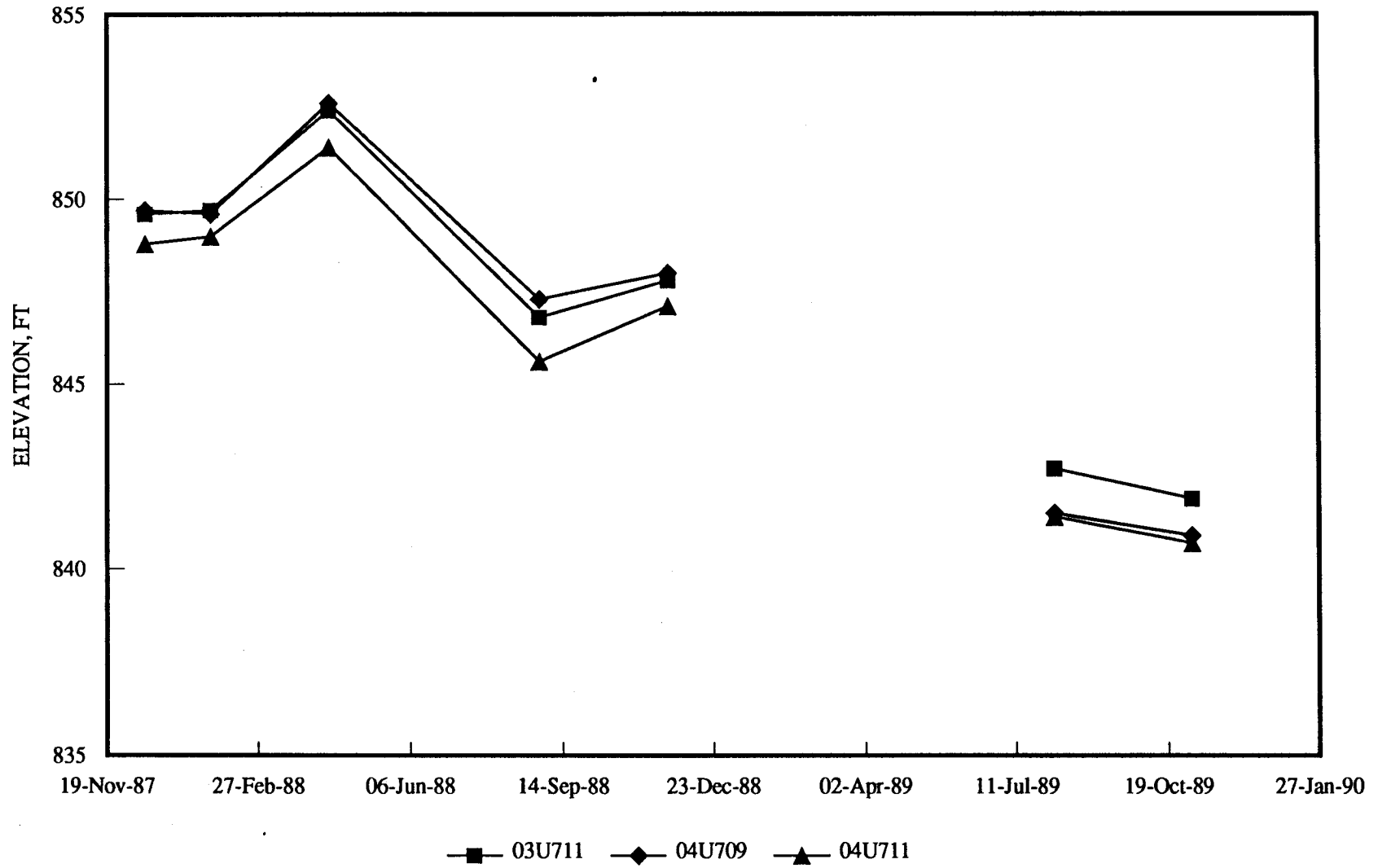


Figure 4-62, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

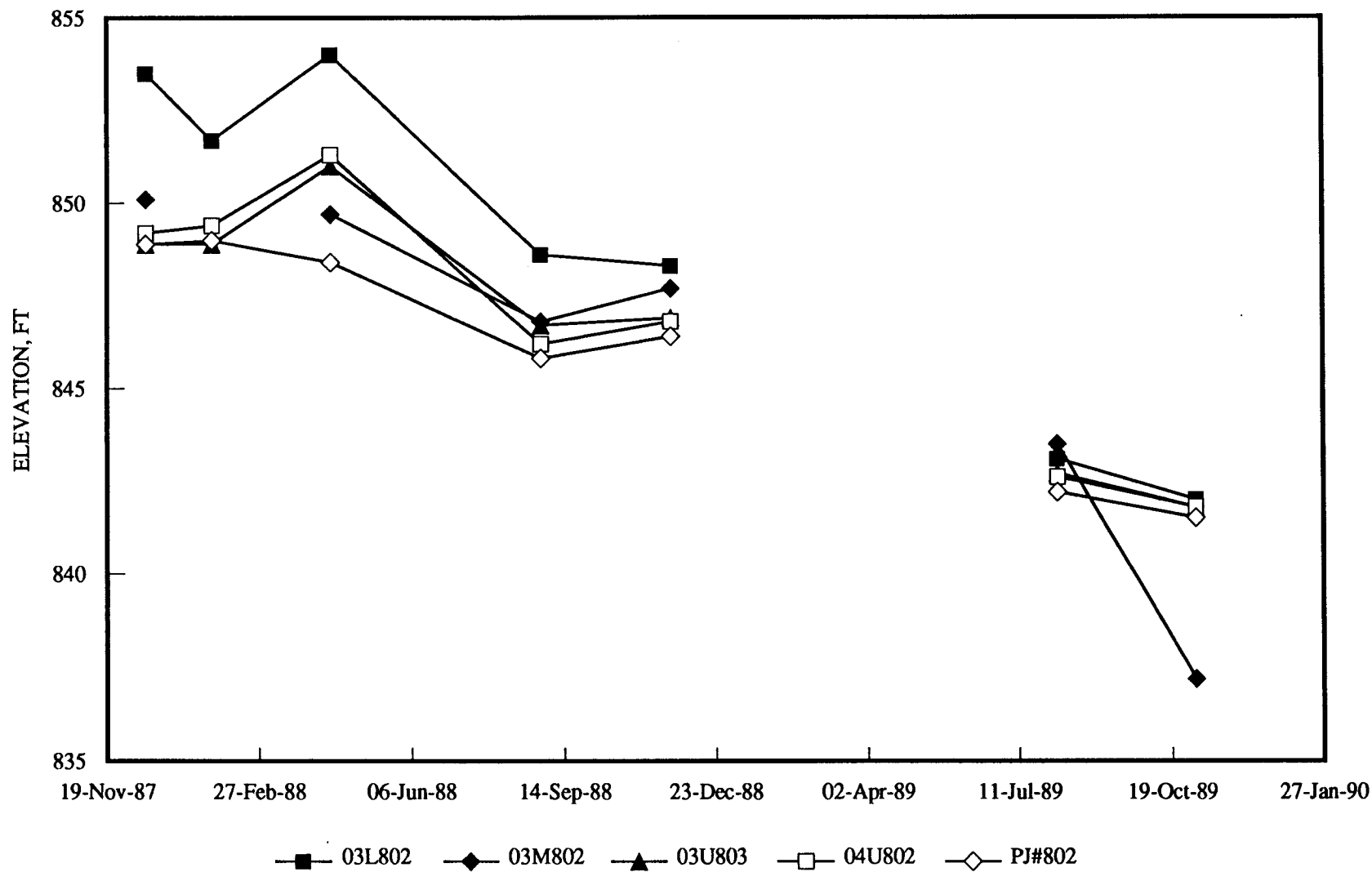


Figure 4-63, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

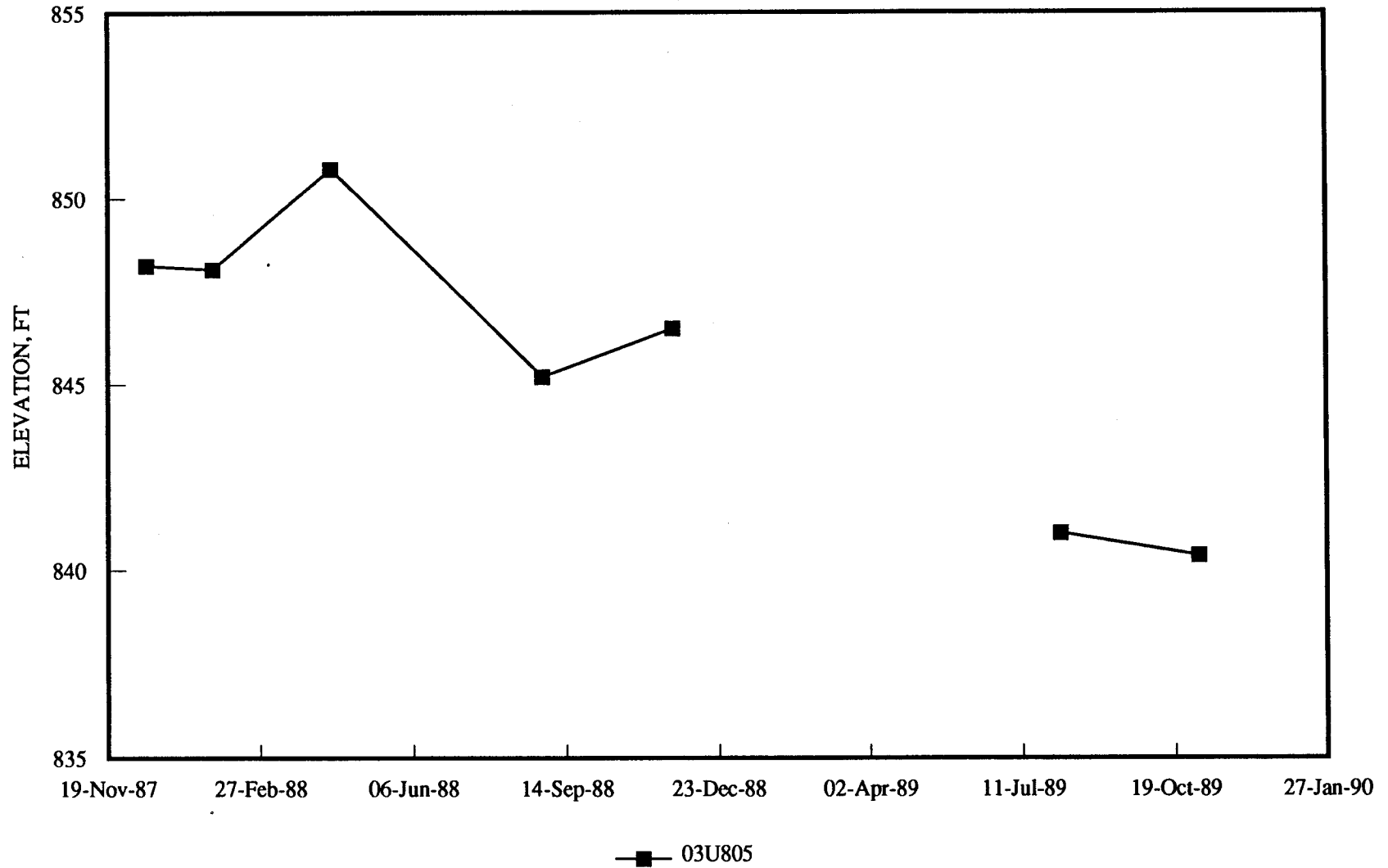


Figure 4-64, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

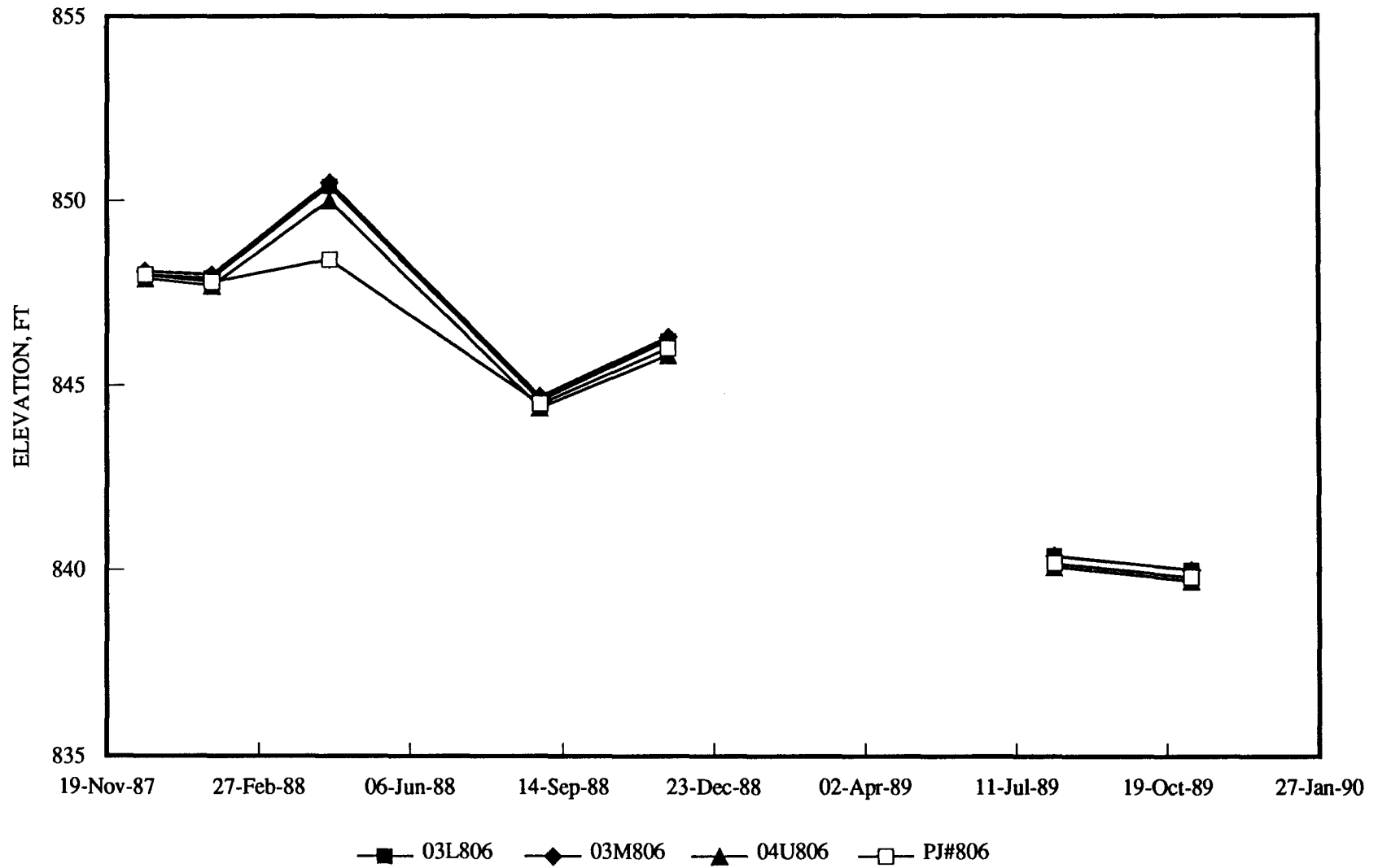


Figure 4-65, SOUTHWEST BOUNDARY, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

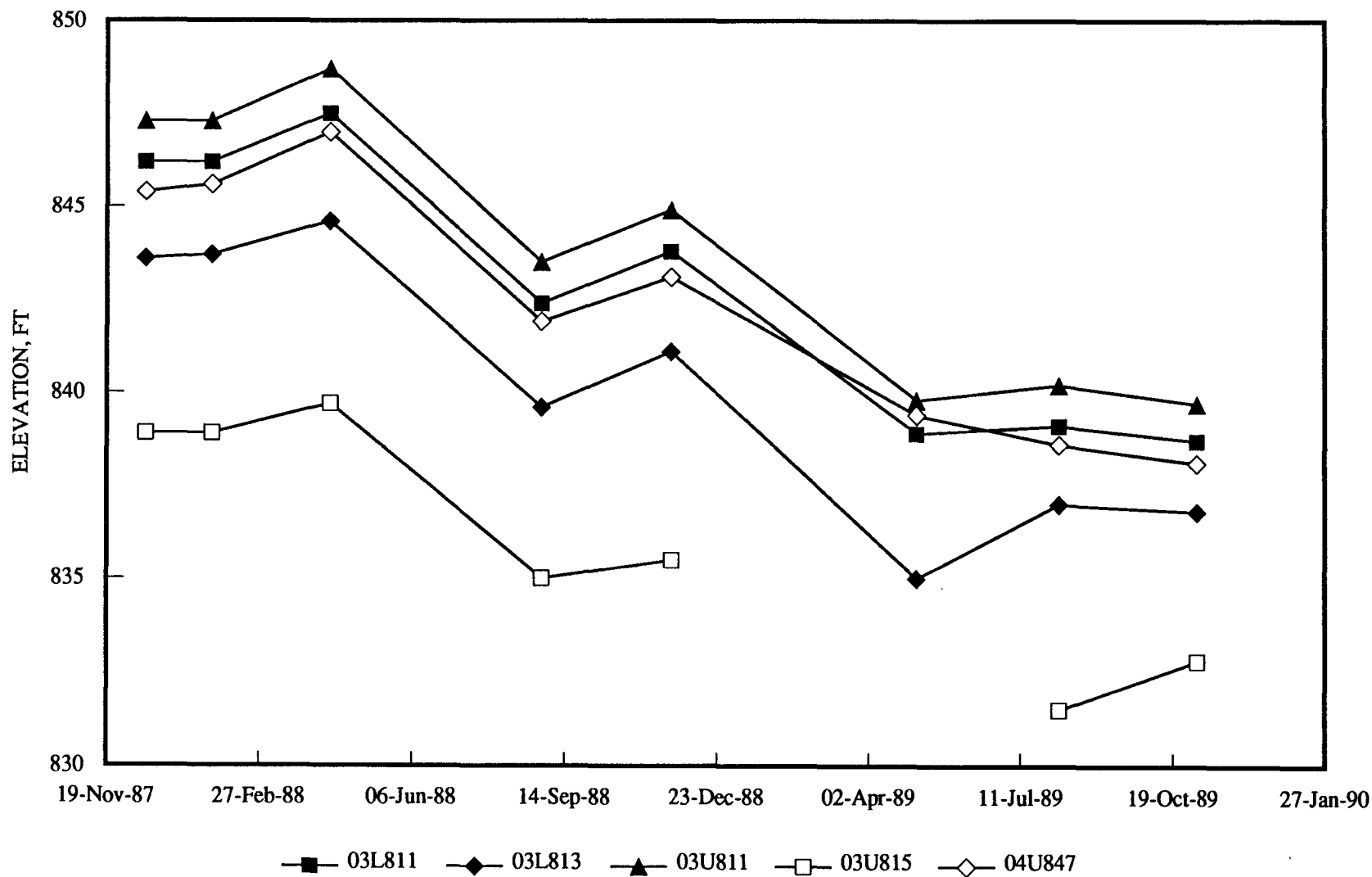


Figure 4-66, NORTH OF RUSH LAKE, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

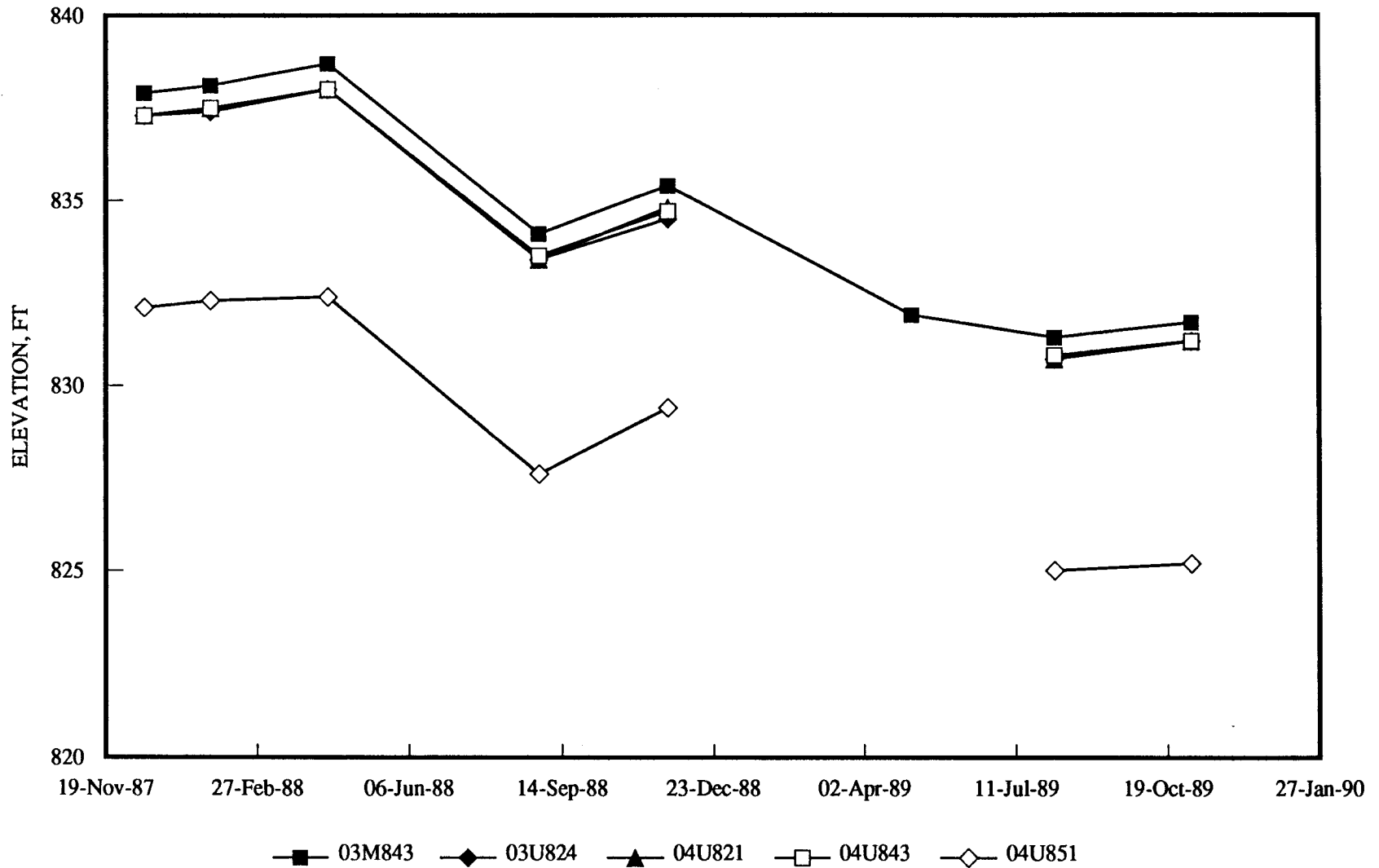


Figure 4-67, BETWEEN RUSH AND LONG LAKE, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

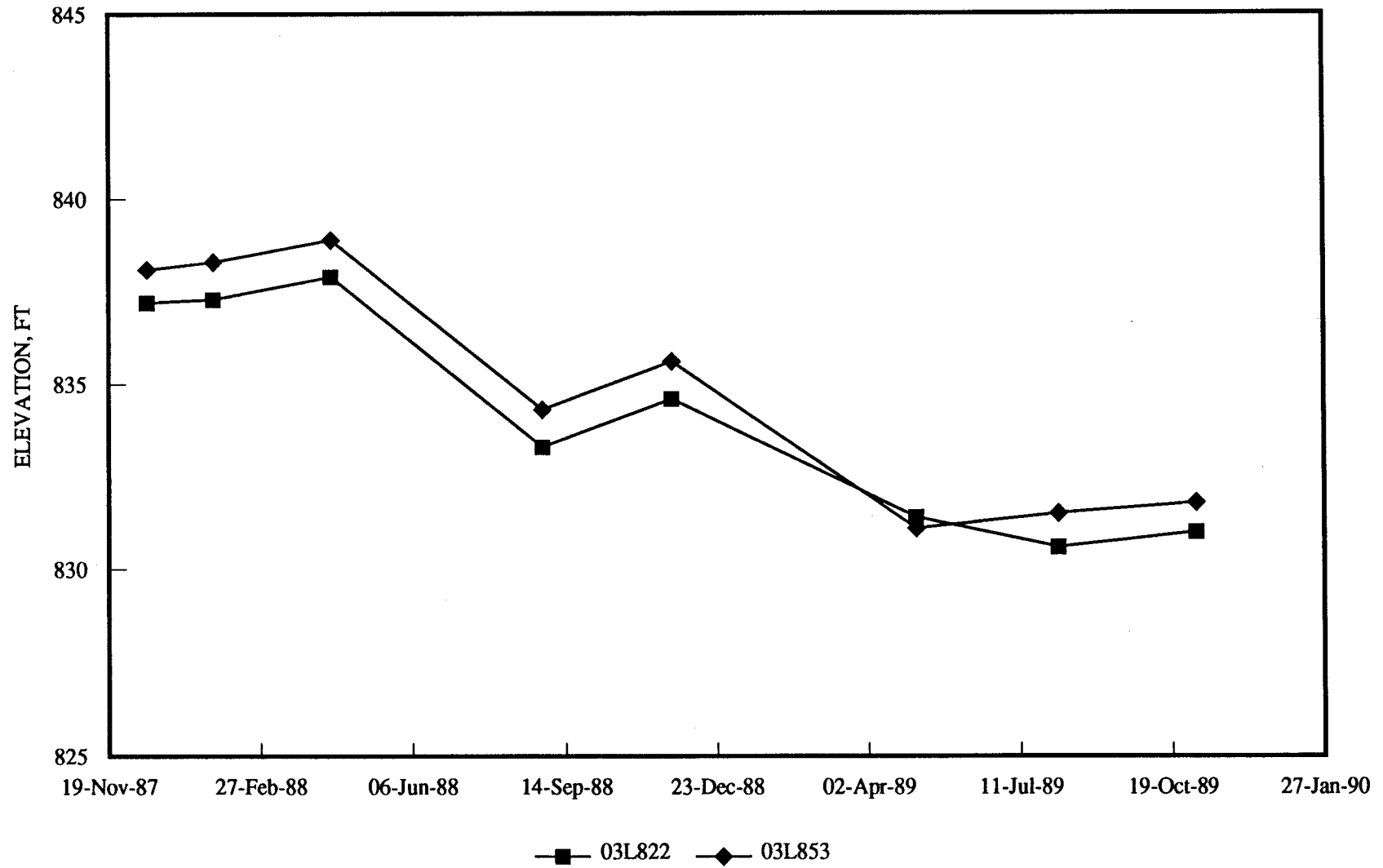


Figure 4-68, BETWEEN RUSH AND LONG LAKE, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

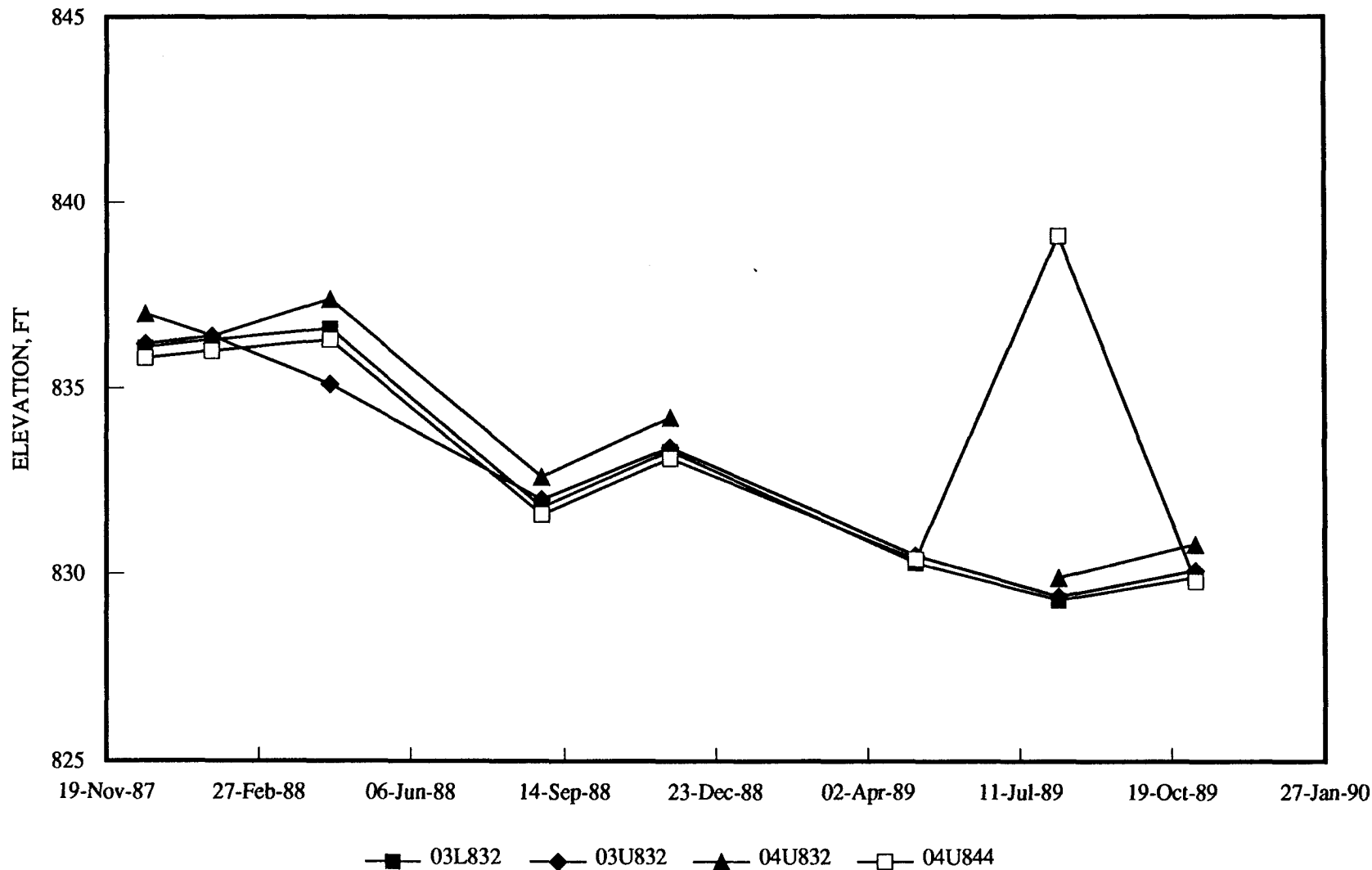


Figure 4-69, NORTHWEST OF HIGHWAY 694/35W INTERSECTION, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

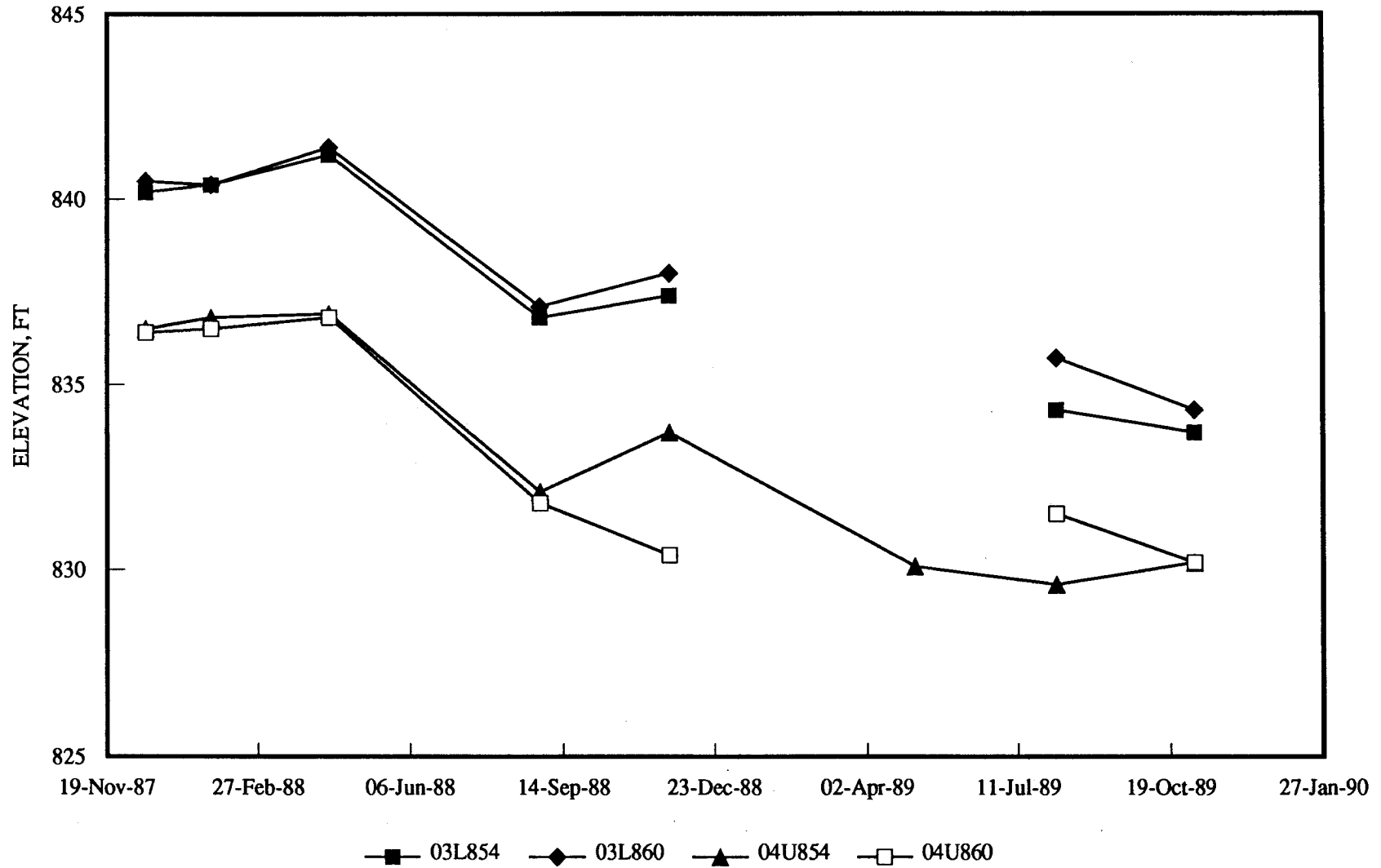


Figure 4-70, ALONG HIGHWAY 35W NORTH OF HIGHWAY 694, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

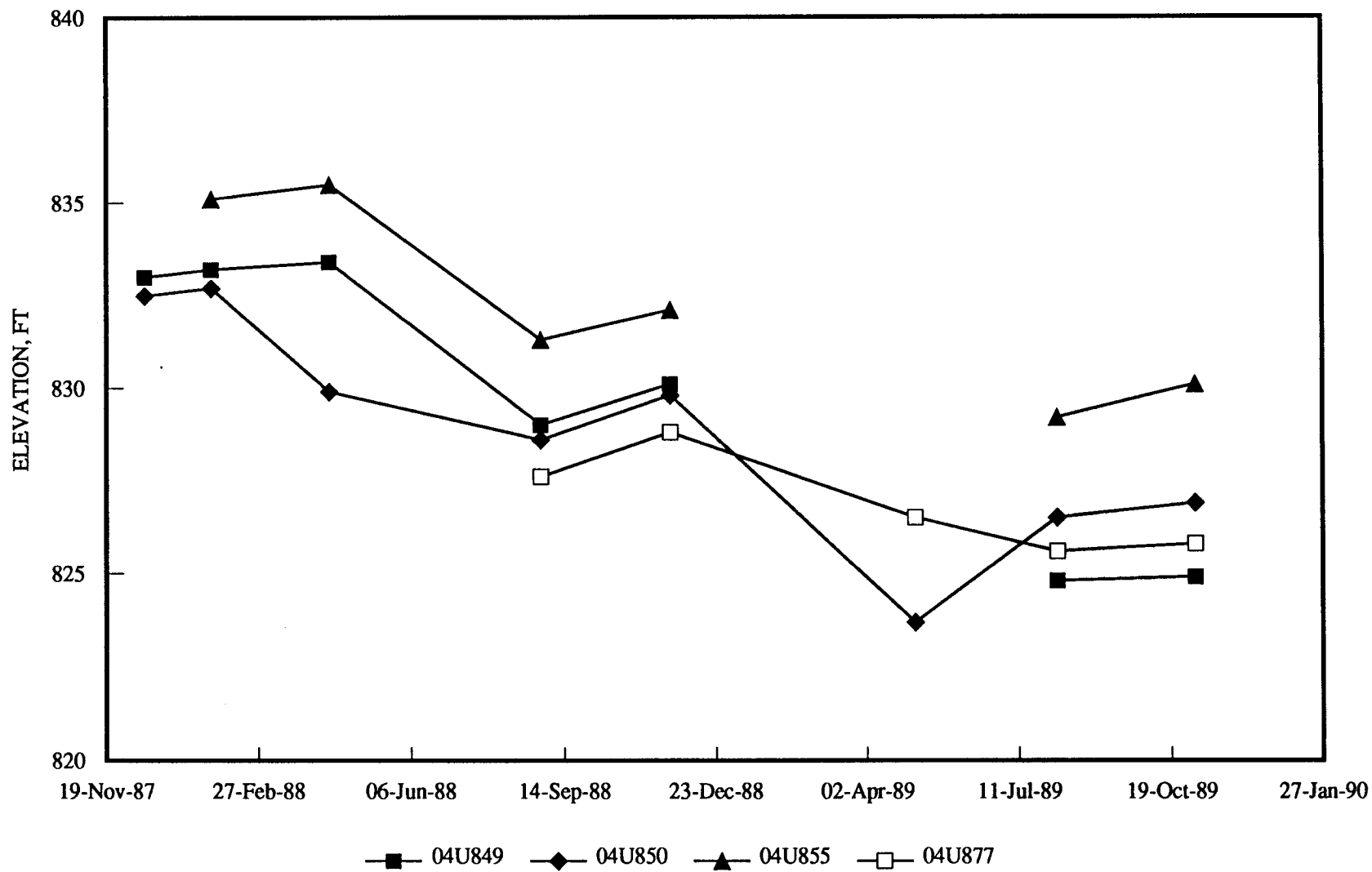


Figure 4-71, PIKE LAKE AREA, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

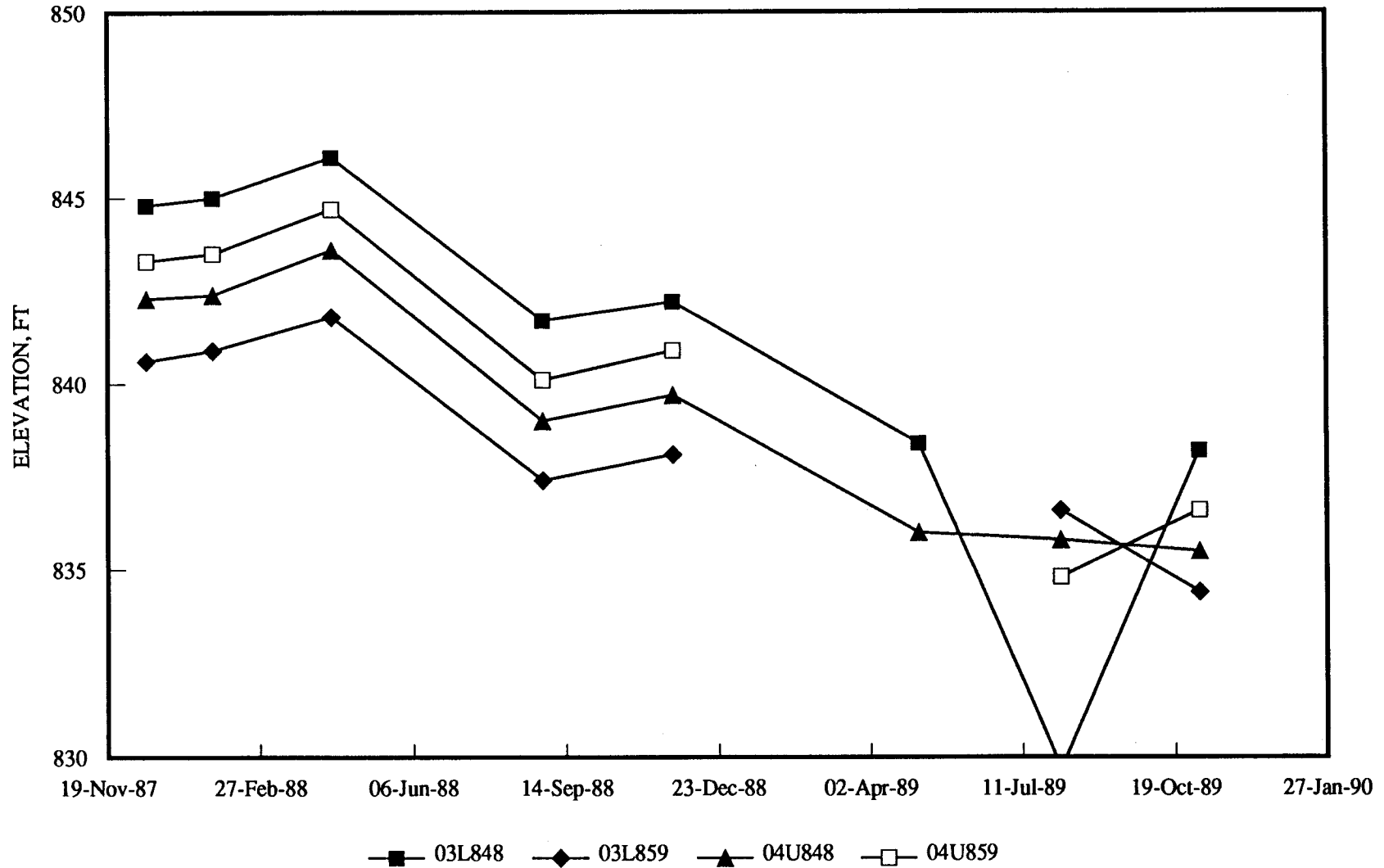


Figure 4-72, BETWEEN RUSH AND ROUND LAKE, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

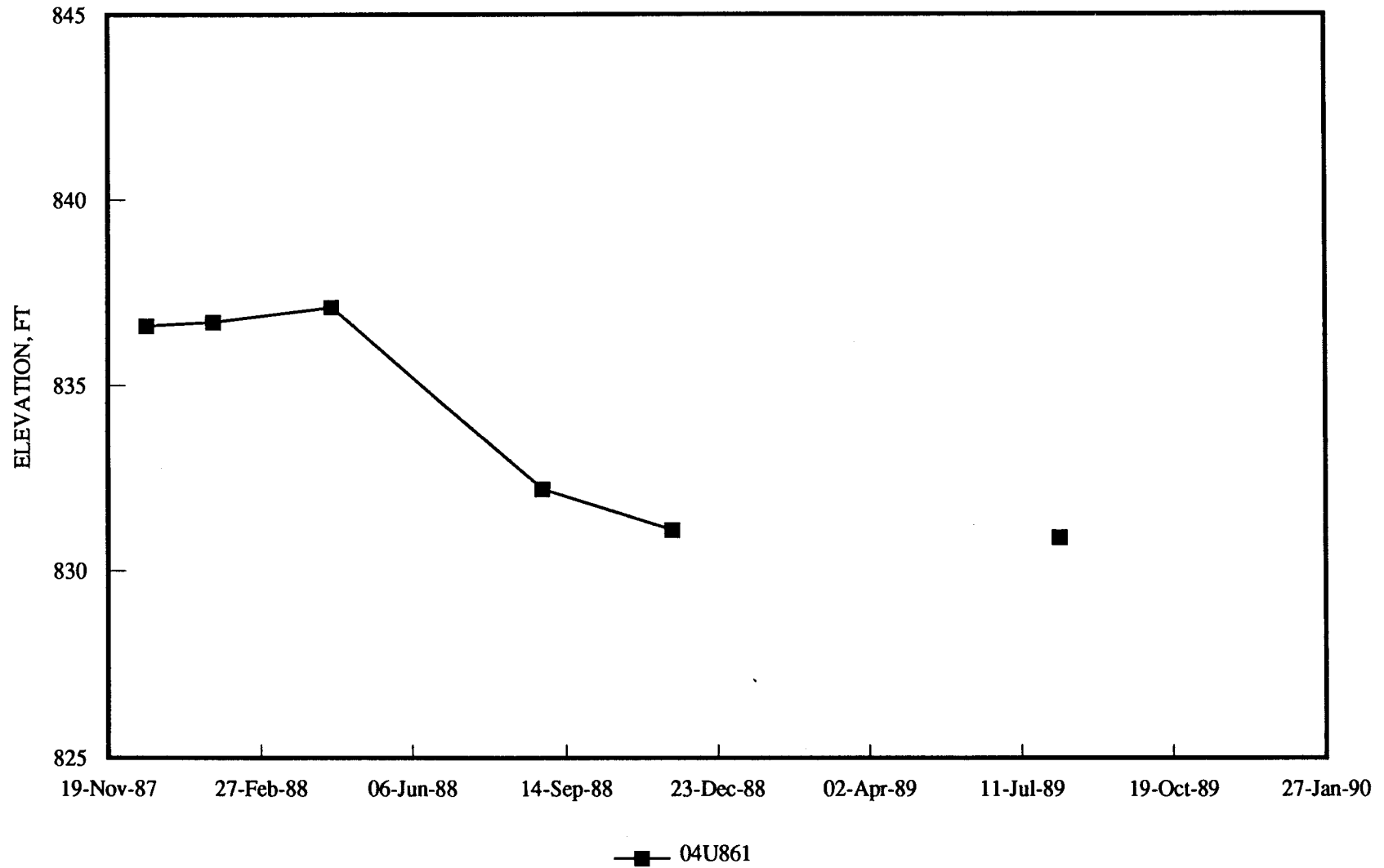


Figure 4-73, NORTHWEST OF HIGHWAY 694/35W INTERSECTION, March 1990  
WENCK ASSOCIATES, INC.



# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

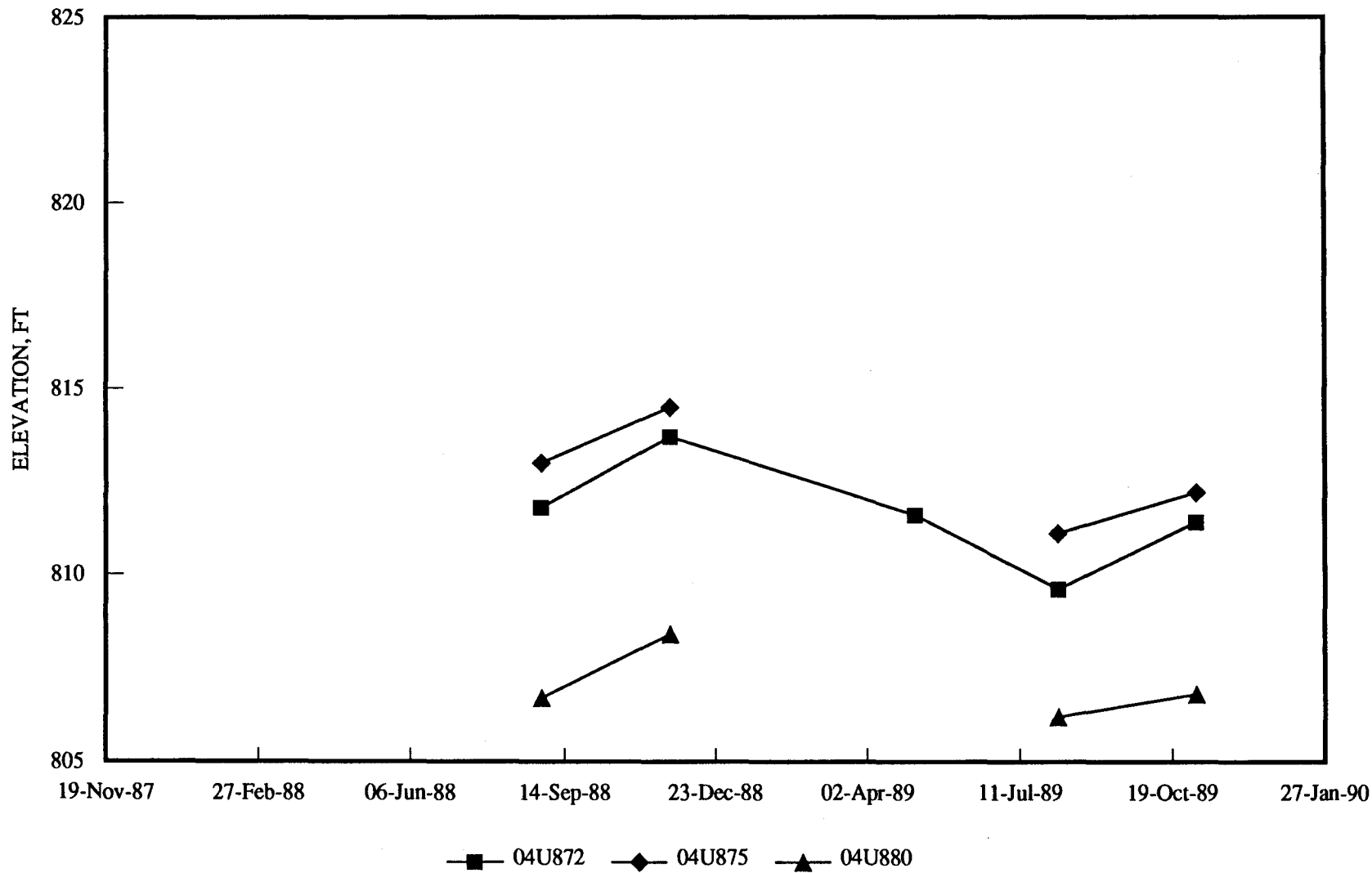


Figure 4-74, SILVER LAKE AREA,  
WENCK ASSOCIATES, INC.

March 1990

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

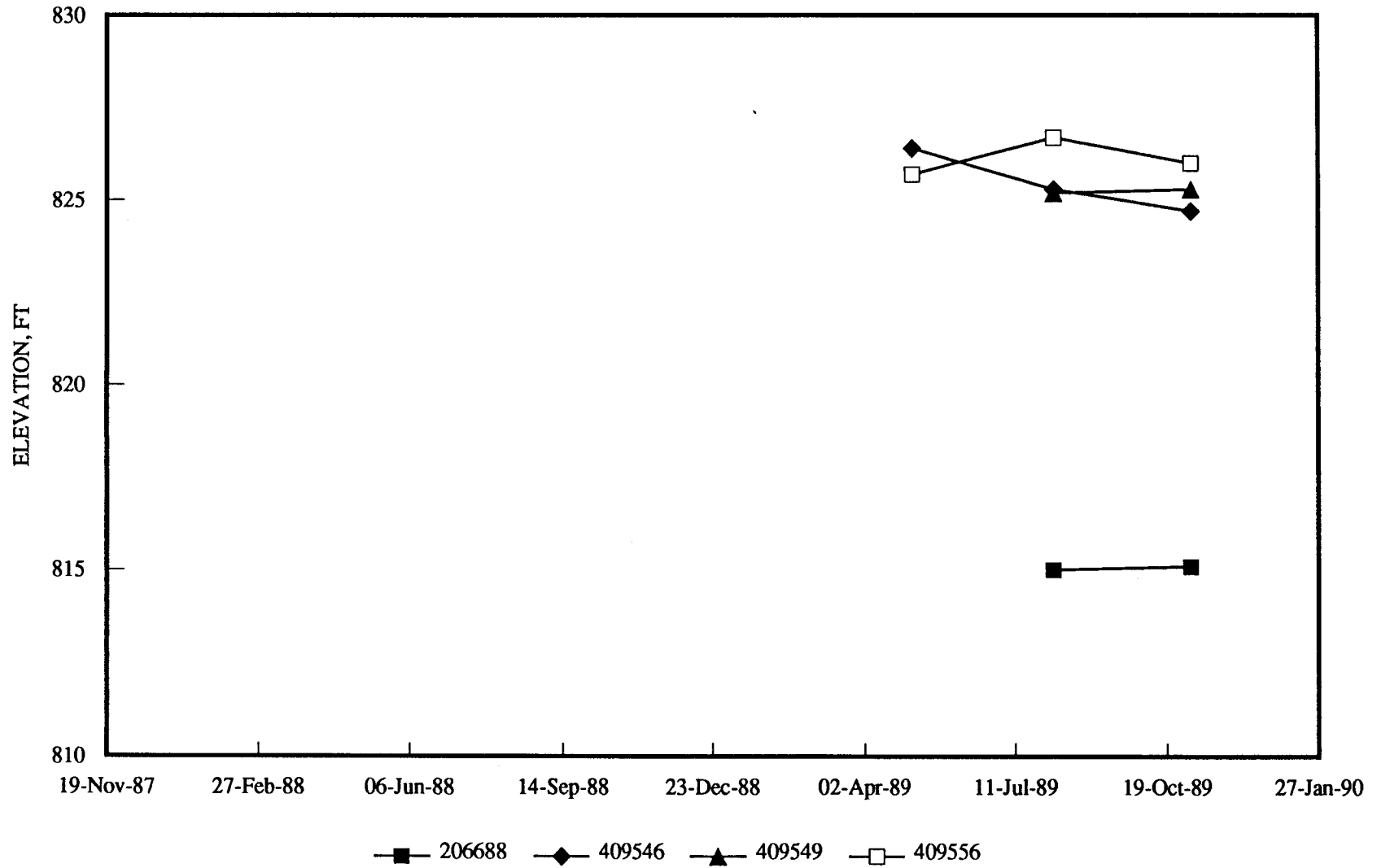


Figure 4-75, HIGHWAY 694 WEST OF 35W, March 1990  
WENCK ASSOCIATES, INC.

# GROUNDWATER HYDROGRAPHS

TWIN CITIES ARMY AMMUNITION PLANT

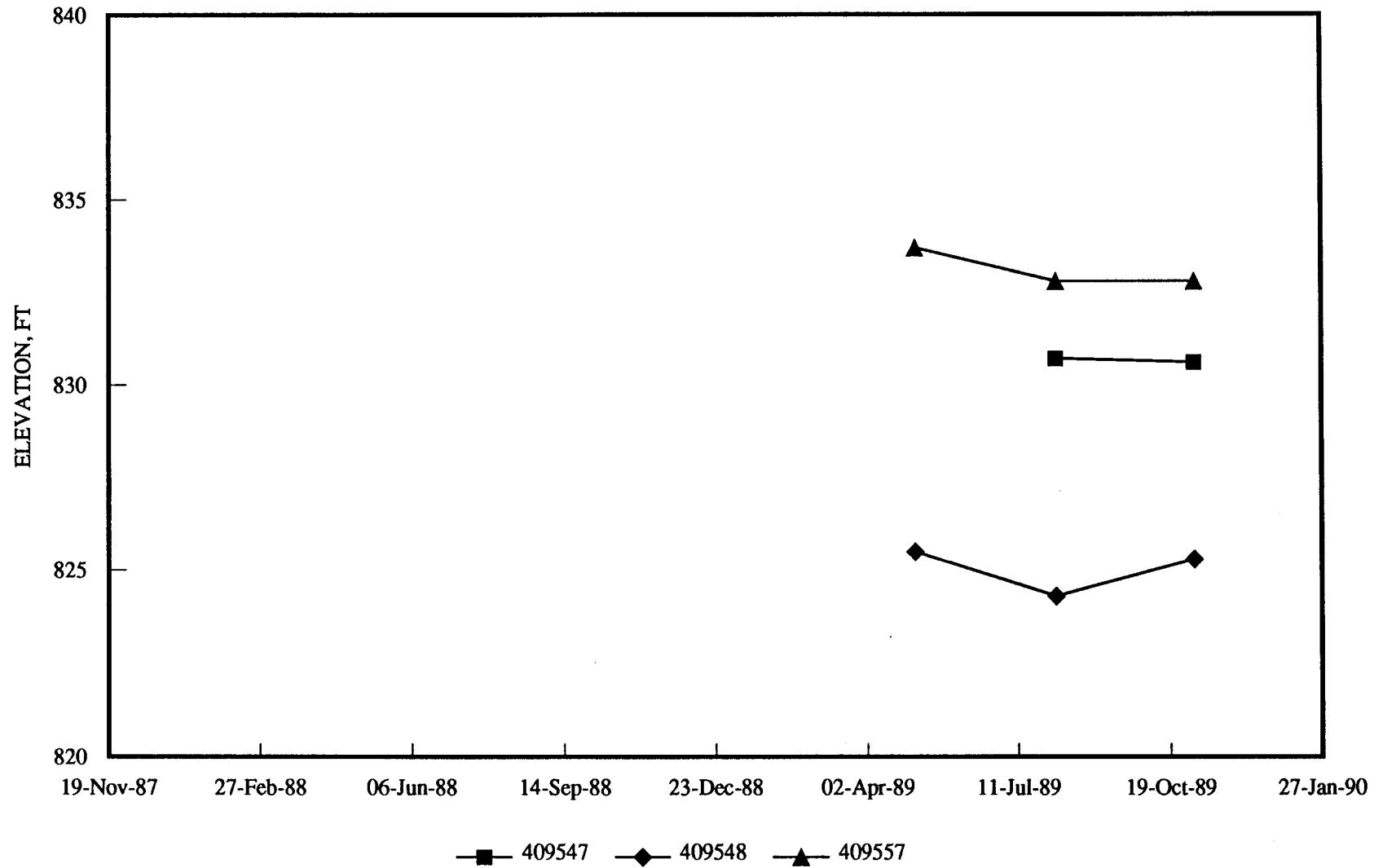


Figure 4-76, HIGHWAY 35 W NORTH OG HIGHWAY 694, March 1990  
WENCK ASSOCIATES, INC.

**SECTION 5**

**GROUNDWATER LEVEL CONTOUR MAPS**

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500ft

TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

LE SERIES

CO. RD. G

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HE1U22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.1.1.1



LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2000 ft.

TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

RICE CREEK

RICE LAKE

LONG LAKE

RUSH LAKE

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 871.10

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

HE1U24-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.1.1.3

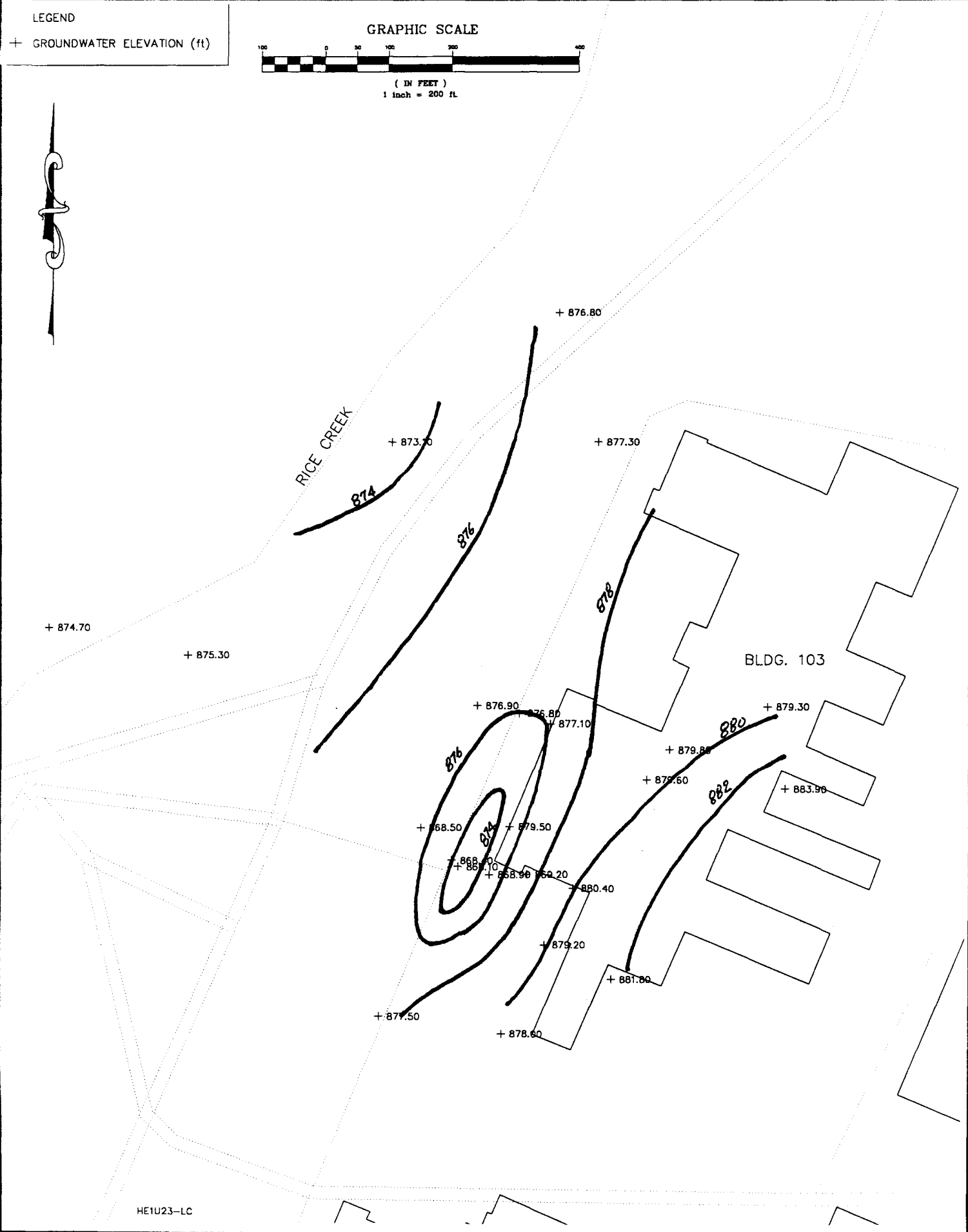
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



HE1U23-LC

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LC-Series, Summer Quarter 1989(Q23)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.1.2.1



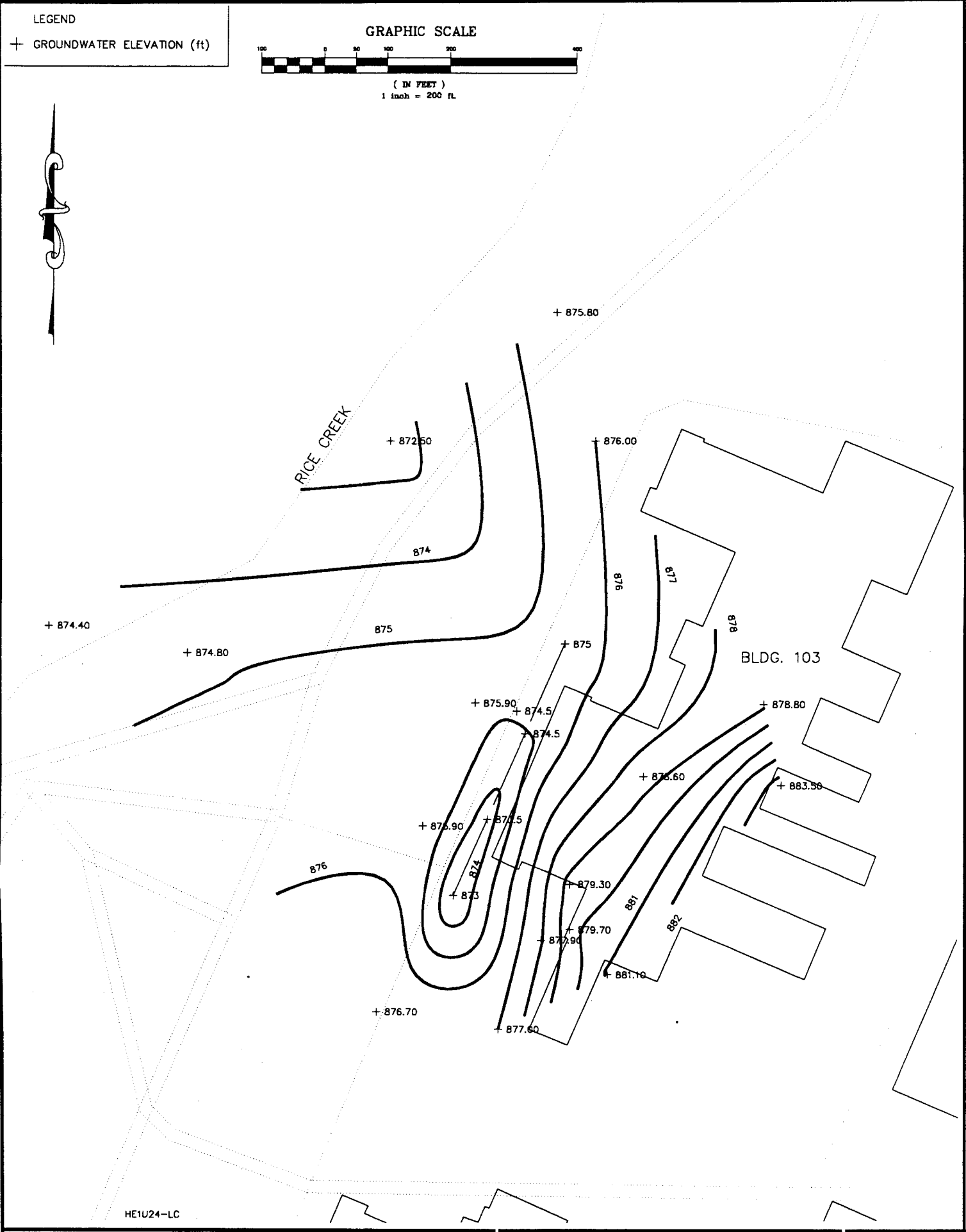
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



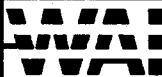
( IN FEET )  
1 inch = 200 ft.



HE1U24-LC

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LC-Series, Fall Quarter 1989(Q24)



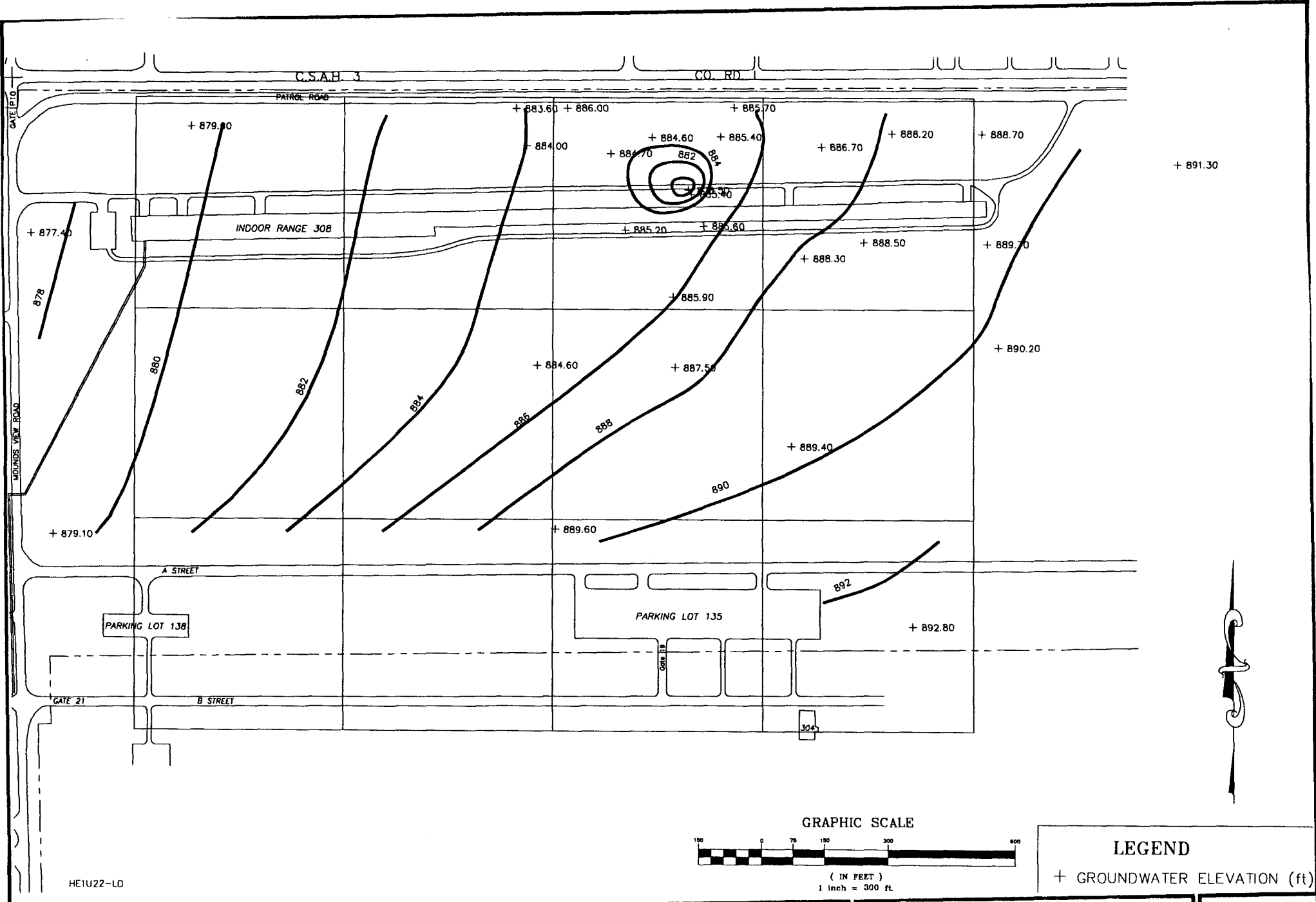
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.1.2.2



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Contours, Unit 1, LD-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

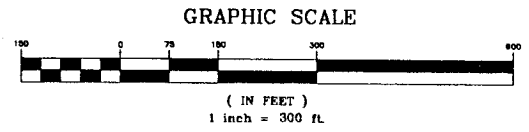
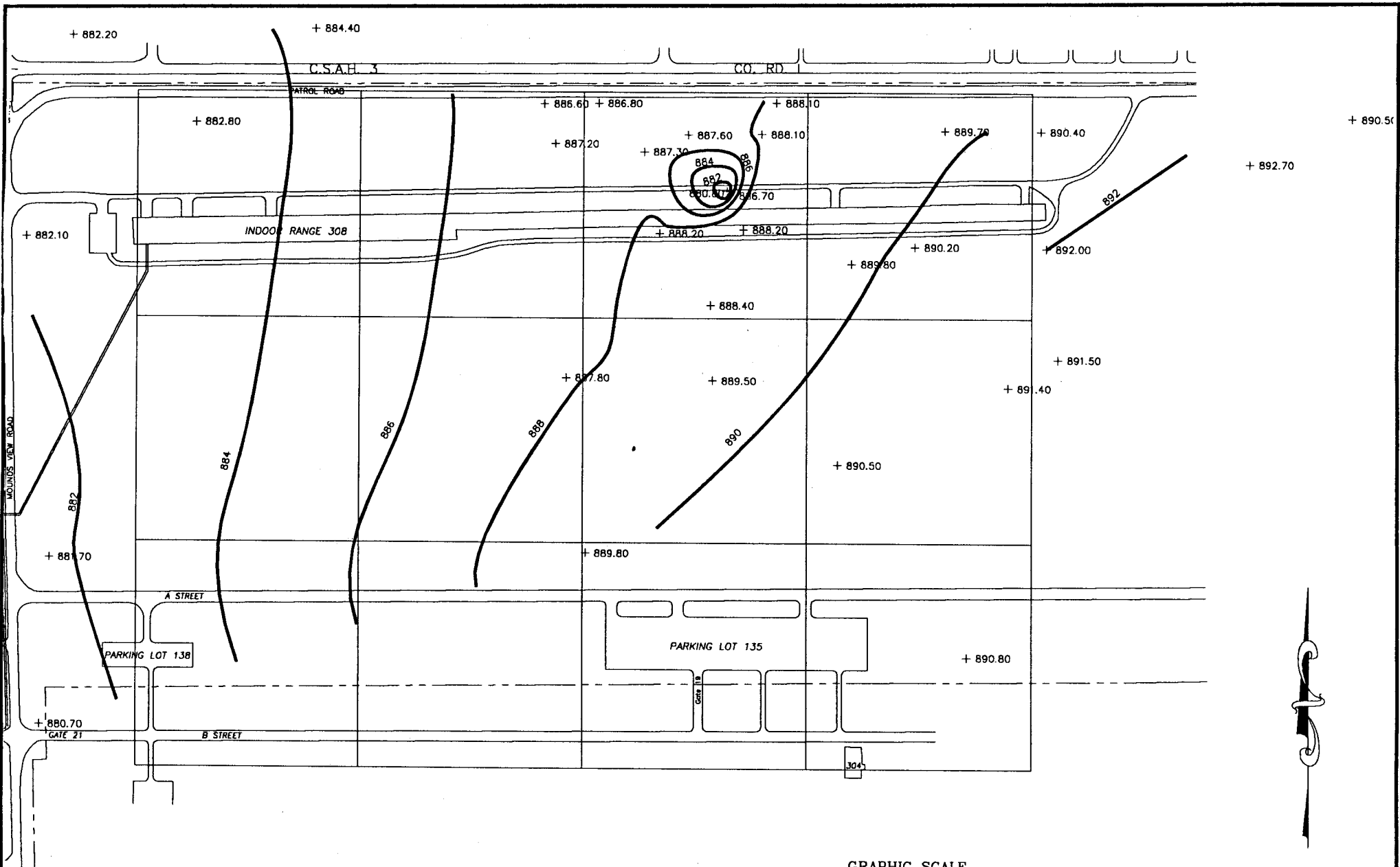
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**LEGEND**

+ GROUNDWATER ELEVATION (ft)

**MAR 1990**

5.1.3.1



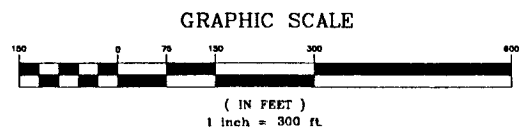
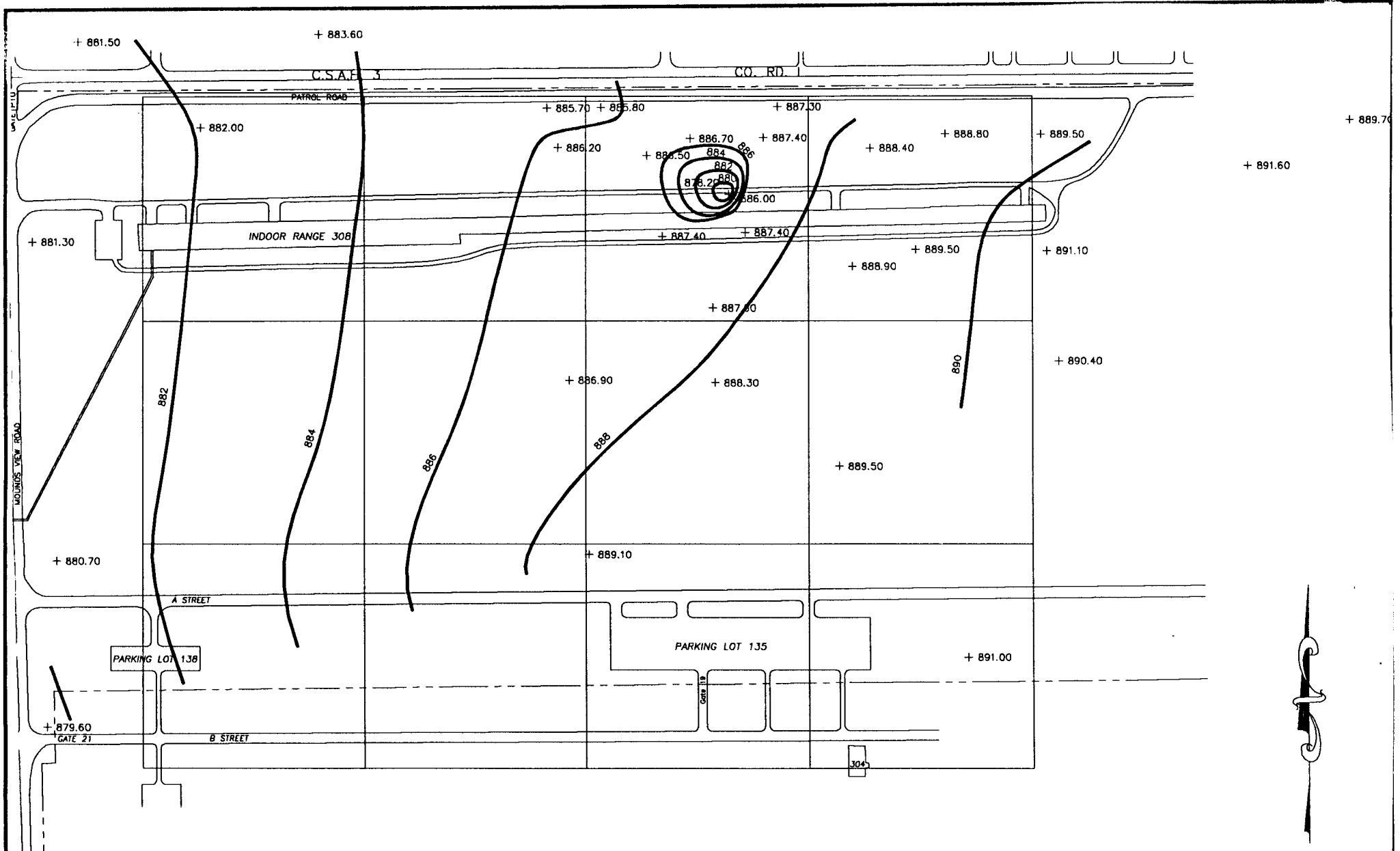
**LEGEND**  
 + GROUNDWATER ELEVATION (ft)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Level Contours, Unit 1, LD-Series, Summer Quarter 1989(Q23)

**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 5.1.3.2

HF11123-10



**LEGEND**  
 + GROUNDWATER ELEVATION (ft)

HE1U24-LD

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Contours, Unit 1, LD-Series, Fall Quarter 1989(Q24)

**Wenck Associates, Inc.**

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**

5.1.3.3

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 839.80

+ 838.60

RUSH LAKE

+ 831.20

+ 831.30

LAKE

ROUND LAKE

+ 831.20

+ 830.50

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

3U22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Upper Unit 3,  
LB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

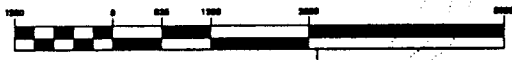
MAR 1990

5.2.1.1

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2000ft.

LD SERIES

CO. RD. I

TCAAP BOUNDARY

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

+ 831.50

LAKE

+ 830.80

+ 830.60

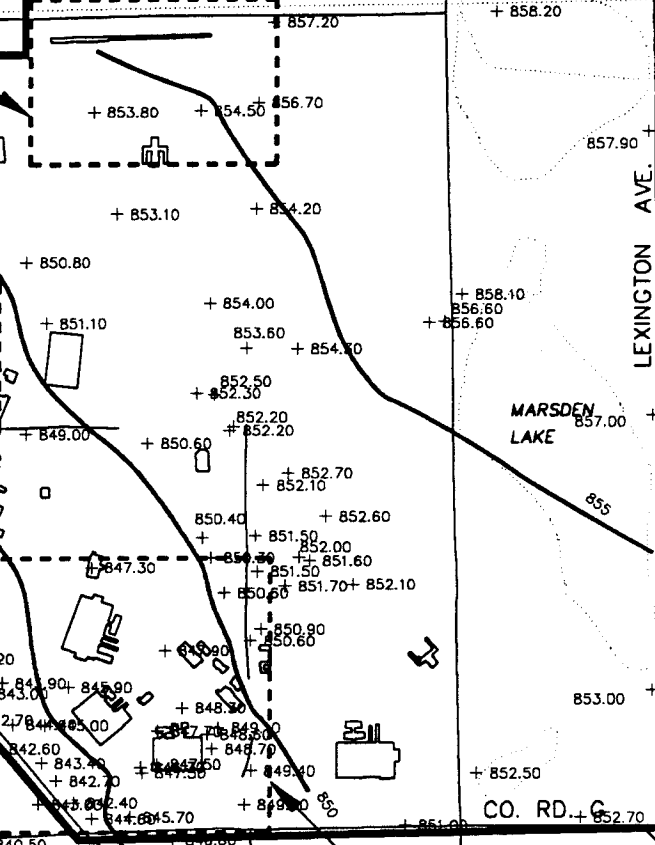
+ 830.70

+ 830.90

+ 829.40

U.S. INT. 694

U.S. INT. HWY. 35W



MARSDEN LAKE

+ 857.00

+ 853.00

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. HWY. 10

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

HE3U23-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,  
Upper Unit 3, LB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.2.1.2

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

857.70

+ 859.90

853.00

+ 854.20

854.50

857.10

859.80+

+ 853.00

+ 854.20

+ 850.90

+ 853.60

+ 857.40

+ 856.60

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

857.90+

RICE

+ 847.90

+ 844.70

+ 848.80

850.00

851.80

+ 851.90

+ 851.30

+ 852.80

855.60

+ 851.90

+ 851.80

+ 850.60

+ 850.90

+ 850.50

+ 850.70+

851.10

852.90

+ 841.60

+ 849.70

+ 845.80

+ 850.00

+ 849.80

+ 850.00

LONG

+ 832.80

+ 840.00

+ 841.40

+ 841.70

+ 843.20

+ 842.40

+ 843.90

+ 841.90

+ 842.50

+ 841.80

+ 842.30

+ 843.0

+ 839.40

+ 843.20

+ 842.40

+ 843.90

+ 841.90

+ 842.50

+ 841.80

+ 842.30

+ 843.0

+ 839.40

+ 843.20

+ 842.40

+ 843.90

+ 841.90

+ 842.50

+ 841.80

+ 842.30

+ 843.0

+ 839.40

+ 843.20

+ 842.40

+ 843.90

+ 841.90

+ 842.50

+ 841.80

+ 842.30

+ 843.0

+ 839.40

+ 851.20

CO. RD. G

+ 851.50

+ 831.30

+ 831.10

+ 831.20

+ 830.10

LE SERIES

U.S. INT. 694

U.S. INT. 694

U.S. INT. HWY. 35W

U.S. HWY. 10

HAMLIN AVE.

ST. HWY. 51

LEXINGTON AVE.

U.S. INT. 694

CO. RD. E

HE3U24-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,  
Upper Unit 3, LB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.2.1.3

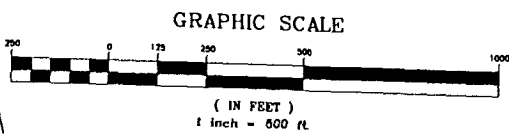




NOTE:

TO VIEW DETAILED  
GROUNDWATER  
CONTOURS IN THIS  
AREA, SEE PART II  
OF THE 1989 TCAAP  
ANNUAL MONITORING  
REPORT BY  
HONEYWELL/CRA.

**LEGEND**  
+ GROUNDWATER ELEVATION (ft)



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Contours, Upper Unit 3, LE-Series, Fall Quarter 1989(Q24)



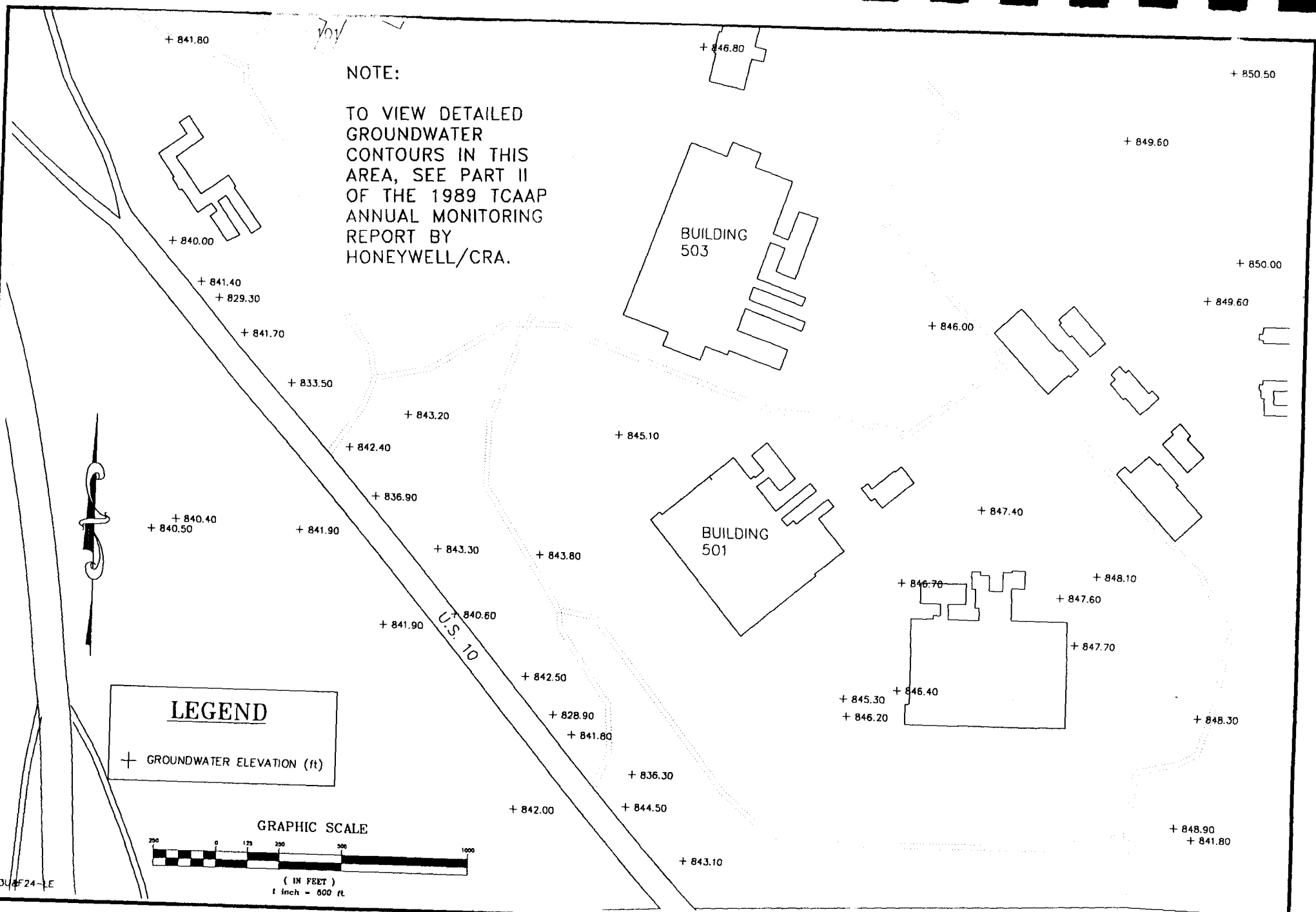
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.2.2.2



LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 831.90

LAKE

CO. RD. G

LAKE

+ 833.70

ROUND LAKE

LE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 825.70

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HE3M22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,

Middle Unit 3, LB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.3.1.1

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

+ 858.20

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

852.80

LEXINGTON AVE.

855

MARSDEN LAKE

CO. RD. H

CREEK

RICE

+ 845.10

850

+ 841.50

+ 847.30

LONG

+ 843.50

+ 842.90

+ 847.50

+ 854.00

RUSH

LAKE

+ 831.30

+ 840.40

+ 842.90

+ 843.50

+ 845.20

+ 850.00

+ 850.50

CO. RD. G

LE SERIES

LAKE

068

+ 832.80

+ 838.00

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 826.70

VALENTINE LAKE

U.S. INT. 694

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HE3M23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,  
Middle Unit 3, LB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.3.1.2

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

+ 859.90

LC SERIES

U.S. HWY. 10

853.50

855

ST. HWY. 65

U.S. INT. HWY. 35W

850

LEXINGTON AVE.

CO. RD. H

CREEK

+ 845.40

MARSDEN LAKE

RICE

+ 841.60

+ 846.80

+ 859.90

LONG

+ 840.00

+ 842.40

+ 847.00

+ 849.90

CO. RD. G

RUSH LAKE

+ 831.70

+ 837.70

LE SERIES

LAKE

+ 832.80

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 826.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HE3M24-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,  
Middle Unit 3, LB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

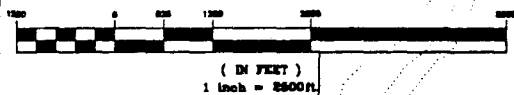
MAR 1990

5.3.1.3

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

+ 835.00

+ 838.90

+ 836.00

+ 839.60

LONG

RUSH

+ 831.10

+ 838.40

+ 831.40

LAKE

ROUND LAKE

LAKE

U.S. HWY. 10

LE SERIES

CO. RD. G

U.S. INT. 694

+ 829.60

+ 826.40

+ 830.30

HAMLIN AVE.

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

LEXINGTON AVE.

MARSDEN LAKE

LEXINGTON AVE.

HE3L22-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,  
Lower Unit 3, LB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

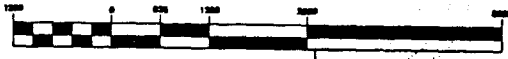
MAR 1990

5.4.1.1

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200ft.

TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

BUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 827.80

+ 825.30

+ 829.30

U.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

HE3L23-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,  
Lower Unit 3, LB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.4.1.2

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

+ 859.50

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

853.50

855

CO. RD. H

CREEK

RICE

+ 845.20

850

MARSDEN LAKE

+ 841.40

+ 851.00

+ 851.40

+ 846.80

+ 849.40

+ 850.90

+ 850.50

+ 850.80

+ 836.80

+ 838.70

+ 840.10

+ 842.00

+ 842.90

+ 843.70

+ 846.20

+ 847.90

+ 848.20

+ 850.80

+ 850.90

+ 852.60

LONG

+ 835.40

835 RUSH

+ 842.50

+ 841.70

+ 843.90

+ 848.90

+ 848.90

CO. RD. G

LAKE

LE SERIES

+ 831.80

+ 838.20

U.S. HWY. 10

HAMLIN AVE.

LAKE

+ 831.00

+ 834.40

ROUND LAKE

LEXINGTON AVE.

+ 835.70

+ 834.30

+ 829.90

+ 827.80

+ 824.70

+ 829.90

VALENTINE LAKE

ST. HWY. 51

U.S. INT. 694

U.S. INT. 694

U.S. INT. HWY. 35W

CO. RD. E

HE3L24-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours,  
Lower Unit 3, LB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.4.1.3

NOTE:

TO VIEW DETAILED  
GROUNDWATER  
CONTOURS IN THIS  
AREA, SEE PART II  
OF THE 1989 TCAAP  
ANNUAL MONITORING  
REPORT BY  
HONEYWELL/CRA.

+ 842.00

101

+ 829.50

+ 840.70

+ 840.40

+ 834.40

+ 842.90

+ 845.20

+ 836.50

+ 847.80

+ 850.70

BUILDING  
503

BUILDING  
501

+ 842.10

+ 849.10

+ 847.80

U.S. 10

+ 843.10

+ 828.60

+ 837.20

+ 842.60

+ 849.60

+ 843.10

+ 843.90

**LEGEND**

+ GROUNDWATER ELEVATION (ft)

**GRAPHIC SCALE**



( IN FEET )  
1 inch = 500 ft.

HE3L&F23-LE

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Contours, Lower Unit 3, LE-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

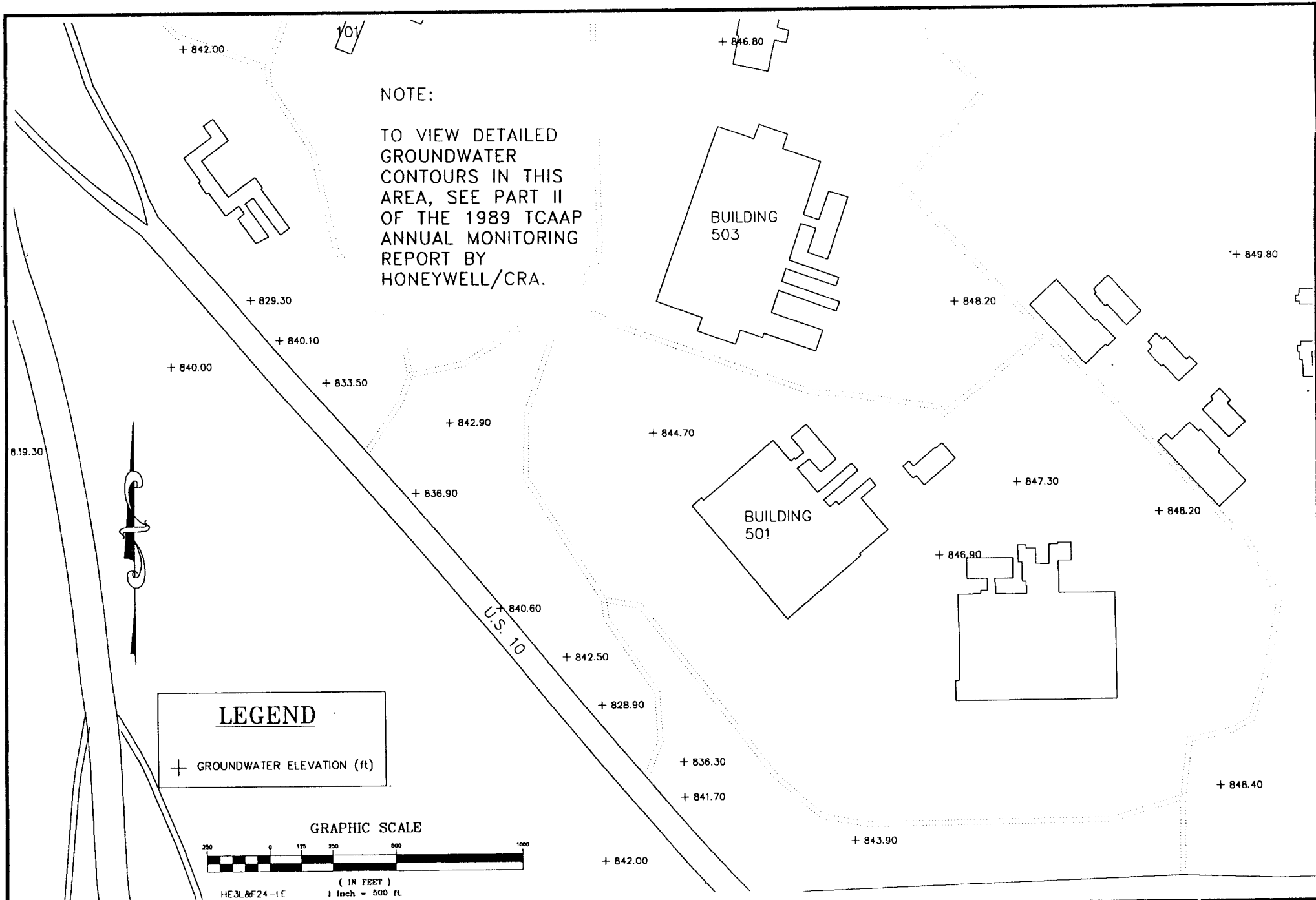
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.4.2.1

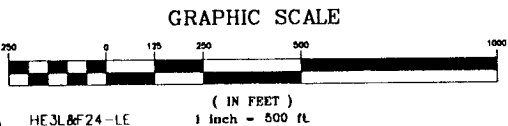




**NOTE:**

TO VIEW DETAILED  
GROUNDWATER  
CONTOURS IN THIS  
AREA, SEE PART II  
OF THE 1989 TCAAP  
ANNUAL MONITORING  
REPORT BY  
HONEYWELL/CRA.

**LEGEND**  
+ GROUNDWATER ELEVATION (ft)



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Contours, Lower Unit 3, LE-Series, Fall Quarter 1989(Q24)



**Consulting Engineers**  
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359  
Wenck Associates, Inc.

**MAR 1990**

5.4.2.2

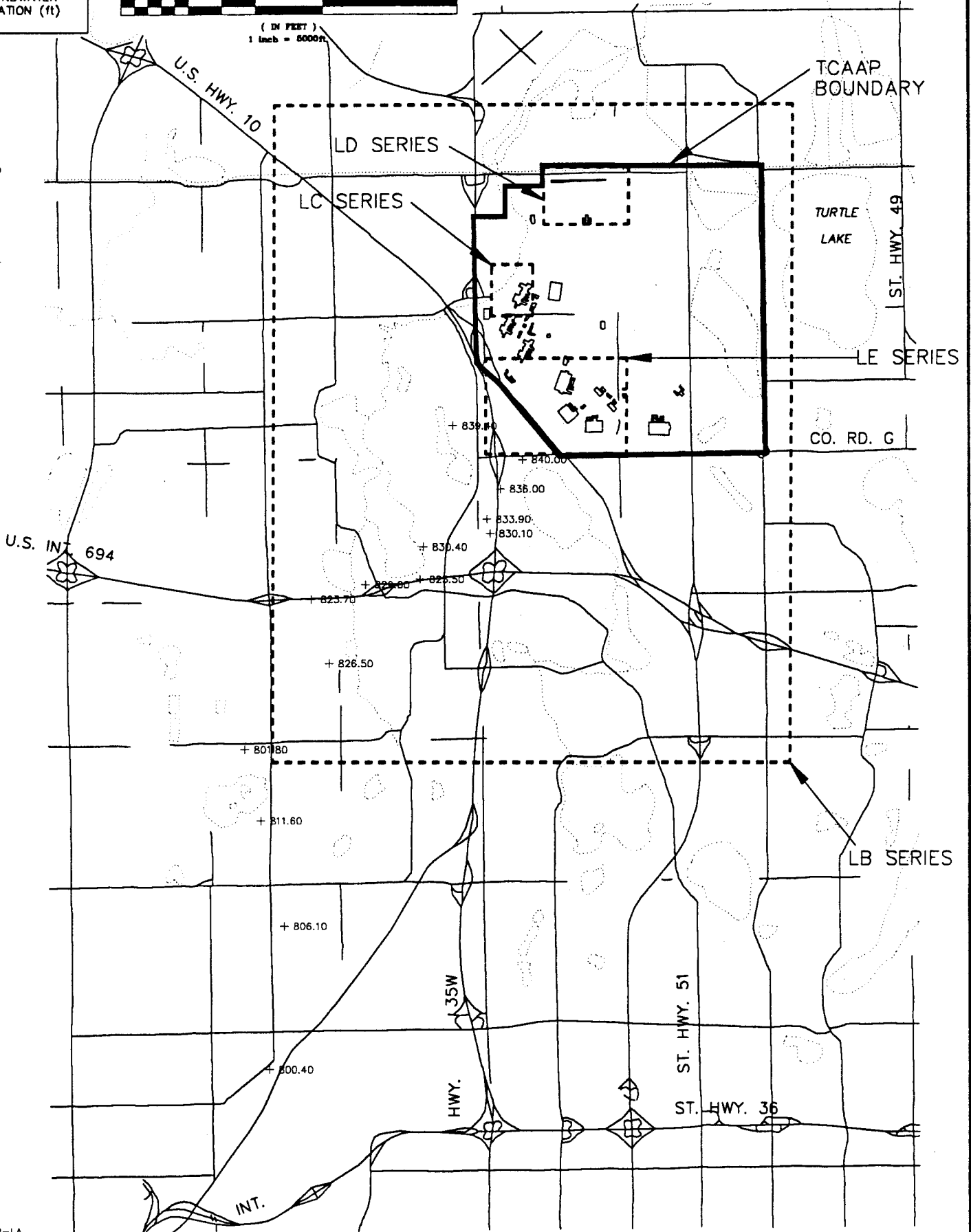
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 5000ft.



HE4U&#22-LA

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 4, LA-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.5.1.1

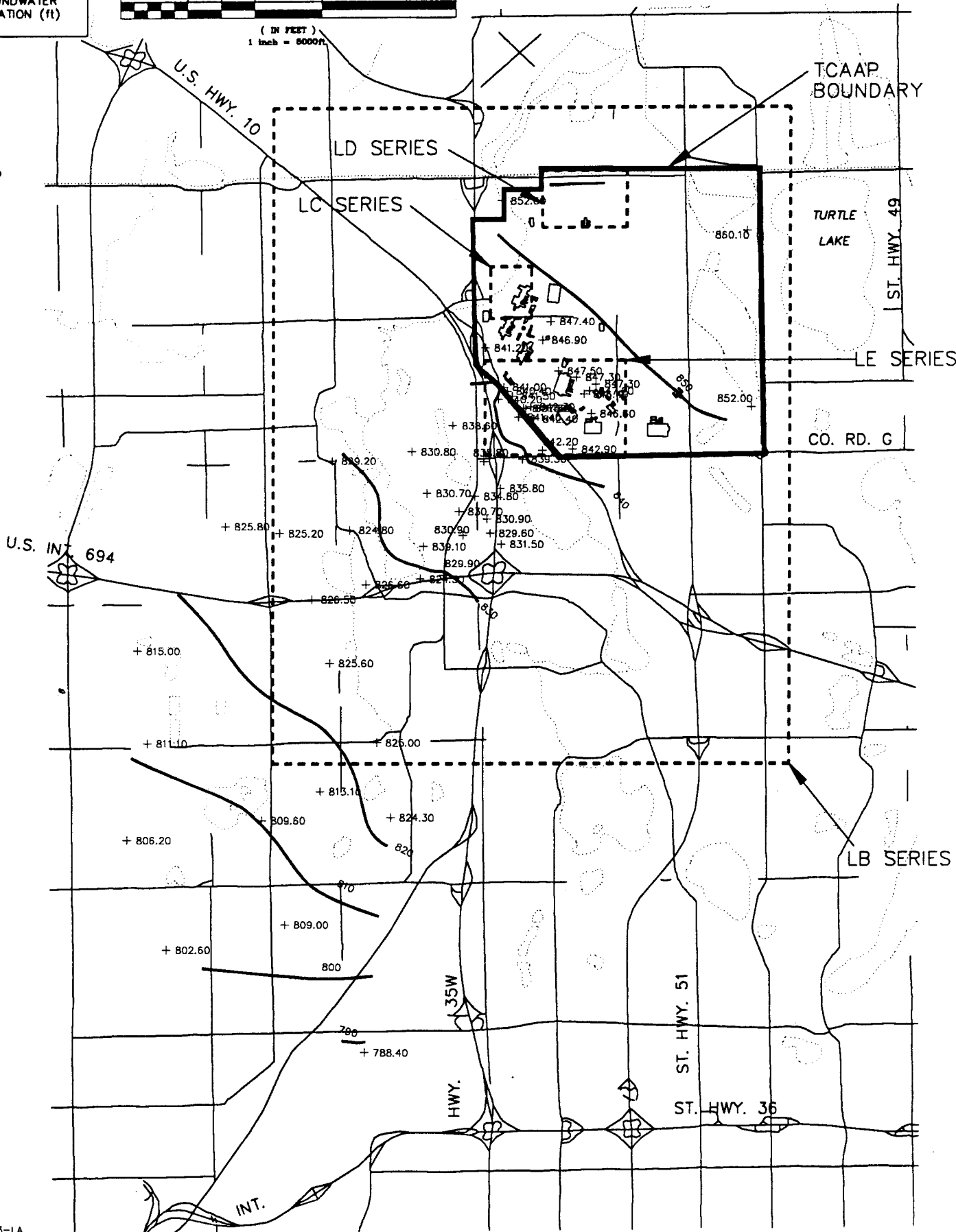
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



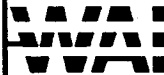
( IN FEET )  
1 inch = 5000ft



HE4U&#23-LA

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 4, LA-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.5.1.2

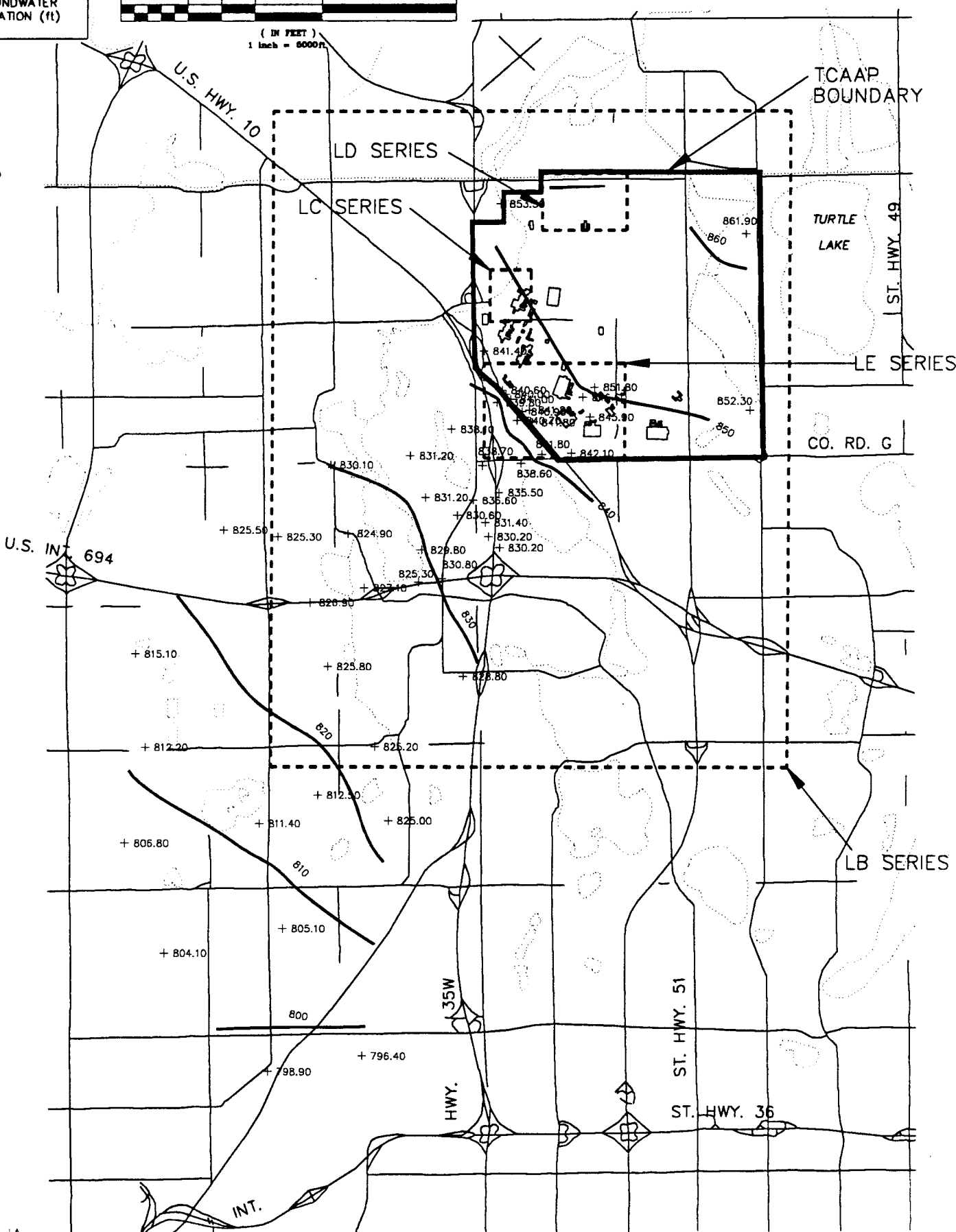
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 6000 ft.



HE4U&#24-LA

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 4, LA-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

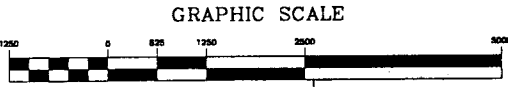
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.5.1.3

LEGEND

+ GROUNDWATER ELEVATION (ft)



LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

830

+ 839.40  
+ 836.00  
+ 833.90  
+ 830.10

U.S. INT. 694  
+ 823.90

+ 829.00

+ 825.50

+ 826.50

VALENTINE LAKE

U.S. INT. 694

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HE4U&#22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 4, LB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

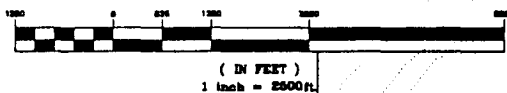
MAR 1990

5.5.2.1

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 852.60

855

860.10 +

LEXINGTON AVE.

CO. RD. H

CREEK

+ 847.40

+ 846.90

+ 841.20

MARSDEN LAKE

RICE

+ 847.50

+ 847.30

+ 841.00

+ 840.40

+ 841.50

+ 846.30

+ 842.40

+ 846.60

852.00 +

LONG

+ 838.60

+ 830.80

+ 834.80

+ 842.90

CO. RD. G

RUSH

+ 830.70

+ 835.80

LE SERIES

LAKE

+ 830.70

+ 834.80

ROUND LAKE

+ 830.90

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 825.20

+ 831.80

+ 830.90

+ 830.90

+ 829.60

+ 831.50

+ 826.60

+ 824.30

+ 829.90

U.S. INT. 694

+ 825.60

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

+ 825.00

U.S. INT. HWY. 35W

HE4U#23-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 4, LB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

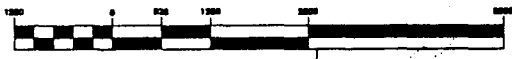
MAR 1990

5.5.2.2

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2000 ft.

LD SERIES

CO. RD. I

TCAAP BOUNDARY

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 853.50

860

+ 861.90

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. H

CREEK

RICE

+ 841.40

LONG

+ 840.60

+ 840.00

+ 841.00

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 841.80

+ 852.30

CO. RD. G

LE SERIES

RUSH LAKE

+ 838.10

+ 831.20

+ 831.20

+ 829.80

+ 827.10

+ 825.30

+ 825.80

+ 825.20

+ 836.70

+ 836.60

+ 836.60

+ 836.60

+ 836.60

+ 836.60

+ 836.60

+ 836.60

+ 836.60

+ 836.60

+ 835.50

+ 831.40

+ 830.20

+ 830.20

+ 830.20

+ 830.20

+ 830.20

+ 830.20

+ 830.20

+ 830.20

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HE4U&#24-LB

TWIN CITIES ARMY AMMUNITION PLANT



Consulting Engineers

MAR 1990

Groundwater Level Contours, Unit 4, LB-Series, Fall Quarter 1989(Q24)

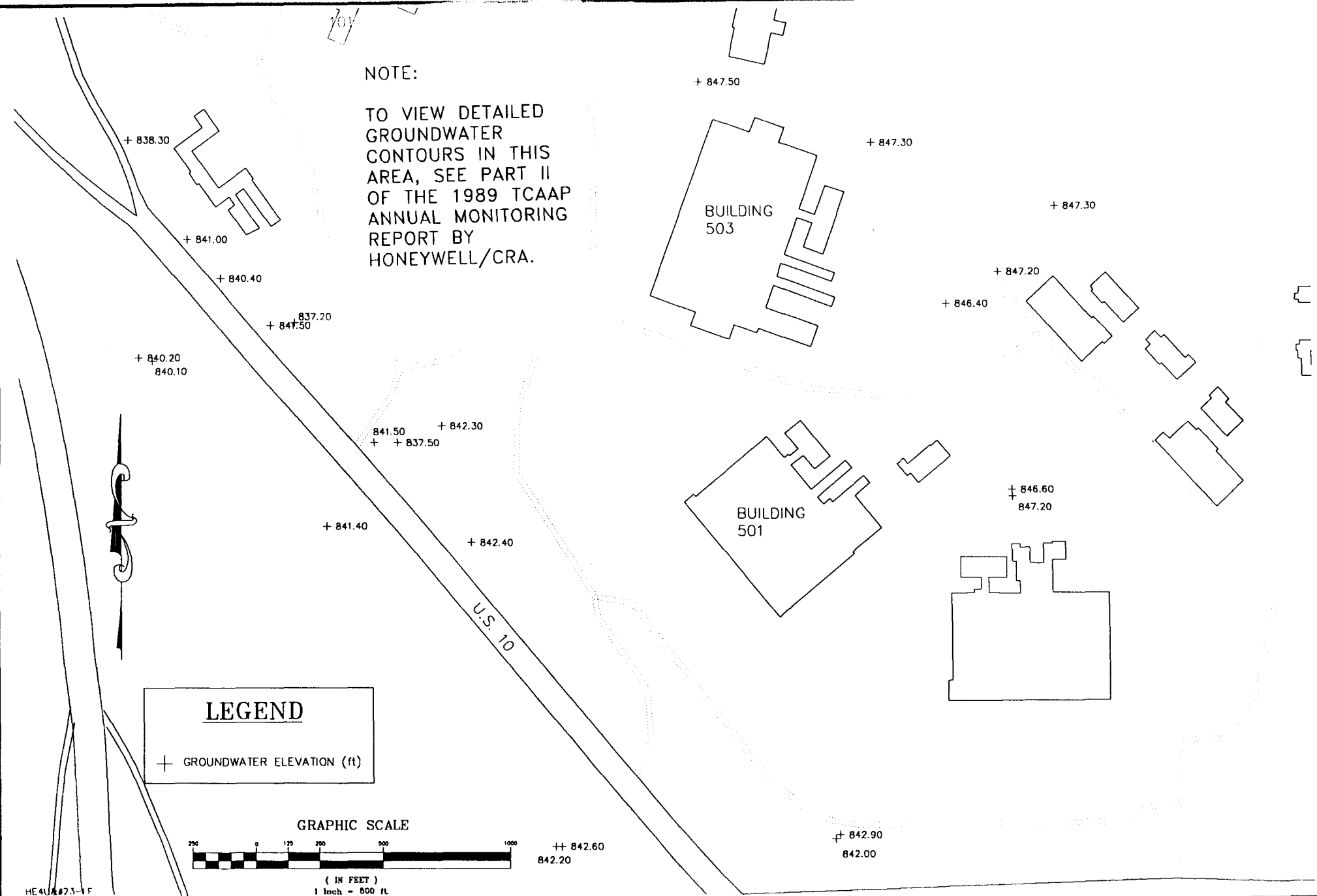
Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

5.5.2.3

NOTE:

TO VIEW DETAILED  
GROUNDWATER  
CONTOURS IN THIS  
AREA, SEE PART II  
OF THE 1989 TCAAP  
ANNUAL MONITORING  
REPORT BY  
HONEYWELL/CRA.



**LEGEND**

+ GROUNDWATER ELEVATION (ft)

**GRAPHIC SCALE**



( IN FEET )  
1 inch = 500 ft

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Contours, Unit 4, LE-Series, Summer Quarter 1989(Q23)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

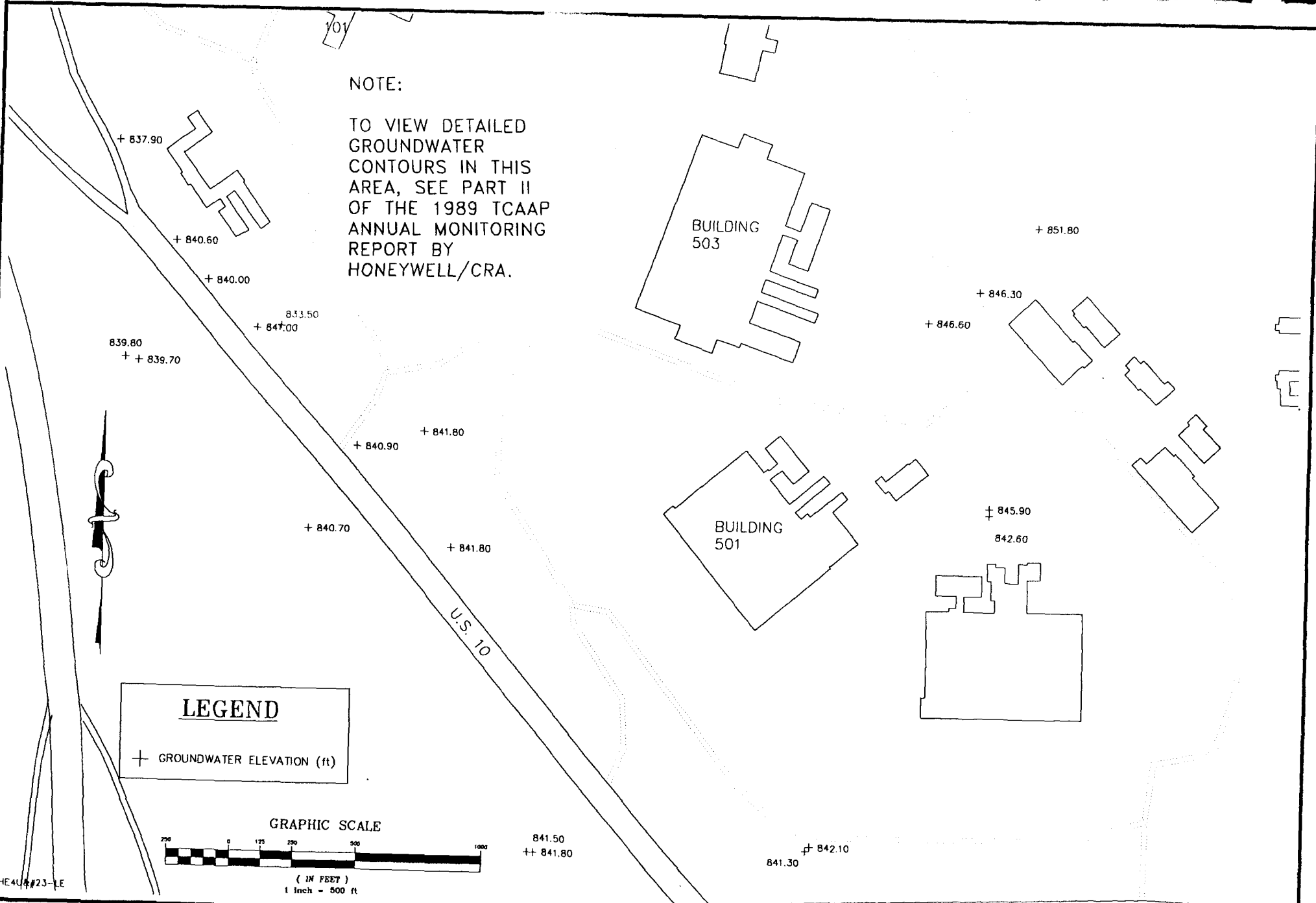
MAR 1990

5.5.3.1



NOTE:

TO VIEW DETAILED  
GROUNDWATER  
CONTOURS IN THIS  
AREA, SEE PART II  
OF THE 1989 TCAAP  
ANNUAL MONITORING  
REPORT BY  
HONEYWELL/CRA.



**LEGEND**

+ GROUNDWATER ELEVATION (ft)

**GRAPHIC SCALE**



( IN FEET )  
1 Inch = 500 ft

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Level Contours, Unit 4, LE-Series, Fall Quarter 1989(Q24)



Consulting Engineers

Wenck Associates, Inc.

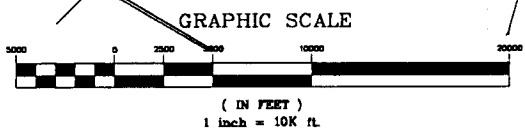
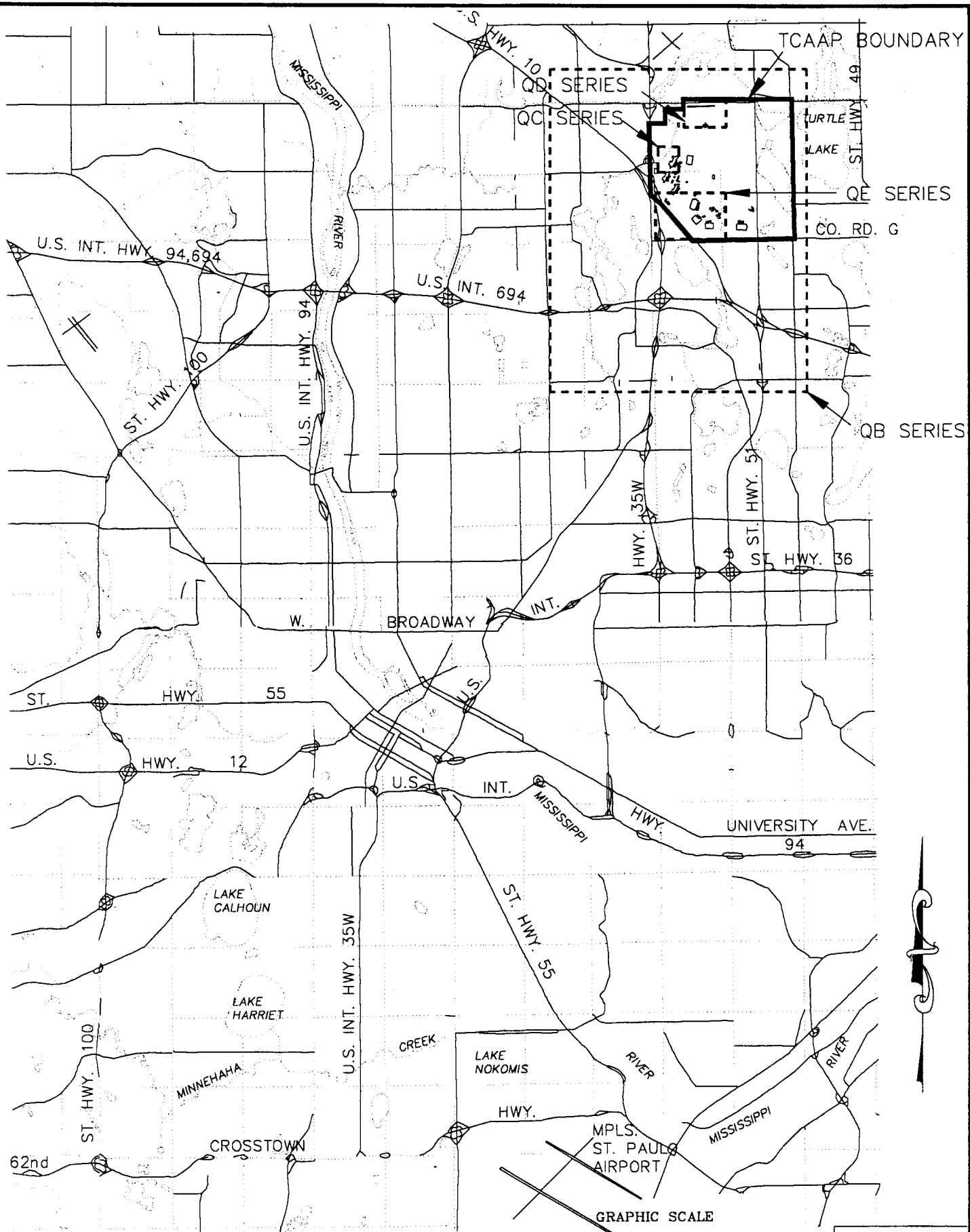
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

5.5.3.2

**SECTION 6**

**Q-SERIES MAPS, BASE MAPS FOR GROUNDWATER QUALITY DATA**



**LEGEND**  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**

QA-Series Map, Twin Cities Metropolitan Area



**Wenck Associates, Inc.**

**Consulting Engineers**

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

QE SERIES

CO. RD. G

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

TWIN CITIES ARMY AMMUNITION PLANT

QB-Series Map, TCAAP and Vicinity



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

6.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



RICE CREEK

BLDG. 103

TWIN CITIES ARMY AMMUNITION PLANT

QC-Series Map, Site K Area



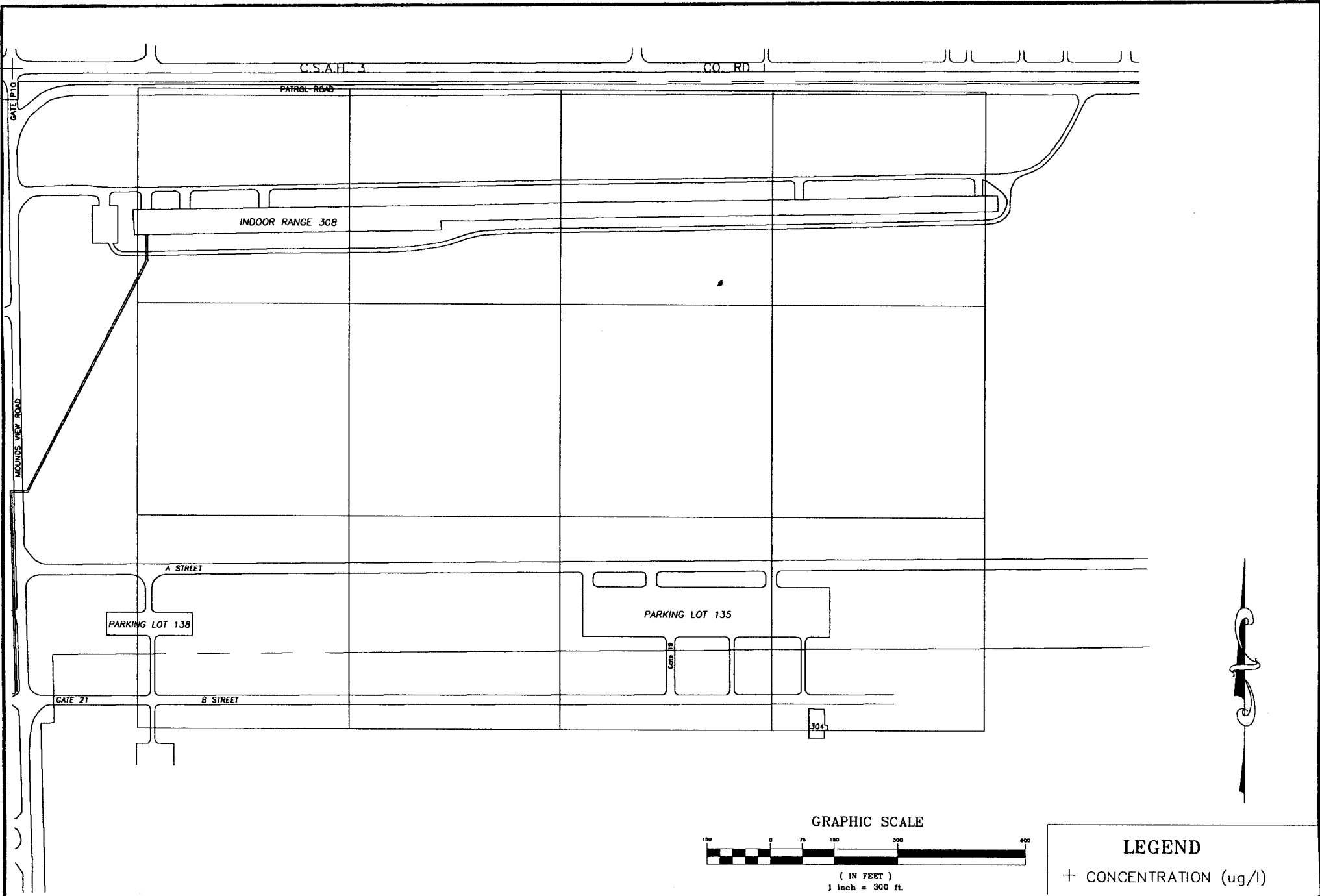
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

6.3



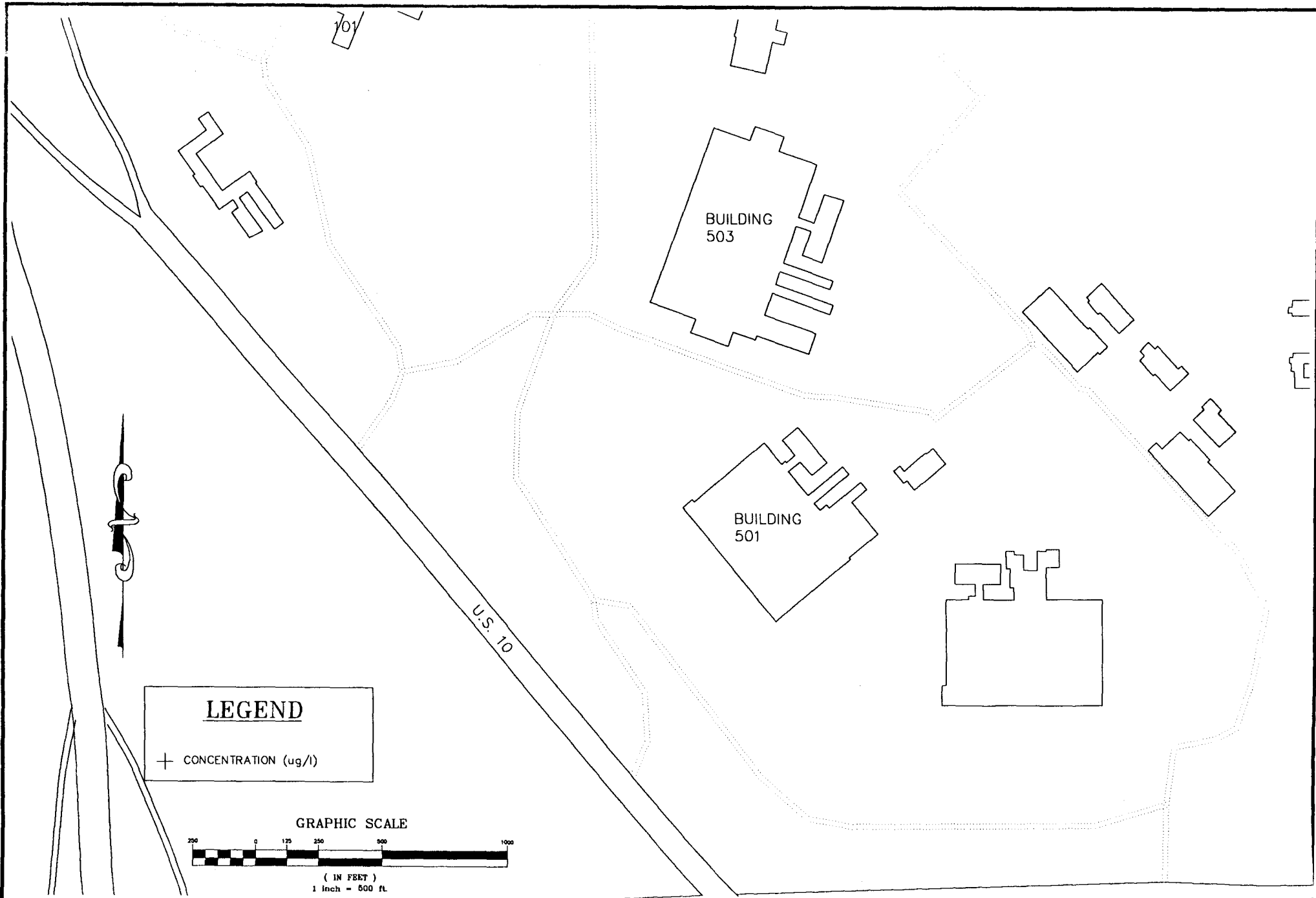
**LEGEND**  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**

QD-Series Map, Site A Area

**Consulting Engineers**  
 Wenck Associates, Inc.  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 6.4



**TWIN CITIES ARMY AMMUNITION PLANT**

QE-Series Map, Southwest Boundary Area



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

6.5

**SECTION 7**

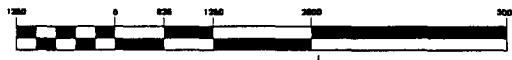
**GROUNDWATER QUALITY SAMPLING LOCATION MAPS**



LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

01L813 + 01L816 + 01L811

RUSH

LAKE

+ 01L821 + 01L822

LAKE

ROUND LAKE

U.S. INT. 694

+ 01L823

MAP SA1U99.PRN - QB SERIES

U.S. INT. HWY. 35W

BOYLE

U.S. HWY. 10

VALENTINE LAKE

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

CO. RD. E

TCAAP BOUNDARY

LEXINGTON AVE.

MARSDEN LAKE

01U098 + 01U060

CO. RD. G

QE SERIES

01U901

01U034

01U122

01U035

01U101 01U100

01U136

01U039

01U135

01U038

01U040

01U041

01U022

01U063

01U085

01U045

01U128

01U092

01U047

01U048

01U611

01U617

01U618

01U619

01U065

01U130

01U050

01U051

01U524

01U527

01U526

01U062

01U825

01U666

01U054

01U636

01U639

01U053

01U003

01U004

01U634

01U652

01U064

01U640

01U001

01U072

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Sampling Locations, Unit 1 Wells, QB-Series



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

7.1.1

LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



RICE CREEK

+ 01U047

+ 01U048

+ 01U128

+ 01U052

BLDG. 103

+ 01U611

+ 01U601

+ 01U617

+ 01U604

+ 01U615

+ 01U618

+ 01U619

MAP 1U-QC SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Sampling Locations, Unit 1 Wells, QC-Series



Wenck Associates, Inc.

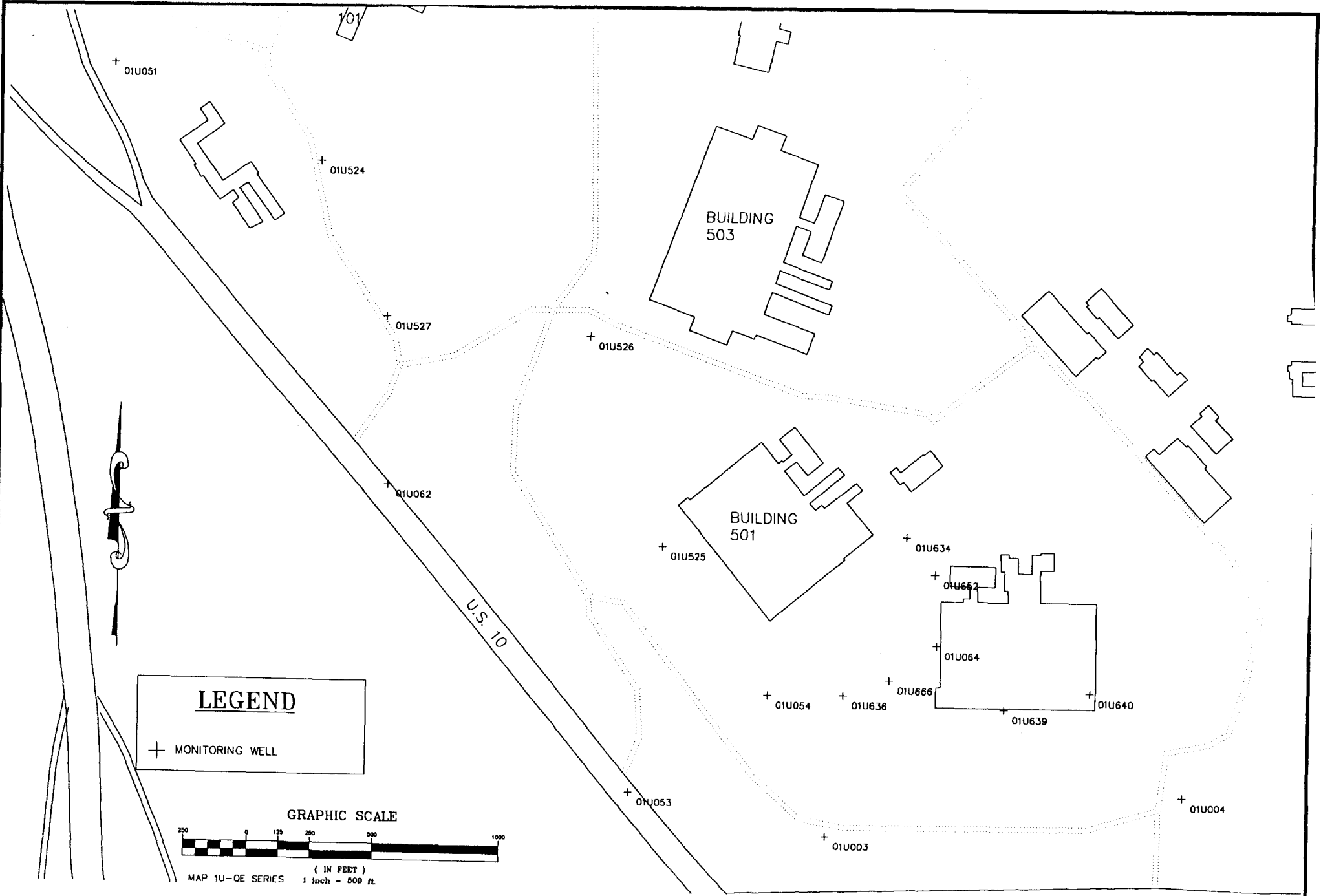
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

7.1.2





**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Sampling Locations, Unit 1 Wells, QE-Series



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

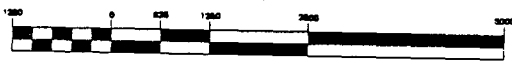
MAR 1990

7.1.4

LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

134318

03U010

03U009

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

03U832

U.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

MAP SA3U99.PRN - QB SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Sampling Locations, Upper Unit 3 Wells, QB-Series



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

7.2.1



LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

03M013

03M001

03M713

03M017

03M028

03M806

03M002

03M505

LONG

RUSH

03M802+

03M003

03M004

03M005

CO. RD. G

QE SERIES

03M843

LAKE

03M848

ROUND LAKE

409557

LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

409556

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

MAP 3M-QB SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Sampling Locations, Middle Unit 3 Wells, QB-Series



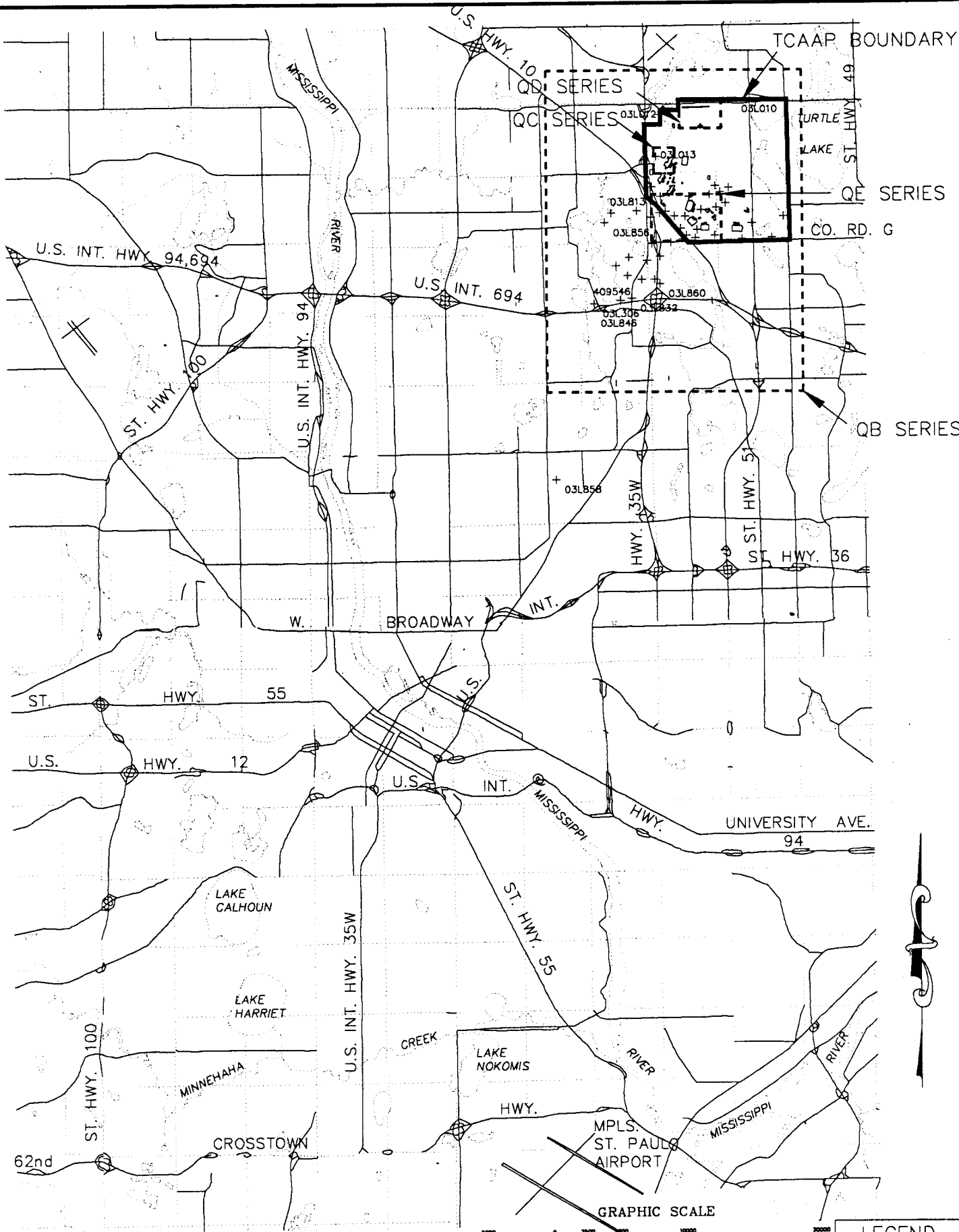
Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

7.3.1



MAP SA3L99.PRN-QA SERIES

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Sampling Locations, Lower Unit 3 Wells, QA-Series



**Wenck Associates, Inc.**

**Consulting Engineers**

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**LEGEND**

+ MONITORING WELL

**MAR 1990**

7.41



LEGEND

MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

03L012

03L013

03L010

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. H

CREEK

RICE

03L001

03L091

03L113

03L137

03L018

03L138

03L813

03L811

03L806

03L077

03L021

03L014

03L022

03L856

03L809

03L002

03L078

03L029

03L138

03L007

03L086

LONG

RUSH

03L078

03L079

03L003

03L004

03L005

03L006

CO. RD. G

03L841

03L673

QE SERIES

LAKE

03L853

03L848

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

03L822

03L859

03L848

03L854

03L860

LAKE

409597

03L861

03L860

VALENTINE LAKE

U.S. INT. 694

03L895

409548

03L832

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

MAP 3L-QB SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Sampling Locations, Lower Unit 3 Wells, QB-Series



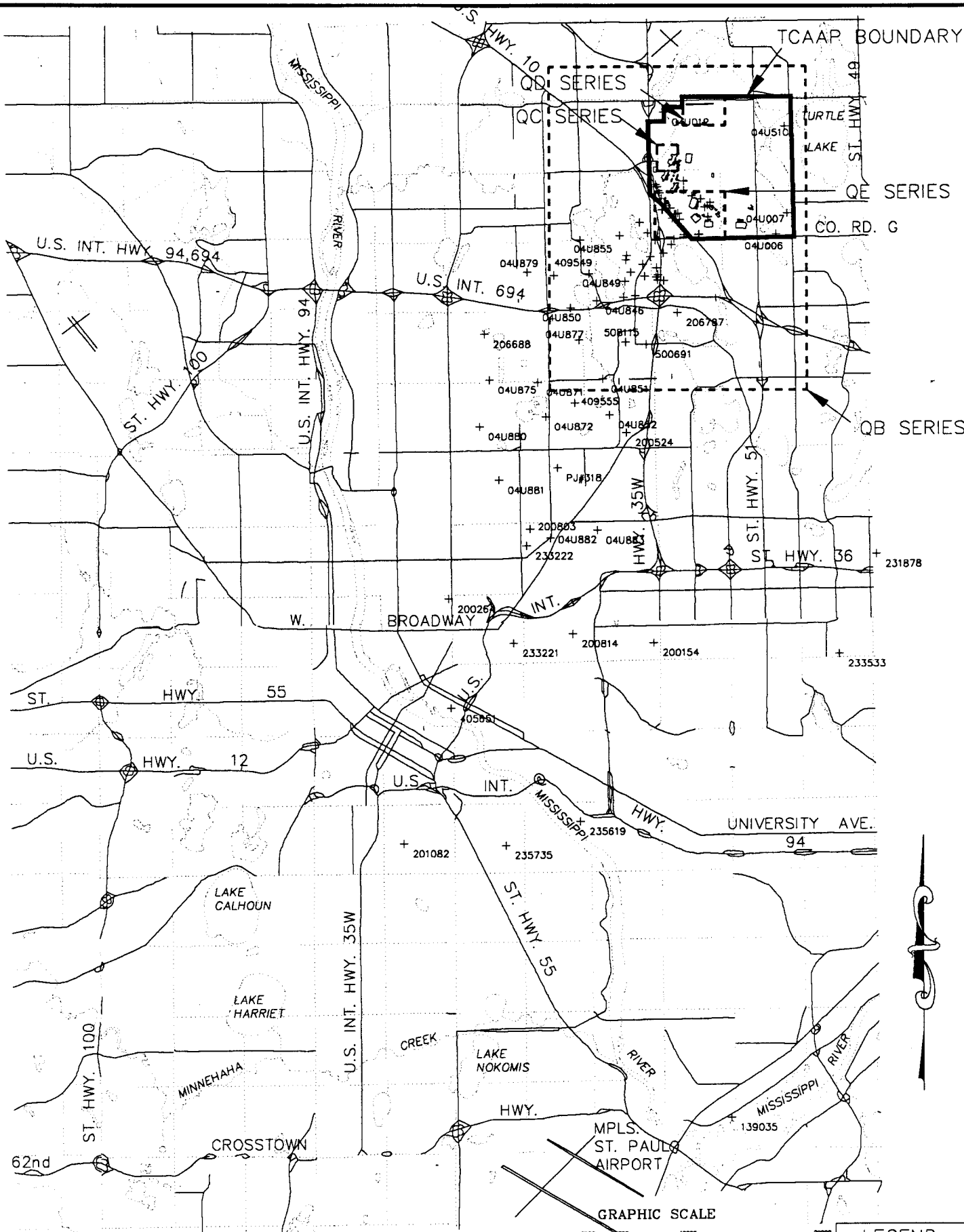
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

7.4.2



MAP SA4U&#99.PRN - LA SERIES

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Sampling Locations, Unit 4 Wells, QA-Series



**Wenck Associates, Inc.**

**Consulting Engineers**

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**LEGEND**

+ MONITORING WELL

**MAR 1990**

7.5.1

LEGEND

+ MONITORING WELL

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

04U012

04U510

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

04U001

04U714

04J714

PJ#313

PJ#502

PJ#503

PJ#506

PJ#507

PJ#074

PJ#508

04U020

PJ#022

04U027

04U007

LONG

RUSH

04U702

04J077

04U806

04U709

04U711

04U708

04U802

PJ#802

04U801

04U673

234319

04U847

04U843

04U841

04U848

04U859

04U845

04U854

234337

04U860

NB2103

254335

04U844

04U832

04U846

409548

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

04U832

CO. RD. G

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. HWY. 10

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

U.S. INT. 694

04U850

206787

508115

508691

04U877

04U85

MAP SA4U99.PRN - QB SERIES

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Sampling Locations, Unit 4 Wells, QB-Series



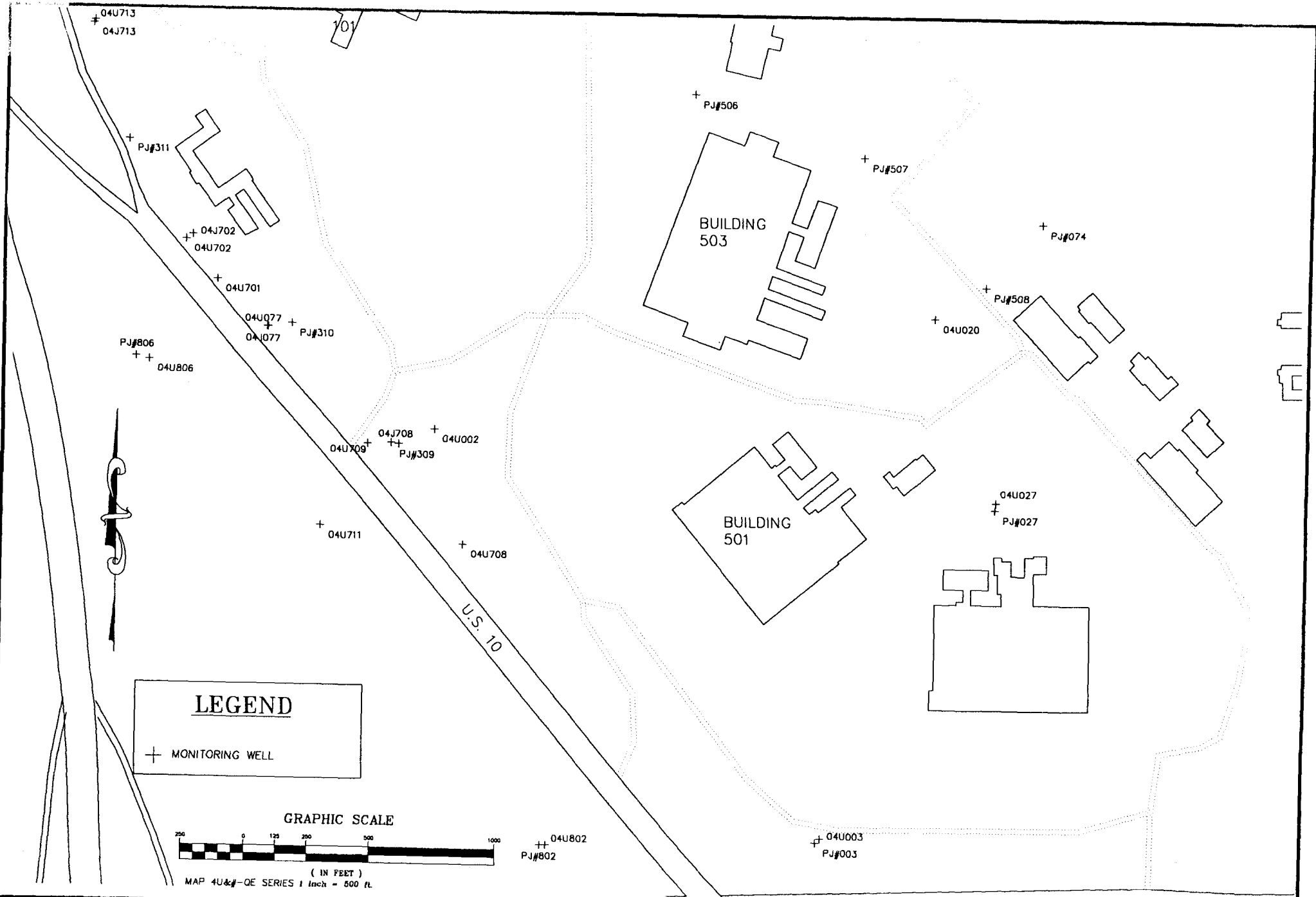
Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

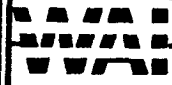
MAR 1990

7.5.2



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Sampling Locations, Unit 4 Wells, QE-Series



**Consulting Engineers**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359  
**Wenck Associates, Inc.**

**MAR 1990**

7.5.3

**SECTION 8**

**GROUNDWATER QUALITY DATA PLOTS/ISOCONCENTRATION MAPS**

LEGEND

⊕ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

VALENTINE LAKE

MARSDEN LAKE

CO. RD. G

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

ST. HWY. 51

CO. RD. E

TCAAP BOUNDARY

+1.00  
+2.00  
+0.00  
+0.00  
+0.00  
+0.00

3UCR.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Chromium, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.1.2.2.2

LEGEND

† CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 Inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

MARSDEN LAKE

TCAAP BOUNDARY

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

UCR.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Chromium, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

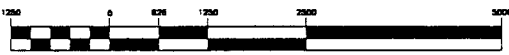
MAR 1990

8.1.2.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3UCR.024

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Chromium, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

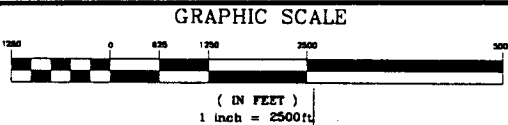
MAR 1990

8.1.2.2.4



LEGEND

CONCENTRATION (ug/l)



QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. INT. 694

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

QE SERIES

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

3LCR.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Chromium, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

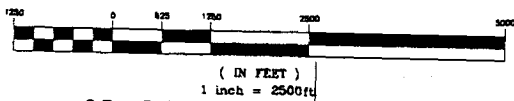
MAR 1990

8.1.4.2.4

LEGEND

CONCENTRATION  
(-g/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND  
LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

MARSDEN  
LAKE

CO. RD. G

U.S. INT. 694

U.S. INT. HWY. 35W

VALENTINE  
LAKE

ST. HWY. 51

U.S. INT. 694

CO. RD. E

4LCR.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Chromium, Unit 4, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

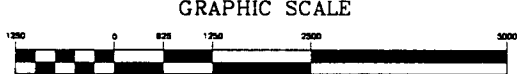
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.1.5.2.2

LEGEND

+ CONCENTRATION (ug/l)



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

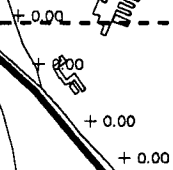
LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE



LONG

RUSH

LAKE

CO. RD. G

QE SERIES

ROUND LAKE

LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4UCR.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Chromium, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.1.5.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

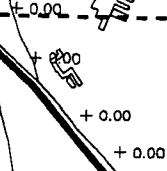
LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE



LONG

RUSH

LAKE

CO. RD. G

LAKE

ROUND LAKE

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

ST. HWY. 51

U.S. INT. 694

VALENTINE LAKE

CO. RD. E

4UCR.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Chromium, Unit 4, QB-Series, Fall Quarter 1989(Q24)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

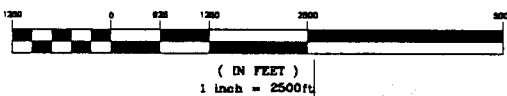
MAR 1990

8.1.5.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3UCD.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Cadmium, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

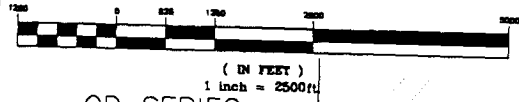
MAR 1990

8.2.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES  
CO. RD. I

QC SERIES  
U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND  
LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

MARSDEN  
LAKE

CO. RD. G

LEXINGTON AVE.

U.S. INT. 694

VALENTINE  
LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3UCD.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Cadmium, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



Consulting Engineers

Wenck Associates, Inc.

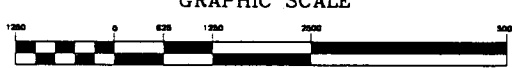
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.2.2.3

LEGEND

CONCENTRATION  
(ug/l)



QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND  
LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE  
LAKE

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

TCAAP  
BOUNDARY

LEXINGTON AVE.

MARSDEN  
LAKE

CO. RD. G

3UCD.024

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Cadmium, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.2.2.2.4

LEGEND

+ CONCENTRATION  
(ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP  
BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN  
LAKE

RICE

+ 1.27

+ 0.13

LONG

RUSH

CO. RD. G

LAKE

QE SERIES

LAKE

ROUND  
LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE  
LAKE

ST. HWY. 51

U.S. INT. 694

CO. RD. E

3LCD.024

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Cadmium, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

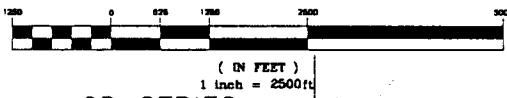
8.2.4.2.4



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+0.00  
+0.00  
+0.00

LONG

RUSH

CO. RD. G

LAKE

QE SERIES

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

LAKE

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

4UCD.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Cadmium, Unit 4, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.2.5.2.2

LEGEND

GRAPHIC SCALE



+ CONCENTRATION (ug/l)

( IN FEET )  
1 inch = 2500ft

QD SERIES

TCAAP BOUNDARY

CO. RD. I

QC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

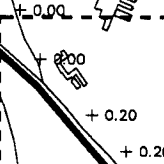
CREEK

RICE

MARSDEN LAKE

LONG

RUSH



CO. RD. G

LAKE

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE LAKE

ST. HWY. 51

U.S. INT. 694

CO. RD. E

4UCD.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Cadmium, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

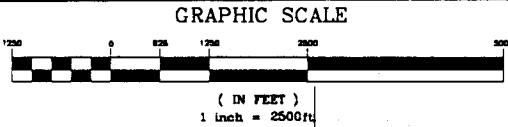
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.2.5.2.3

LEGEND

+ CONCENTRATION (ug/l)



QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+0.00  
+0.00  
+0.00

LONG

RUSH

CO. RD. G

LAKE

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

4UCD.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Cadmium, Unit 4, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

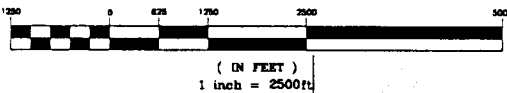
MAR 1990

8.2.5.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

MARSDEN LAKE

CO. RD. G

TCAAP BOUNDARY

3UHG.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Mercury, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.3.2.2.2

LEGEND

GRAPHIC SCALE

+ CONCENTRATION (ug/l)



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE LAKE

ST. HWY. 51

U.S. INT. 694

CO. RD. E

TCAAP BOUNDARY

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

3UHG.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Mercury, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

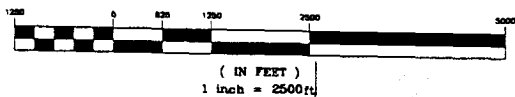
MAR 1990

8.3.2.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

TCAAP BOUNDARY

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

MARSDEN LAKE

LEXINGTON AVE.

HAMLIN AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

3114C Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Mercury, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.3.2.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+0.00  
+0.00  
+0.00

LONG

RUSH

CO. RD. G

LAKE

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

4UHQ.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Mercury, Unit 4, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.3.5.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+0.00  
+0.00  
+0.00

LONG

RUSH

CO. RD. G

LAKE

QE SERIES

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

4UHC.023

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Mercury, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

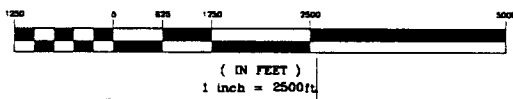
8.3.5.2.3



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

MARSDEN LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4UHC.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Mercury, Unit 4, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.3.5.2.4

LEGEND

CONCENTRATION  
(ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

QD SERIES

CO. RD. I

TCAAP  
BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN  
LAKE

RICE

LONG

RUSH

LAKE

CO. RD. G

QE SERIES

LAKE

ROUND  
LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE  
LAKE

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

3UPB.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Lead, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.4.2.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

ST. HWY. 65

QC SERIES

U.S. HWY 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

3UPB.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Lead, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.4.2.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

TCAAP BOUNDARY

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

3UPB.024

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Lead, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.4.2.2.4

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500 ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

MARSDEN LAKE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

J.S. INT. HWY. 35W

ST. HWY. 51

U.S. INT. 694

VALENTINE LAKE

CO. RD. E

3LPB.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Lead, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.4.4.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

VALENTINE LAKE

MARSDEN LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

41PR 022

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Lead, Unit 4, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

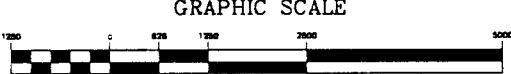
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.4.5.2.2

LEGEND

+ CONCENTRATION (ug/l)



( IN FEET )  
1 inch = 2500ft

QD SERIES

TCAAP BOUNDARY

CO. RD. I

QC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4UPB.023

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Lead, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

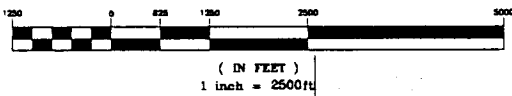
MAR 1990

8.4.5.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H  
CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND  
LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

VALENTINE  
LAKE

ST. HWY. 51

CO. RD. E

LEXINGTON AVE.

MARSDEN  
LAKE

CO. RD. G

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

4UPB.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Lead, Unit 4, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

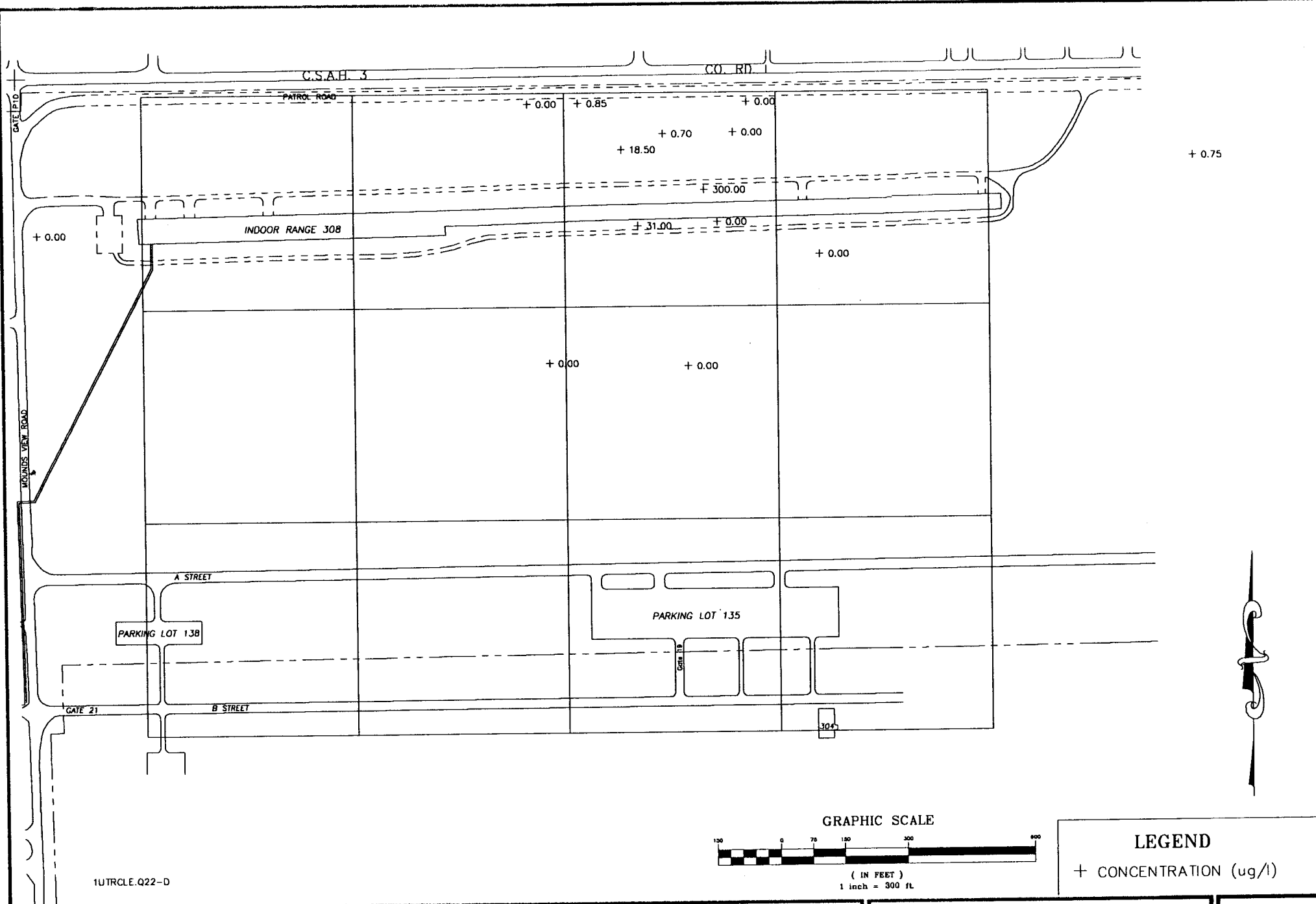
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

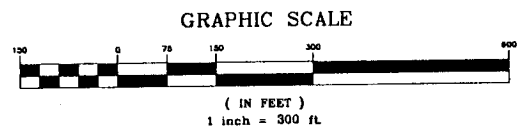
8.4.5.2.4







1UTRCLE.Q22-D



**LEGEND**  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Trichloroethene, Unit 1, QD-Series, Spring Quarter 1989(Q22)



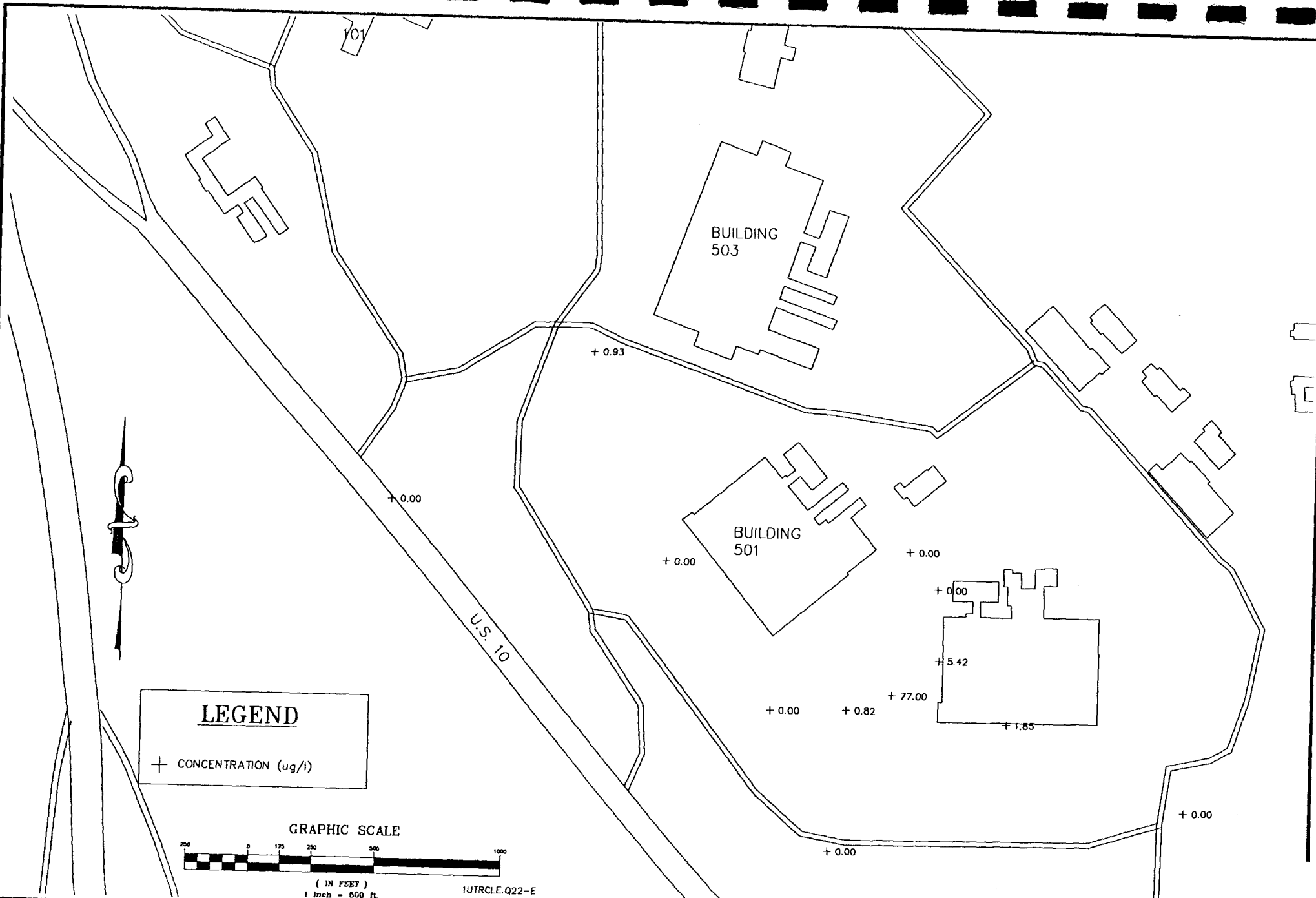
**Wenck Associates, Inc.**

**Consulting Engineers**

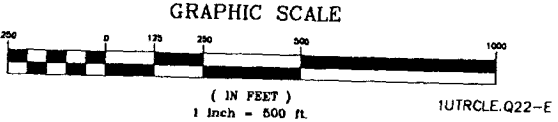
1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**

8.5.1.4.2



**LEGEND**  
 + CONCENTRATION (ug/l)



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Trichloroethene, Unit 1, QE-Series, Spring Quarter 1989(Q22)



Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359  
 Wenck Associates, Inc.

MAR 1990

8.5.1.5.2

LEGEND

GRAPHIC SCALE



CONCENTRATION (ug/l)

QD SERIES

( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

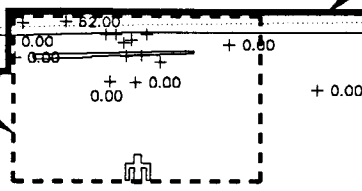
CO. RD. I

QC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W



CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND

LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

U.S. INT. 694

U.S. INT. HWY. 35W

HAMLIN AVE.

LEXINGTON AVE.

VALENTINE

LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

1UTRCL.E.Q23-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Unit 1, QB-Series, Summer Quarter 1989(Q23)



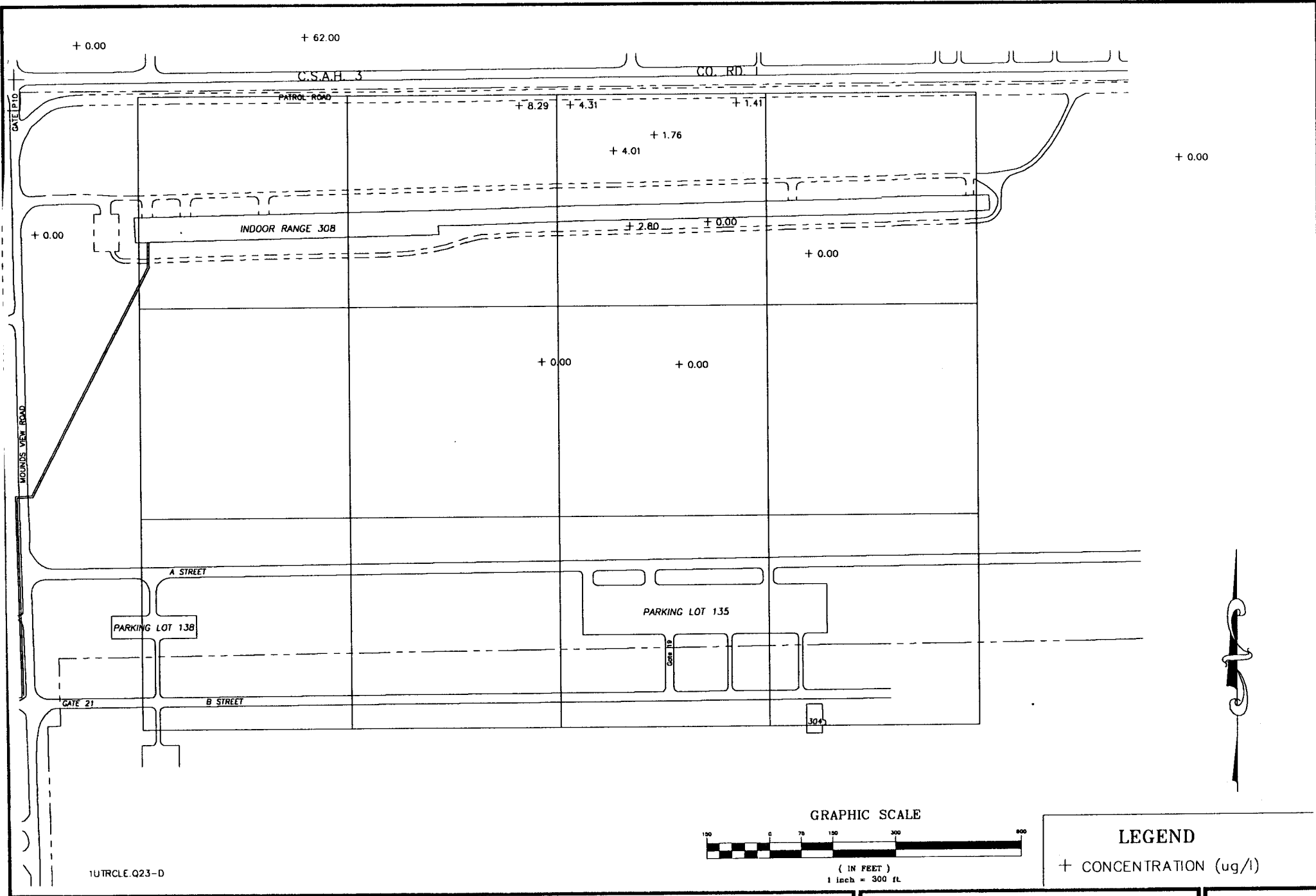
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

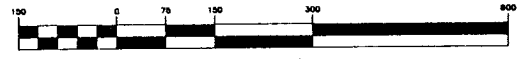
MAR 1990

8.5.1.2.3



1UTRCL.E.Q23-D

GRAPHIC SCALE



( IN FEET )

1 inch = 300 ft.

**LEGEND**  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Trichloroethene, Unit 1, QD-Series, Summer Quarter 1989(Q23)



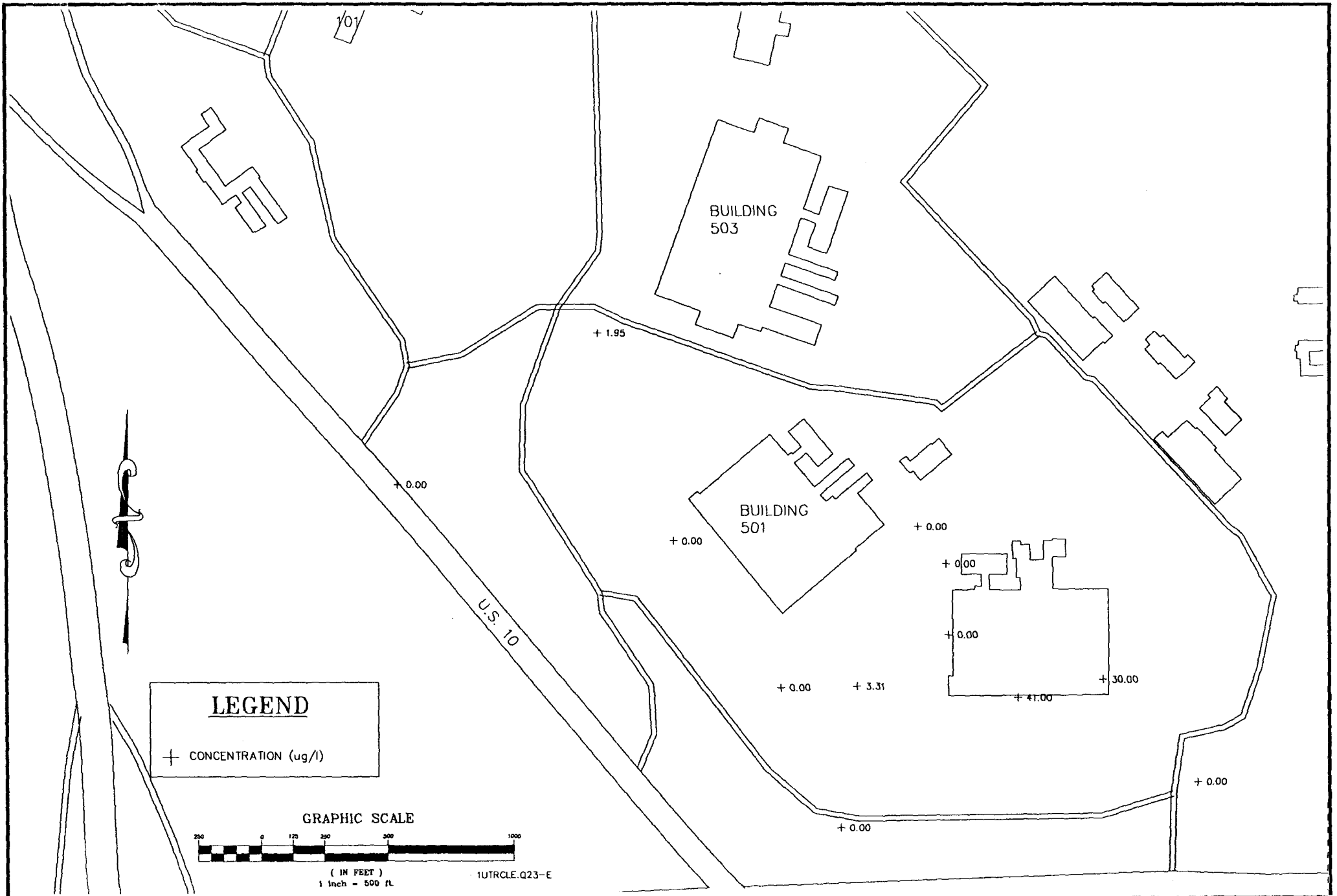
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990

8.5.1.4.3



**LEGEND**

+ CONCENTRATION (ug/l)

**GRAPHIC SCALE**



( IN FEET )  
1 inch = 500 ft  
1UTRCLE.Q23-E

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
Trichloroethene, Unit 1, QE-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.1.5.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

+ 1.43

1UTRCL.E.Q24-08

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Unit 1, QB-Series, Fall Quarter 1989(Q24)



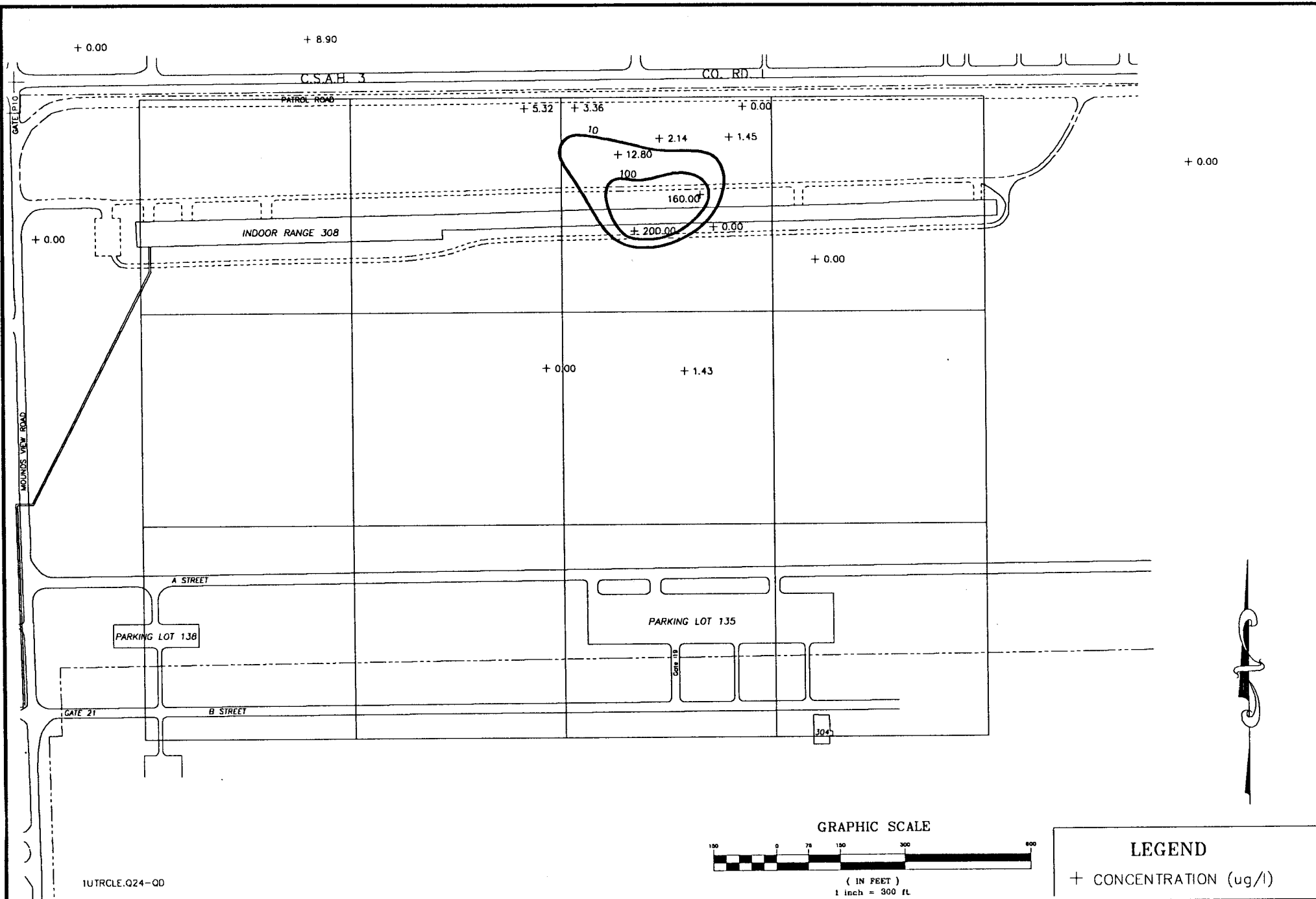
Wenck Associates, Inc.

Consulting Engineers

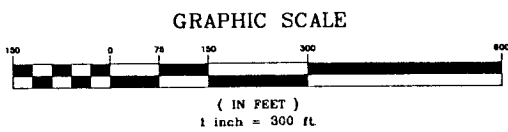
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.1.2.4




1UTRCL.E.Q24-QD



**LEGEND**  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Isoconcentration Contours  
 Trichloroethene, Unit 1, QD-Series, Fall Quarter 1989(Q24)



**Consulting Engineers**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

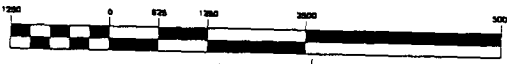
**MAR 1990**  
 8.5.1.4.4



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3U TRCLE.Q21-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)



Consulting Engineers

Wenck Associates, Inc.

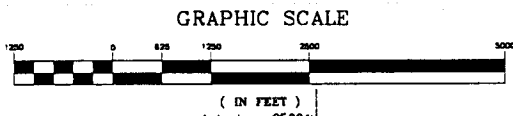
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.2.1

LEGEND

CONCENTRATION  
(µg/l)



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

+ 6.90

MARSDEN LAKE

LONG

+ 0.00

RUSH

+ 4.10

+ 7.80

+ 13.00

+ 1500.00

+ 13000.00

+ 4.90

+ 1300.00

+ 1100.00

+ 1000.00

+ 280.00

CO. RD. G

QE SERIES

+ 210.00

+ 0.00

LAKE

ROUND LAKE

+ 0.00

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

JUTRCL.Q22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Trichloroethene, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



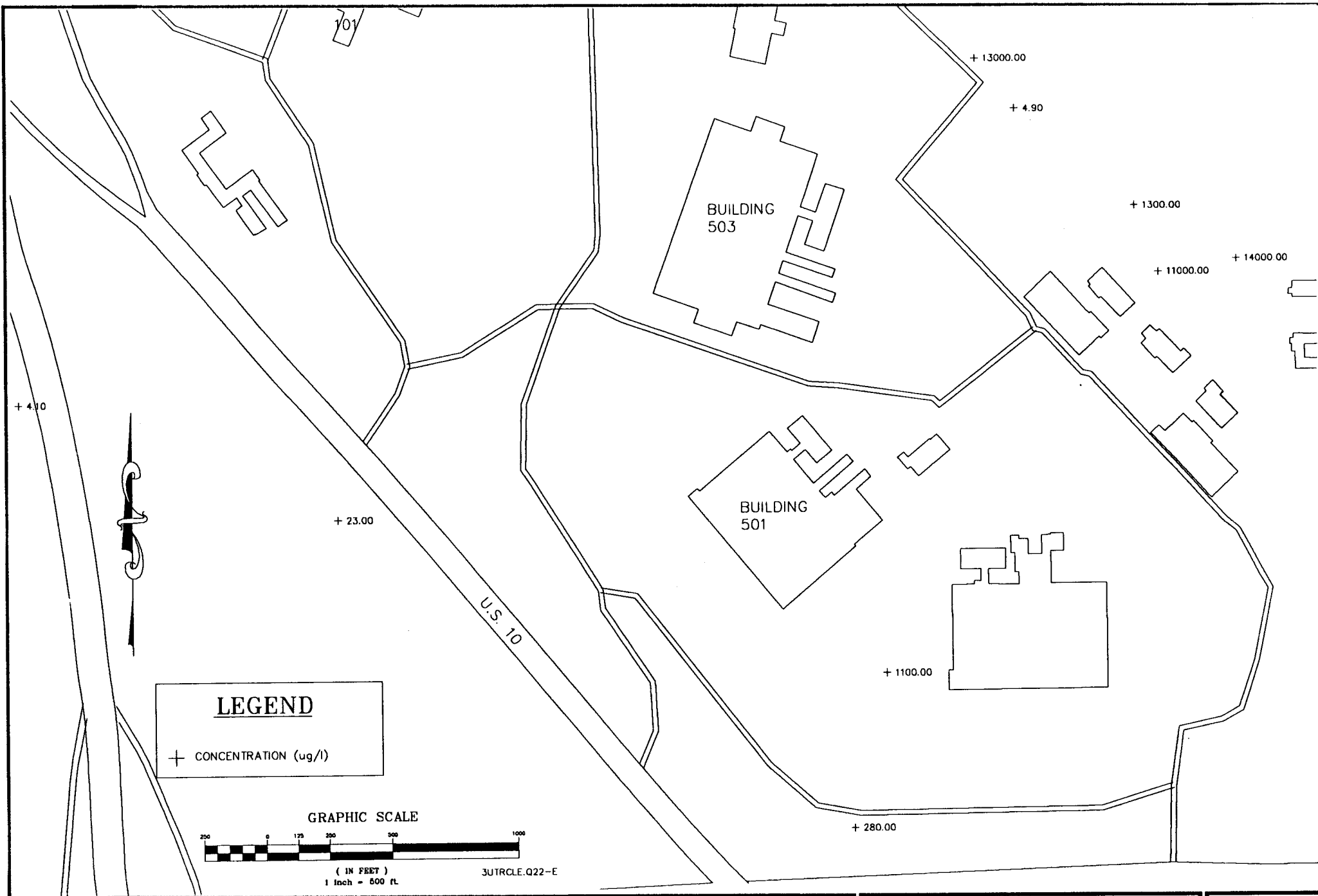
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.2.2.2



**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 Trichloroethene, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)

**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.5.2.5.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

+ 0.00

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

+ 3.70

MARSDEN LAKE

RICE

+ 0.00

LONG

+ 12000.00  
+ 4.20

+ 940.00

+ 800.00

+ 4.47

RUSH

+ 26.00

+ 1100.00

+ 900.00

CO. RD. G

LAKE

QE SERIES

+ 950.00

+ 0.00

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3UTRCLE.Q23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



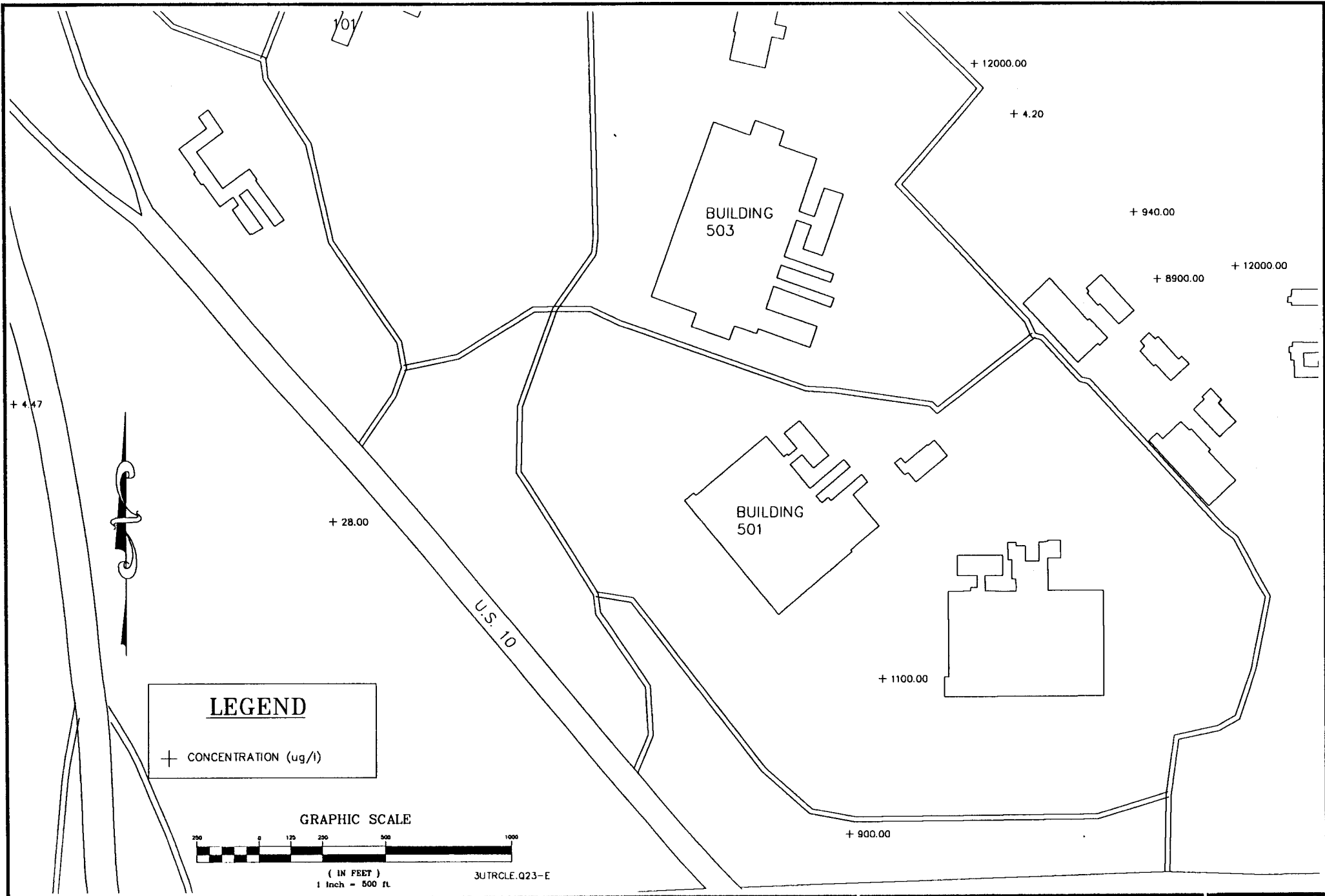
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.2.2.3



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Trichloroethene, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

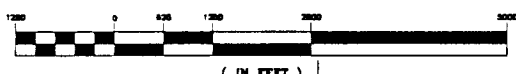
MAR 1990

8.5.2.5.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

BUSH LAKE

LAKE

ROUND LAKE

MARSDEN LAKE

CO. RD. G

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. HWY. 10

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

JUTRCL E.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Isoconcentration Contours

Trichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



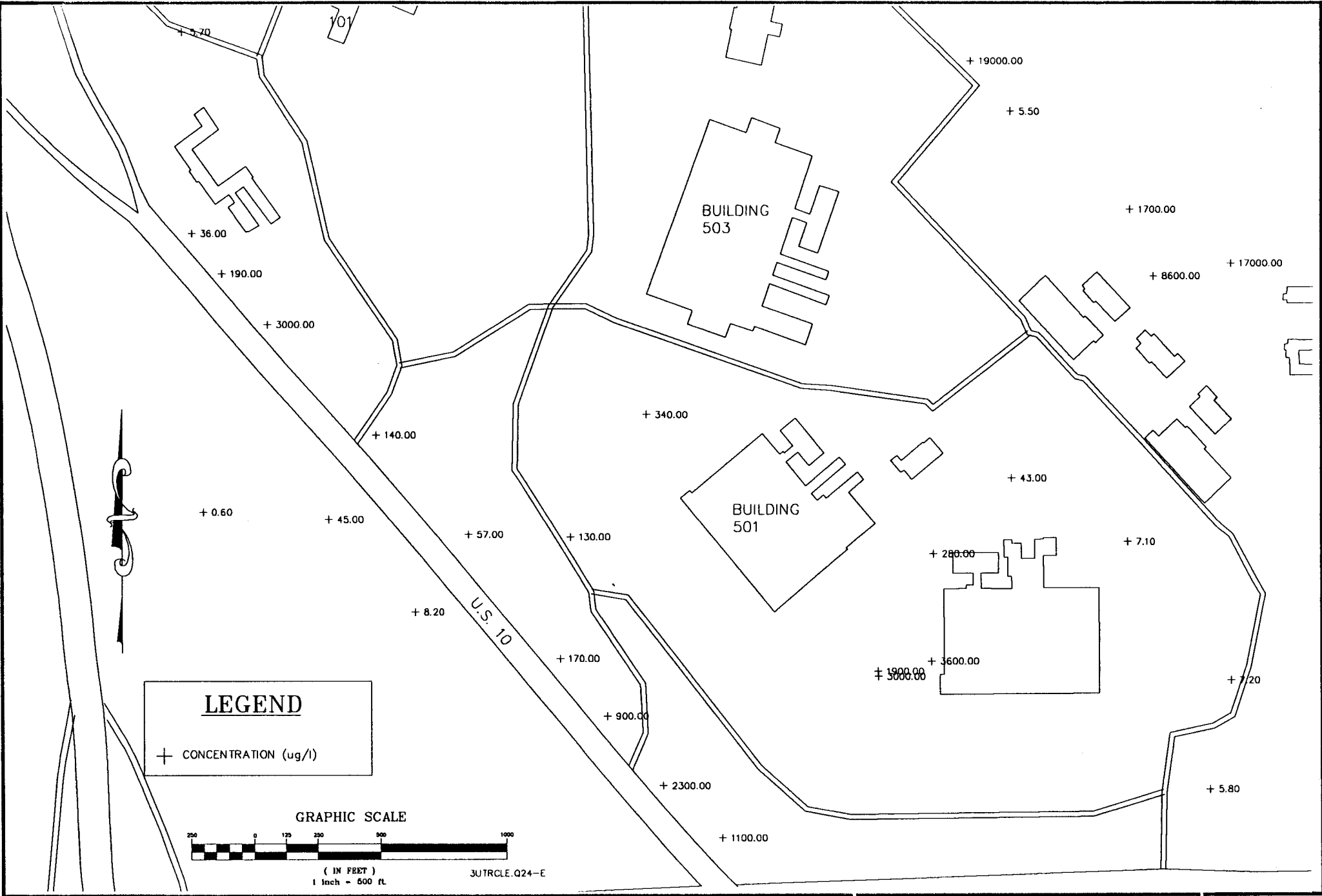
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.5.2.4



**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 Trichloroethene, Upper Unit 3, QE-Series, Fall Quarter 1989(Q24)

**W A**  
**W A**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359  
 Wenck Associates, Inc.

**MAR 1990**  
 8.5.2.5.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500 ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

MARSDEN LAKE

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

JM TRCLE.Q21-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.3.2.1



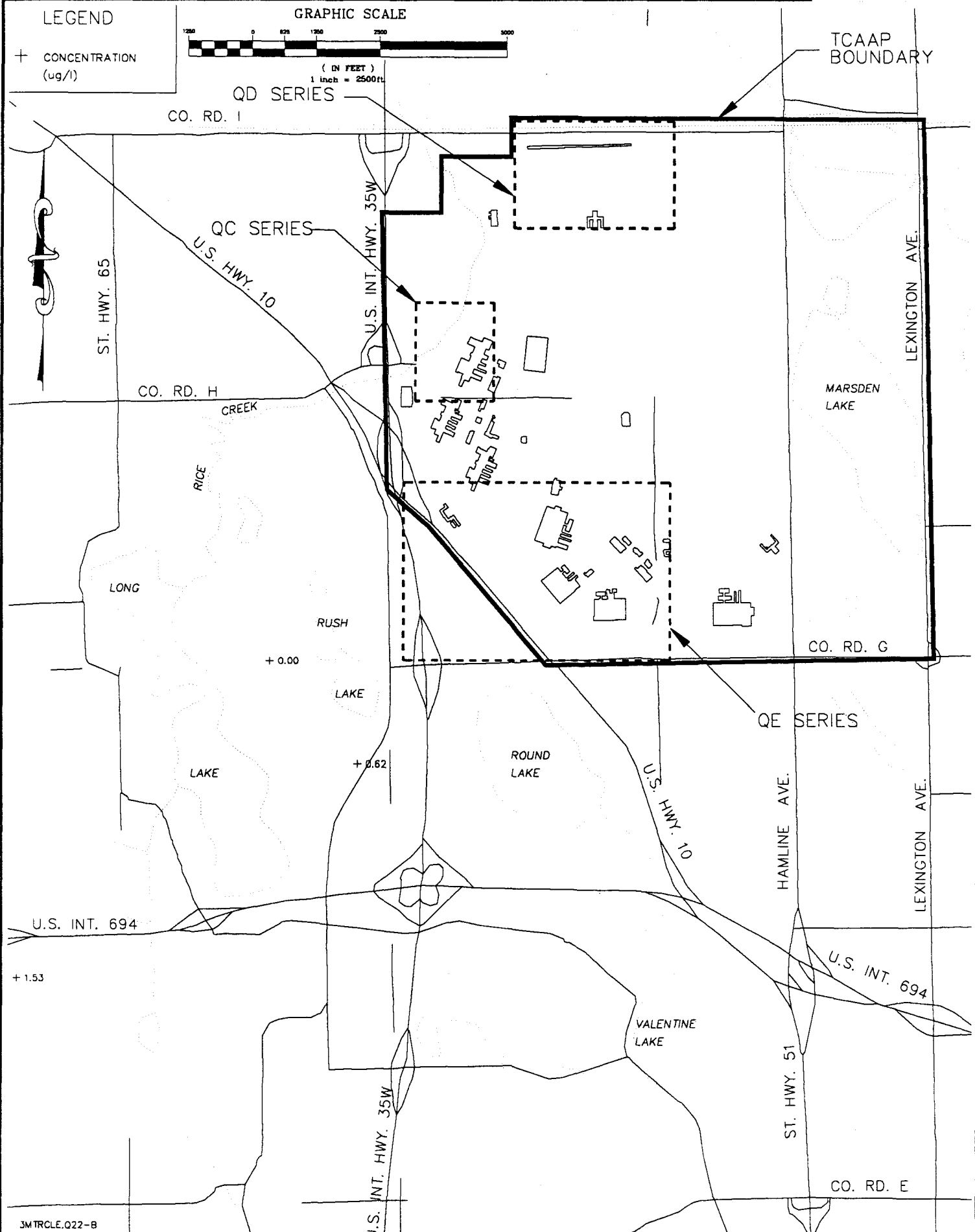
LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.



JMTRCLE.Q22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Trichloroethene, Middle Unit 3, OB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

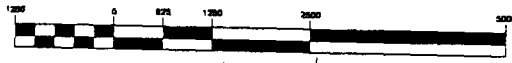
MAR 1990

8.5.3.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

QE SERIES

CO. RD. G

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 1.42

U.S. INT. 694

VALENTINE LAKE

S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3MTRCLE.Q23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.3.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+1.45

LAKE

LAKE

+1.40

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

+0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

JMTRCLE.Q24-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)



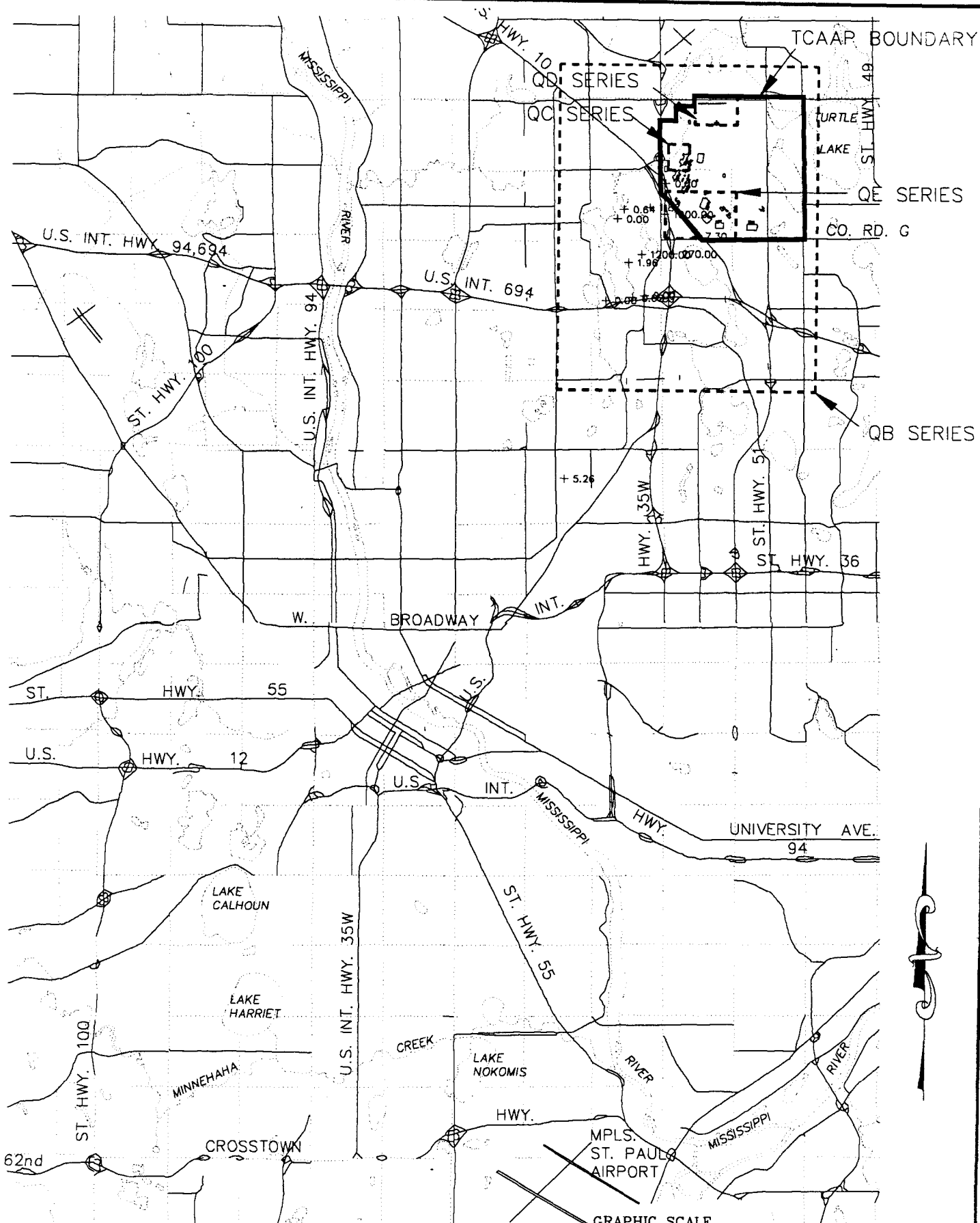
Wenck Associates, Inc.

Consulting Engineers

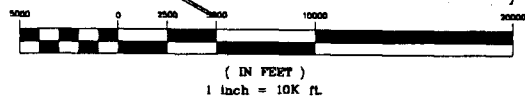
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.3.2.4



3LTRCLE.Q22-QA



**LEGEND**  
+ CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
Groundwater Quality Data Plot  
Trichloroethene, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)

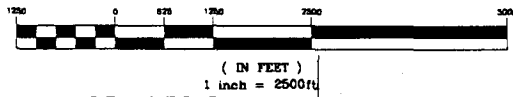
**Wenck Associates, Inc.**  
Consulting Engineers  
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**MAR 1990**  
8.5.4.1.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 0.64

+ 1.87

+ 1900.00

+ 0.00

RUSH

+ 30

CO. RD. G

LAKE

+ 1200.00

+ 270.00

QE SERIES

LAKE

+ 1.96

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 0.00

+ 0.62

0.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3L TRCLE.Q22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

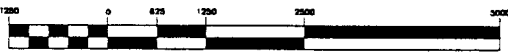
8.5.4.2.2



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500 ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 1.70

+ 0.00

+ 0.00

LONG

+ 0.00

RUSH

+ 1300.00

+ 130.00

LAKE

+ 0.00

LAKE

ROUND LAKE

+ 0.00

U.S. HWY. 10

QE SERIES

CO. RD. J

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3L TRCLE.Q23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)



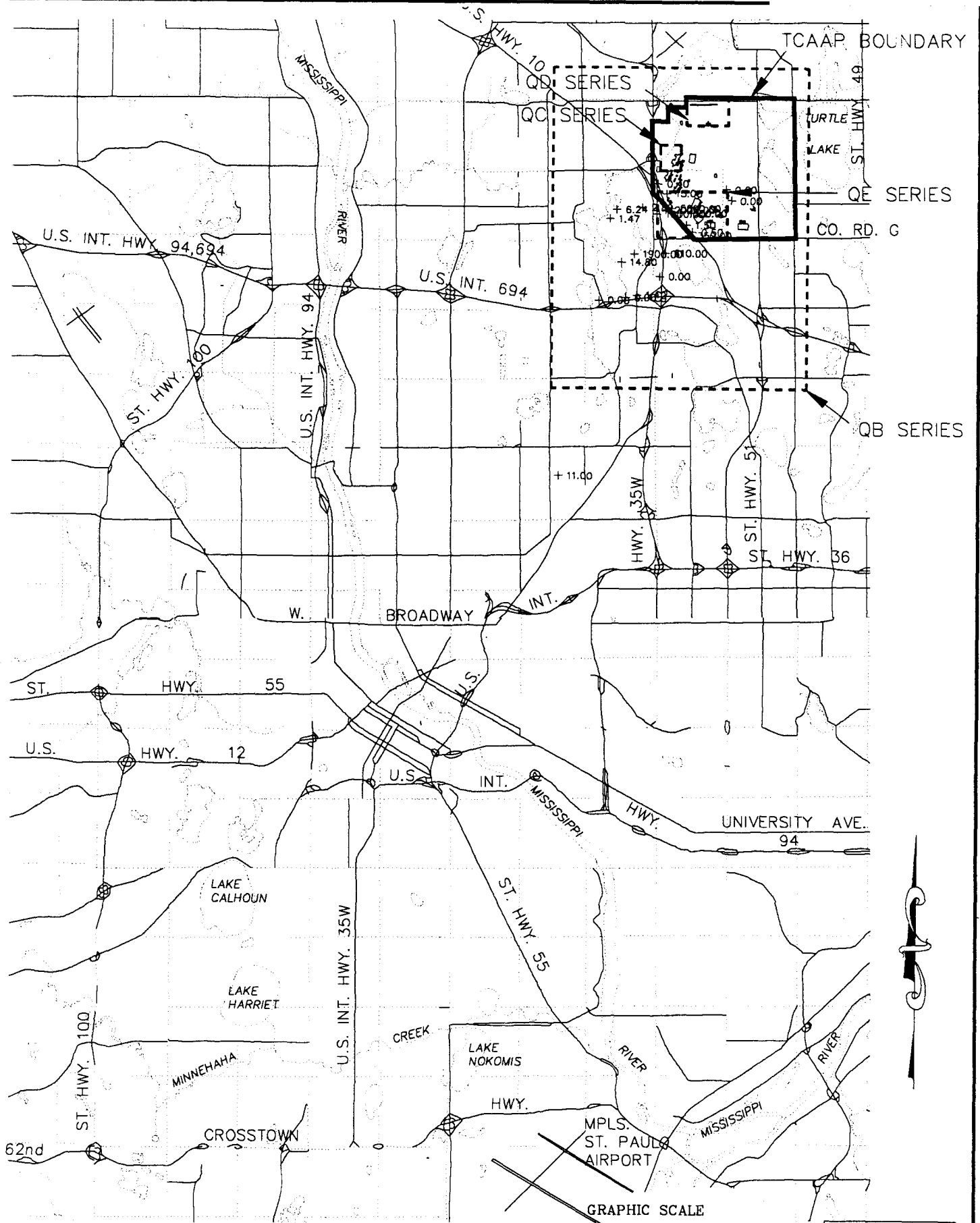
Wenck Associates, Inc.

Consulting Engineers

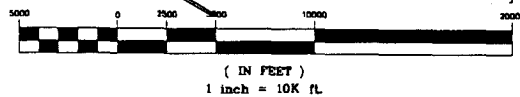
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.4.2.3



3LTRCLE.Q24-QA



LEGEND

+ CONCENTRATION (ug/l)

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Trichloroethene, Lower Unit 3, QA-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.4.1.4



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 6.24

+ 2.89

+ 0.40

+ 15.00

+ 0.00

+ 0.00

LONG

+ 1.47

+ 1800.00

+ 5600.00

+ 1000.00

+ 1100.00

+ 10.00

RUSH

+ 1.50

+ 0.50

CO. RD. G

LAKE

+ 1900.00

+ 610.00

QE SERIES

LAKE

+ 14.80

ROUND LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 1.42

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

3LTRCLE.Q24-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



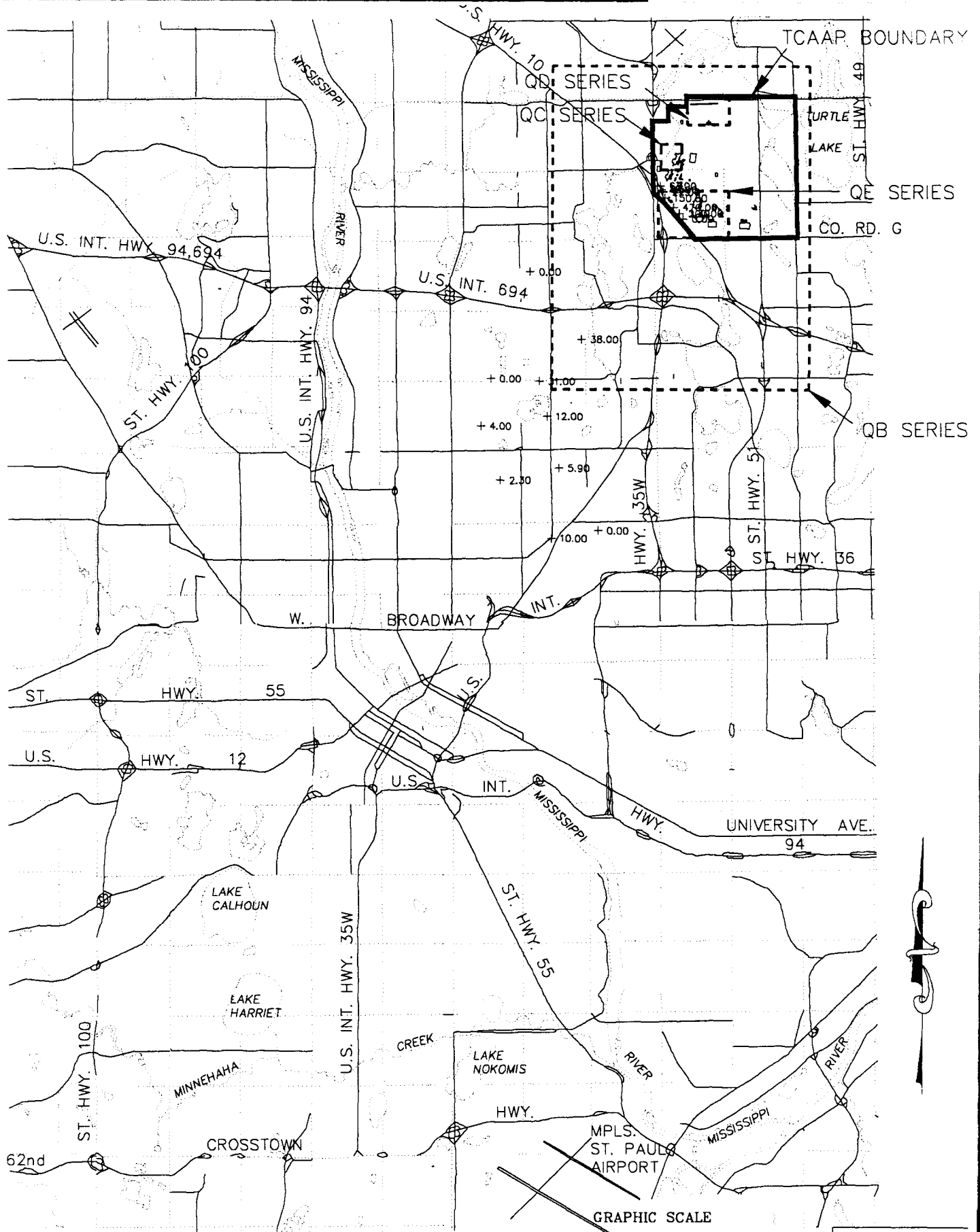
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.4.2.4



407RCLC.Q21-QA

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot

Trichloroethene, Unit 4, QA-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**LEGEND**

+ CONCENTRATION  
(ug/l)

**MAR 1990**

8.5.5.1.1

LEGEND

+ CONCENTRATION  
(ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

TCAAP BOUNDARY

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

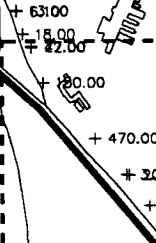
LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE



LONG

RUSH

CO. RD. G

LAKE

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 38.00

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4UTRCL. Q21-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Unit 4, QB-Series, Winter Quarter 1989(Q21)



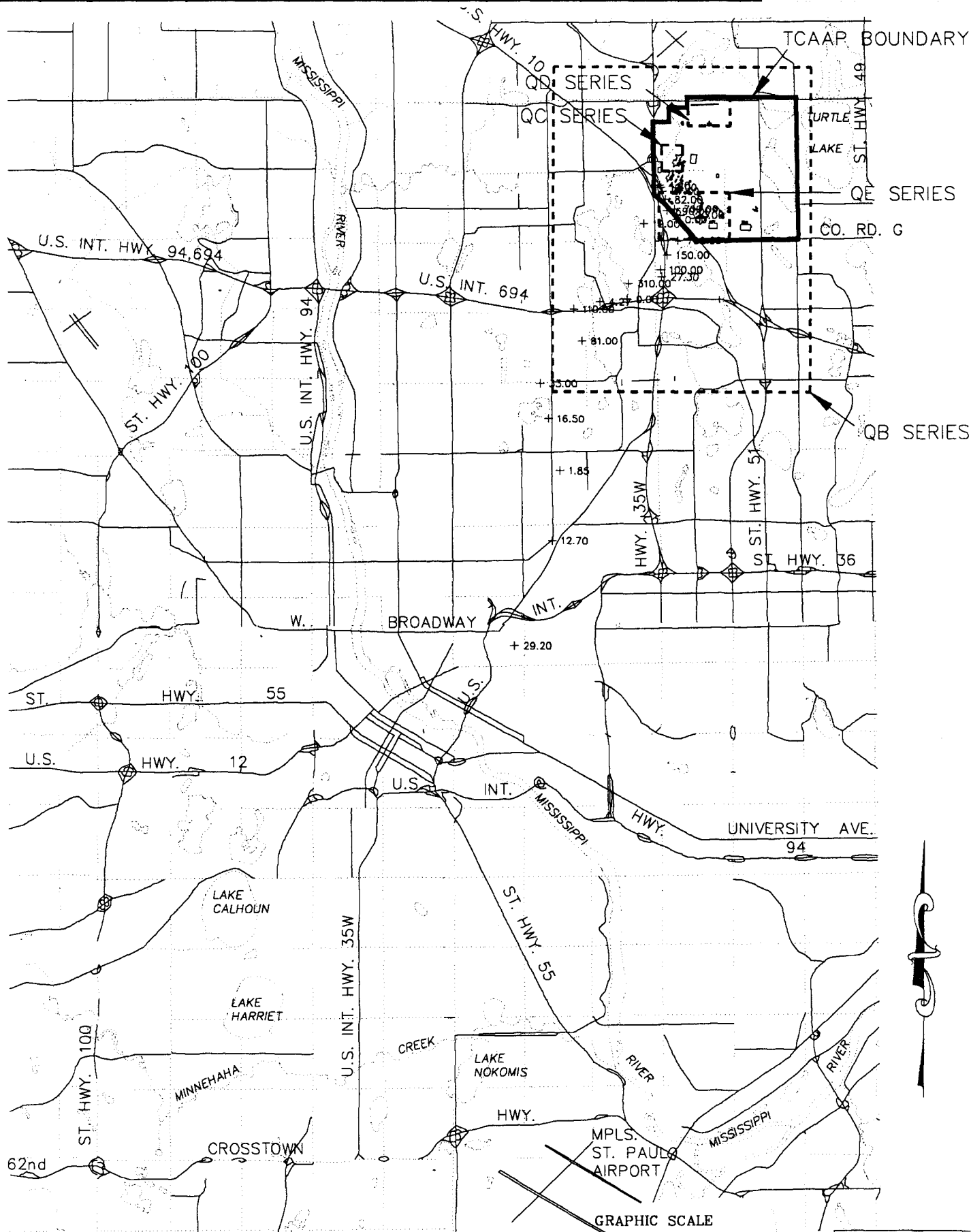
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.5.2.1



4UTRCL. Q22-OA

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Trichloroethene, Unit 4, QA-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**

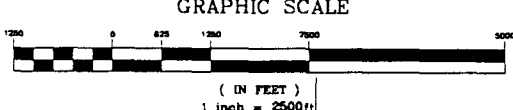
+ CONCENTRATION  
 (ug/l)

MAR 1990

8.5.1.2

LEGEND

+ CONCENTRATION (ug/l)



QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 4.20  
+ 19.00  
+ 27.00

LONG

+ 12.00  
RUSH

+ 700.00  
+ 800.00  
+ 320.00  
+ 7.00

CO. RD. G

LAKE

QE SERIES

+ 150.00

LAKE

ROUND LAKE

+ 100.00

+ 27.30

+ 310.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 4.27

U.S. INT. 694

U.S. INT. 694

+ 81.00

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

4UTRCL. Q22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Unit 4, QB-Series, Spring Quarter 1989(Q22)



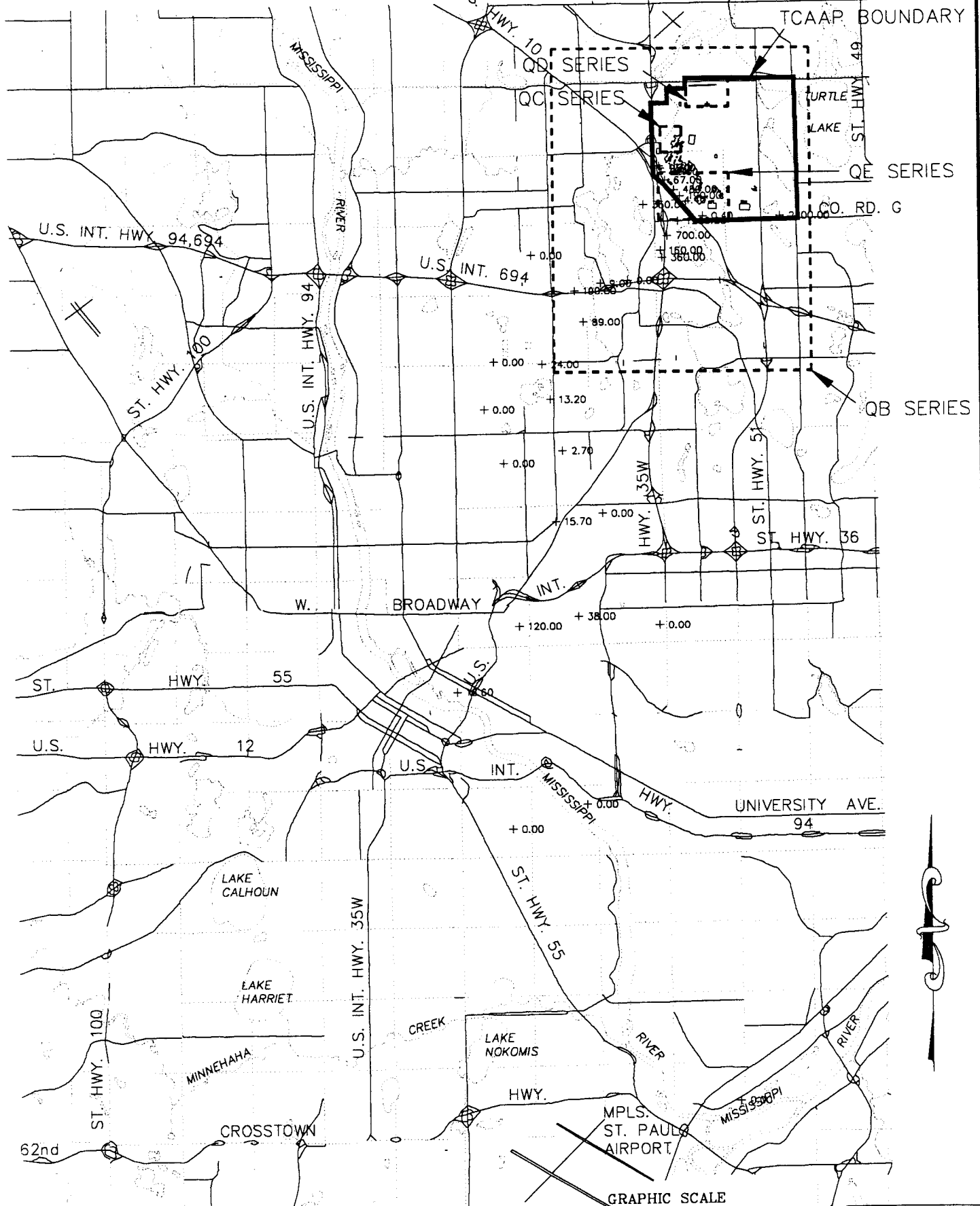
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.5.2.2



4UTRCL.023-OA

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Trichloroethene, Unit 4, QA-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**

+ CONCENTRATION  
 (ug/l)

MAR 1990

8.5.5.1.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500 ft.

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 11.00  
+ 25.00

+ 480.00

+ 190.00

+ 340

+ 350.00

+ 0.40

CO. RD. 200.00

LONG

RUSH

LAKE

QE SERIES

+ 700.00

ROUND LAKE

+ 140.00  
+ 560.00

LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 9.00

+ 0.00

U.S. INT. 190.00 694

+ 89.00

VALENTINE LAKE

U.S. INT. 694

S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4UTRCL. Q23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Unit 4, QB-Series, Summer Quarter 1989(Q23)



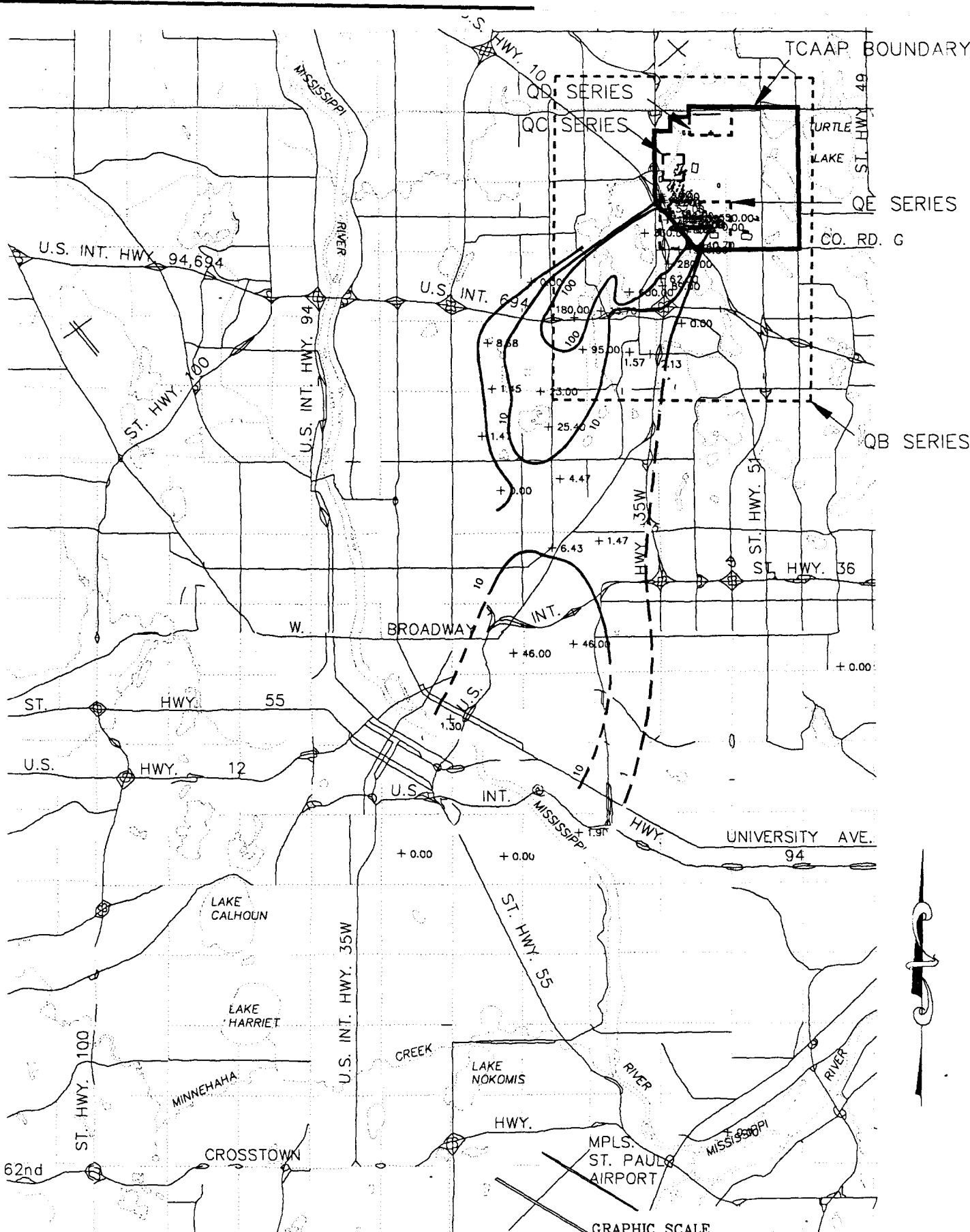
Consulting Engineers

Wenck Associates, Inc.

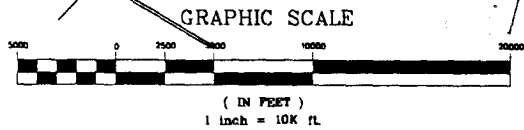
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.5.2.3



4UTRCL. Q24-QA



**LEGEND**  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 Trichloroethene, Unit 4, QA-Series, Fall Quarter 1989(Q24)

**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

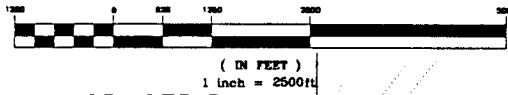
**MAR 1990**  
 8.5.5.1.4



LEGEND

--- CONCENTRATION  
(ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

U.S. INT. 694

100

+ 95.00

+ 13.70

+ 600.00

+ 62.00

+ 89.00

+ 280.00

+ 1.40

+ 900.00

+ 250.00

+ 240.00

+ 220.00

+ 170.00

+ 130.00

+ 30.00

+ 15.00

+ 9.80

+ 2.50

+ 560.00

+ 530.80

+ 0.00

+ 8.60

+ 0.70

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

TCAAP BOUNDARY

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

41 RQLE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Trichloroethene, Unit 4, QB-Series, Fall Quarter 1989(Q24)



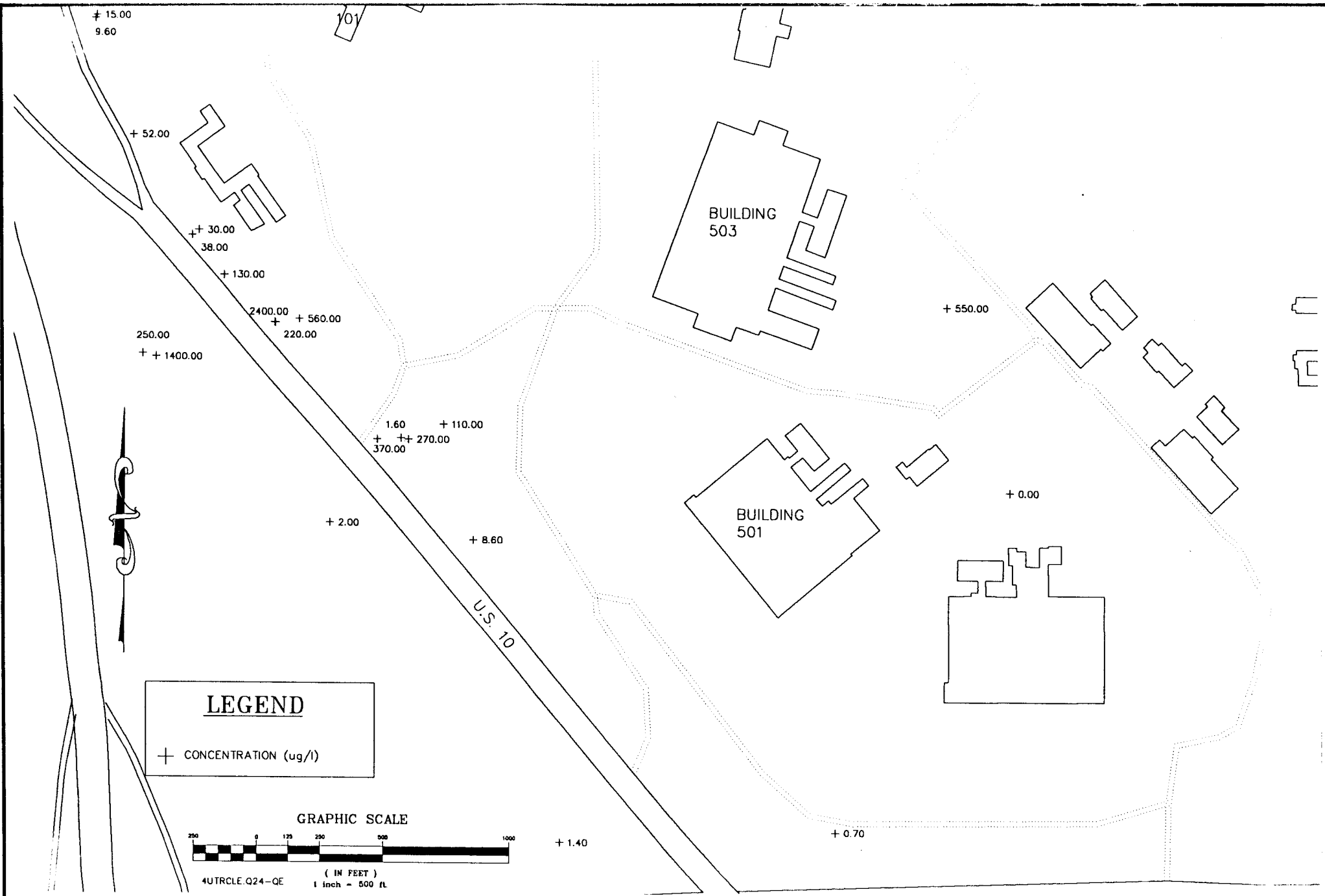
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.5.5.2.4



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Trichloroethene, Unit 4, QE-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

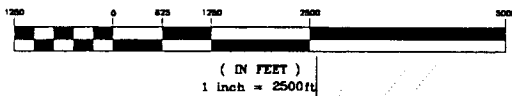
MAR 1990

8.5.5.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND

LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

1U111TCE.Q22-0B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 1, QB-Series, Spring Quarter 1989(Q22)



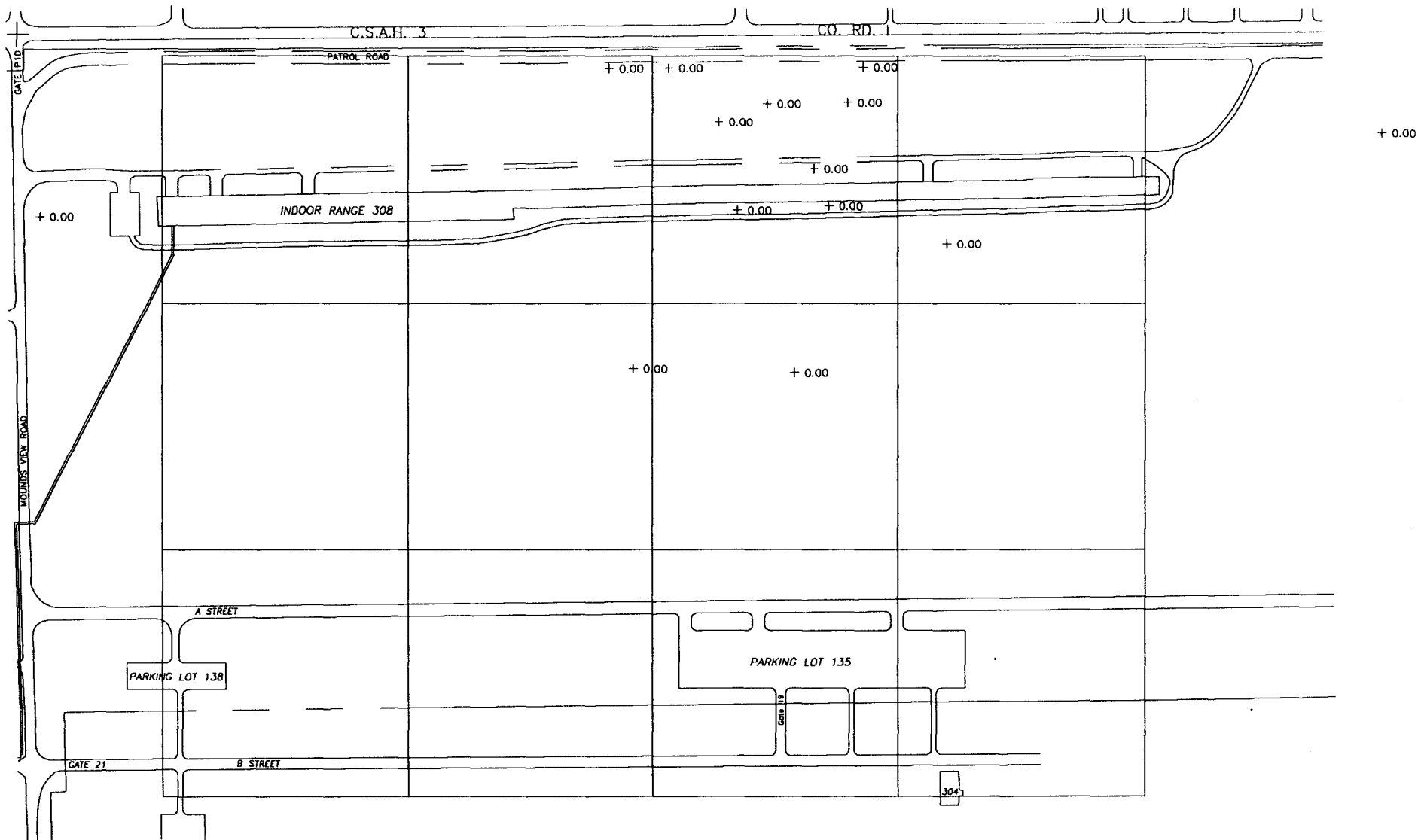
Wenck Associates, Inc.

Consulting Engineers

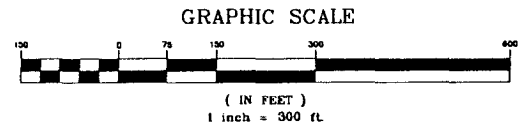
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.1.2.2




1U111TCE.Q22-0

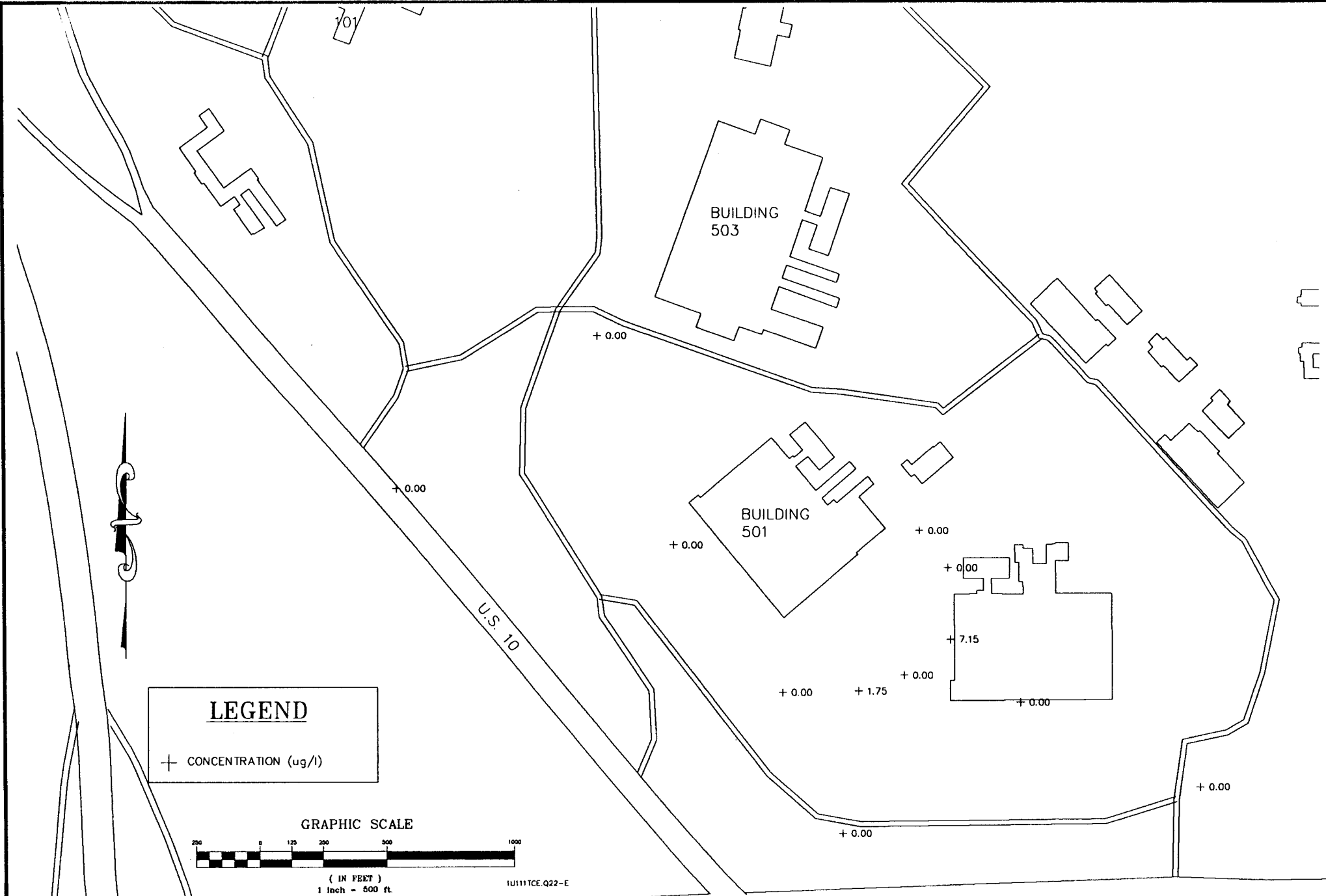


**LEGEND**  
 + CONCENTRATION (ug/l)

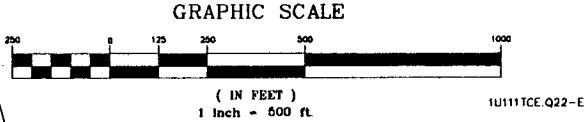
**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 1,1,1-Trichloroethane, Unit 1, QD-Series, Spring Quarter 1989(Q22)

  
**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.6.1.4.2



**LEGEND**  
 + CONCENTRATION (ug/l)



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1,1-Trichloroethane, Unit 1, QE-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

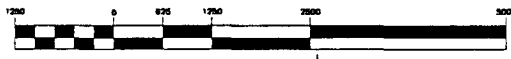
MAR 1990

8.6.1.5.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND

LAKE

U.S. INT. 694

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE

LAKE

ST. HWY. 51

CO. RD. E

MARSDEN LAKE

CO. RD. G

QE SERIES

TCAAP BOUNDARY

LEXINGTON AVE.

1U111TCE.Q23-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 1, QB-Series, Summer Quarter 1989(Q23)



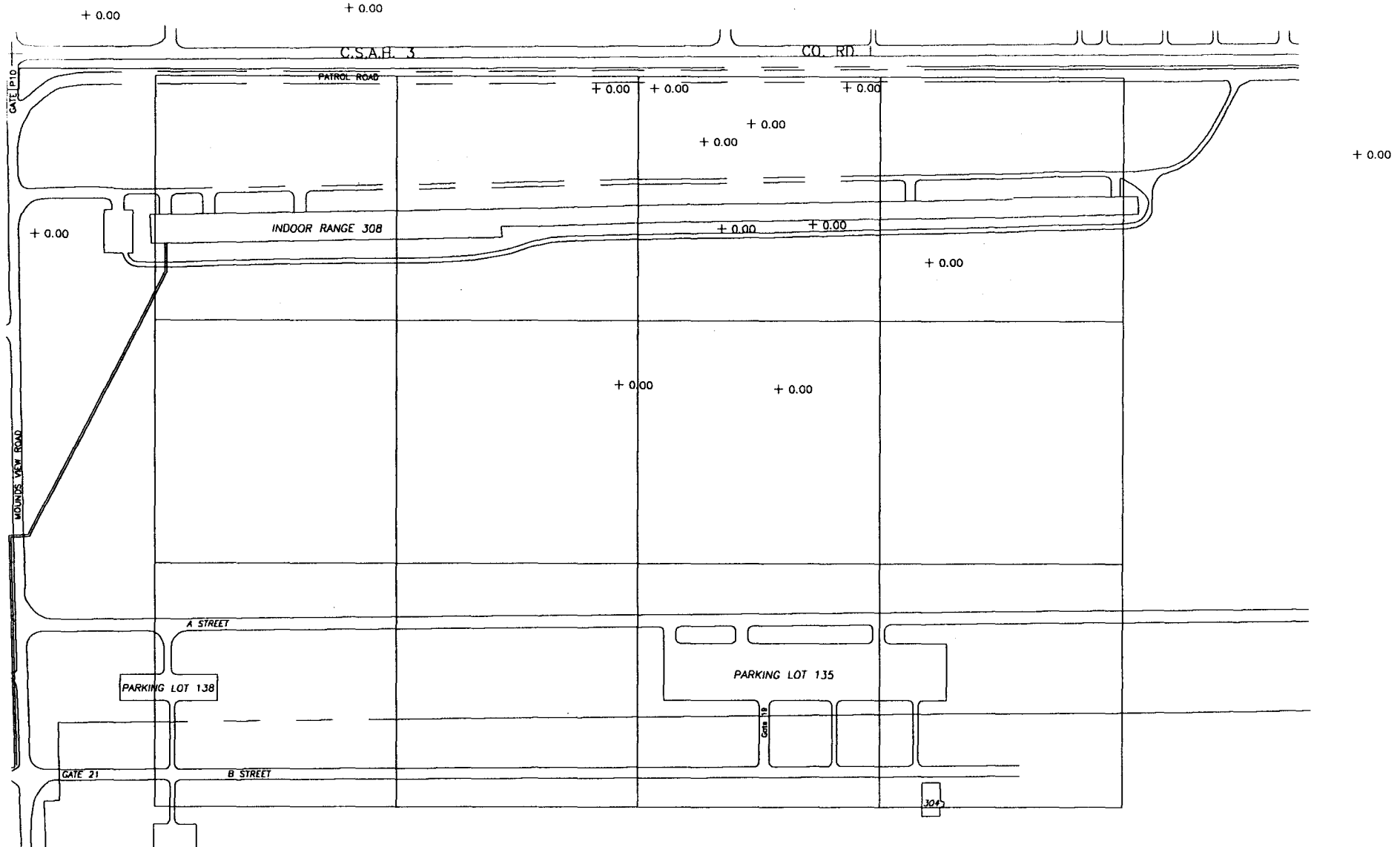
Wenck Associates, Inc.

Consulting Engineers

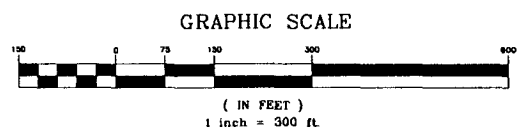
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990


8.6.1.2.3



1U111TCE.Q23-D



**LEGEND**  
 + CONCENTRATION (ug/l)

<b>TWIN CITIES ARMY AMMUNITION PLANT</b>	 <b>Consulting Engineers</b>	<b>MAR 1990</b>
Groundwater Quality Data Plot 1,1,1-Trichloroethane, Unit 1, QD-Series, Summer Quarter 1989(Q23)	<b>Wenck Associates, Inc.</b> 1800 Pioneer Creek Dr. Maple Plain, MN 55359	<b>8.6.1.4.3</b>





LEGEND

--- CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND

LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

0.00

U.S. INT. HWY. 35W

10111TCE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 1, QB-Series, Fall Quarter 1989(Q24)



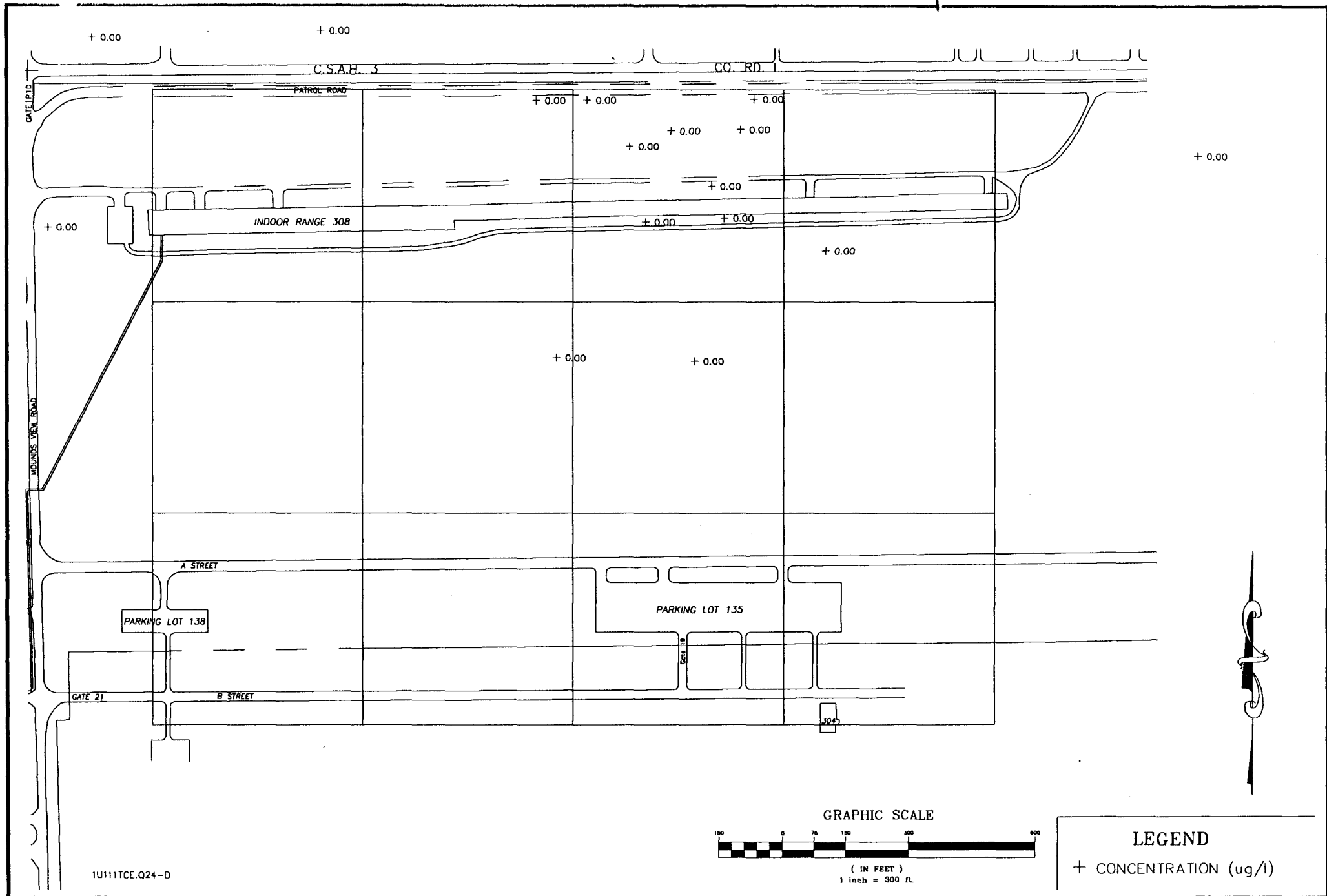
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.1.2.4



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1,1-Trichloroethane, Unit 1, QD-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

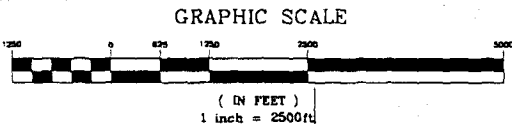
1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990

8.6.1.4.4

LEGEND

+ CONCENTRATION (mg/l)



QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

3U111TCE.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

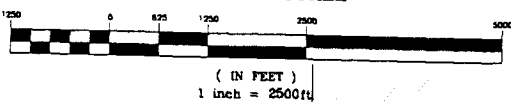
MAR 1990

8.6.2.2.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

CO. RD. I  
QD SERIES

ST. HWY. 65

QC SERIES  
U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

+ 0.00

MARSDEN LAKE

RICE

LONG

+ 14.90

RUSH

+ 0.00

+ 7.00

+ 6.70

+ 2800.00

+ 28.00

+ 490.00

+ 3400.00

+ 25.00

+ 36.00

+ 62.00

+ 14.30

LAKE

LAKE

+ 0.00

+ 0.00

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

CO. RD. G

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

3U111TCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



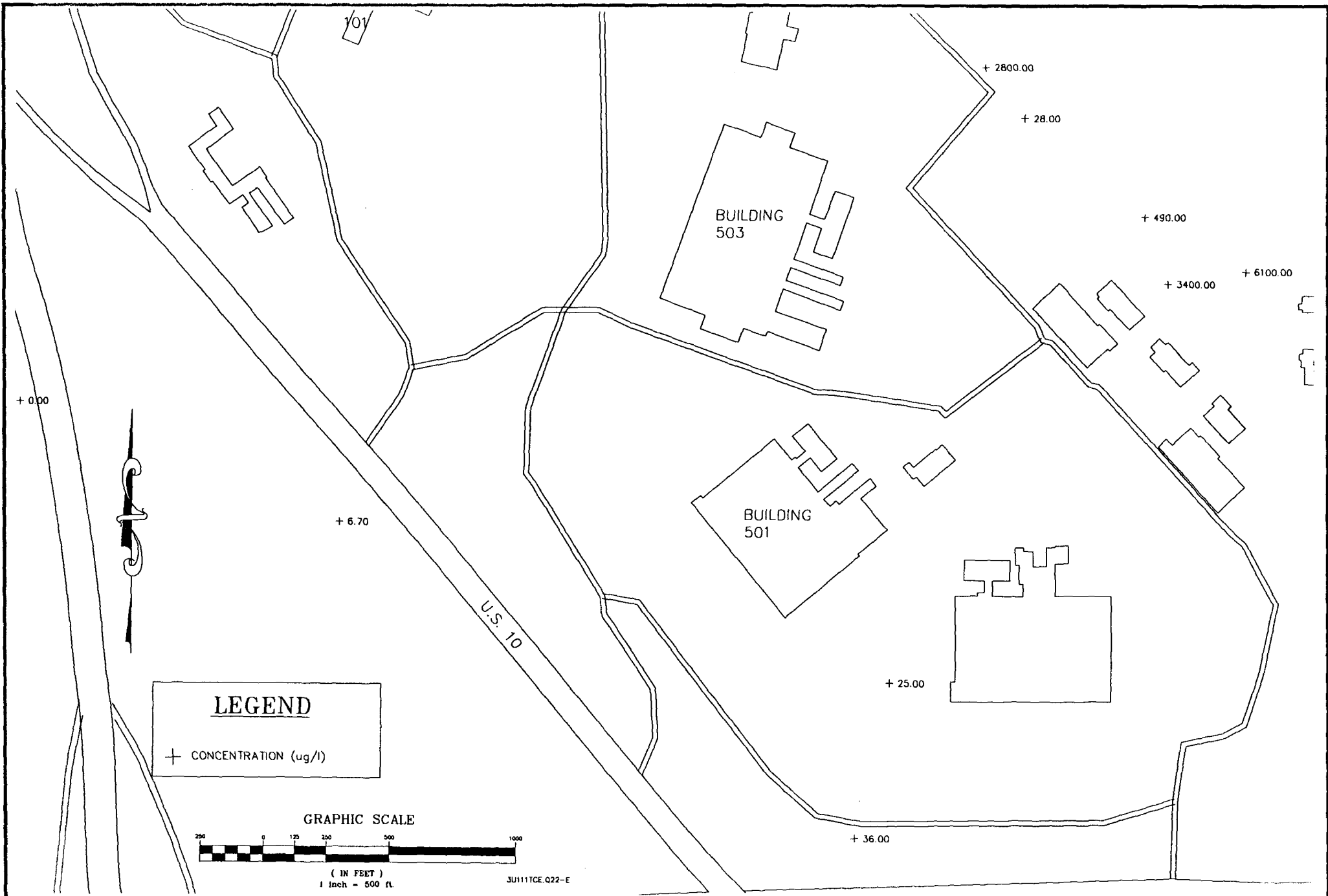
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.2.2



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
1,1,1-Trichloroethane, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.2.5.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

+ 0.00

TCAAP BOUNDARY

CO. RD. I

QC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

+ 0.30

CO. RD. H

CREEK

RICE

MARSDEN LAKE

LONG

+ 0.00

+ 5800.00  
+ 29.00  
+ 620.00  
+ 3000.00

RUSH

+ 0.00

+ 81.00

+ 270.00

CO. RD. G

QE SERIES

+ 140.00

+ 10.50

LAKE

ROUND LAKE

LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3U111TCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



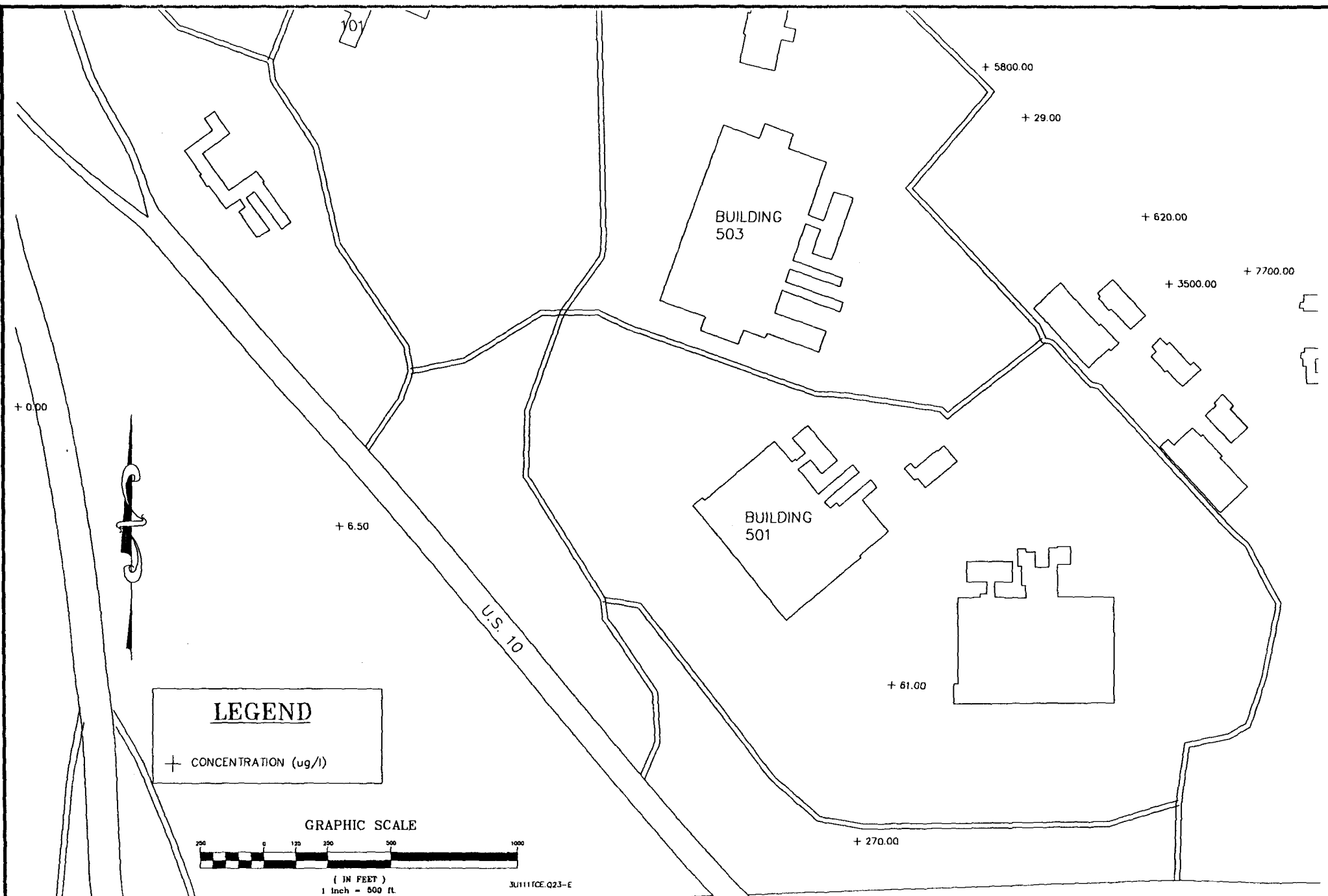
Wenck Associates, Inc.

Consulting Engineers

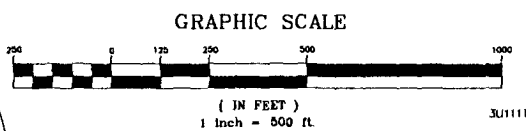
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.2.2.3



**LEGEND**  
 + CONCENTRATION (ug/l)



JU1111CE.Q23-E

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1,1-Trichloroethane, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)

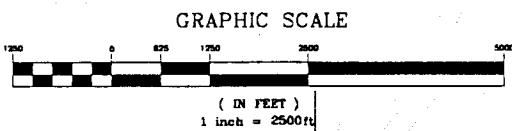


Consulting Engineers  
 Wenck Associates, Inc.  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990  
 8.6.2.5.3

LEGEND

± CONCENTRATION (ug/l)



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 1.10

+ 0.00

+ 2.90+ 14.00

CO. RD. H

CREEK

+ 0.00

+ 0.30

MARSDEN LAKE

RICE

+ 0.90

+ 13000.00

+ 1200.00

+ 7000.00

+ 35.00

+ 1.10

LONG

+ 1.01

+ 7.00

+ 130.00

+ 1600.00

+ 35.00

+ 22.00

+ 10.00

+ 17.00

+ 4.00

+ 25.00

+ 19.00

+ 86.00

+ 90.00

+ 0.00

+ 9.80

+ 10.00

+ 17.00

+ 34.00

+ 75.00

+ 280.00

+ 120.00

+ 130.00

+ 90.00

+ 0.60

+ 0.90

+ 1.10

+ 890.00

+ 10000.00

+ 3500.00

+ 0.60

+ 0.90

+ 1.10

+ 0.00

+ 0.00

CO. RD. G

LEXINGTON AVE.

QE SERIES

+ 66.00

+ 6.29

LAKE

ROUND LAKE

LAKE

+ 0.00

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

SOUTHCE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

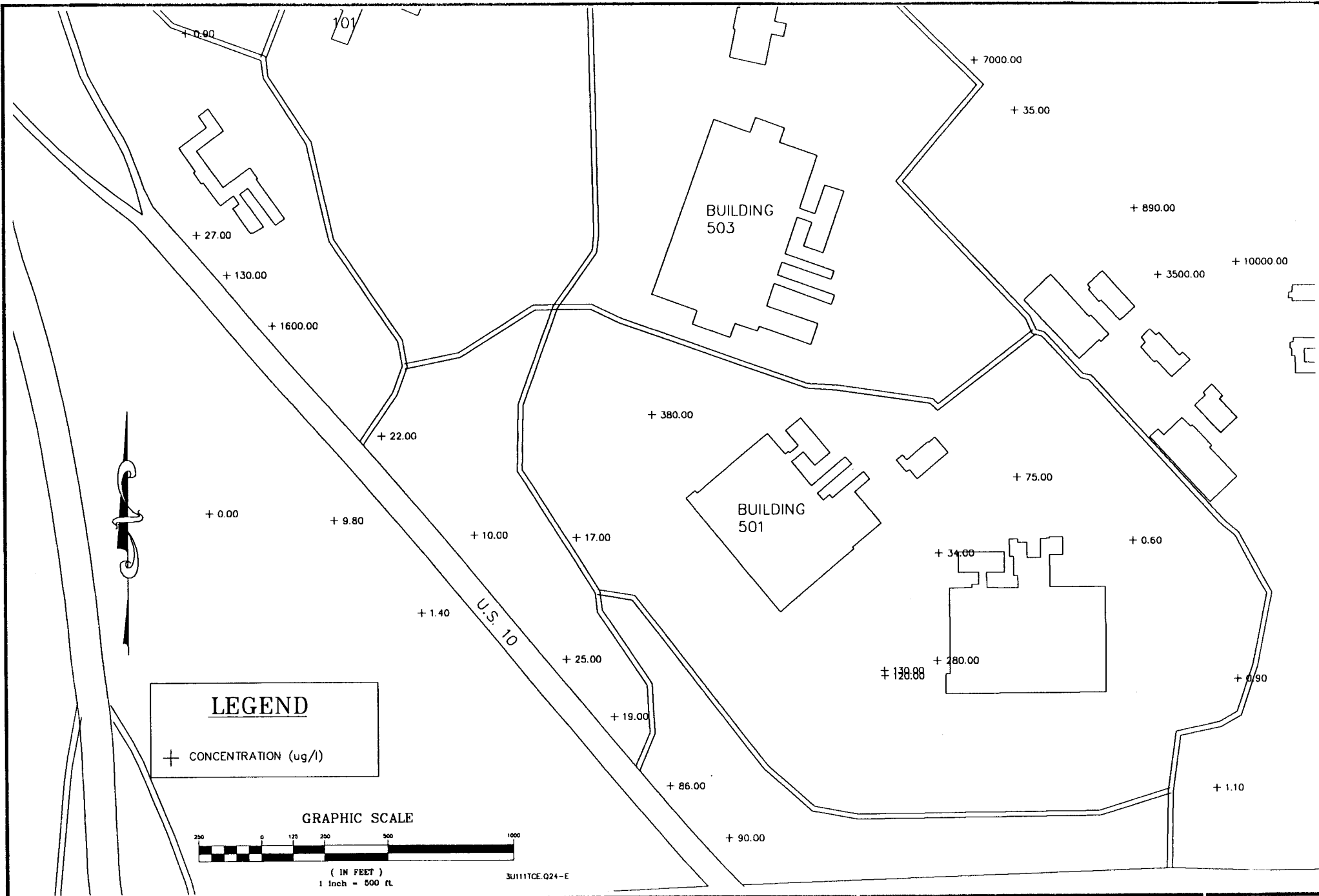
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.2.2.4





**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1,1-Trichloroethane, Upper Unit 3, QE-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

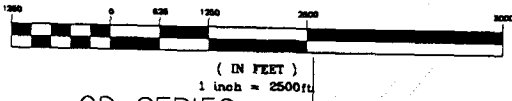
MAR 1990

8.6.2.5.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3M111TCE.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.6.3.2.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M111TCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

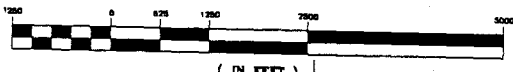
MAR 1990

8.6.3.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

MARSDEN LAKE

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M111TCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

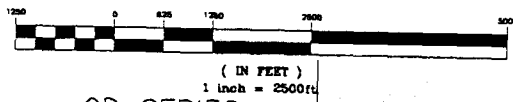
MAR 1990

8.6.3.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

3M111TCE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)



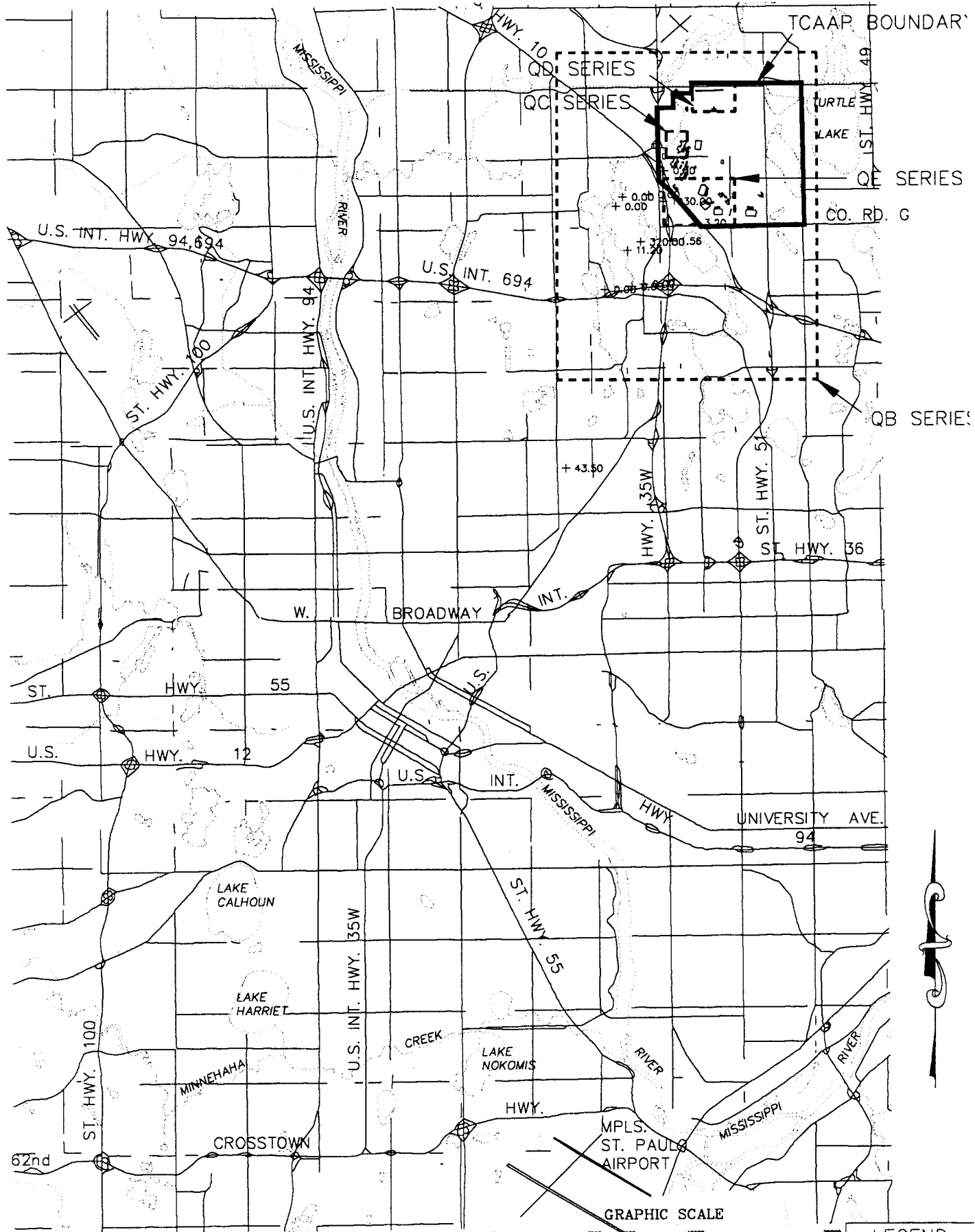
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.3.2.4



3L111TCE.Q22

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1,1-Trichloroethane, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990

8.6.4.1.2

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 0.00

LONG

+ 0.00

+ 0.30.00

RUSH

LAKE

+ 320.00

+ 1.56

QE SERIES

CO. RD. G

LAKE

+ 11.20

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

L111TCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)



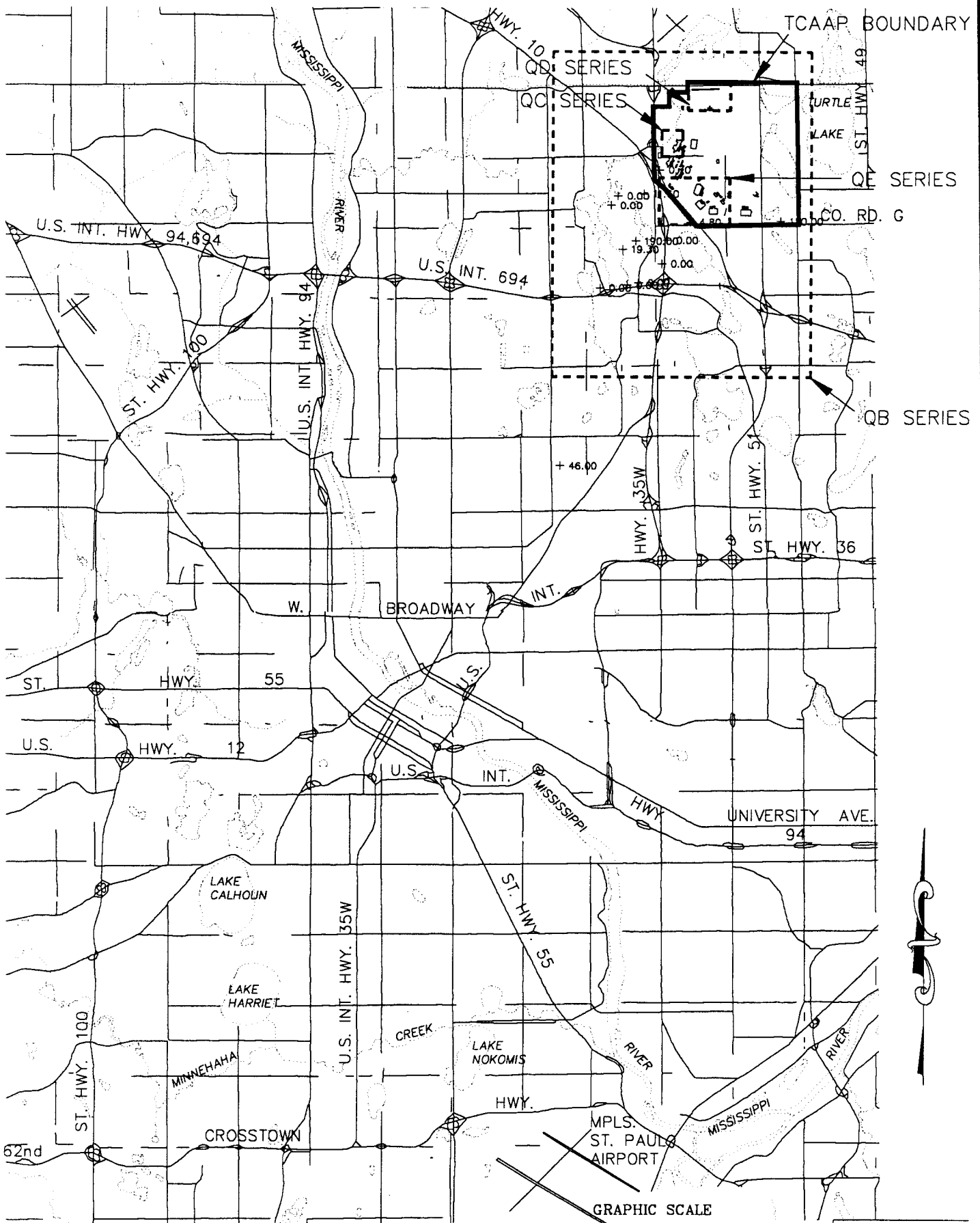
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.4.2.2



5L111TCE.Q23

LEGEND

+ CONCENTRATION  
(µg/l)

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Lower Unit 3, QA-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

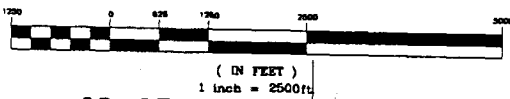
8.6.4.1.3



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.70

+ 0.00

+ 11.60

LONG

+ 0.00

RUSH

+ 0.80

CO. RD. J

LAKE

+ 190.00

QE SERIES

LAKE

+ 19.30

ROUND LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 0.00

+ 0.00

+ 0.00

U.S. INT. 694

+ 0.00

VALENTINE LAKE

U.S. INT. 694

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3L111TCE.023

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

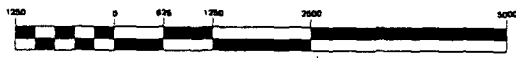
MAR 1990

8.6.4.2.3

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 4.30

+ 0.00

+ 0.00

+ 0.98

+ 4.75

+ 0.00

+ 380.00

+ 0.00

+ 68.00

+ 20.00

LONG

+ 0.00

RUSH

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

CO. RD. G

LAKE

+ 280.00

QE SERIES

LAKE

+ 19.00

ROUND LAKE

+ 0.00

+ 1.56

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

3L111TCE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



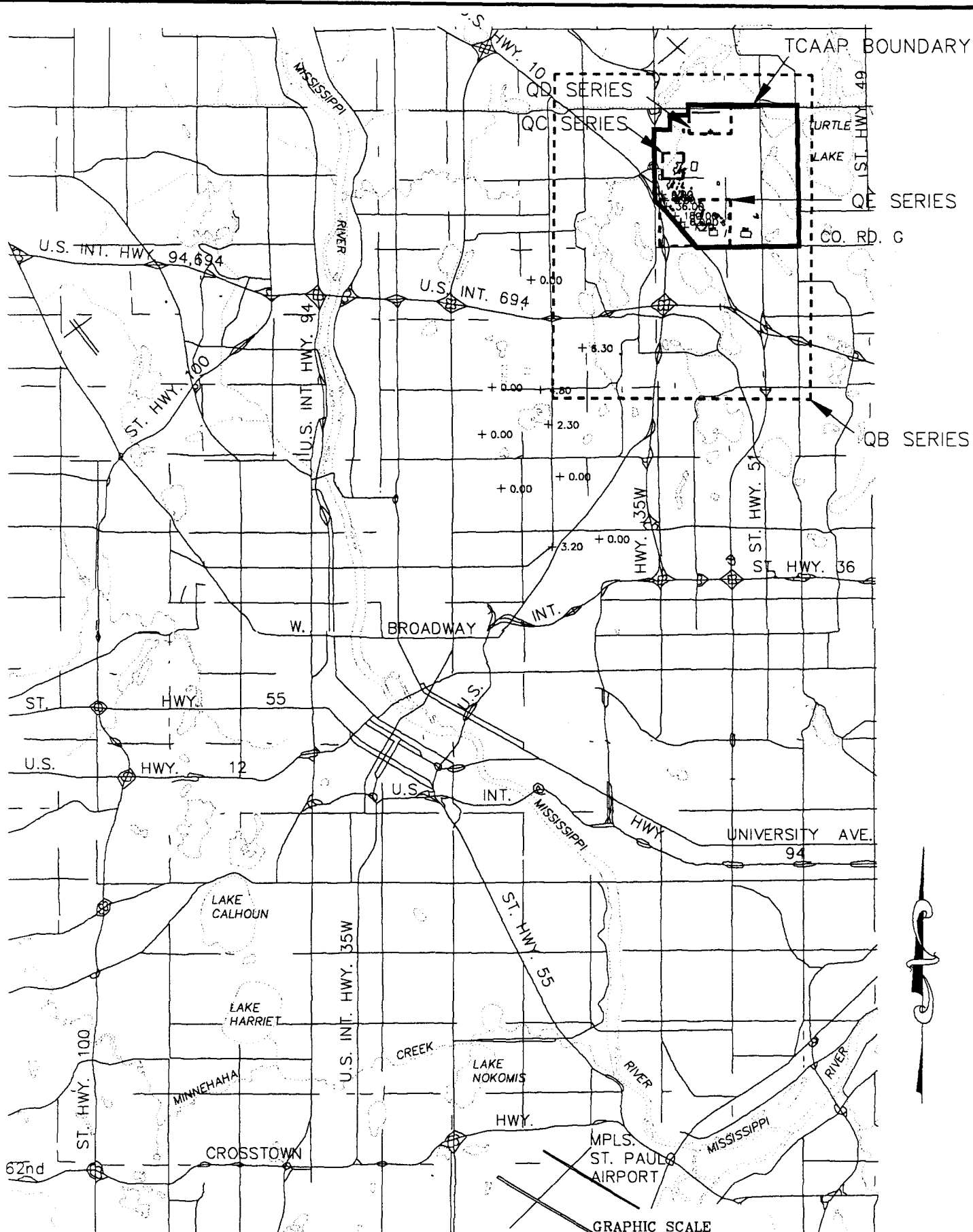
Wenck Associates, Inc.

Consulting Engineers

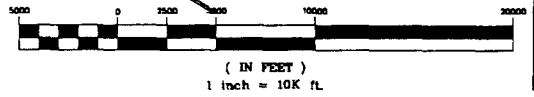
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.4.2.4



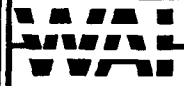
J111TCE.Q21



LEGEND  
 + CONCENTRATION  
 (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1,1-Trichloroethane, Unit 4, QA-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

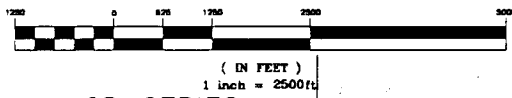
MAR 1990

8.6.5.1.1

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

MARSDEN LAKE

LONG

RUSH

LAKE

CO. RD. G

LAKE

ROUND LAKE

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 6.30

VALENTINE LAKE

U.S. INT. 694

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4U111TCE.Q21-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 4, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.5.2.1



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500 ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

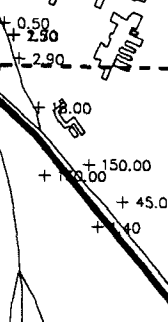
LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE



LONG

RUSH

CO. RD. G

LAKE

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. HWY. 694

U.S. INT. 694

+ 11.10

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

4U111TCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 4, QB-Series, Spring Quarter 1989(Q22)



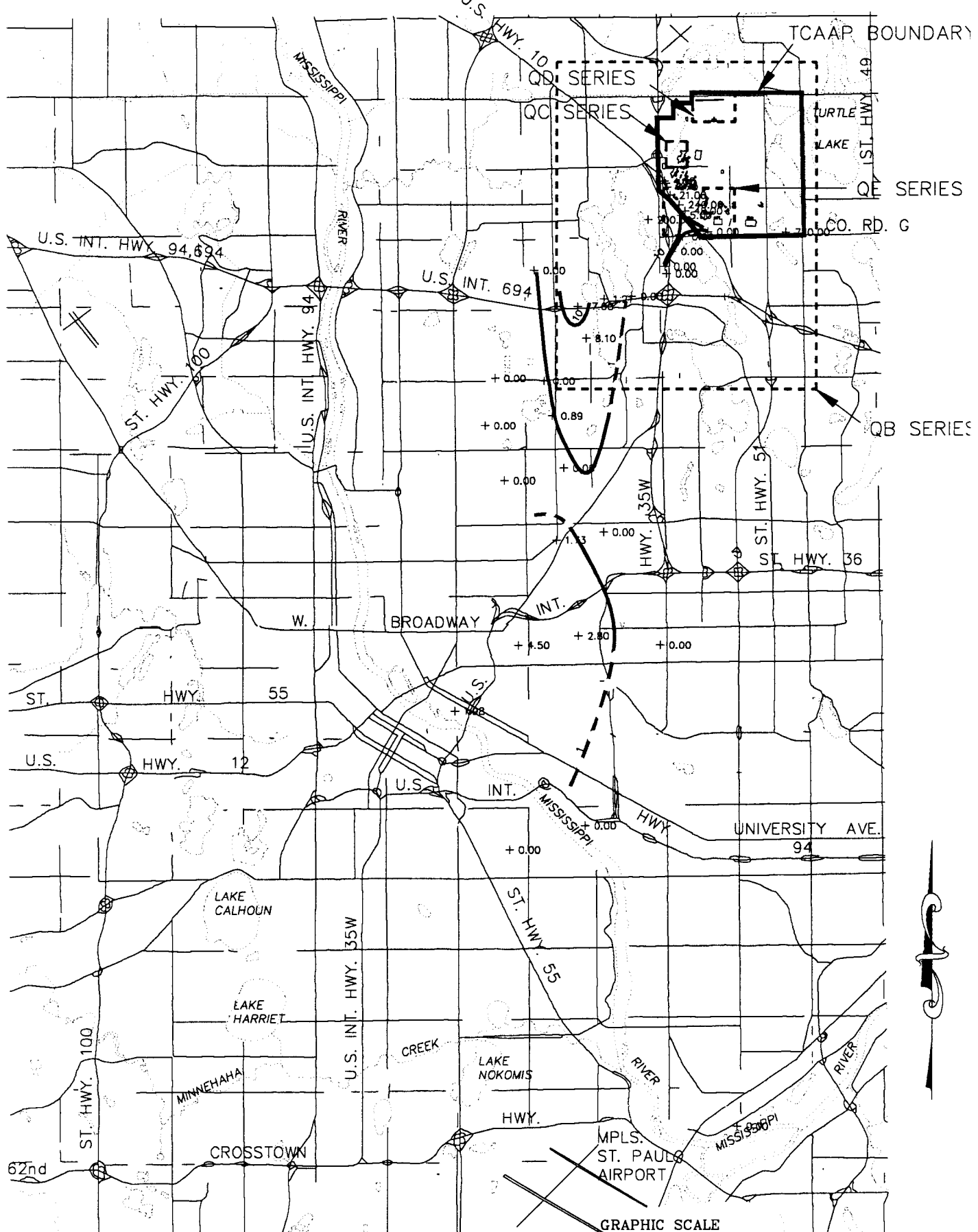
Consulting Engineers

Wenck Associates, Inc.

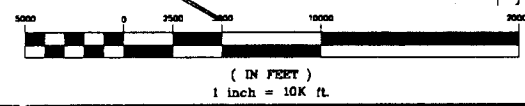
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.5.2.2



HU111TCE.Q23



**LEGEND**  
 + CONCENTRATION  
 (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Isoconcentration Contours  
 1,1,1-Trichloroethane, Unit 4, QA-Series, Summer Quarter 1989(Q23)

**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.6.5.1.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

MARSDEN LAKE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 1.21

+ 0.00

+ 8.10

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

4U111TCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

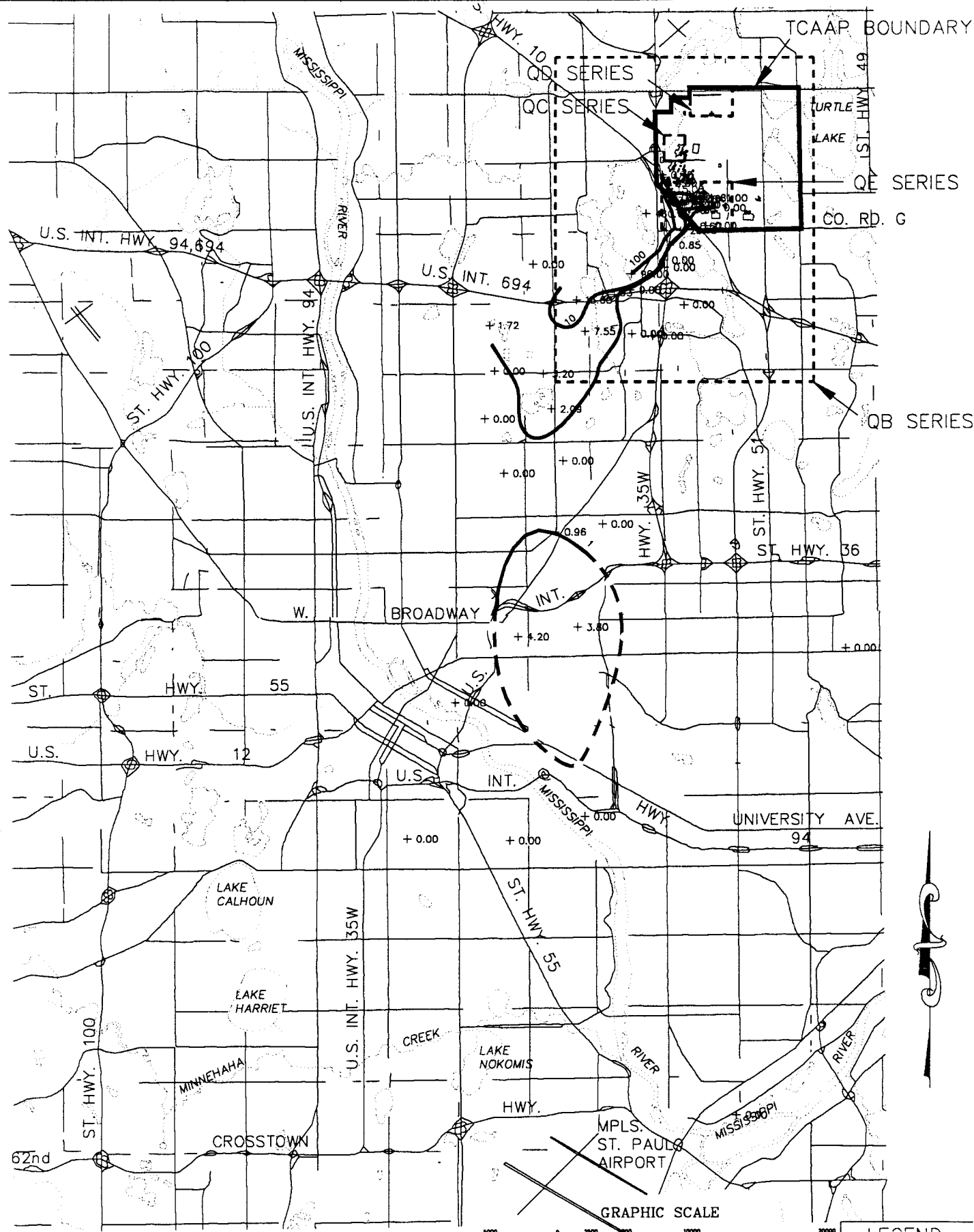
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.5.2.3





4011TCE.Q24

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Isoconcentration Contours  
 1,1,1-Trichloroethane, Unit 4, QA-Series, Fall Quarter 1989(Q24)



**Wenck Associates, Inc.**

**Consulting Engineers**

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**

+ CONCENTRATION  
 (ug/l)

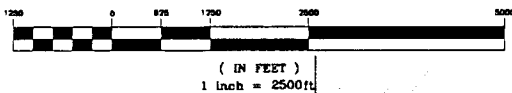
**MAR 1990**

8.6.5.1.4

LEGEND

CONCENTRATION  
(ug/l)

GRAPHIC SCALE



TCAAP  
BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND  
LAKE

+ 96.00

+ 1.93

+ 0.00

+ 0.85

+ 0.00

+ 0.00

U.S. INT. 694

+ 7.55

+ 0.00

+ 0.00

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE  
LAKE

ST. HWY. 51

CO. RD. E

CO. RD. G

QE SERIES

MARSDEN  
LAKE

4U111TCE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 4, QB-Series, Fall Quarter 1989(Q24)



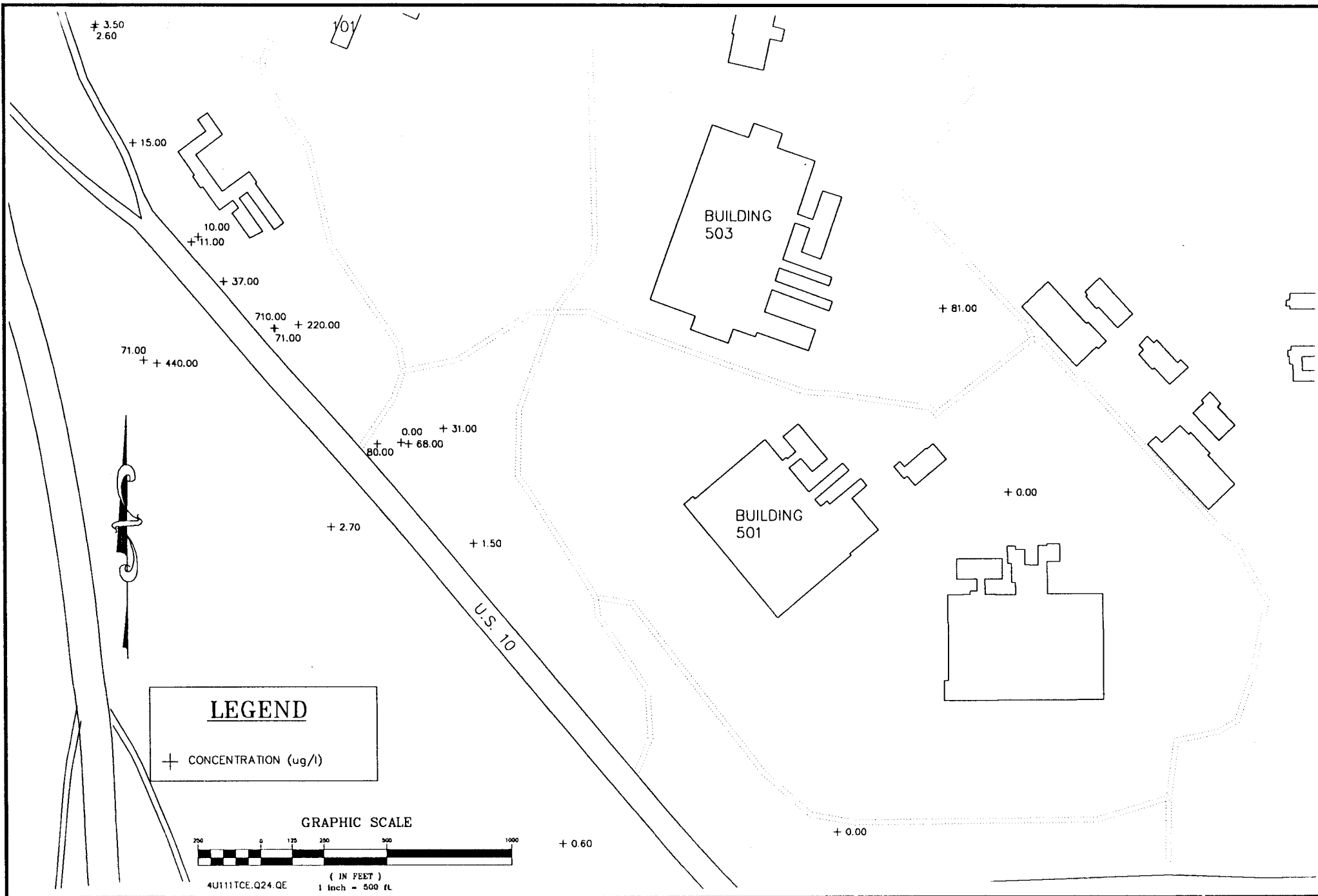
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.6.5.2.4



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot

1,1,1-Trichloroethane, Unit 4, QE-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

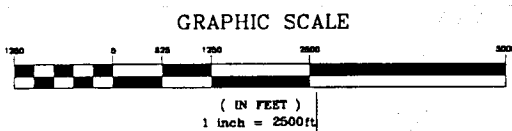
1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990

8.6.5.4

LEGEND

+ CONCENTRATION (ug/l)



QD SERIES

CO. RD. I

TCAAP BOUNDARY

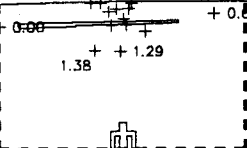
QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

1.36



+ 0.00

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

U.S. INT. 694

U.S. INT. HWY. 35W

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

1U11DCE Q22-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Unit 1, QB-Series, Spring Quarter 1989(Q22)



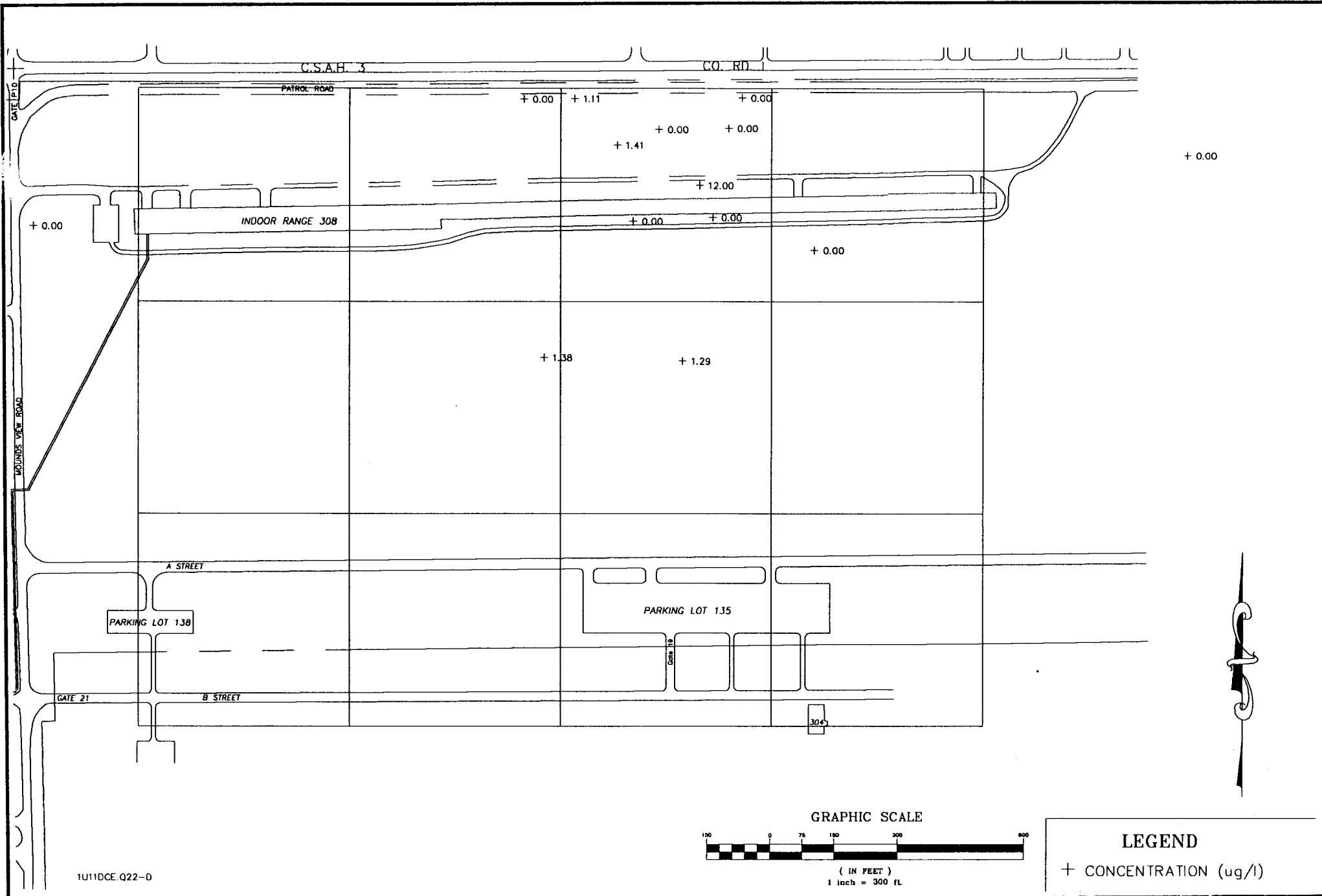
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.1.2.2



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1-Dichloroethene, Unit 1, QD-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990

8.7.1.4.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

U.S. INT. 694

U.S. INT. HWY. 35W

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

MARSDEN LAKE

CO. RD. G

TCAAP BOUNDARY

IU111DCE.Q23-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Unit 1, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

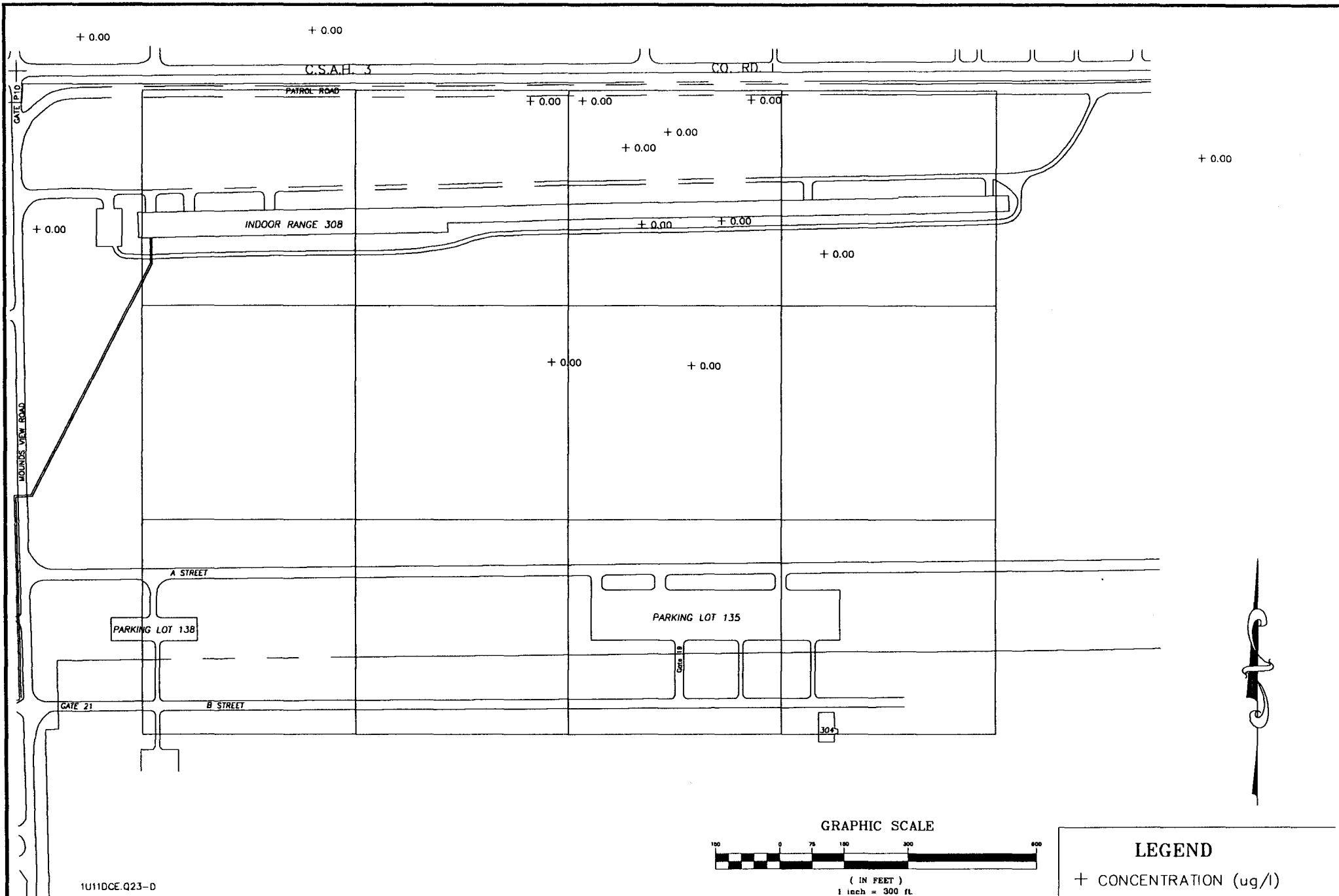
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.1.2.3





1U11DCE.Q23-D

GRAPHIC SCALE



( IN FEET )  
1 inch = 300 ft.

**LEGEND**

+ CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
1,1-Dichloroethene, Unit 1, QD-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.1.4.3



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

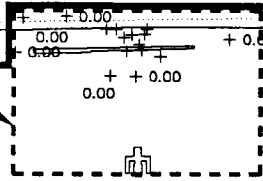
CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W



CO. RD. H

CREEK

MARSDEN LAKE

LEXINGTON AVE.

RICE

LONG

RUSH

LAKE

ROUND LAKE

LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

+ 0.00

UNIT 1, E.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Unit 1, QB-Series, Fall Quarter 1989(Q24)



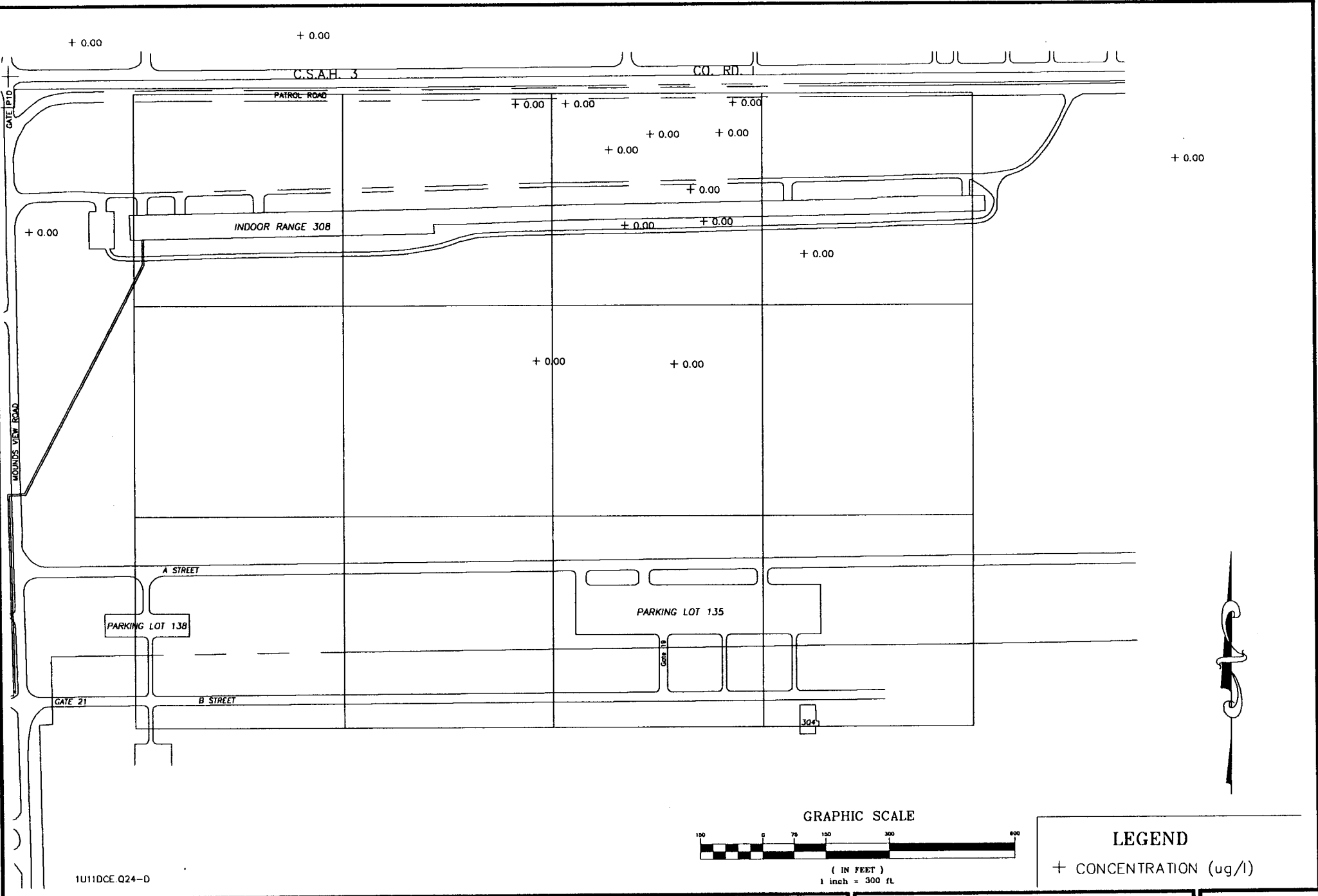
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.1.2.4



1U11DCE.Q24-D

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 1,1-Dichloroethene, Unit 1, QD-Series, Fall Quarter 1989(Q24)



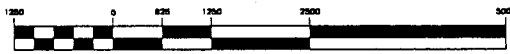
**Consulting Engineers**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.7.1.4.4

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

JU11DCE.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

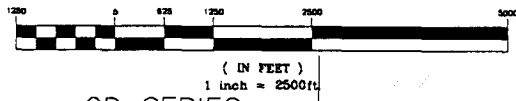
MAR 1990

8.7.2.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

+ 0.00

MARSDEN LAKE

RICE

+ 5.50

+ 650.00

+ 4.90

+ 100.00

+ 500.00

+ 18.00

+ 14.00

LONG

RUSH

CO. RD. G

LAKE

QE SERIES

+ 17.00

+ 2.77

ROUND LAKE

LAKE

+ 0.00

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

3U11DCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



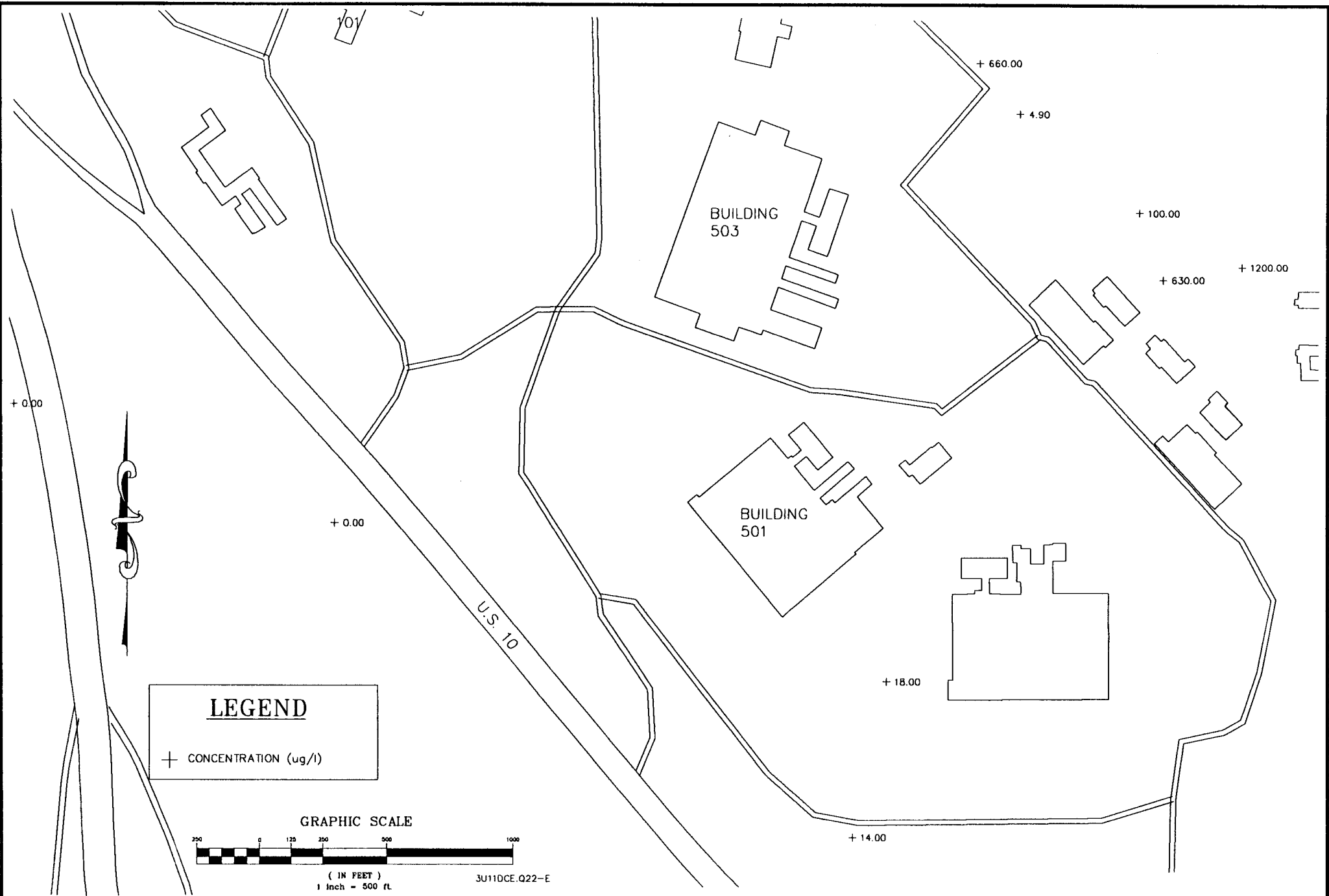
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.7.2.2.2



**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 1,1-Dichloroethene, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)

**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.7.2.5.2

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

+ 0.00

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

+ 0.00

MARSDEN LAKE

RICE

+ 0.00

+ 0.00

+ 1200.00  
+ 9.20

+ 150.00  
+ 180.00

+ 18.00

+ 110.00

LONG

RUSH

+ 0.00

QE SERIES

CO. RD. G

+ 0.00

+ 1.66

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

9U11DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



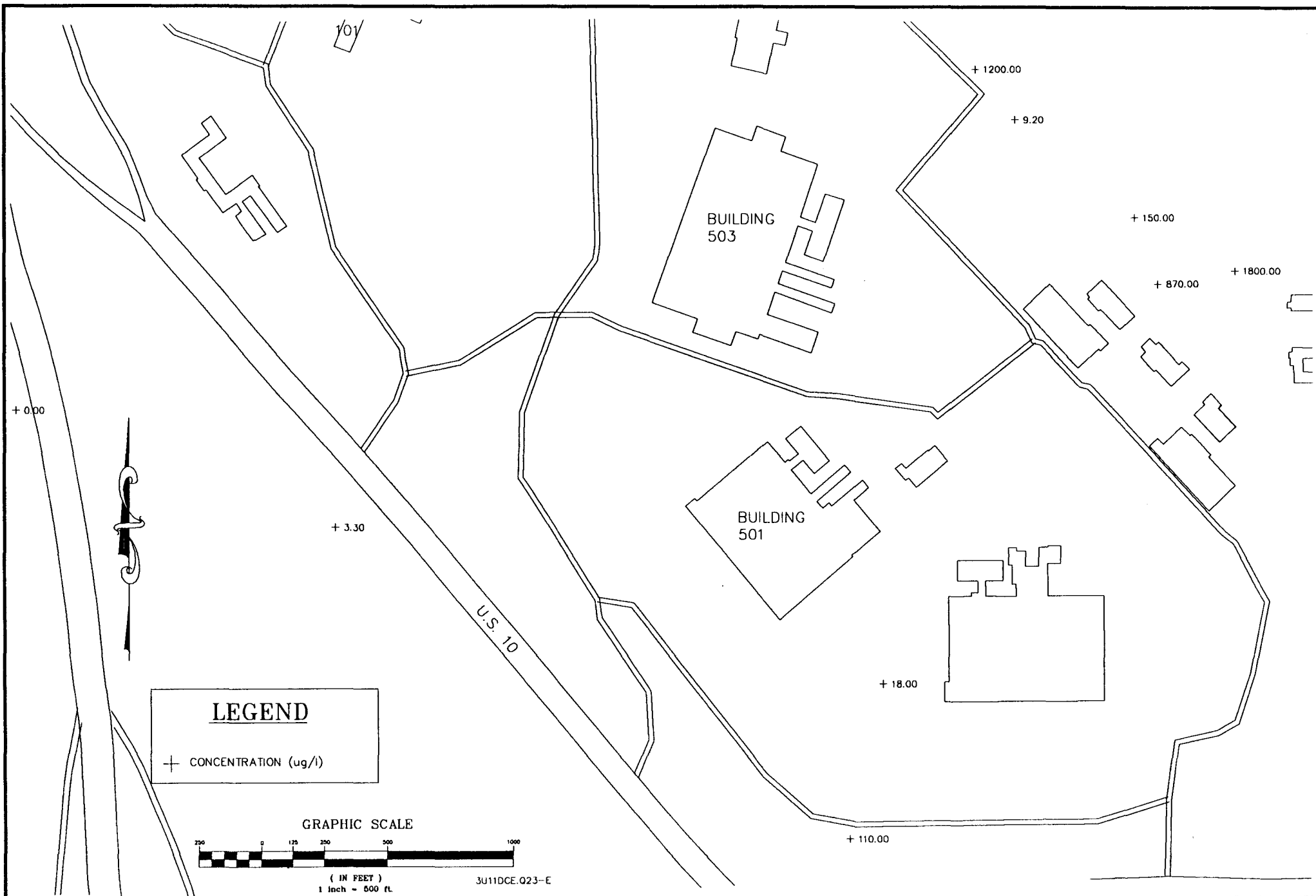
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.2.2.3



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1-Dichloroethene, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990

8.7.2.5.3

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 0.00

+ 0.00

+ 0.30+ 2.20

CO. RD. H

CREEK

+ 0.00

+ 0.00

MARSDEN LAKE

RICE

+ 1800.00

+ 210.00

+ 0.00

LONG

+ 0.74

+ 25.00

+ 360.00

+ 760.00

+ 8.70

+ 160.00

+ 1600.00

+ 0.00

RUSH

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

CO. RD. G

QE SERIES

LAKE

+ 39.00

+ 2.03

ROUND LAKE

+ 0.00

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3U11DCE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.2.2.4

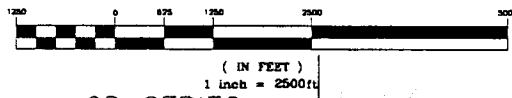




LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

CO. RD. G

QE SERIES

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694



VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M11DCE.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

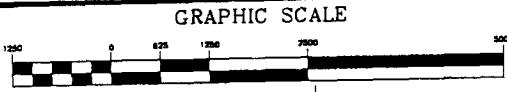
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.3.1

LEGEND

+ CONCENTRATION (ug/l)



QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

ROUND LAKE

+ 0.00

U.S. INT. 694

+ 0.00

VALENTINE LAKE

J.S. INT. HWY. 35W

U.S. HWY. 10

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

CO. RD. E

TCAAP BOUNDARY

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

QE SERIES

LEXINGTON AVE.

3M11DCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
1,1-Dichloroethene, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

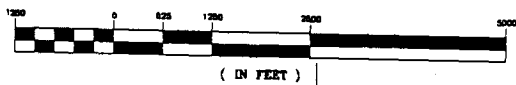
MAR 1990

8.7.3.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

QE SERIES

CO. RD. G

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

3M11DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

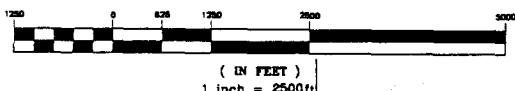
MAR 1990

8.7.3.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M11DCE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

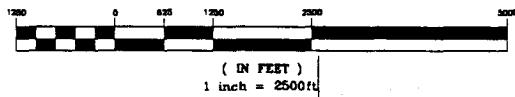
MAR 1990

8.7.3.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

+ 0.00

+ 0.00

LONG

+ 0.00

RUSH

+ 230.00

LAKE

+ 56.00

+ 2.64

LAKE

+ 0.00

ROUND LAKE

+ 0.00

+ 0.00

+ 0.00

U.S. INT. 694

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

MARSDEN LAKE

CO. RD. G

TCAAP BOUNDARY

LEXINGTON AVE.

IL11DCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
1,1-Dichloroethene, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

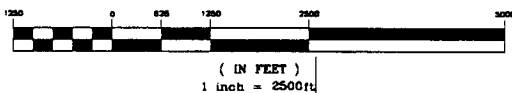
MAR 1990

8.7.4.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

0.20

+ 0.00

+ 3.74

LONG

+ 0.00

RUSH

CO. RD. J

QE SERIES

LAKE

+ 0.00

+ 0.00

LAKE

+ 0.00

ROUND LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

+ 0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

3L11DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

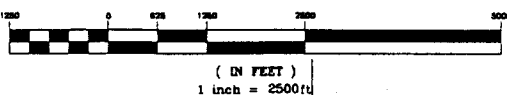
MAR 1990

8.7.4.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 1.70

+ 0.00

+ 0.00

+ 0.73

+ 2.84

+ 0.00

+ 150.00

+ 42.00

+ 11.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

CO. RD. G

QE SERIES

LAKE

+ 1.08

+ 90.00

+ 1.16

ROUND LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.77

+ 0.00

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3L11DCF 024

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.4.2.4



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 0.00

+ 0.00

+ 38.00

+ 0.000

+ 0.00

LONG

RUSH

CO. RD. G

LAKE

QE SERIES

ROUND LAKE

LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 1.50

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4U11DCE.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Unit 4, QB-Series, Winter Quarter 1989(Q21)



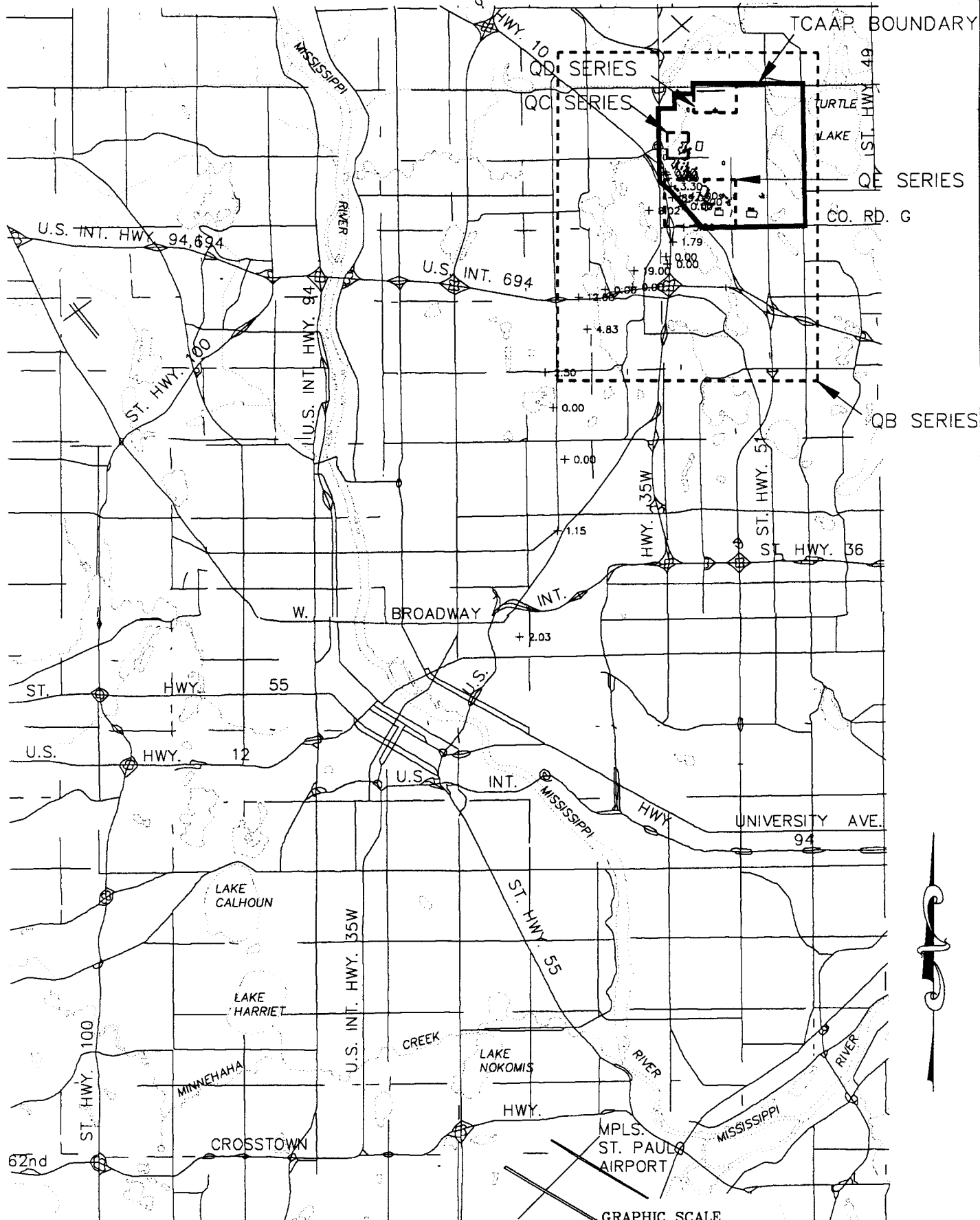
Wenck Associates, Inc.

Consulting Engineers

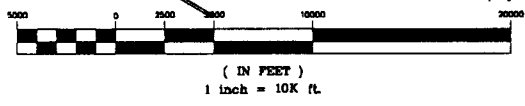
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.5.2.1



4U11DCE.Q22



LEGEND  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 1,1-Dichloroethene, Unit 4, QA-Series, Spring Quarter 1989(Q22)

**WAL**  
**Consulting Engineers**  
**Wenck Associates, Inc.**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.7.5.1.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

TCAAP BOUNDARY

CO. RD. I

QC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

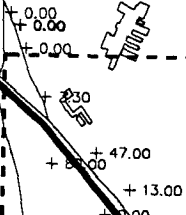
LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE



LONG

RUSH

LAKE

QE SERIES

CO. RD. G

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 19.00

+ 0.00

+ 0.00

U.S. INT. 694

+ 0.00

+ 0.00

+ 4.83

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

4U11DCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Unit 4, QB-Series, Spring Quarter 1989(Q22)



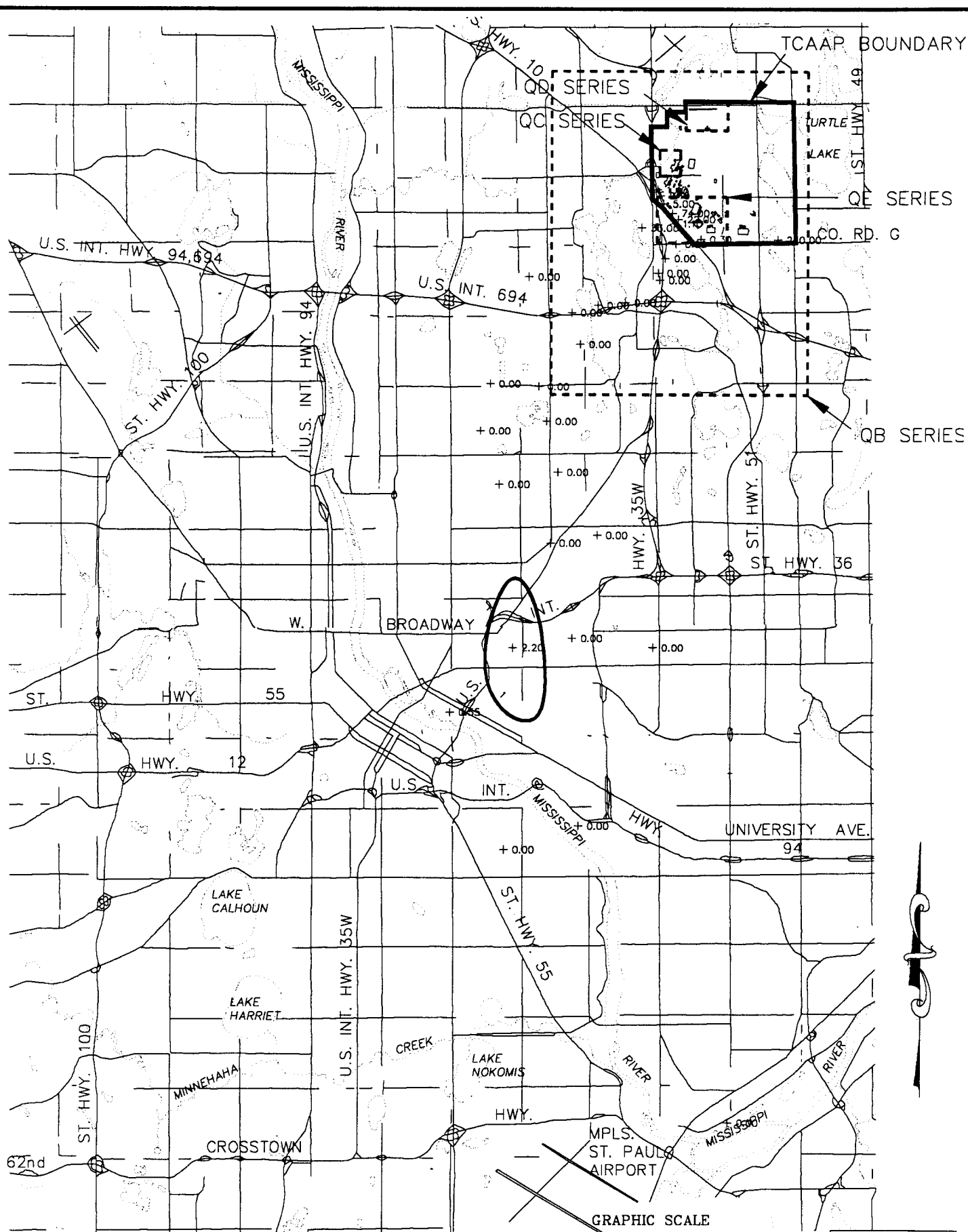
Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.5.2.2



4U11DCE.Q23

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Isoconcentration Contours

1,1-Dichloroethene, Unit 4, QA-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

**LEGEND**

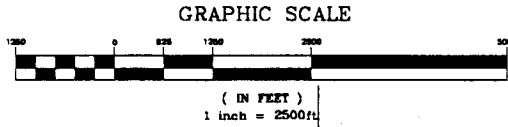
+ CONCENTRATION  
(ug/l)

MAR 1990

8.7.5.1.3

LEGEND

+ CONCENTRATION (ug/l)



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

+ 33.00

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

J.S. INT. HWY. 35W

VALENTINE LAKE

ST. HWY. 51

U.S. INT. 694

CO. RD. E

4U11DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Unit 4, QB-Series, Summer Quarter 1989(Q23)



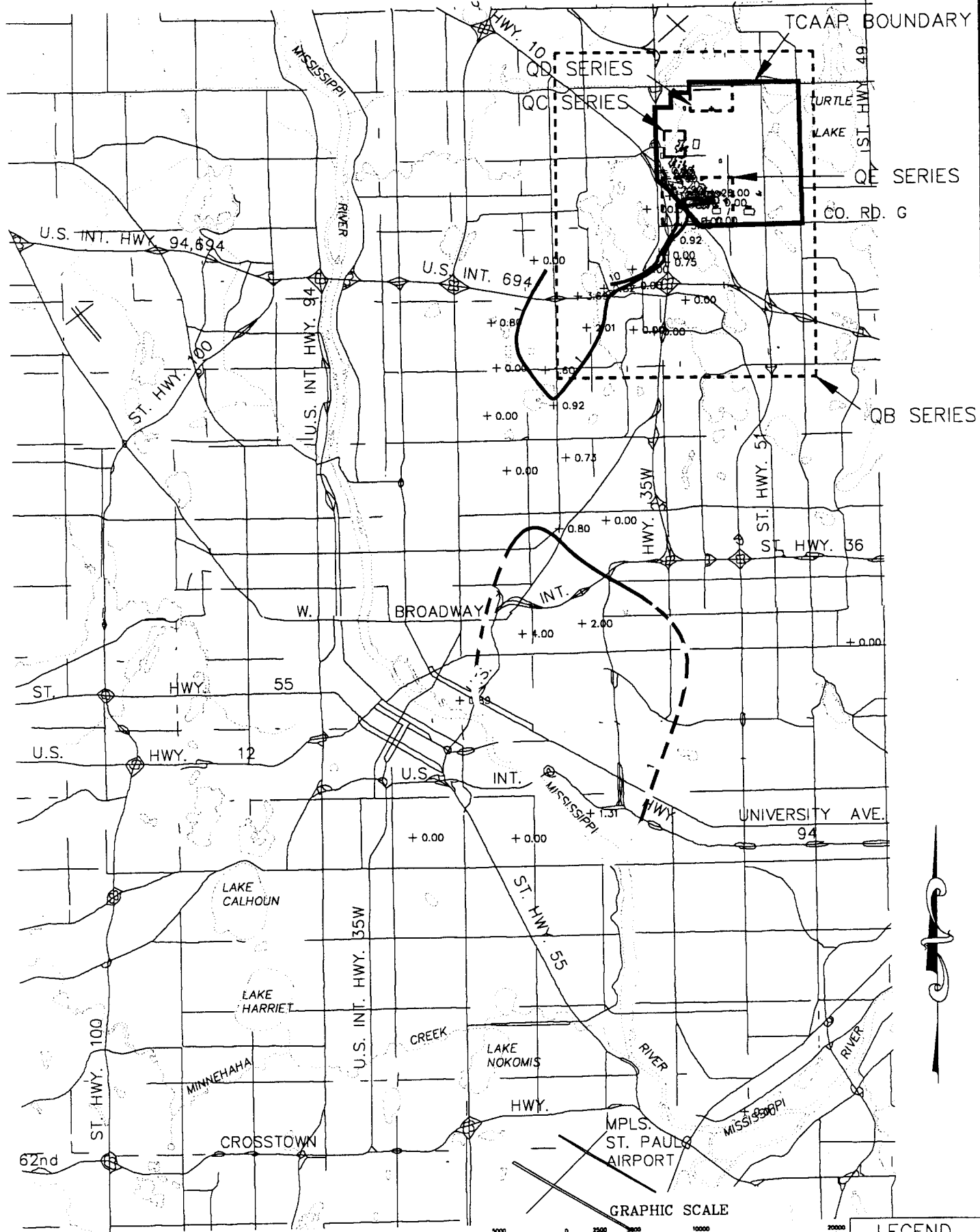
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.5.2.3



4U11DCE.Q24

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Isoconcentration Contours  
 1,1-Dichloroethene, Unit 4, QA-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**

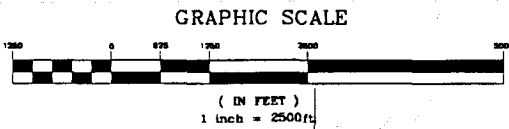
+ CONCENTRATION  
 (ug/l)

MAR 1990

8.7.5.1.4

LEGEND

+ CONCENTRATION (ug/l)



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

+ 41.00

+ 0.82

+ 0.00

U.S. INT. 694

+ 2.01

+ 0.00

+ 0.00

+ 0.00

U.S. HWY. 10

VALENTINE LAKE

+ 0.00

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

CO. RD. E

4U11DCE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethene, Unit 4, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.7.5.2.4

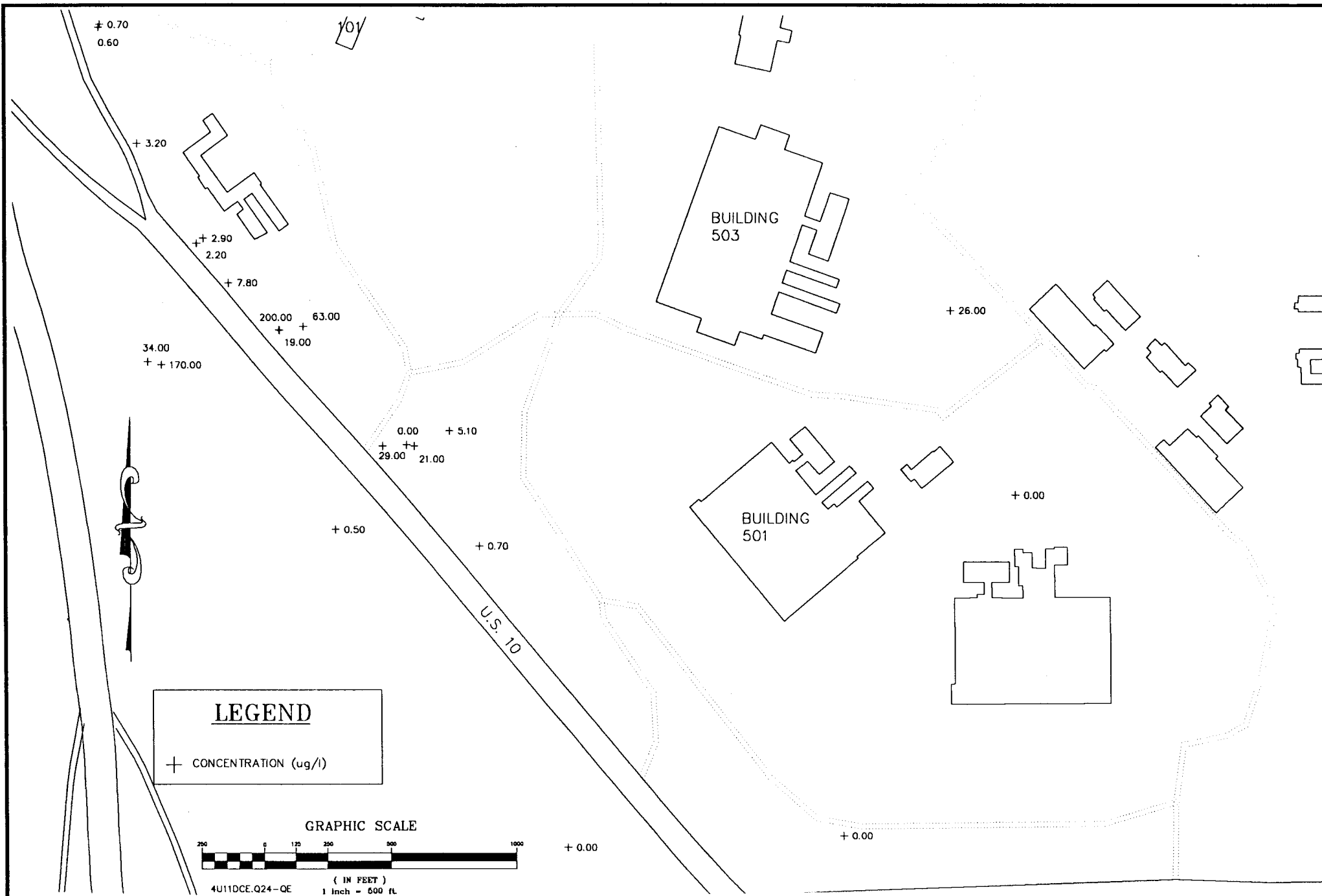
QE SERIES

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

LEXINGTON AVE.



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1-Dichloroethene, Unit 4, QE-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

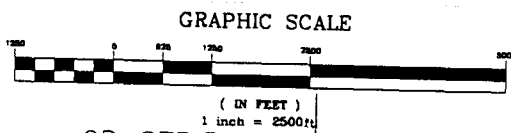
MAR 1990

8.7.5.5.4



LEGEND

+ CONCENTRATION (ug/l)



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

3U11DCL.E.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.8.2.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

U.S. HWY. 10

VALENTINE LAKE

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

CO. RD. E

TCAAP BOUNDARY

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

QE SERIES

+ 0.00

+ 22.00

+ 27.00

+ 2.50

+ 45.00

+ 530.00

1200.00

+ 0.50

+ 4.00

+ 22.00

3U11DCLE.Q22-Q8

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



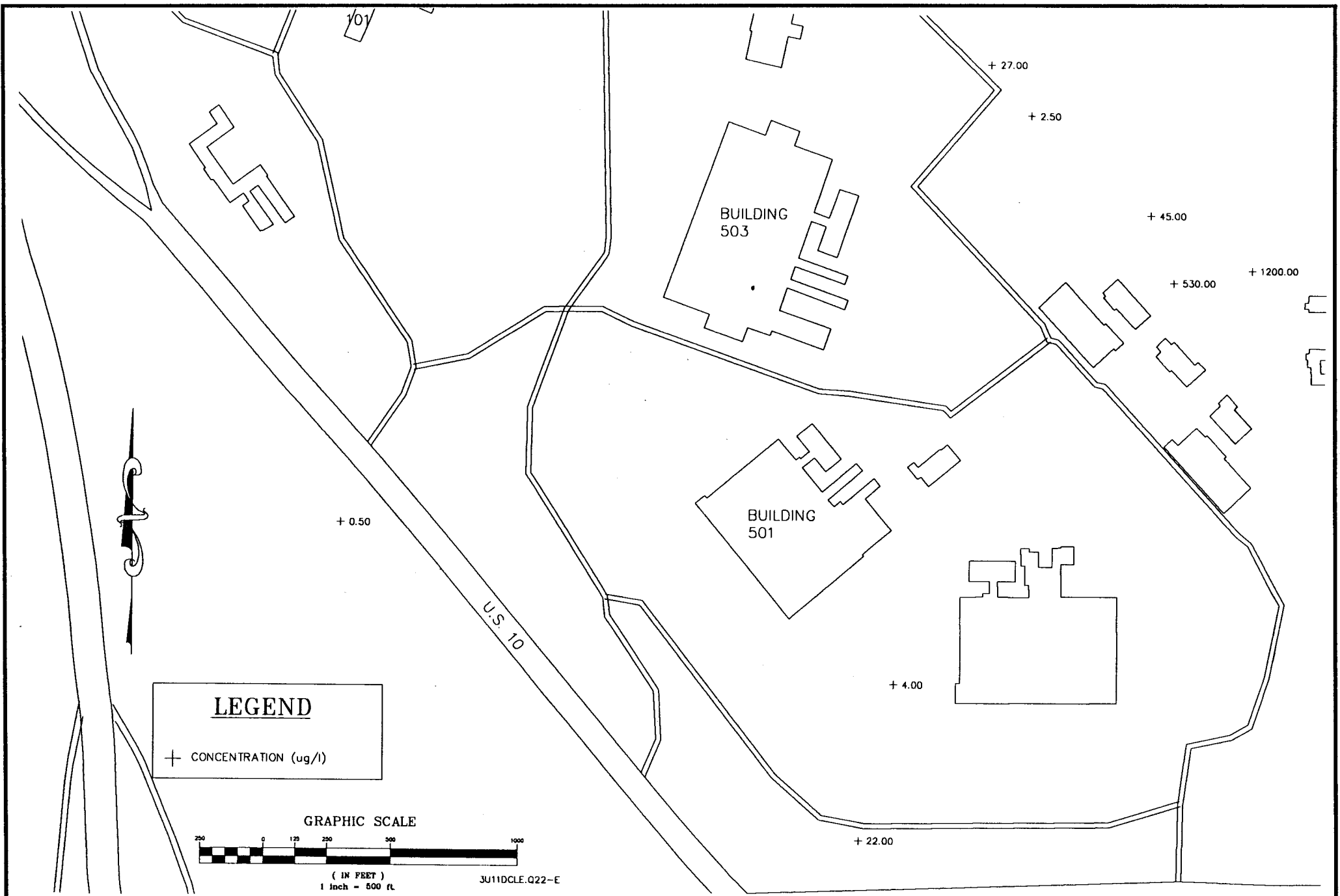
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.8.2.2.2



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,1-Dichloroethane, Upper Unit 3, QE-Series, Spring Quarter 1989(Q22)



**Wenck Associates, Inc.**

**Consulting Engineers**

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

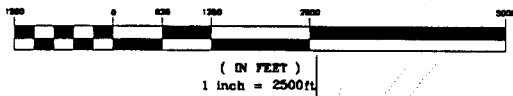
**MAR 1990**

8.8.2.5.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE LAKE

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

CO. RD. E

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

QE SERIES

+ 0.00

280.00

+ 47.00

+ 2.10

+ 51.00

510.00

1200.00

+ 0.00

+ 62.00

+ 0.90

3U11DCLE.Q23-Q8

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



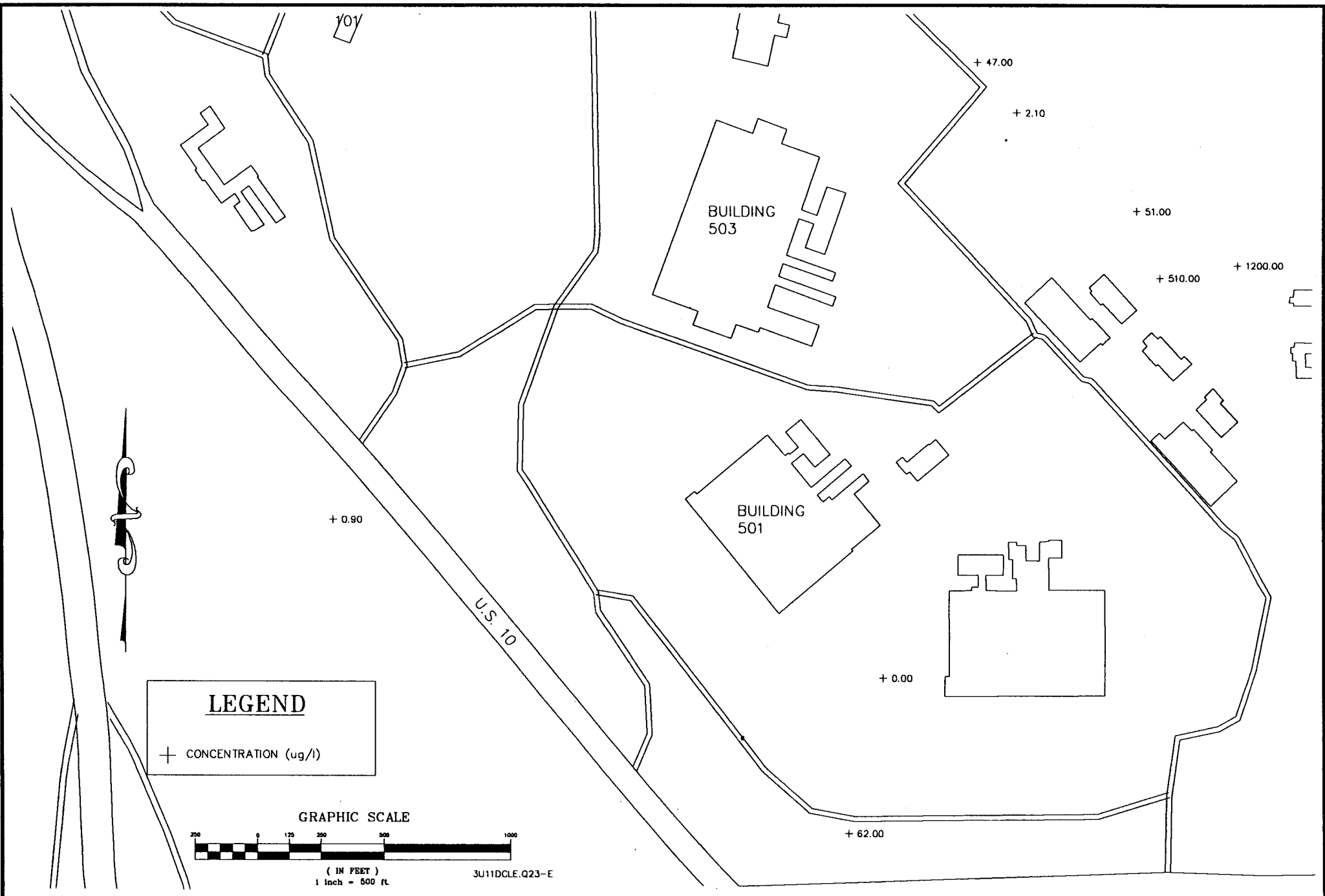
Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.8.2.2.3



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot

1,1-Dichloroethane, Upper Unit 3, QE-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.8.2.5.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 0.00

+ 0.00

+ 0.00 + 0.00

CO. RD. H

CREEK

+ 0.00

+ 0.00

RICE

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

+ 0.00

MARSDEN LAKE

LEXINGTON AVE.

CO. RD. G

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

RUSH LAKE

VALENTINE LAKE

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

SU11DCLE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.8.2.4



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

LEXINGTON AVE.

MARSDEN LAKE

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M11DCLE.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

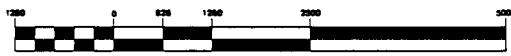
8.8.3.2.1



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M11DCL.E.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)



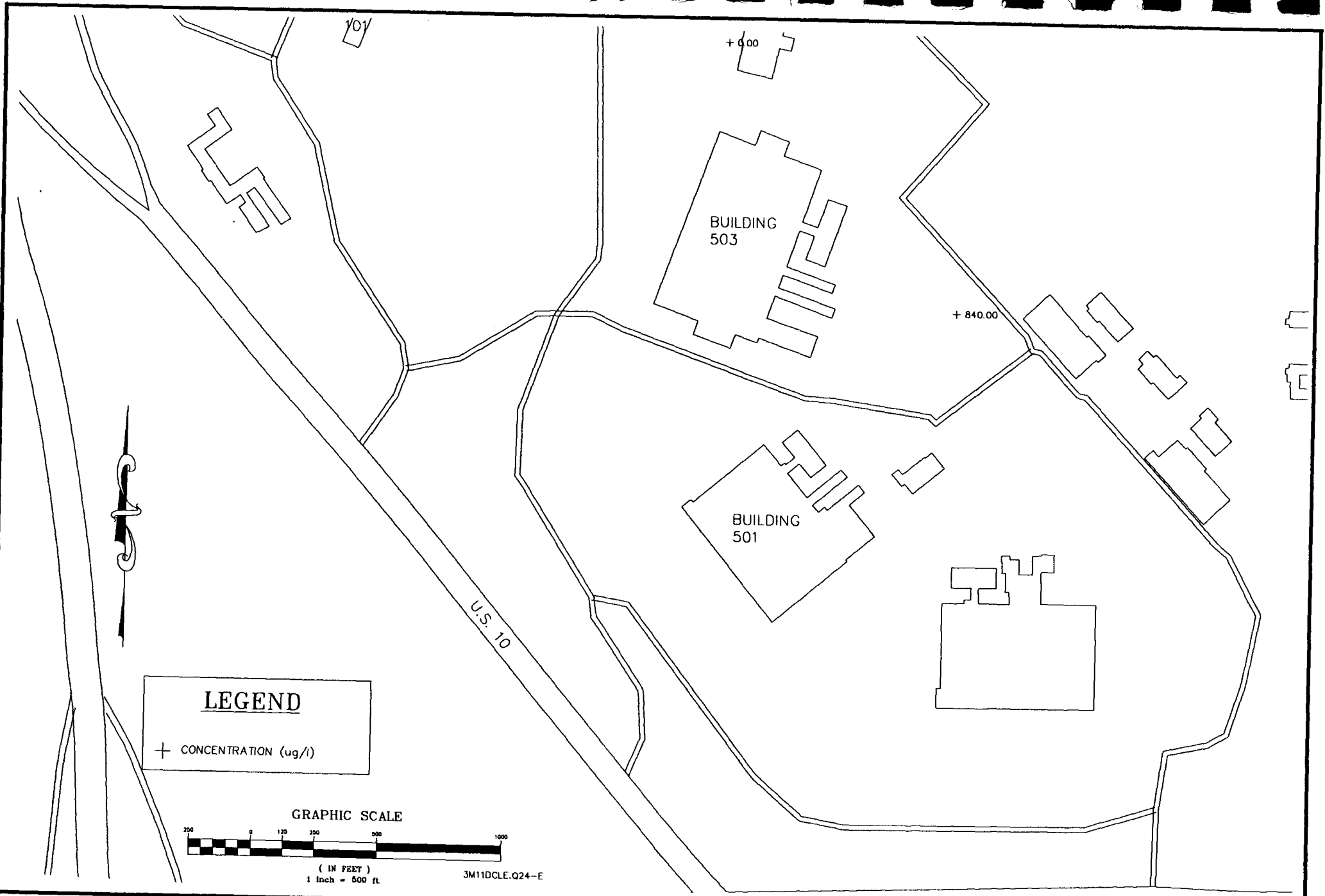
Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.8.3.2.4



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot

1,1-Dichloroethane, Middle Unit 3, QE-Series, Fall Quarter 1989(Q24)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

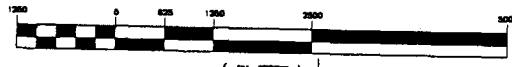
MAR 1990

8.8.3.5.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

LONG

RUSH

LAKE

CO. RD. G

LAKE

ROUND LAKE

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

U.S. INT. 694

VALENTINE LAKE

CO. RD. E

3L110CLE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

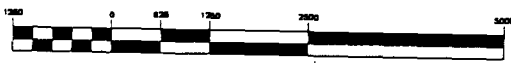
MAR 1990

8.8.4.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

LONG

RUSH

LAKE

CO. RD. 200.00

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3L11DCL.E.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

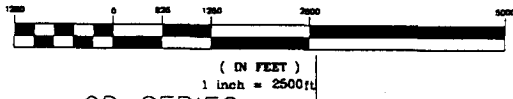
MAR 1990

8.8.4.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 0.00

+ 0.00

+ 52.00 + 42.00

+ 0.00

+ 0.00

+ 0.00

+ 30

LONG

RUSH

LAKE

CO. RD. G

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

JL110CLE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

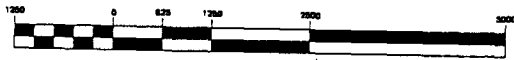
MAR 1990

8.8.4.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND LAKE

MARSDEN LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 2.60

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4U11DCLE.Q21

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Unit 4, QB-Series, Winter Quarter 1989(Q21)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.8.5.2.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

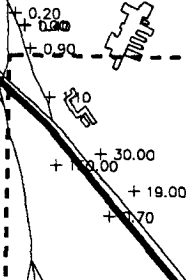
LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE



LONG

RUSH

LAKE

CO. RD. G

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

J.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

4U11DCL.E.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Unit 4, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.8.5.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND  
LAKE

U.S. INT. 694

U.S. HWY. 10

VALENTINE  
LAKE

U.S. INT. HWY. 35W

HAMLIN AVE.

ST. HWY. 51

CO. RD. E

MARSDEN  
LAKE

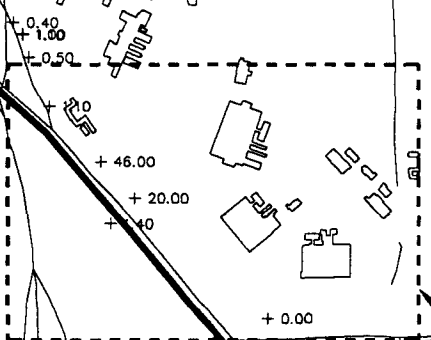
LEXINGTON AVE.

LEXINGTON AVE.

TCAAP  
BOUNDARY

QE SERIES

CO. RD. 20.00



4U110CLE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.8.5.2.3



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 Inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND

LAKE

U.S. INT. 694

+ 0.00

J.S. INT. HWY. 35W

U.S. HWY. 10

VALENTINE

LAKE

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

CO. RD. E

MARSDEN

LAKE

CO. RD. G

QE SERIES

TCAAP

BOUNDARY

LEXINGTON AVE.

LEXINGTON AVE.

4U11DCLE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,1-Dichloroethane, Unit 4, QB-Series, Fall Quarter 1989(Q24)



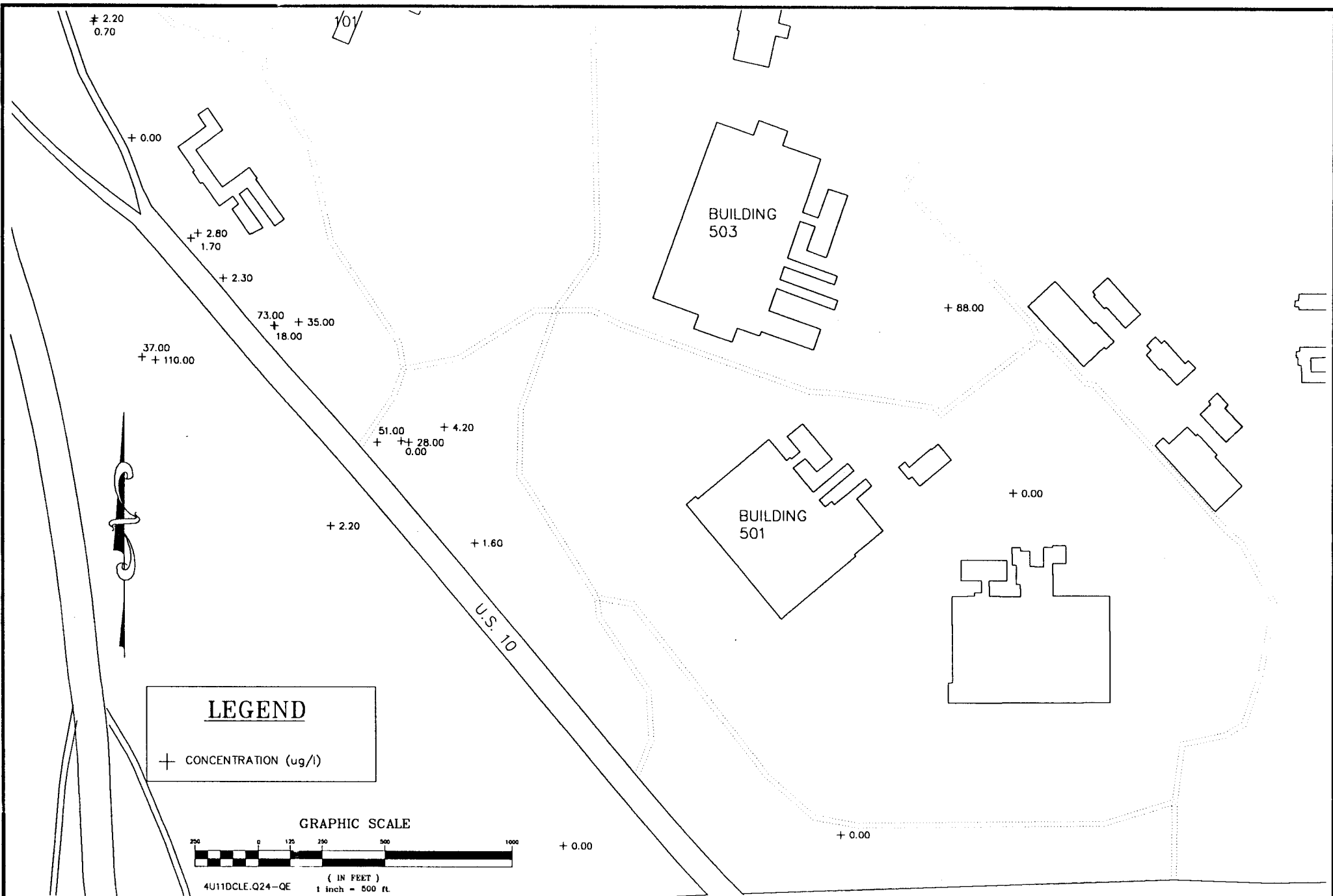
Wenck Associates, Inc.

Consulting Engineers

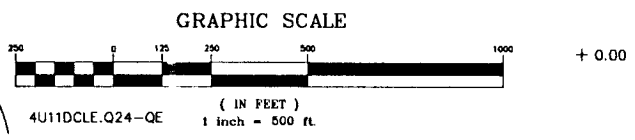
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.8.5.2.4



**LEGEND**  
 + CONCENTRATION (ug/l)



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

1U12DCE.Q22-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 1, QB-Series, Spring Quarter 1989(Q22)



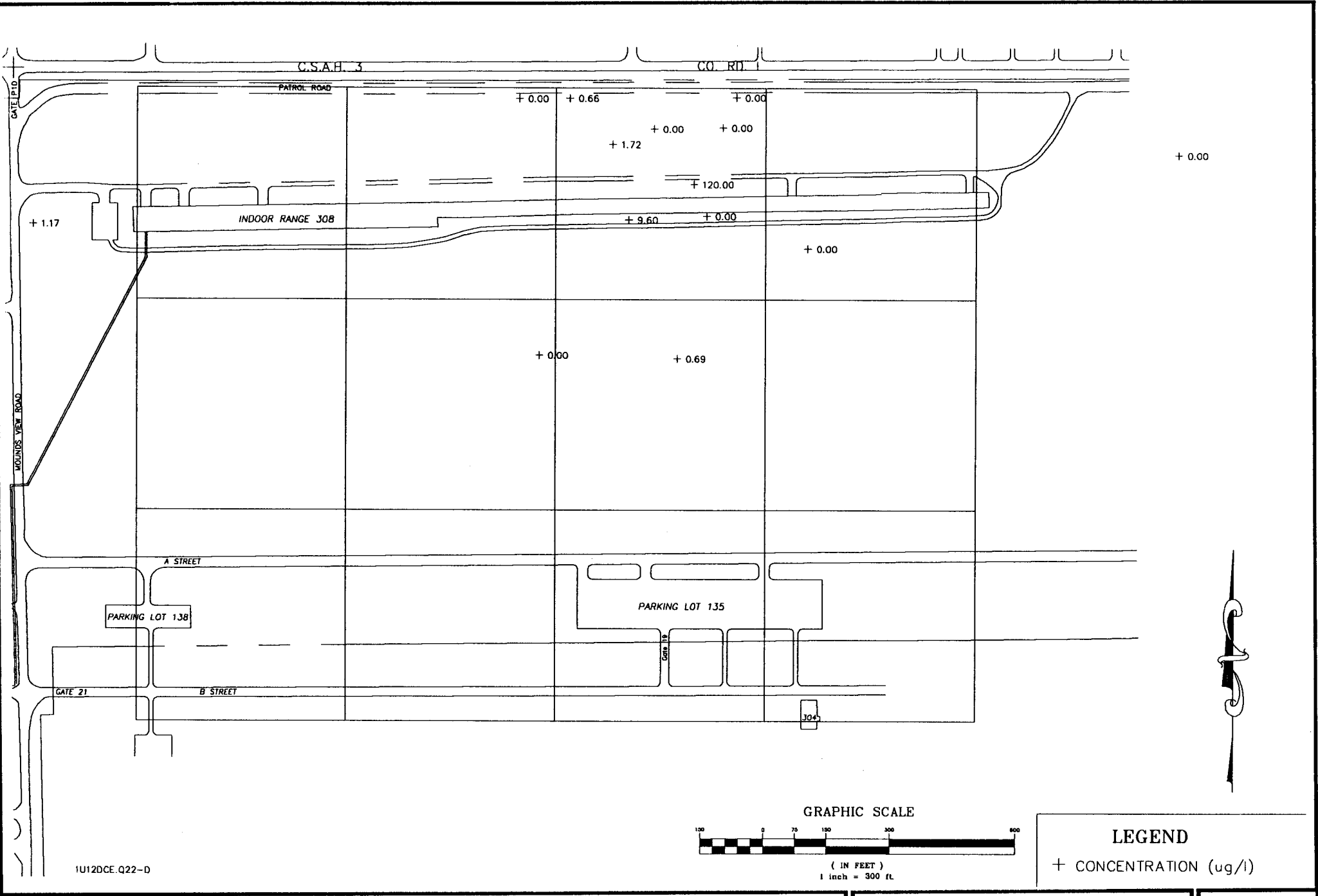
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.9.1.2.2



1U12DCE.Q22-D

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 1,2-Dichloroethene, Unit 1, QD-Series, Spring Quarter 1989(Q22)

**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.9.1.4.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND

LAKE

U.S. HWY. 10

U.S. INT. 694

VALENTINE

LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

U.S. INT. 694

CO. RD. E

TCAAP BOUNDARY

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

IU12DCE.Q23-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 1, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.9.1.2.3

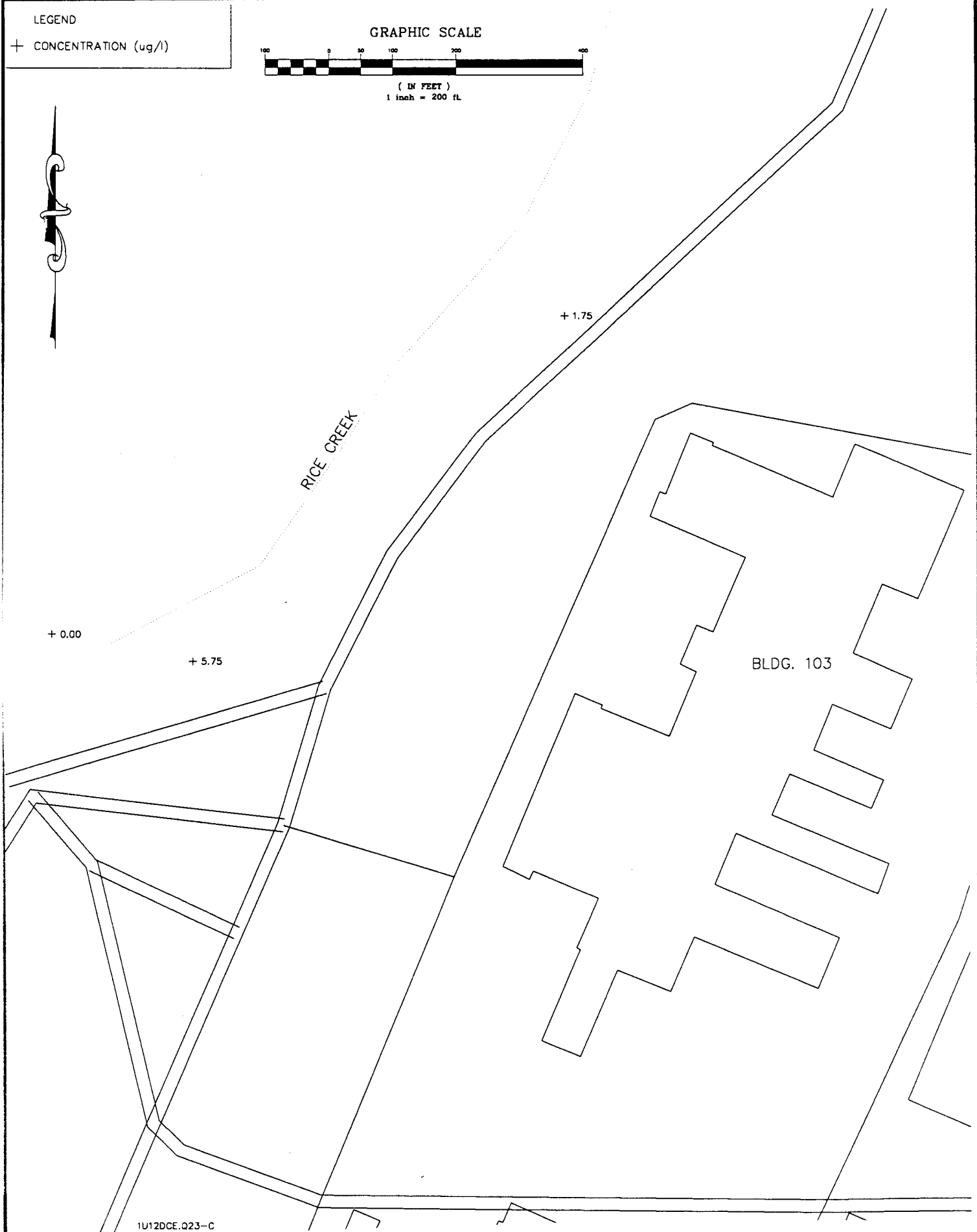
LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



1U12DCE.Q23-C

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 1, QC-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

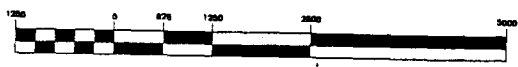
8.9.1.3.3



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

1U12DCE.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 1, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.9.1.2.4



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



RICE CREEK

+ 0.00

+ 2.89

+ 0.00

BLDG. 103

1U12DCE.Q24-C

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 1, QC-Series, Fall Quarter 1989(Q24)



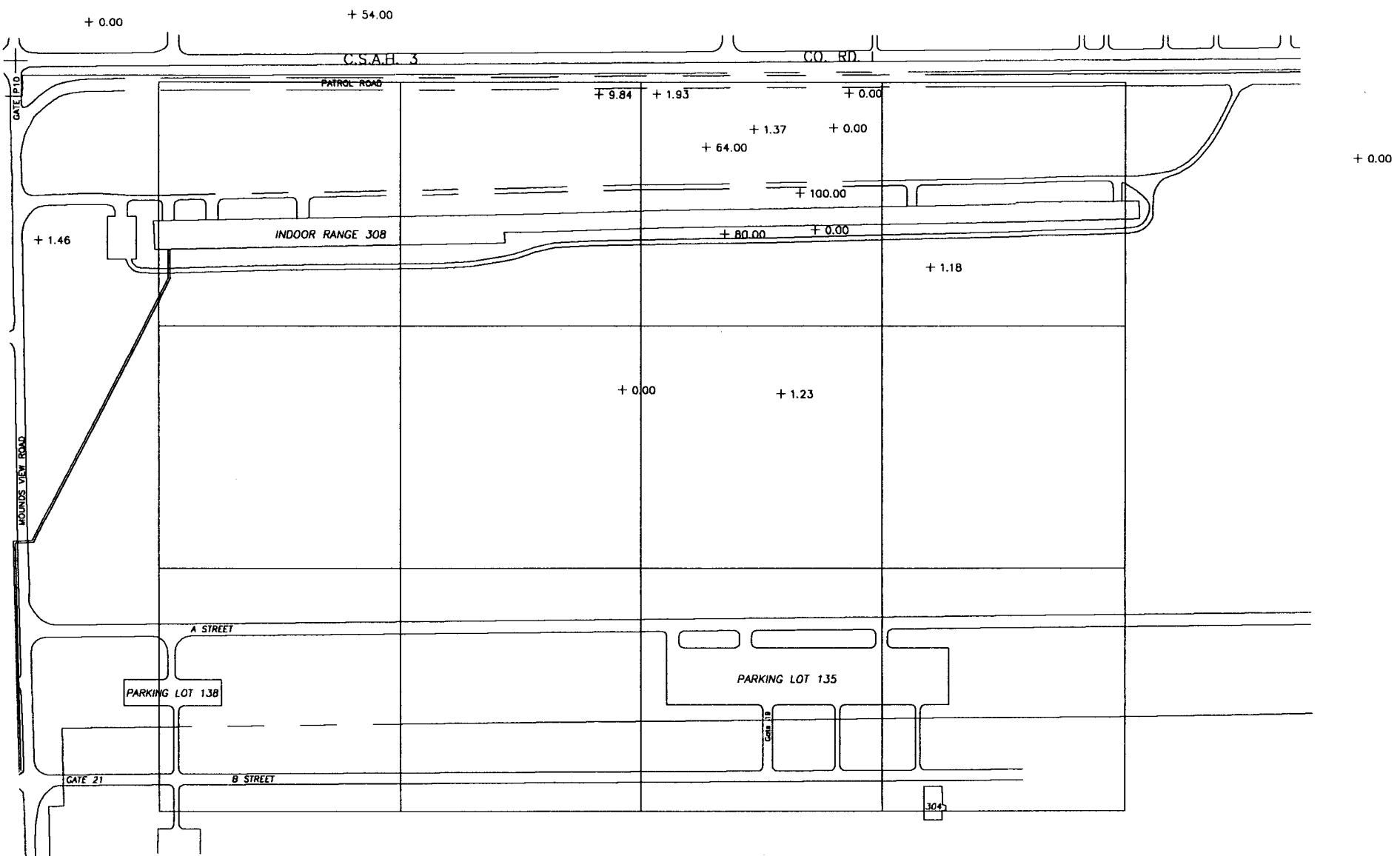
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.9.1.3.4



+ 0.00

+ 54.00

C.S.A.H. 3

CO. RD.

PATROL ROAD

+ 9.84

+ 1.93

+ 0.00

+ 1.37  
+ 64.00

+ 0.00

+ 100.00

INDOOR RANGE 308

+ 80.00

+ 0.00

+ 1.46

+ 1.18

+ 0.00

+ 0.00

+ 1.23

A STREET

PARKING LOT 138

PARKING LOT 135

Gate 13

GATE 21

B STREET

Gate 30

GRAPHIC SCALE



( IN FEET )  
1 inch = 300 ft

LEGEND

+ CONCENTRATION (ug/l)

1U12DCE.Q24-D

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 1, QD-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

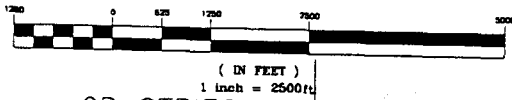
MAR 1990

8.9.1.4.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

- 0.66

+ 2.00

LONG

RUSH

LAKE

+ 9.20

+ 0.00

LAKE

ROUND LAKE

+ 0.00

+ 0.00

QE SERIES

CO. RD. G

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. HWY. 10

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

3U12DCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Upper Unit 3, QB-Series, Spring Quarter 1989(Q2)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

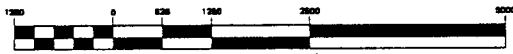
MAR 1990

8.9.2.2.2

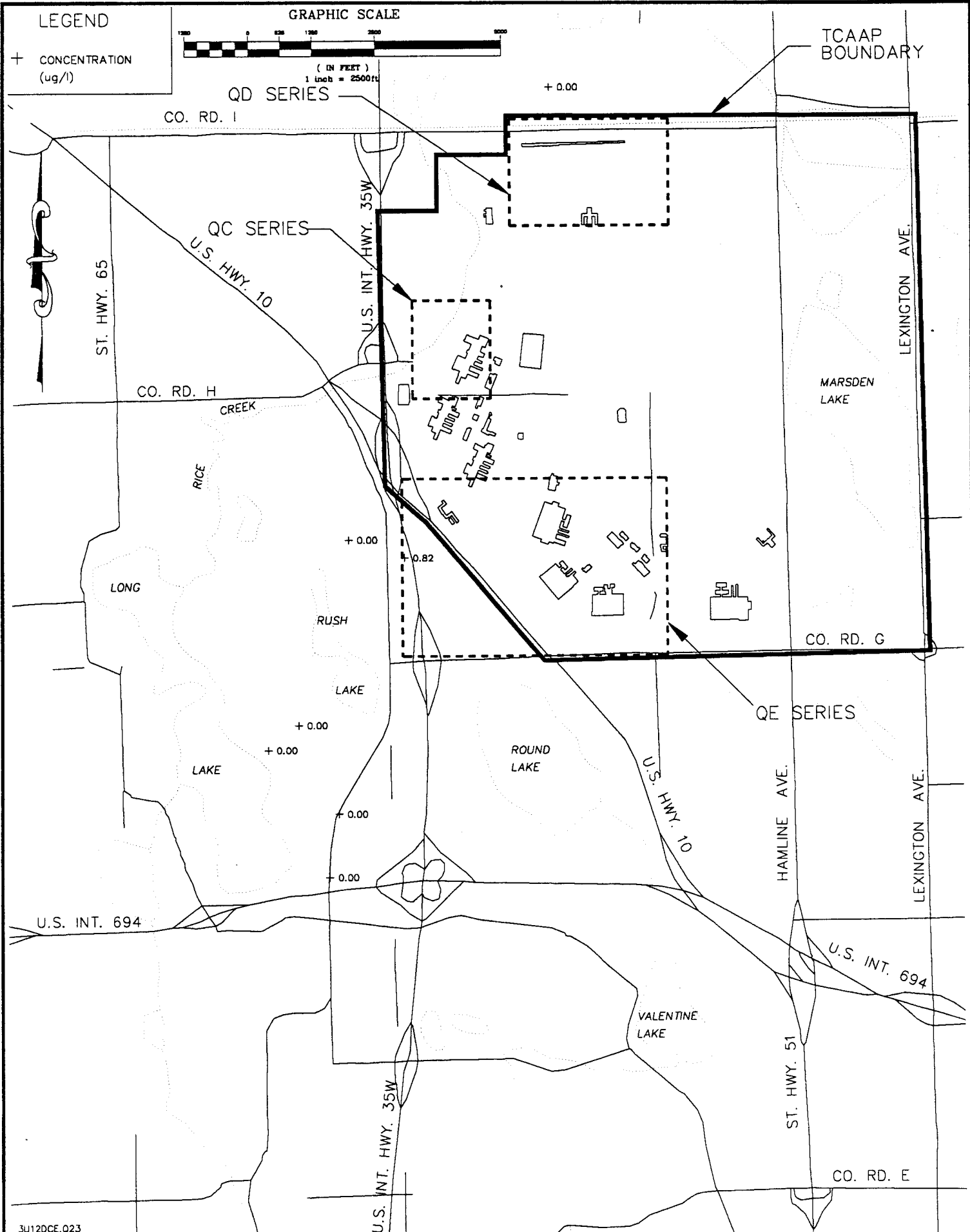
LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft



3U12DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.9.2.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500 ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

ST. HWY. 65

QC SERIES

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 8.40

RUSH

CO. RD. G

LONG

+ 59.00

+ 1.46

LAKE

QE SERIES

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 0.00

+ 0.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3U12DCE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

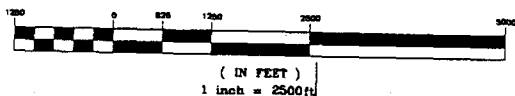
MAR 1990

8.9.2.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M12DCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)



Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr. Maple Plain, MN 55359

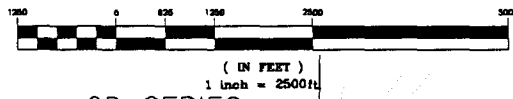
MAR 1990

8.9.3.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M12DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

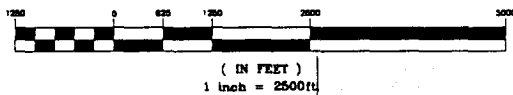
MAR 1990

8.9.3.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

+ 0.00

LAKE

LAKE

+ 0.00

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

MARSDEN LAKE

U.S. INT. 694

+ 0.00

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3M12DCE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

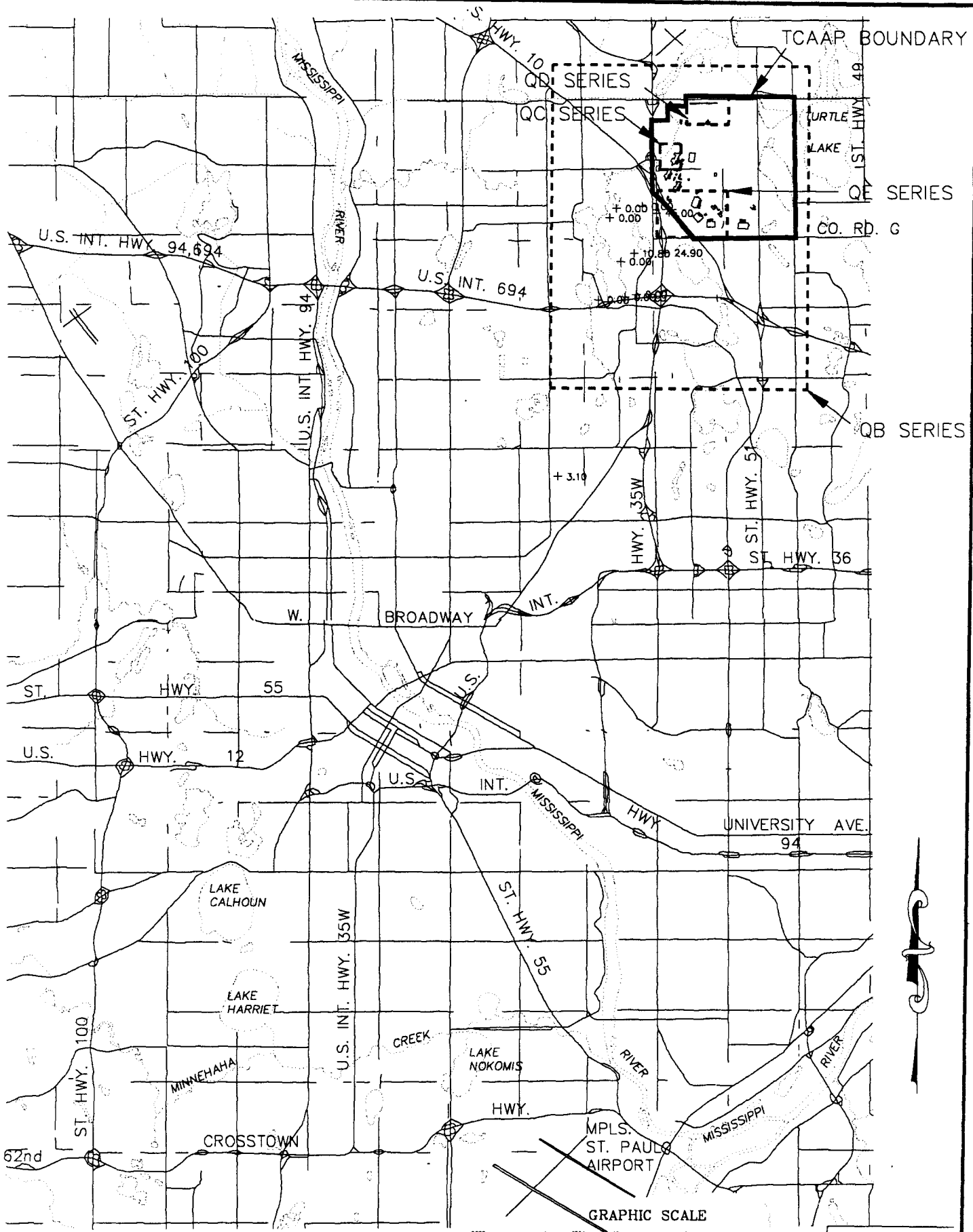
Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.9.3.2.4





3L12DCE.Q22

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,2-Dichloroethene, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**

+ CONCENTRATION  
 (ug/l)

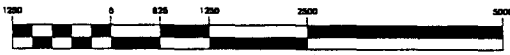
MAR 1990

. 8.9.4.1.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 0.00

+ 5.00

LONG

+ 0.00

RUSH

LAKE

+ 10.80

+ 24.90

LAKE

+ 0.00

ROUND LAKE

QE SERIES

CO. RD. G

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

3L12DCE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

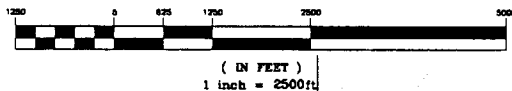
MAR 1990

8.9.4.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

+ 0.00

+ 0.60

LONG

+ 0.00

RUSH

LAKE

+ 0.00

+ 0.00

LAKE

+ 0.00

ROUND LAKE

+ 0.00

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

+ 0.00

+ 1.01

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

3L12DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

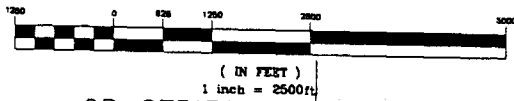
8.9.4.2.3



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 1.39

+ 0.00

+ 0.00

+ 0.00

LONG

+ 0.00

RUSH

CO. RD. G

LAKE

+ 0.00

+ 21.60

QE SERIES

LAKE

+ 0.00

ROUND LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

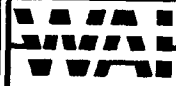
CO. RD. E

3L12DCE.Q24

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



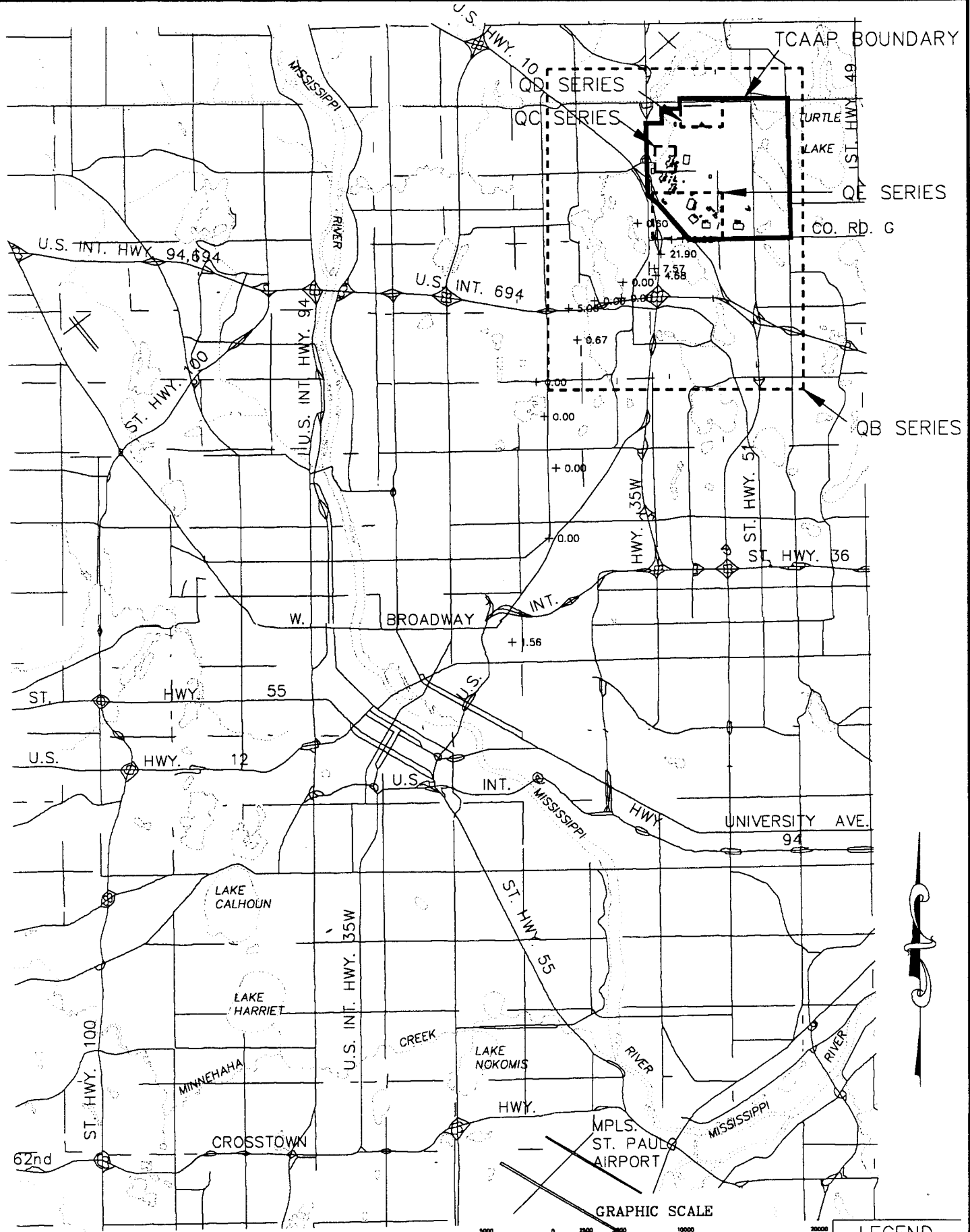
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

8.9.4.2.4



4U12DCE.Q22

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 1,2-Dichloroethene, Unit 4, QA-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**

+ CONCENTRATION (ug/l)

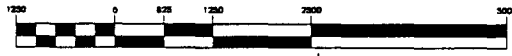
**MAR 1990**

8.9.5.1.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

+ 0.60  
RUSH

CO. RD. G

LAKE

QE SERIES

+ 21.90

ROUND LAKE

+ 7.57

+ 4.68

LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 0.00

+ 0.00

U.S. INT. 694

U.S. INT. 694

+ 0.67

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

4U120CE.Q22

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 4, QB-Series, Spring Quarter 1989(Q22)



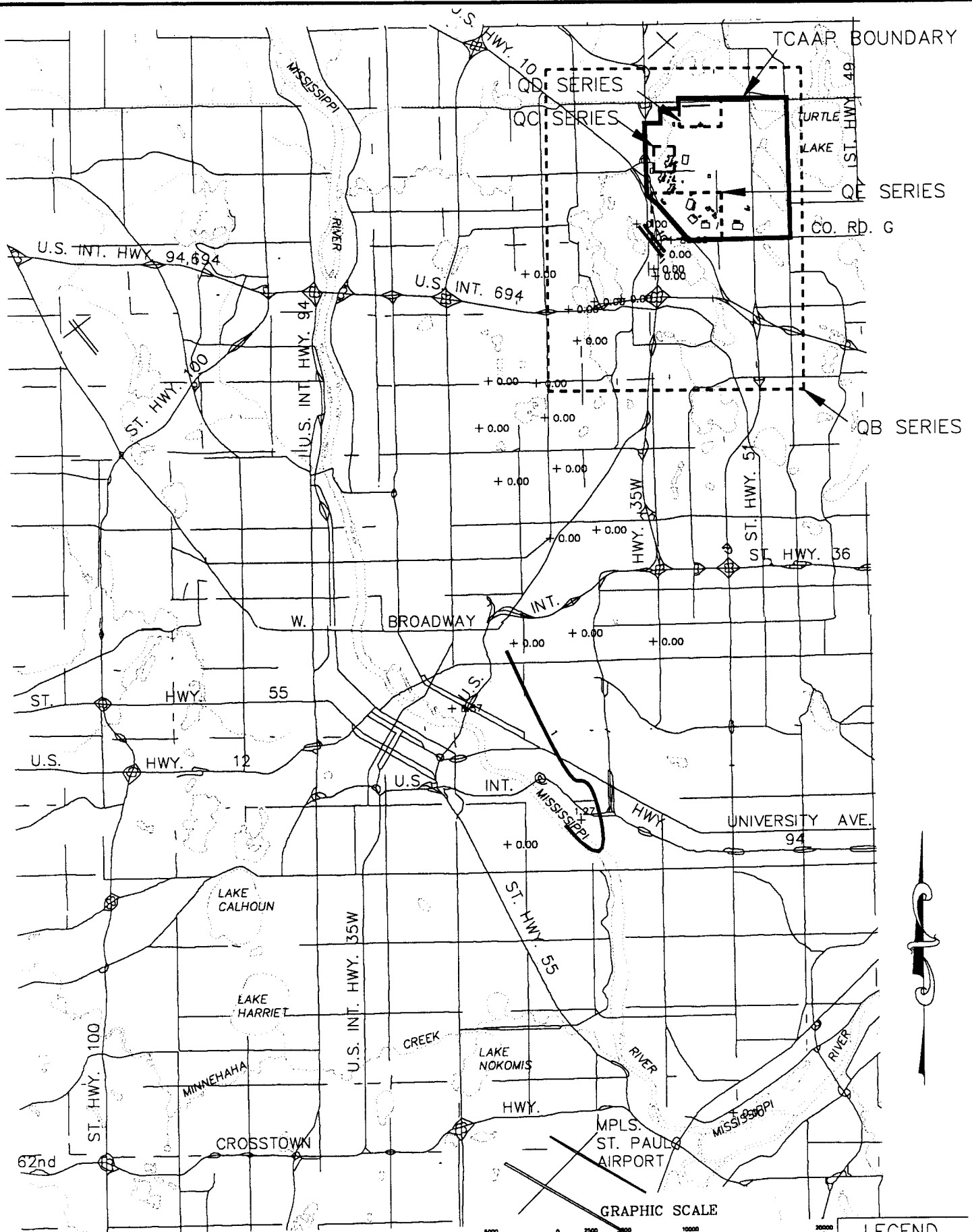
Consulting Engineers

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.9.5.2.2



4U12DCE.Q23

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Isoconcentration Contours  
 1,2-Dichloroethene, Unit 4, QA-Series, Summer Quarter 1989(Q23)



**Wenck Associates, Inc.**

**Consulting Engineers**

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**  
 + CONCENTRATION (ug/l)

**MAR 1990**

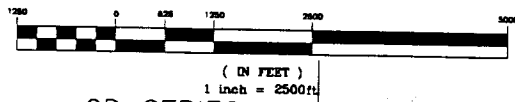
**8.9.5.1.3**



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

+ 0.00

RUSH

LAKE

+ 0.00

+ 0.00

+ 0.00

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

MARSDEN LAKE

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

U.S. INT. HWY. 35W

HJ12DCE.Q23

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.9.5.2.3



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

+ 34.00  
RUSH

LAKE

+ 13.10

+ 15.00

+ 3.70

+ 4.76

LAKE

ROUND LAKE

QE SERIES

CO. RD. G

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.00

+ 0.00

U.S. INT. 694

+ 1.38

+ 0.00

+ 0.00

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

1,2-Dichloroethene, Unit 4, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1600 Pioneer Creek Dr.  
Maple Plain, MN 55359

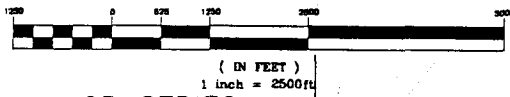
MAR 1990

8.9.5.2.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



QD SERIES

CO. RD. I

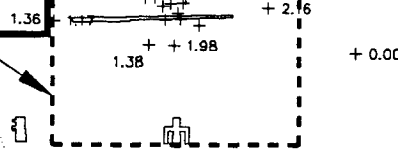
TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W



CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

1UTV.Q22-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Unit 1, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.1.2.2

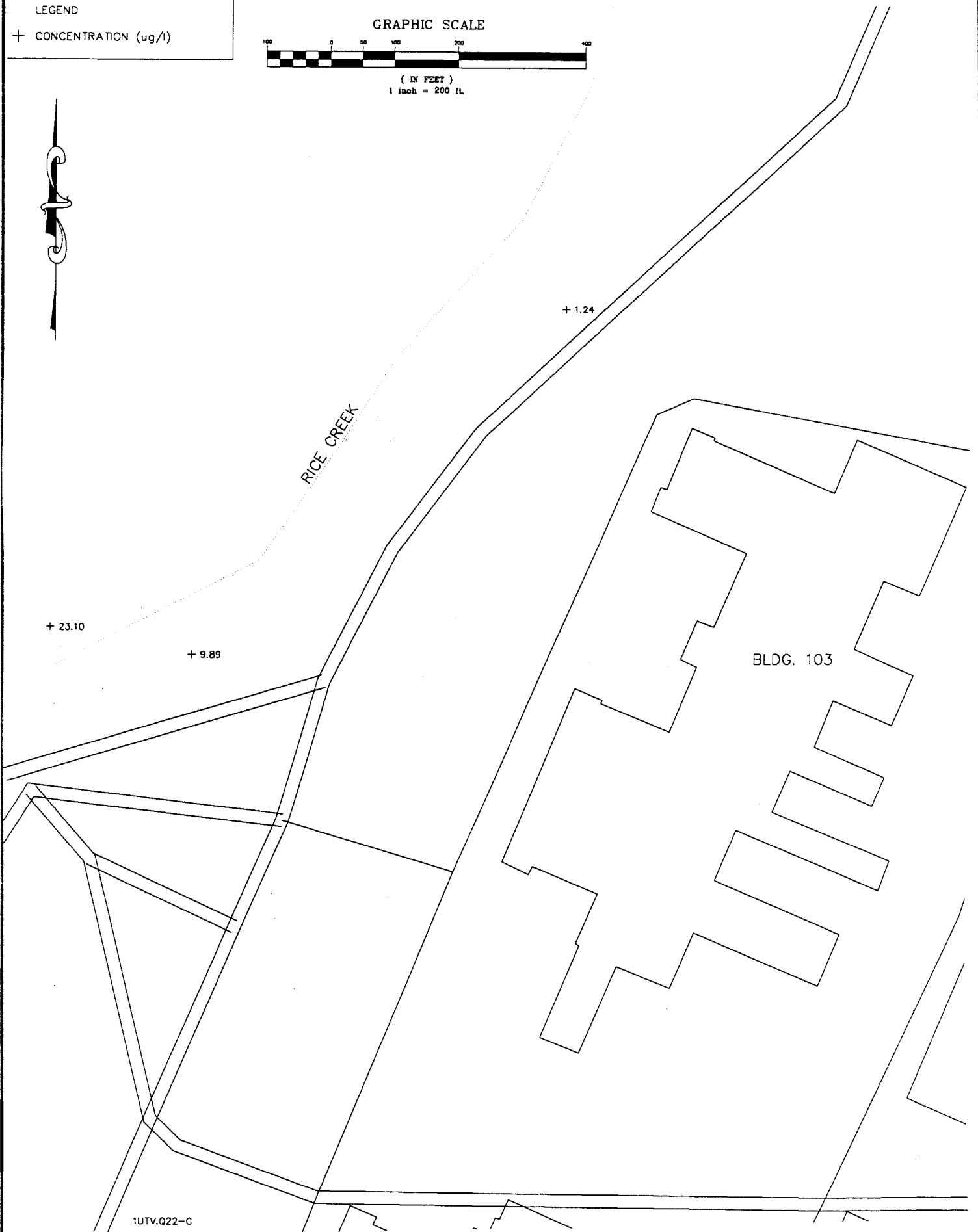
LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Unit 1, QC-Series, Spring Quarter 1989(Q22)



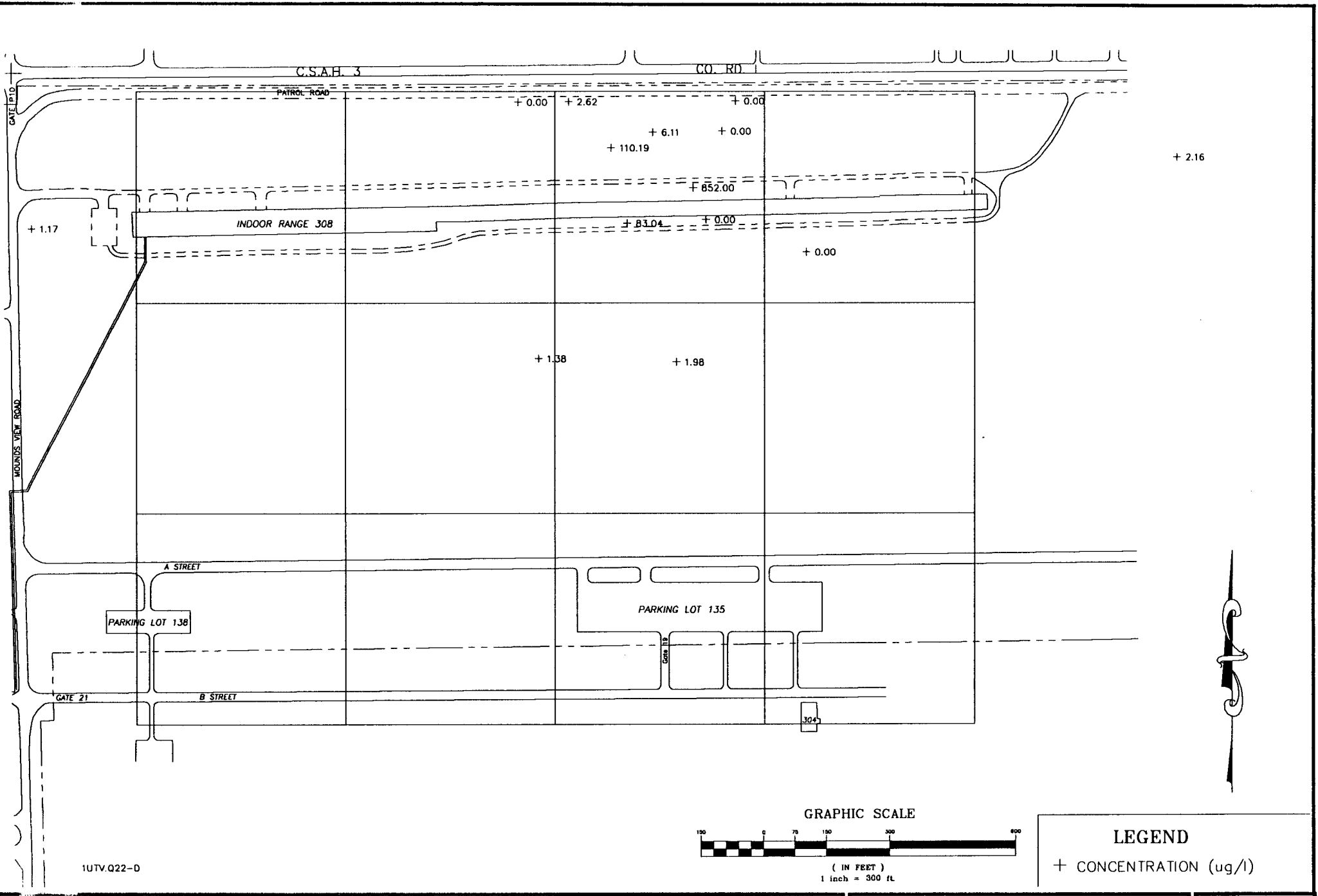
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.1.3.2



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Total VOC, Unit 1, QD-Series, Spring Quarter 1989(Q22)



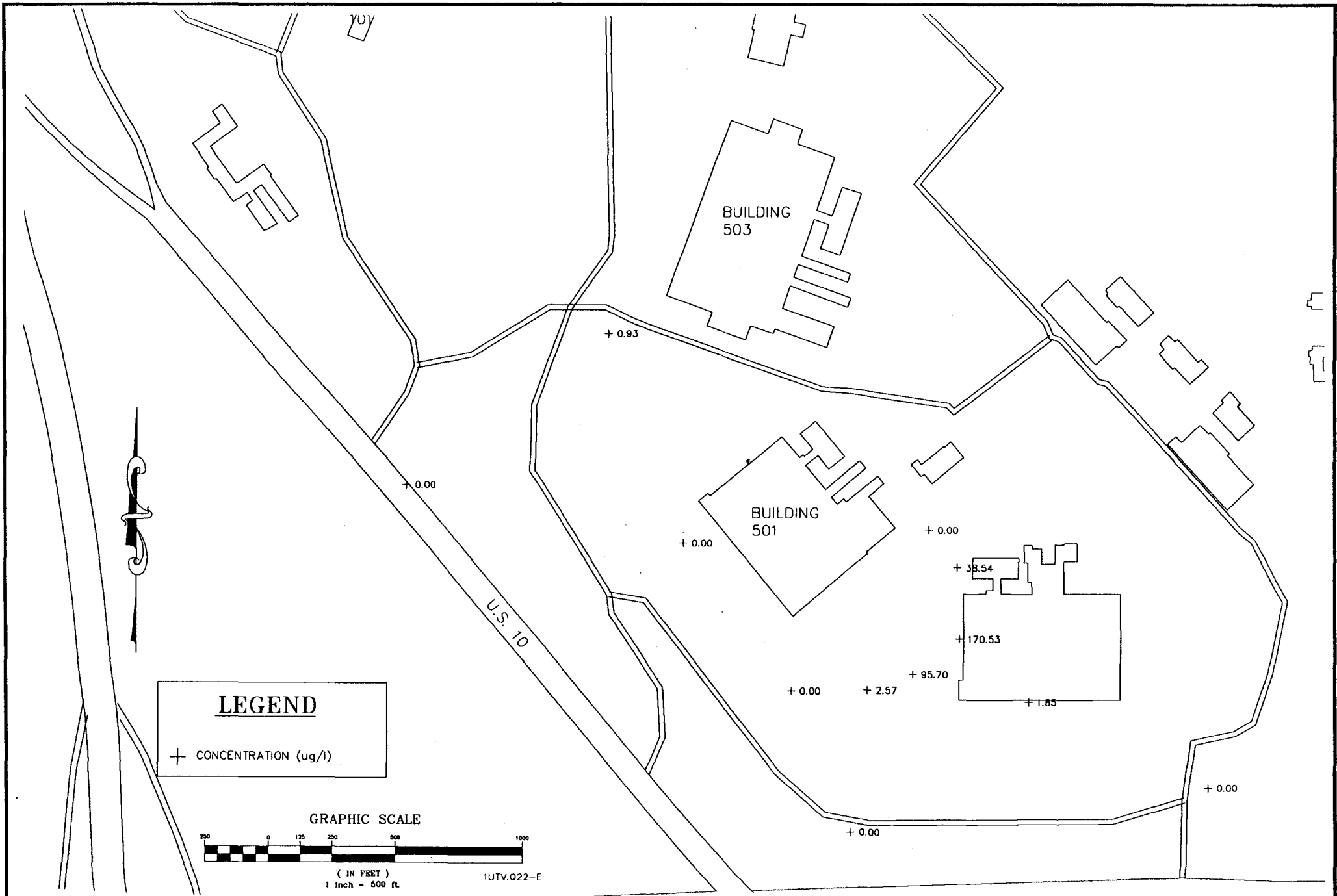
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990

8.10.1.4.2



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Total VOC, Unit 1, QE-Series, Spring Quarter 1989(Q22)



**Consulting Engineers**  
 1800 Pioneer Creek Dr.  
 Wenck Associates, Inc. Maple Plain, MN 55359

**MAR 1990**

8.10.1.5.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

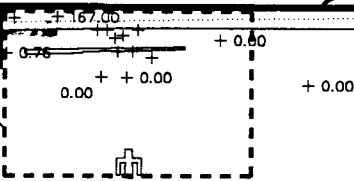
QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

19.70



CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

1UTV.Q23-Q8

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Unit 1, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

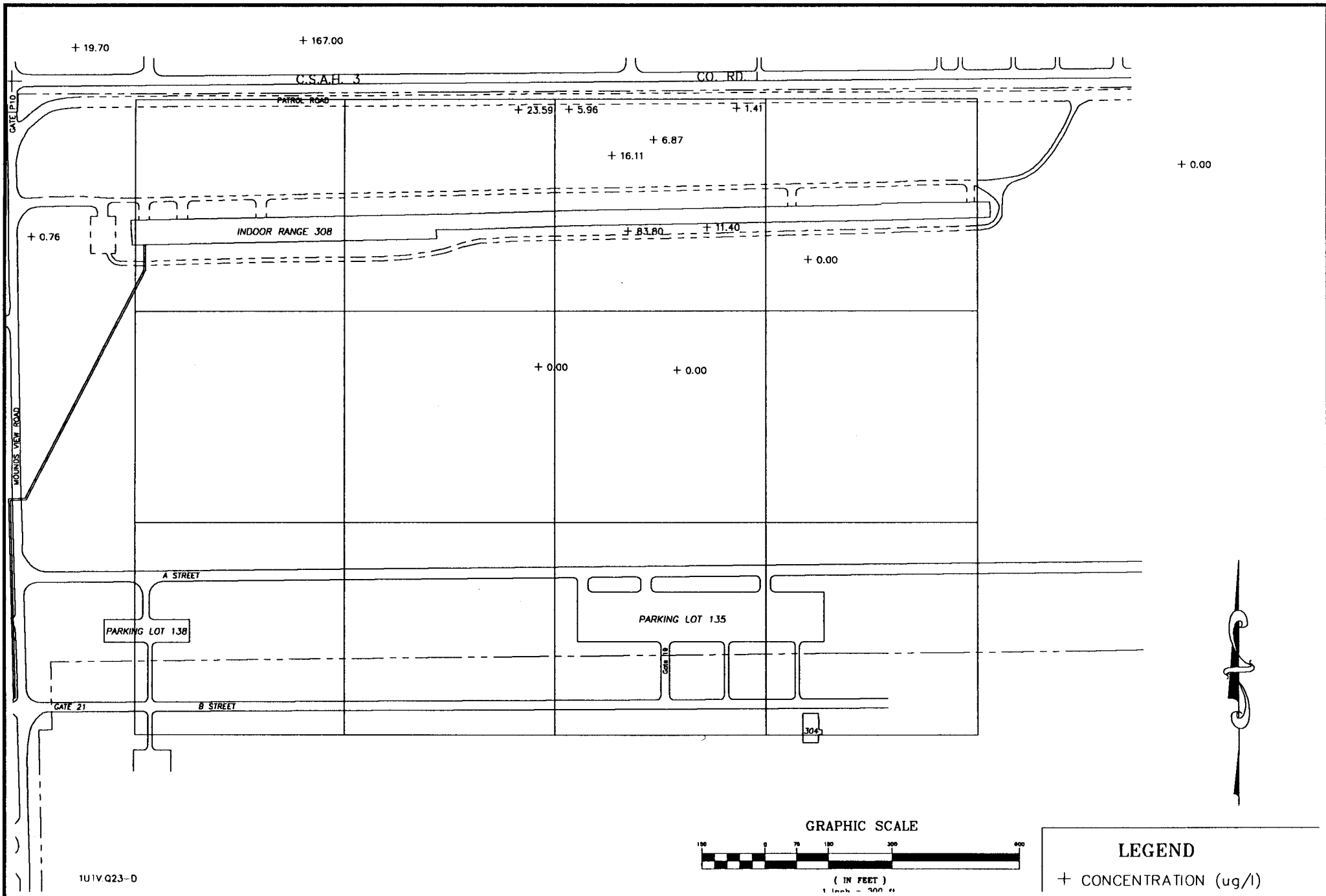
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

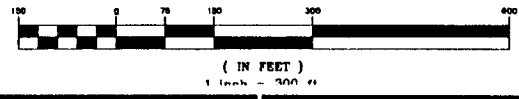
8.10.1.2.3





1U1V Q23-D

GRAPHIC SCALE



**LEGEND**  
 + CONCENTRATION (ug/l)

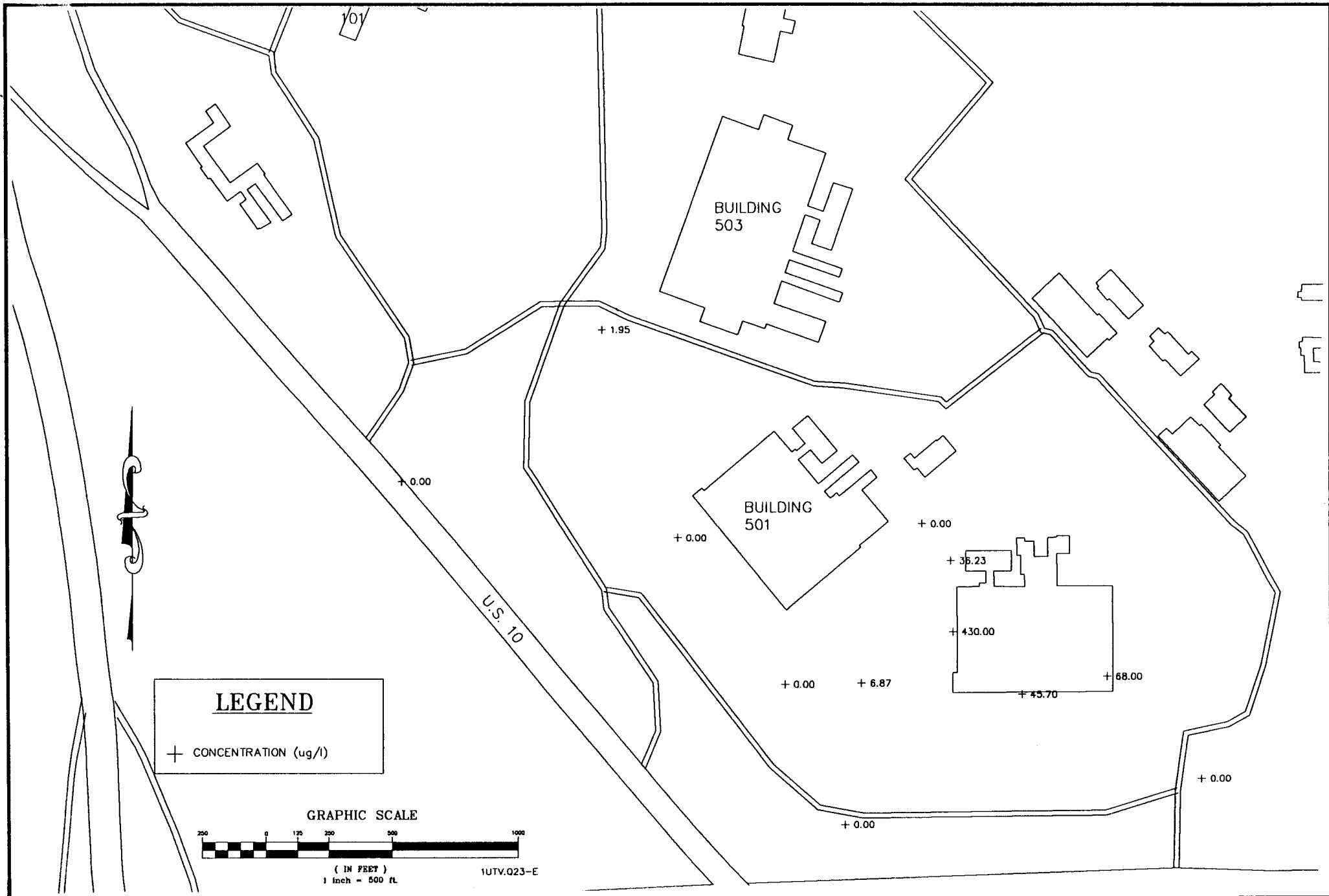
**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Total VOC, Unit 1, QD-Series, Summer Quarter 1989(Q23)



**Consulting Engineers**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55259

**MAR 1990**  
 8.10.1.4.3



**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 Total VOC, Unit 1, QE-Series, Summer Quarter 1989(Q23)

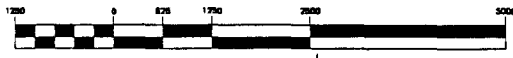
**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.10.1.5.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

QD SERIES

CO. RD. I

0.00

+ 62.90

+ 31.17

+ 31.39

+ 2.66

+ 0.38

0.00

1.16

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

CO. RD. G

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

+ 1.43

UTV 124-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Unit 1, QB-Series, Fall Quarter 1989(Q24)



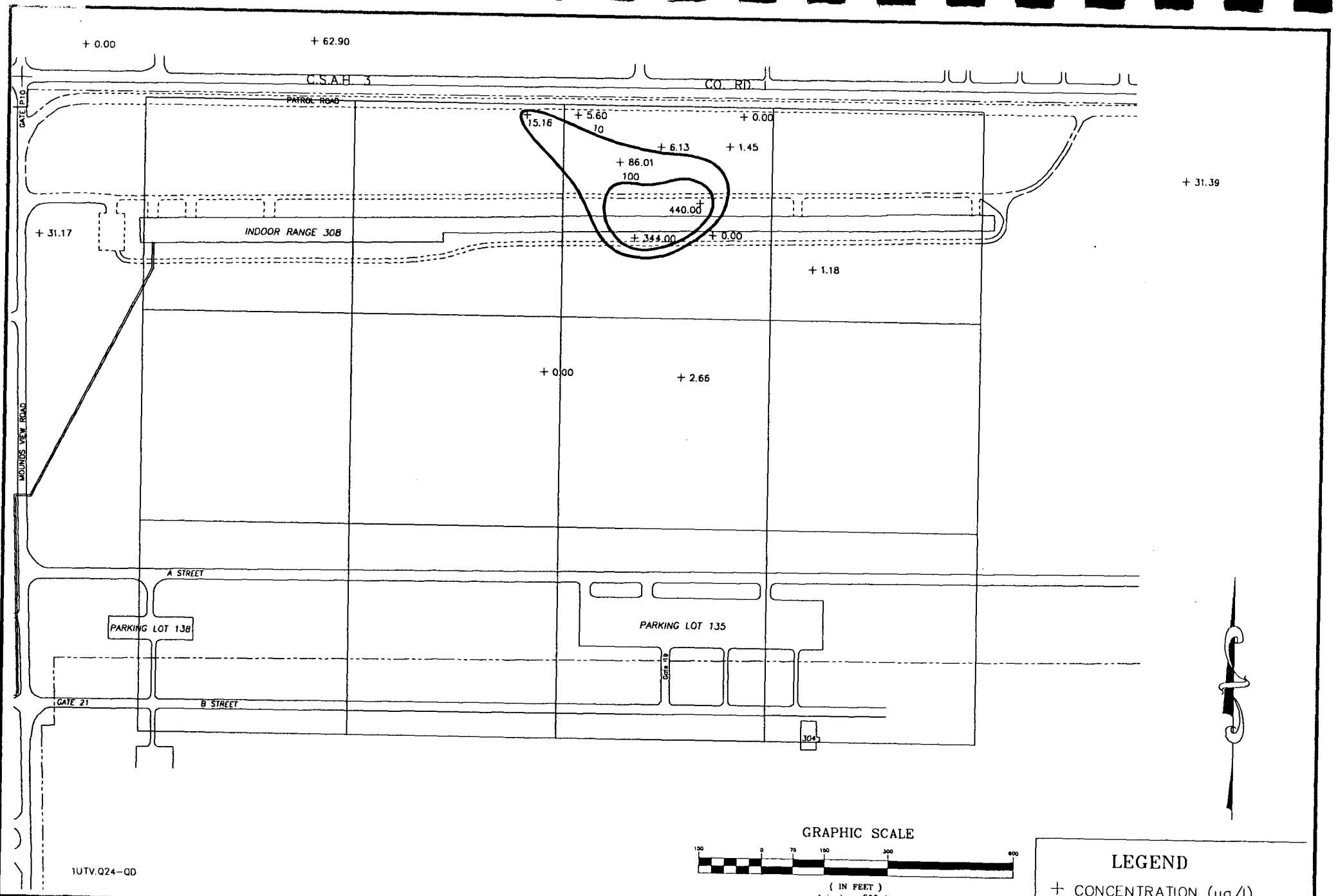
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.1.2.4



**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Isoconcentration Contours  
 Total VOC, Unit 1, QD-Series, Fall Quarter 1989(Q24)



**Consulting Engineers**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.10.1.4.4

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

LAKE

ROUND  
LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

U.S. HWY. 10

VALENTINE  
LAKE

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

CO. RD. E

MARSDEN  
LAKE

CO. RD. G

QE SERIES

TCAAP  
BOUNDARY

LEXINGTON AVE.

LEXINGTON AVE.

+ 4428.00  
+ 41.90  
+ 1625.00  
+ 5672.00  
+ 3081.30

3UTV.Q21-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Upper Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.2.2.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

LONG

LAKE

RUSH

+ 21.58

+ 6.10

+ 43.60

+ 64.40

+ 298.20

+ 20.65

+ 0.00

+ 0.00

U.S. INT. 694

S. INT. HWY. 35W

U.S. HWY. 10

HAMLIN AVE.

ST. HWY. 51

U.S. INT. 694

VALENTINE LAKE

CO. RD. E

TCAAP BOUNDARY

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

QE SERIES

+ 6.90

2044.60

+ 16532.50

+ 42.00

+ 1935.90

+ 6207.30

24747.20

+ 1309.40

+ 387.10

3UTV.Q22-Q8

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Upper Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.2.2.2

LEGEND

CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

+ 0.00

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 4.00

CO. RD. H

CREEK

RICE

LONG

+ 0.00

RUSH

LAKE

+ 2330.00

LAKE

+ 12.16

ROUND LAKE

+ 1.43

+ 0.00

U.S. INT. 694

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

14100.00

+ 19113.00

+ 46.50

+ 1776.00

+ 125000.00

+ 14510.00

+ 1339.00

+ 1443.60

83.60

5.29

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3UTV.Q23-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Upper Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

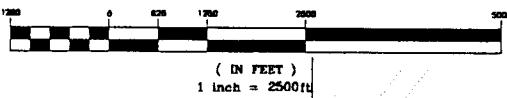
MAR 1990

8.10.2.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

MARSDEN LAKE

LONG

FUSH

LAKE

LAKE

ROUND LAKE

CO. RD. G

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. HWY. 10

U.S. INT. 694

VALENTINE LAKE

J.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3UTV.Q24-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Isoconcentration Contours  
Total VOC, Upper Unit 3, QB-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.2.2.4





LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

CO. RD. G

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3MTV.Q21-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Middle Unit 3, QB-Series, Winter Quarter 1989(Q21)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.3.2.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 1.13

LAKE

LAKE

+ 0.62

ROUND LAKE

QE SERIES

CO. RD. G

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 6.88

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

S. INT. HWY. 35W

3MTV.Q22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Middle Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.3.2.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

LONG

RUSH

+ 0.00

LAKE

CO. RD. G

LAKE

+ 3.21

ROUND LAKE

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 1.42

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

JMTV.Q23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Middle Unit 3, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

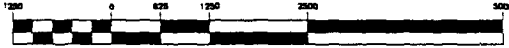
MAR 1990

8.10.3.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

QD SERIES

CO. RD. I

TCAAP BOUNDARY

ST. HWY. 65

QC SERIES

U.S. HWY. 10

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

+ 1.45

LAKE

LAKE

+ 7.40

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

MARSDEN LAKE

CO. RD. G

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

JMTV.Q24-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Middle Unit 3, QB-Series, Fall Quarter 1989(Q24)



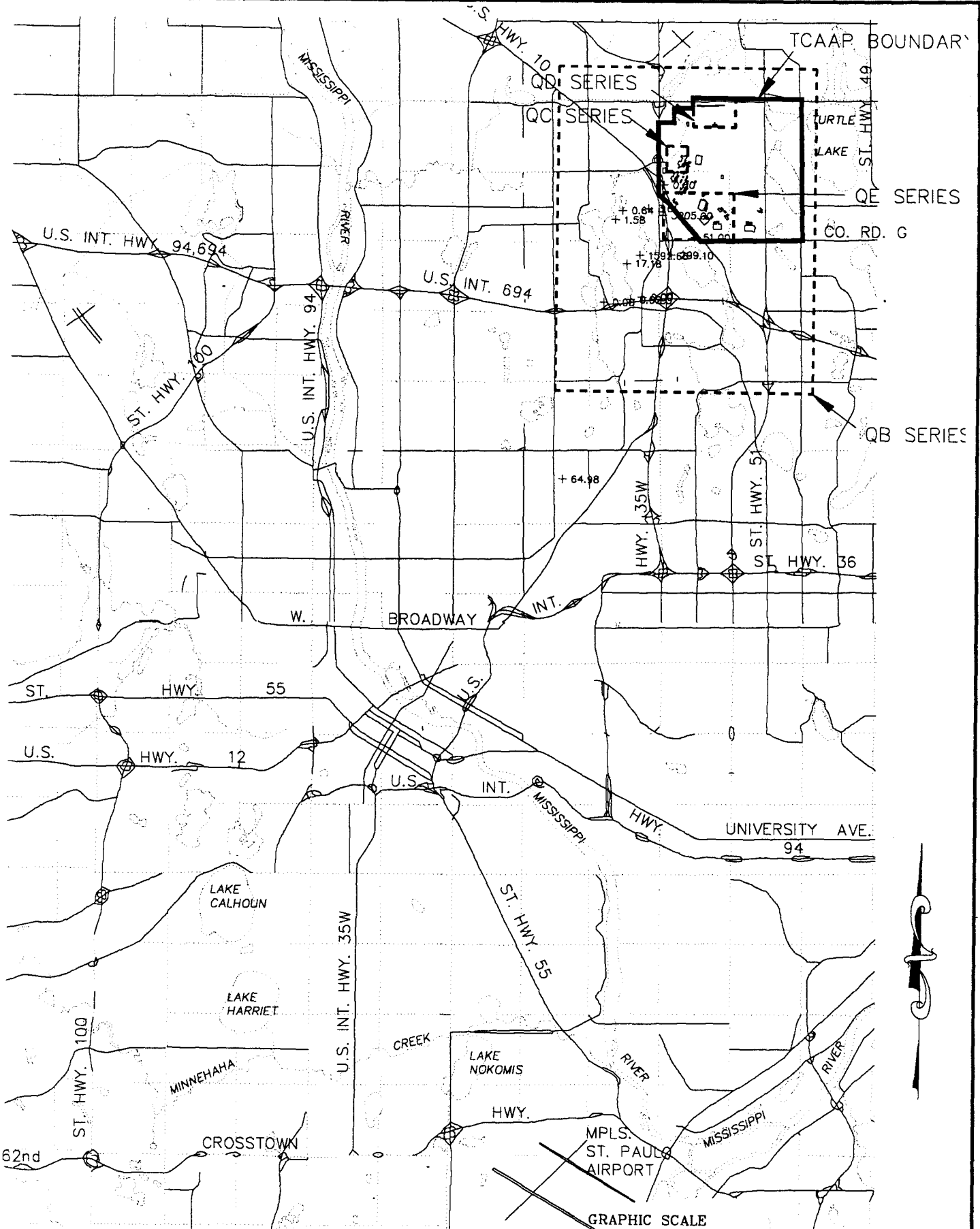
Wenck Associates, Inc.

Consulting Engineers

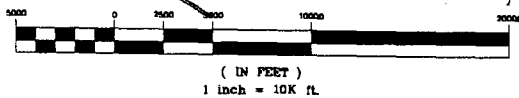
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.3.2.4



3LTV.Q22-QA



LEGEND  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 Total VOC, Lower Unit 3, QA-Series, Spring Quarter 1989(Q22)

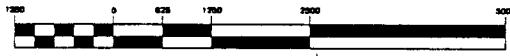
**Consulting Engineers**  
**Wenck Associates, Inc.**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.10.4.1.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500ft

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

CO. RD. H

CREEK

RICE

+ 0.64

+ 3.61

+ 1.58

RUSH

+ 205.00

+ 0.00

LAKE

+ 1592.66

+ 299.10

LAKE

+ 17.18

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

MARSDEN LAKE

TCAAP BOUNDARY

U.S. INT. 694

+ 0.00

+ 0.62

+ 0.00

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

3LTV.Q22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Total VOC, Lower Unit 3, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.4.2.2





LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.00

+ 15.94

+ 0.00

LONG

RUSH

+ 2.60

+ 18.80

CO. RD. G

QE SERIES

LAKE

+ 1490.00

+ 130.00

LAKE

+ 19.30

ROUND LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 3.24

+ 0.00

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

JLTV.Q23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Lower Unit 3, QB-Series, Summer Quarter 1989(Q23)



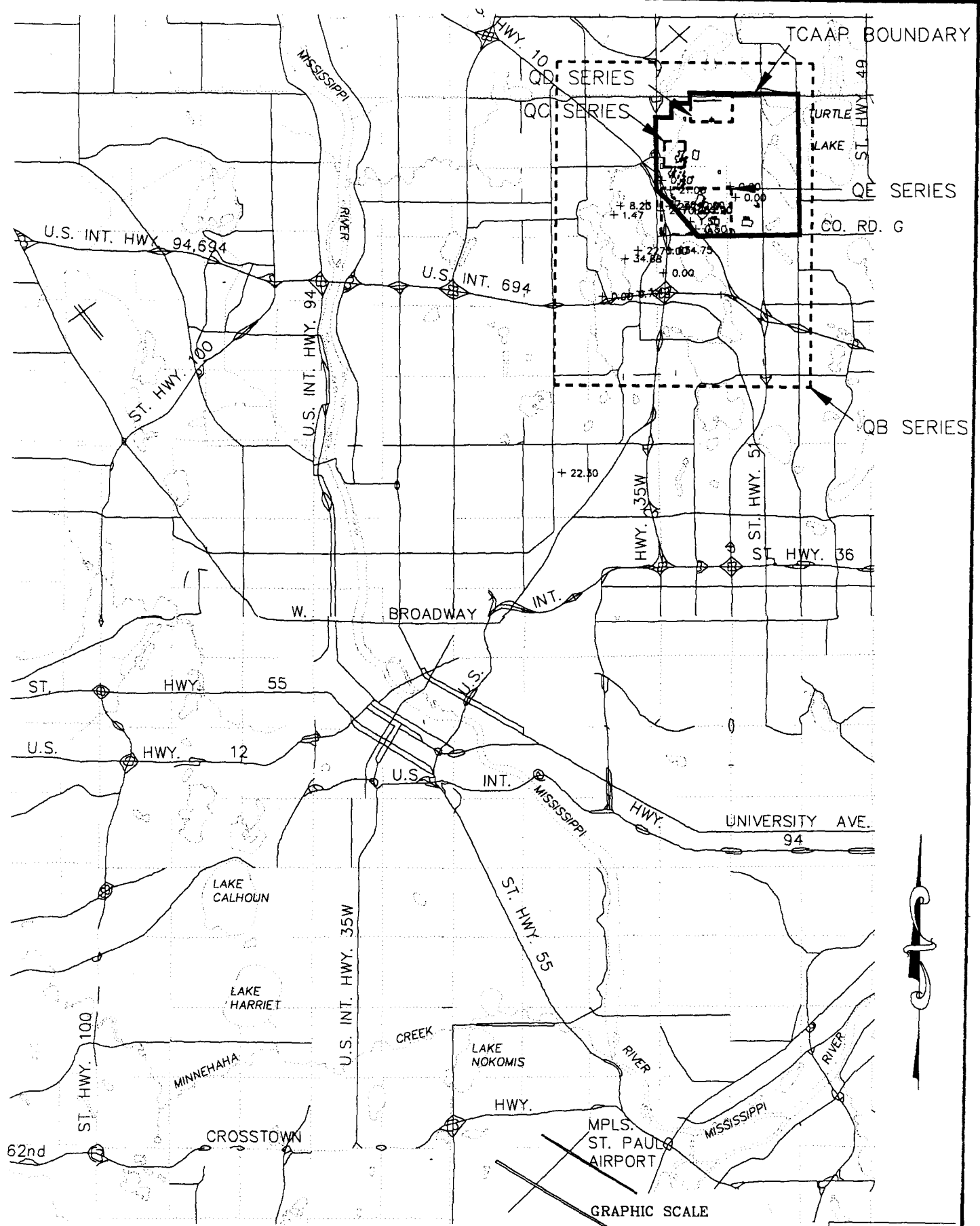
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

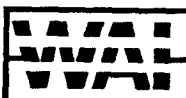
8.10.4.2.3



3LTV.Q24-QA

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Total VOC, Lower Unit 3, QA-Series, Fall Quarter 1989(Q24)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**LEGEND**  
 + CONCENTRATION  
 (ug/l)

MAR 1990

8.10.4.1.4

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 0.40

+ 21.08

+ 0.00

+ 0.00

+ 8.23

+ 11.87

+ 7.60

+ 4.00

+ 1262.00

85

LONG

+ 1.47

RUSH

+ 470.00

+ 1.50

+ 0.50

+ 2.40

CO. RD. G

LAKE

+ 2270.00

+ 634.75

QE SERIES

LAKE

+ 34.88

ROUND LAKE

+ 0.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 0.00

+ 0.77

+ 1.42

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

3LTV.Q24-8

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot  
Total VOC, Lower Unit 3, QB-Series, Fall Quarter 1989(Q24)



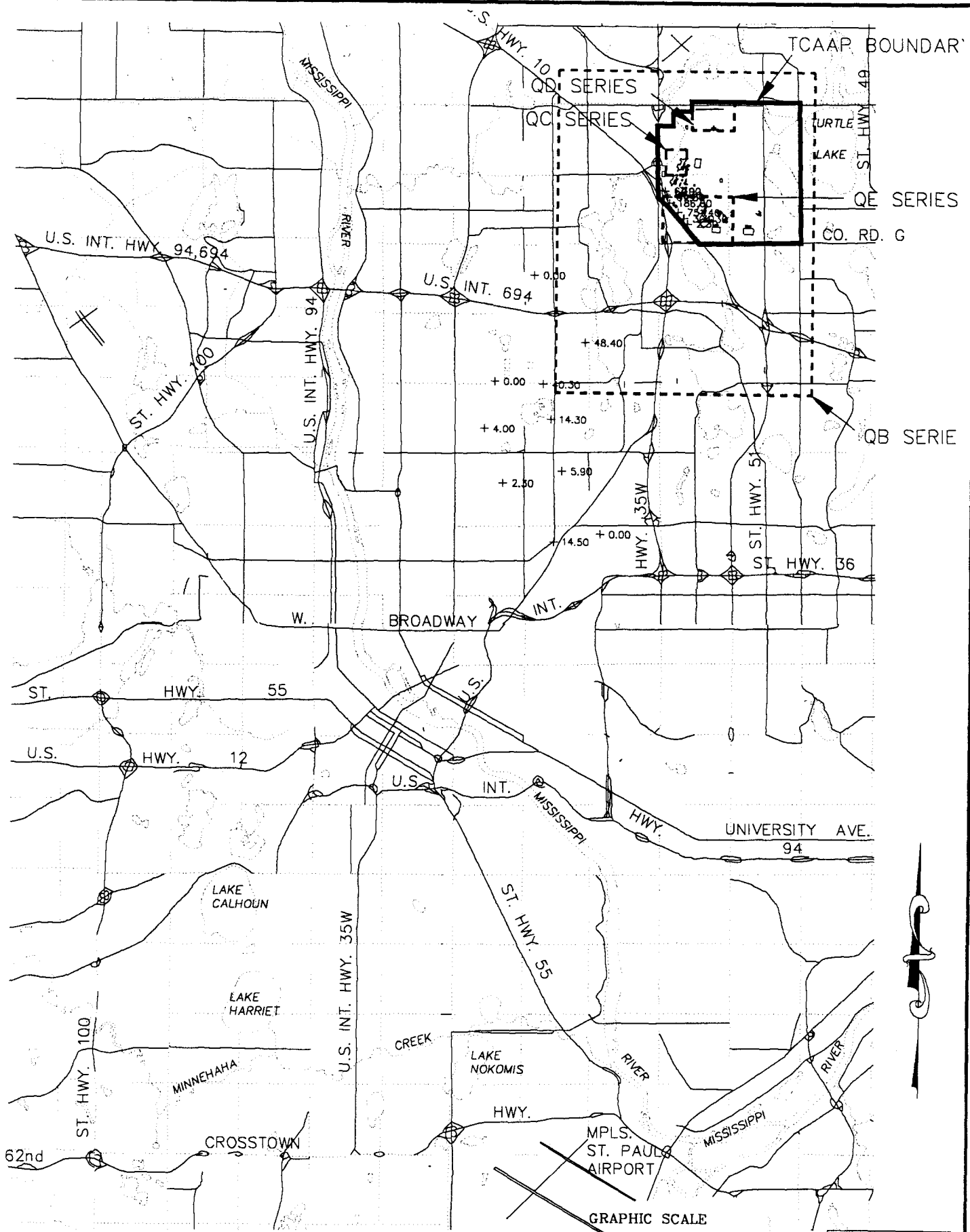
Wenck Associates, Inc.

Consulting Engineers

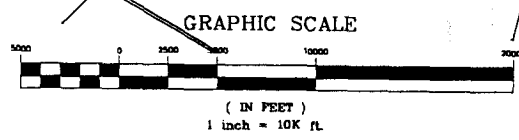
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.4.2.4



117-221-QA



**LEGEND**  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 Total VOC, Unit 4, QA-Series, Winter Quarter 1989(Q21)

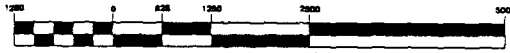
**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 8.10.5.1.1

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 16.80  
+ 18.90  
+ 35.70

+ 8.70

+ 851.00

+ 285.30

+ 1.90

+ 592.10

RUSH

+ 0.70

CO. RD. 3600.00

LAKE

+ 700.00

QE SERIES

LAKE

ROUND LAKE

+ 160.00

+ 360.00

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 10.21

+ 2.71

U.S. INT. 207.60  
694

+ 97.10

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4UTV.Q23-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Unit 4, QB-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.5.2.3

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 17.90  
+ 6.10  
+ 21.30  
+ 22.00  
+ 34.50  
+ 86.00  
+ 751.40  
+ 3.30  
+ 304.30  
+ 2.30

LONG

RUSH

LAKE

CO. RD. G

LAKE

ROUND LAKE

QE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 48.40

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

J.S. INT. HWY. 35W

4UTV.Q21.QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Unit 4, QB-Series, Winter Quarter 1989(Q21)



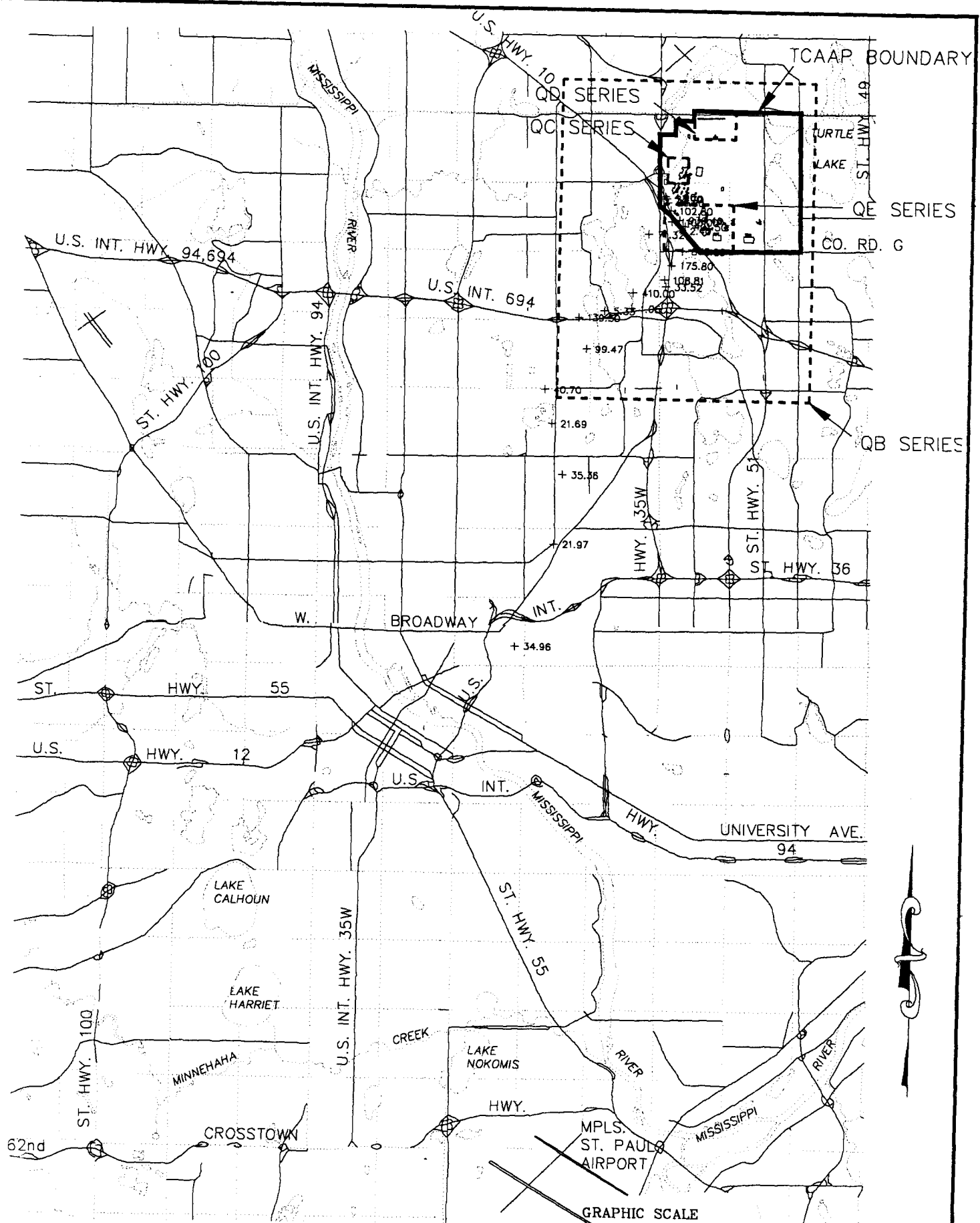
Wenck Associates, Inc.

Consulting Engineers

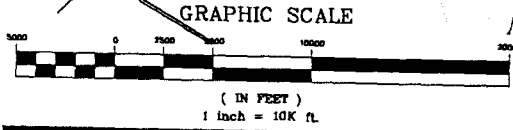
1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.5.2.1



4UTV.Q22--3A



LEGEND  
 + CONCENTRATION (ug/l)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Quality Data Plot  
 Total VOC, Unit 4, QA-Series, Spring Quarter 1989(Q22)

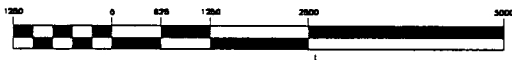
**Wenck Associates, Inc.**  
 Consulting Engineers  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

MAR 1990  
 8.10.5.1.2

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE

+ 4.90  
+ 23.90  
+ 30.80

LONG

+ 71.32

RUSH

+ 22.80  
+ 90.00  
+ 936.40  
+ 401.50  
+ 27.40

LAKE

+ 175.80

QE SERIES

CO. RD. G

LAKE

+ 108.81

ROUND LAKE

+ 53.52

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

+ 410.00

+ 5.33

+ 1.05

U.S. INT. 694

+ 99.47

VALENTINE LAKE

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

4UTV.Q22-B

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Data Plot

Total VOC, Unit 4, QB-Series, Spring Quarter 1989(Q22)



Wenck Associates, Inc.

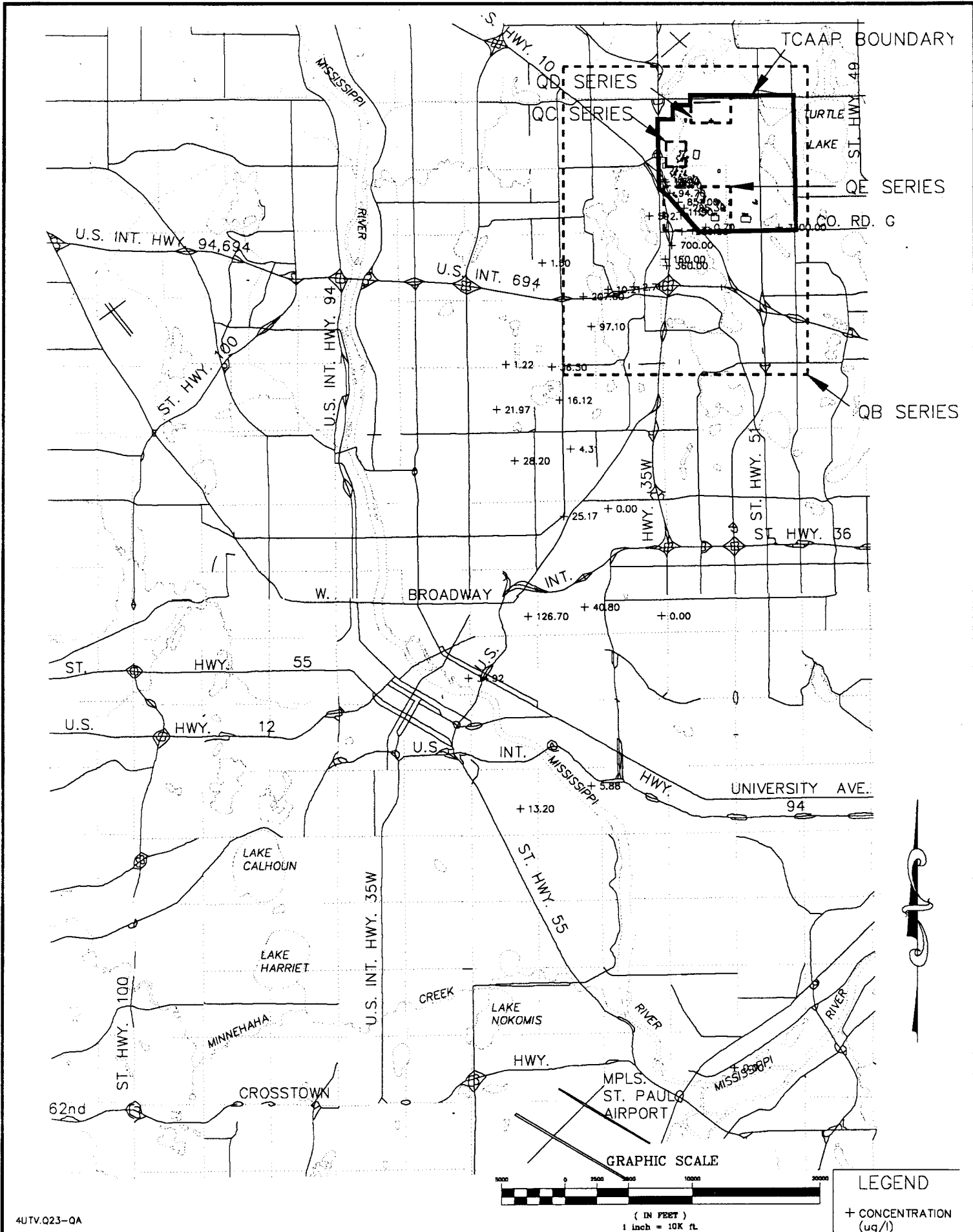
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.5.2.2





4UTV.Q23-QA

**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot

Total VOC, Unit 4, QA-Series, Summer Quarter 1989(Q23)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.5.1.3

**LEGEND**

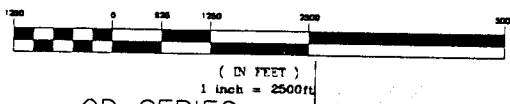
+ CONCENTRATION  
(ug/l)



LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



TCAAP BOUNDARY

QD SERIES

CO. RD. I

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

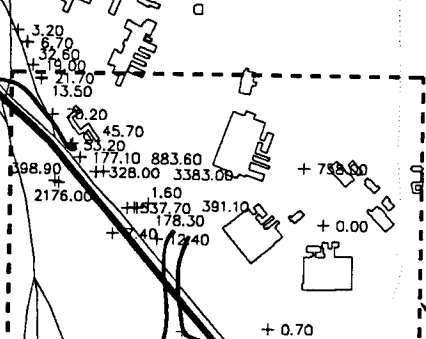
LEXINGTON AVE.

CO. RD. H

CREEK

MARSDEN LAKE

RICE



LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

QE SERIES

HAMLIN AVE.

LEXINGTON AVE.

CO. RD. G

U.S. INT. 694

U.S. INT. 694

VALENTINE LAKE

ST. HWY. 51

CO. RD. E

4UTV Q24-Q8

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Isoconcentration Contours  
Total VOC, Unit 4, QB-Series, Fall Quarter 1989(Q24)



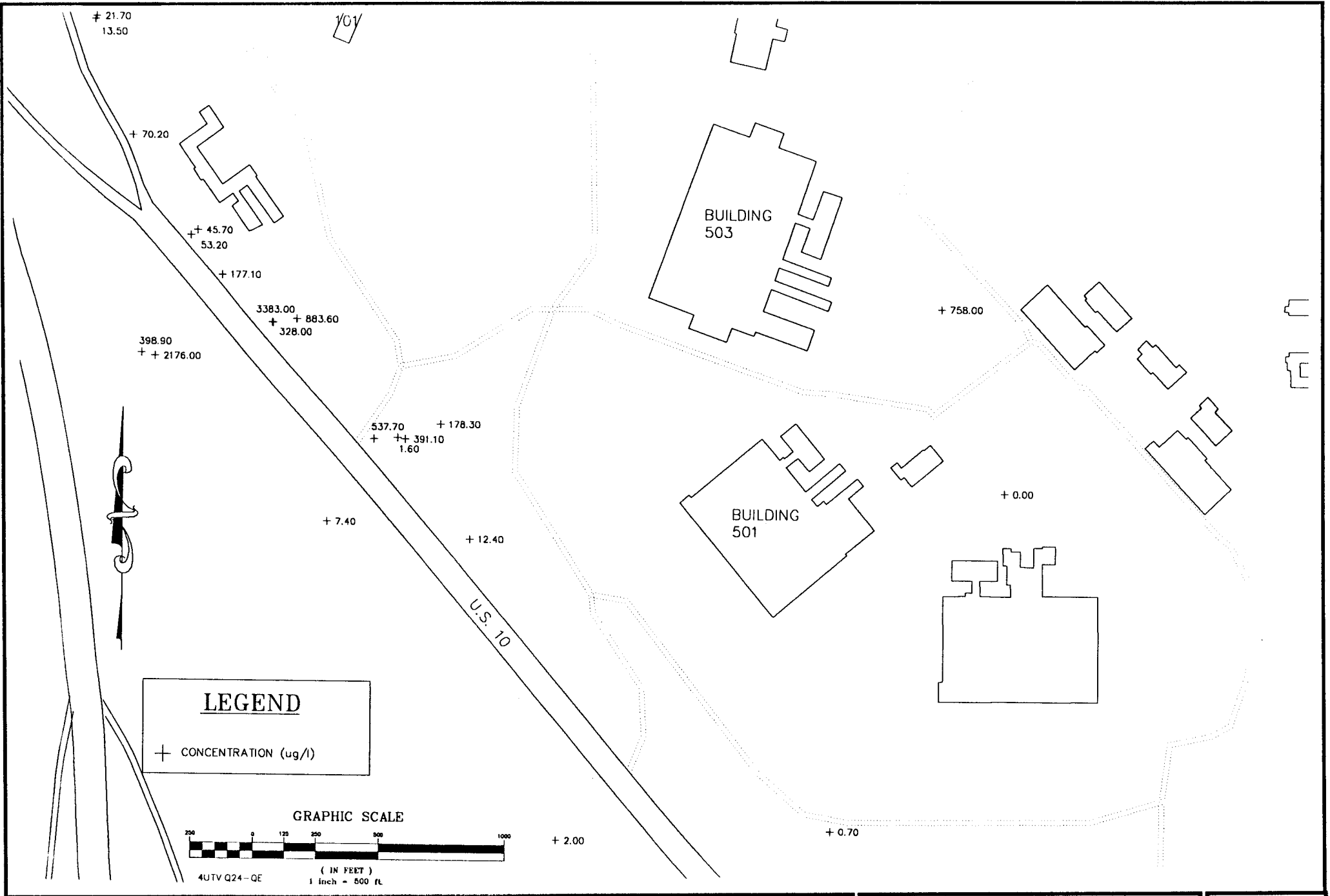
Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

8.10.5.2.4



**TWIN CITIES ARMY AMMUNITION PLANT**

Groundwater Quality Data Plot  
 Total VOC, Unit 4, QE-Series, Fall Quarter 1989(Q24)



**Consulting Engineers**

**Wenck Associates, Inc.**

1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**

**8.10.5.5.4**

**APPENDIX A**

**REVISIONS TO THE 1988 ANNUAL MONITORING REPORT**

## PART I

# INSTALLATION RESTORATION PROGRAM TWIN CITIES ARMY AMMUNITION PLANT 1989 ANNUAL MONITORING REPORT

## APPENDIX A

### REVISIONS TO THE 1988 ANNUAL MONITORING REPORT

#### LIST OF FIGURES

##### GROUNDWATER LEVEL CONTOUR MAPS

- R.1 Groundwater Level Contours, Unit 1, LB-Series, Fall Quarter 1987(Q16)
- R.2 Groundwater Level Contours, Unit 1, LB-Series, Winter Quarter 1988(Q17)
- R.3 Groundwater Level Contours, Unit 1, LB-Series, Spring Quarter 1988(Q18)
- R.4 Groundwater Level Contours, Unit 1, LB-Series, Summer Quarter 1988(Q19)
- R.5 Groundwater Level Contours, Unit 1, LB-Series, Fall Quarter 1988(Q20)
- R.6 Groundwater Level Contours, Unit 1, LC-Series, Fall Quarter 1987(Q16)
- R.7 Groundwater Level Contours, Unit 1, LC-Series, Winter Quarter 1988(Q17)
- R.8 Groundwater Level Contours, Unit 1, LC-Series, Spring Quarter 1988(Q18)
- R.9 Groundwater Level Contours, Unit 1, LC-Series, Summer Quarter 1988(Q19)
- R.10 Groundwater Level Contours, Unit 1, LC-Series, Fall Quarter 1988(Q20)
- R.11 Groundwater Level Contours, Unit 1, LD-Series, Fall Quarter 1988(Q20)
- R.12 Groundwater Level Contours, Unit 3, LB-Series, Fall Quarter 1987(Q16)
- R.13 Groundwater Level Contours, Unit 3, LB-Series, Winter Quarter 1988(Q17)
- R.14 Groundwater Level Contours, Unit 3, LB-Series, Spring Quarter 1988(Q18)
- R.15 Groundwater Level Contours, Unit 3, LB-Series, Summer Quarter 1988(Q19)
- R.16 Groundwater Level Contours, Unit 3, LB-Series, Fall Quarter 1988(Q20)
- R.17 Groundwater Level Contours, Unit 4, LB-Series, Fall Quarter 1988(Q20)

##### GROUNDWATER QUALITY ISOCONCENTRATION MAPS

- R.18 Trichloroethene, Upper Unit 3, QB-Series, Fall Quarter 1987(Q16)
- R.19 Total VOC's, Upper Unit 3, QB-Series, Fall Quarter 1987(Q16)
- R.20 Trichloroethene, Unit 4, QB-Series, Fall Quarter 1987(Q16)
- R.21 Total VOC's, Unit 4, QB-Series, Fall Quarter 1987(Q16)

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.



CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

VALENTINE LAKE

MARSDEN LAKE

LE SERIES

HAMLIN AVE.

U.S. HWY. 10

LEXINGTON AVE.

U.S. INT. 694

+ 872.40

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

HEU16 PRN-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LB-Series, Fall Quarter 1987(Q16)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.1

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKL

LAKE

ROUND LAKE

VALENTINE LAKE

LE SERIES

MARSDEN LAKE

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 871.90

U.S. HWY. 10

U.S. INT. 694

ST. HWY. 51

CO. RD. E

HE1U17.PRN

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LB-Series, Winter Quarter 1988(Q17)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

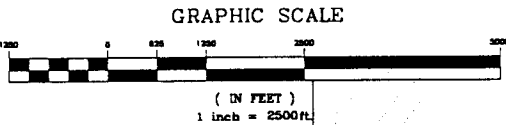
MAR 1990

R.2



LEGEND

+ GROUNDWATER ELEVATION (ft)



TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

+ 868.70 + 870.00

870

+ 872.00

+ 868.20

LAKE

+ 872.30

U.S. INT. 694

U.S. INT. HWY. 35W

VALENTINE LAKE

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

CO. RD. E

HE1U18.PRN-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LB-Series, Spring Quarter 1988(Q18)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.3

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500 ft

TCAAP BOUNDARY

CO. RD. I

LD SERIES

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 871.40

U.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

HE1U19.PRN-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LB-Series, Summer Quarter 1988(Q19)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

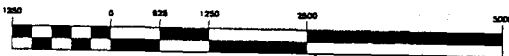
MAR 1990

R.4

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.



CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

MARSDEN LAKE

LE SERIES

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 871.40

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

HE1U20.PRN-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LB-Series, Fall Quarter 1988(Q20)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.5

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE

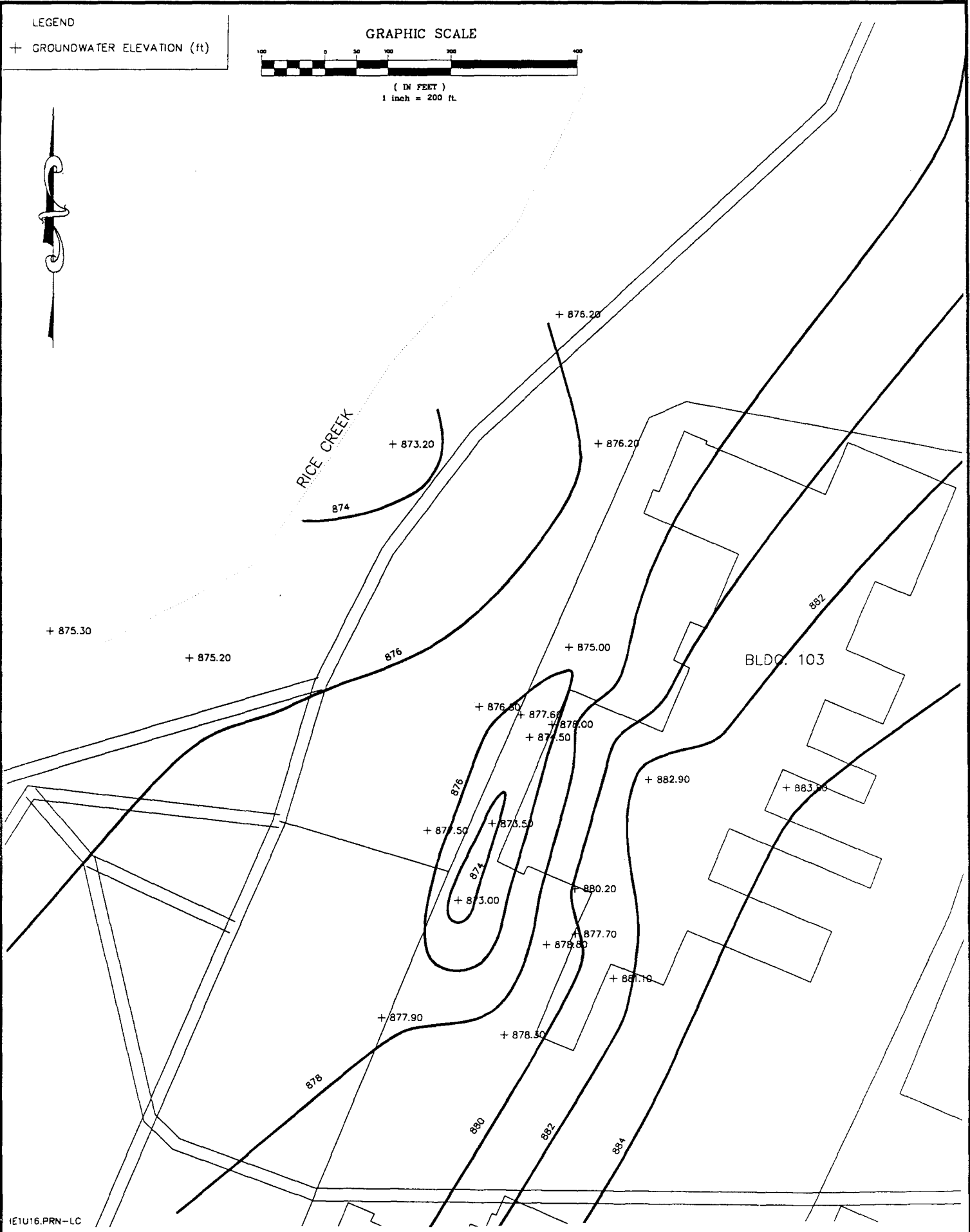


( IN FEET )  
1 inch = 200 ft.



RICE CREEK

BLDG. 103



1E1U16.PRN-LC

TWIN CITIES ARMY AMMUNITION PLANT



Consulting Engineers

MAR 1990

Groundwater Level Contours, Unit 1, LC-Series, Fall Quarter 1987(Q16)

Wenck Associates, Inc.

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

R.6

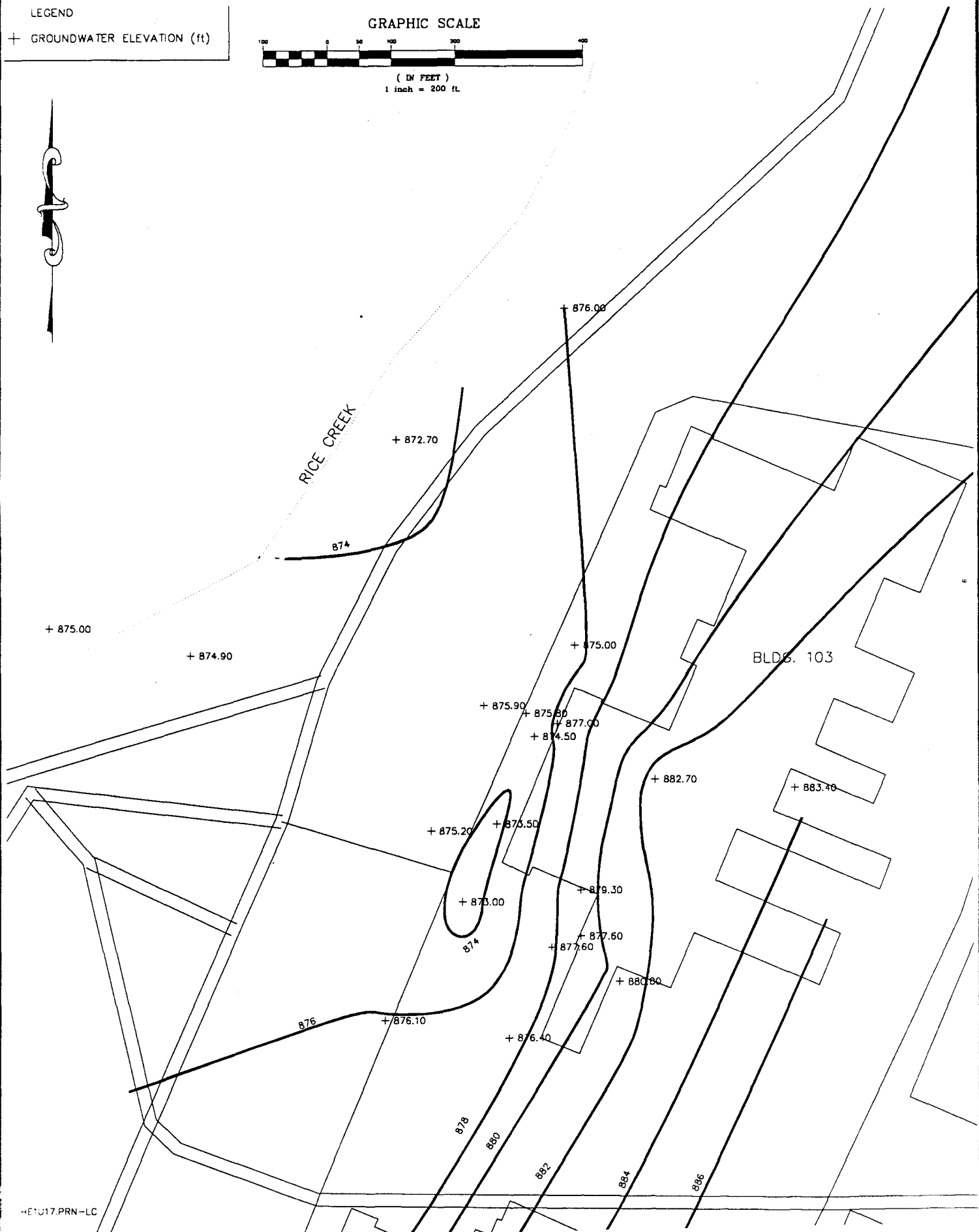
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



HE1U17.PRN-LC

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LC-Series, Winter Quarter 1988(Q17)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.7

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE

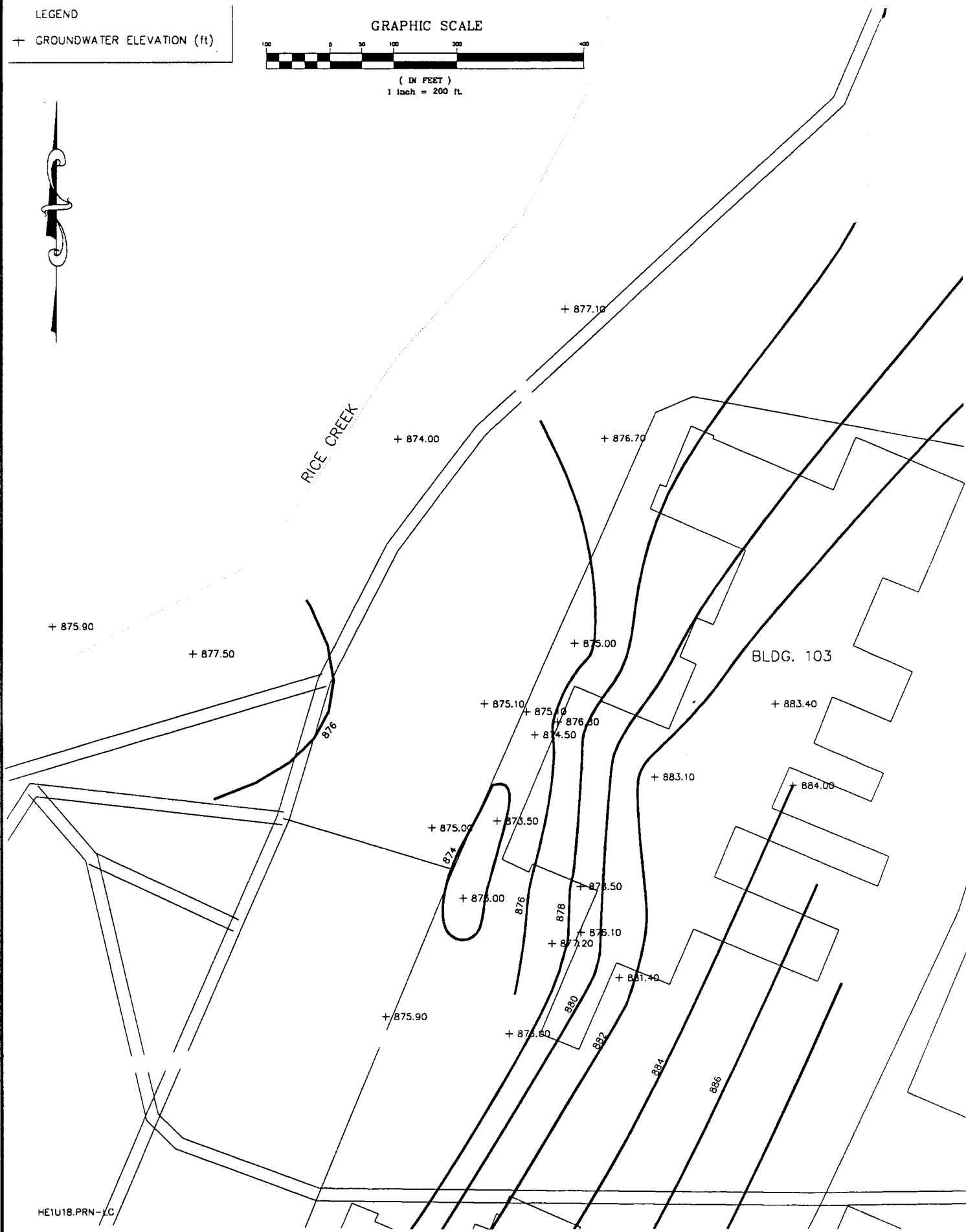


( IN FEET )  
1 inch = 200 ft.



RICE CREEK

BLDG. 103



HE1U18.PRN-LC

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LC-Series, Spring Quarter 1988(Q18)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.8

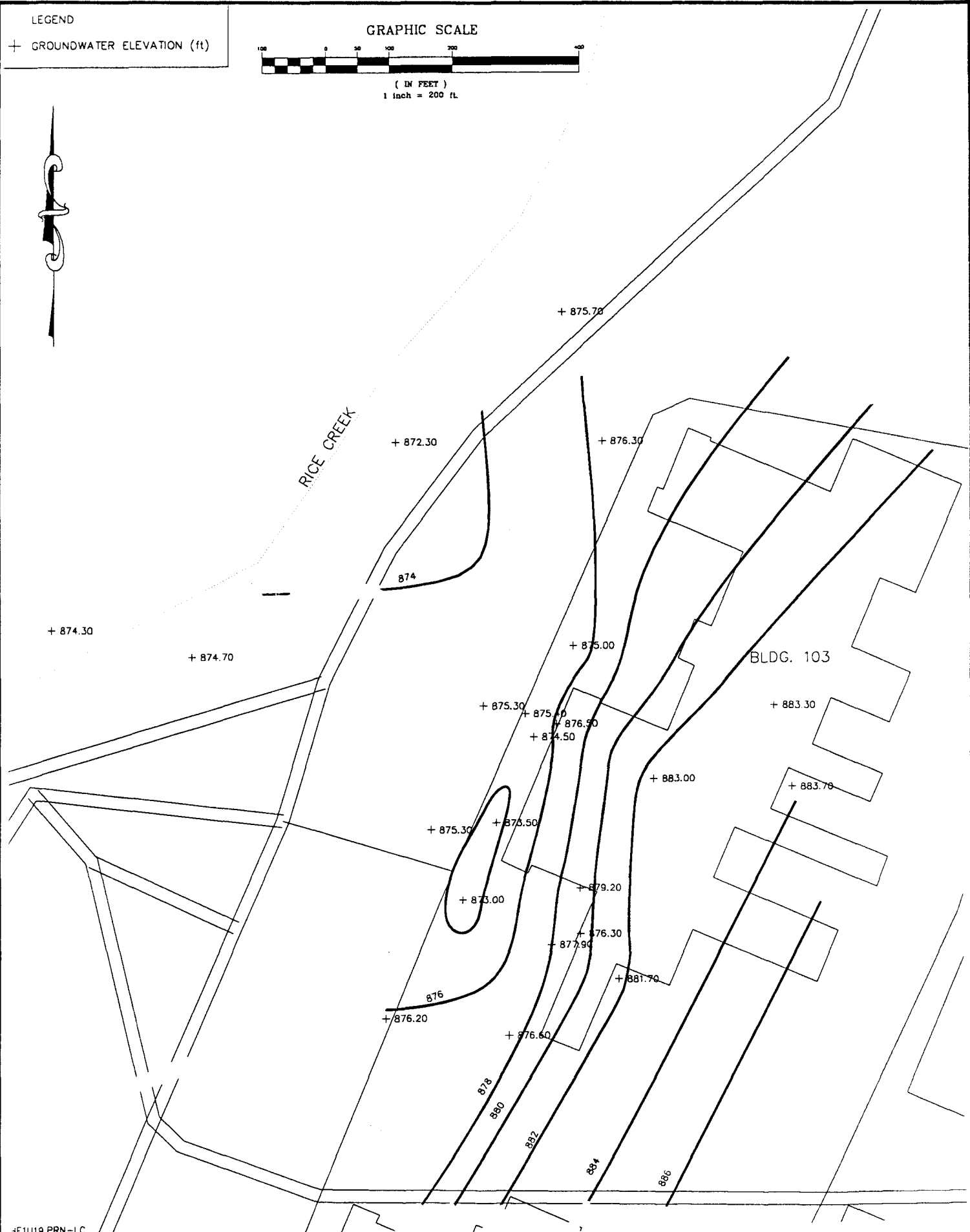
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



4E1U19.PRN-LC

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LC-Series, Summer Quarter 1988(Q19)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.9

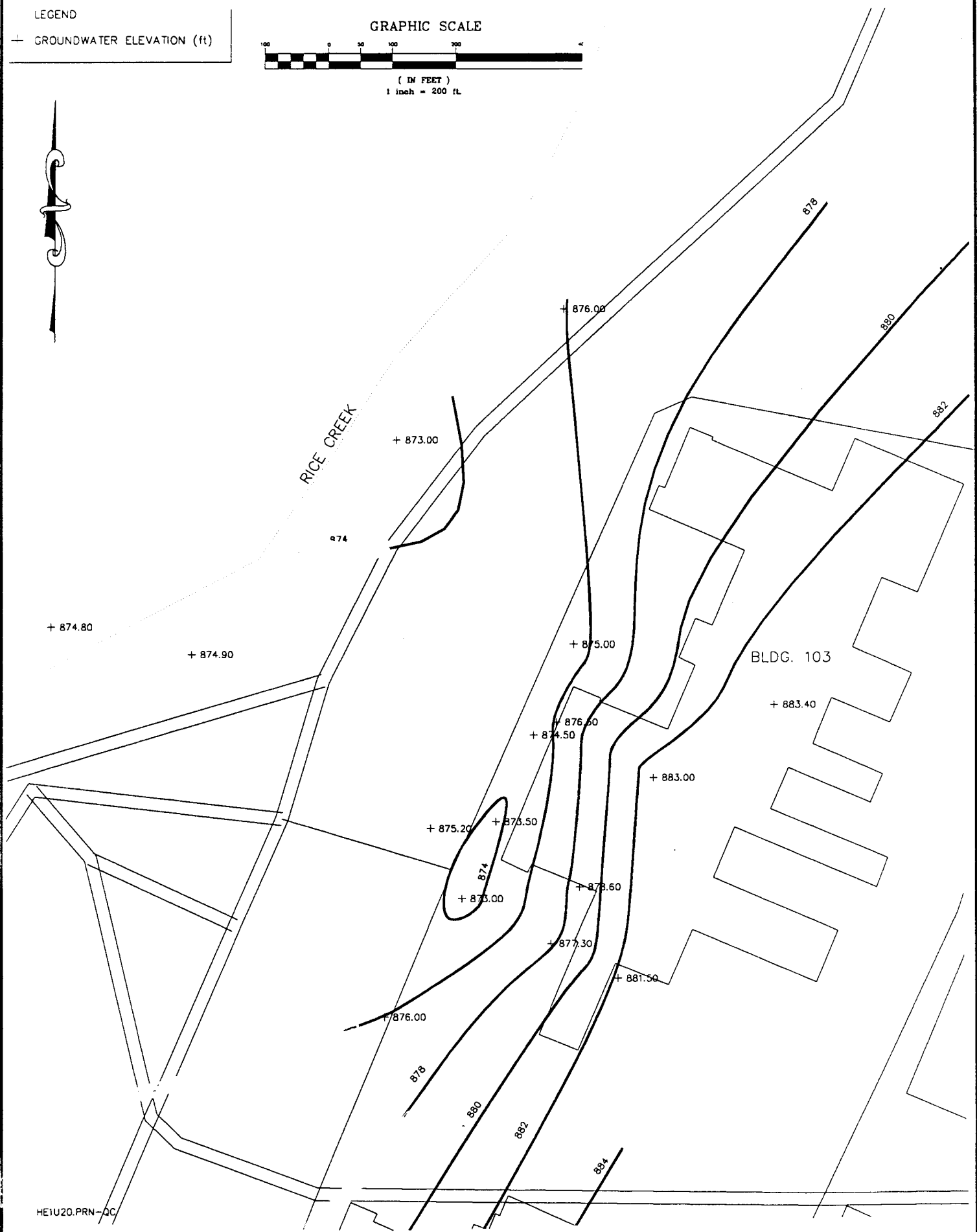
LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.



HE1U20.PRN-QC

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 1, LC-Series, Fall Quarter 1988(Q20)



Wenck Associates, Inc.

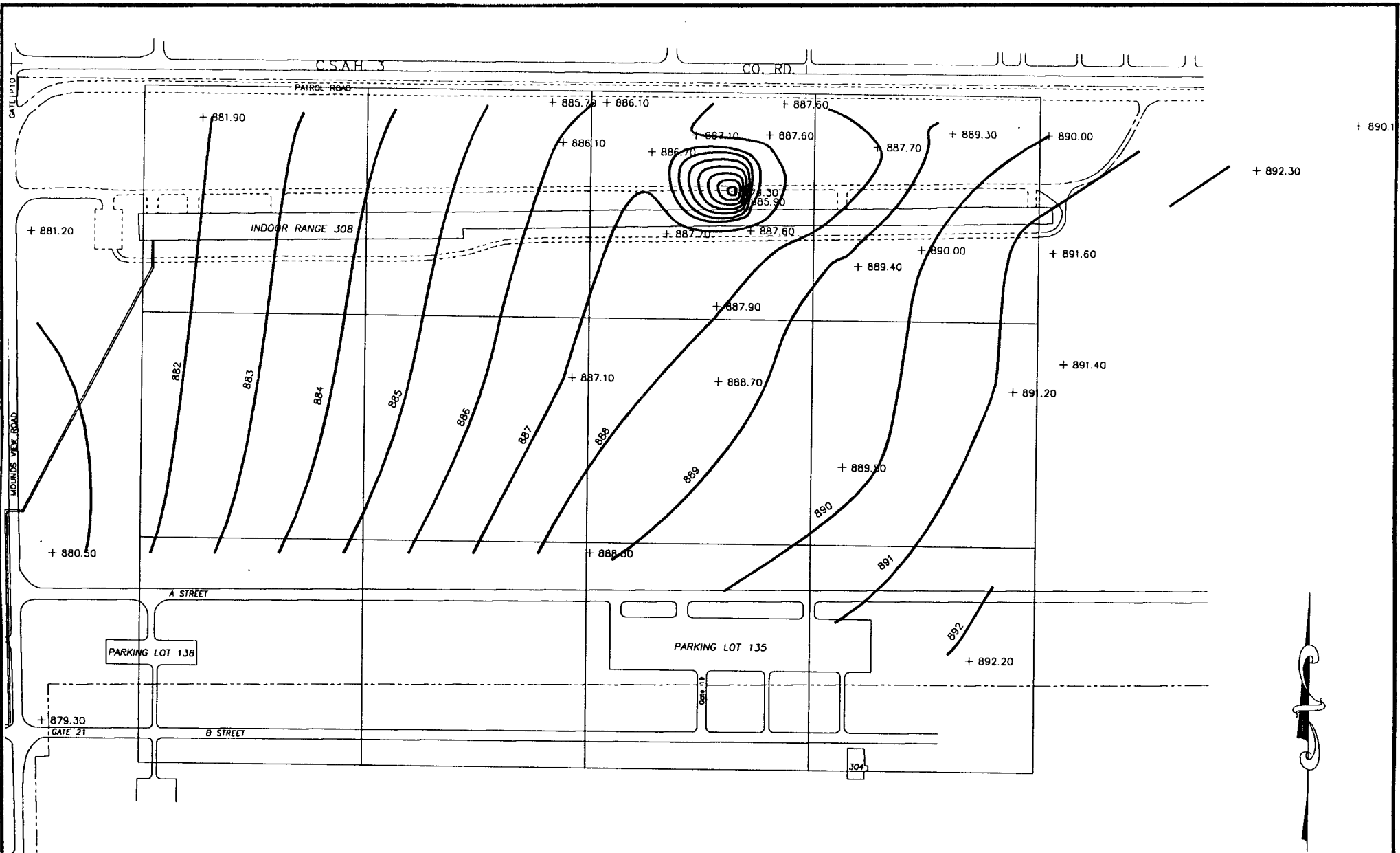
Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

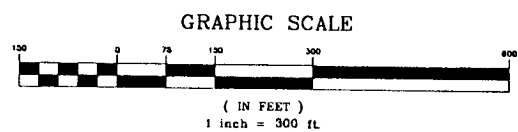
MAR 1990

R.10





HE1U20.PRN



**LEGEND**  
 + GROUNDWATER ELEVATION (ft)

**TWIN CITIES ARMY AMMUNITION PLANT**  
 Groundwater Level Contours, Unit 4, LB-Series, Fall Quarter 1988(Q20)

**Wenck Associates, Inc.**

**Consulting Engineers**  
 1800 Pioneer Creek Dr.  
 Maple Plain, MN 55359

**MAR 1990**  
 H.11



LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft.

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 866.10

+ 866.20

LEXINGTON AVE.

+ 860.70 + 860.90 + 863.20

+ 859.50 + 860.40

+ 857.70

+ 860.00

+ 862.70

+ 852.70

+ 858.00

+ 859.80

+ 860.20

CO. RD. H

CREEK

+ 852.00

+ 856.00

+ 858.40

+ 858.20

+ 859.20

RICE

+ 850.00

+ 856.80

+ 856.80

+ 857.10

+ 859.40

LONG

+ 833.90

+ 850.00

+ 857.30

+ 856.80

+ 857.50

+ 858.10

RUSH

+ 847.30

+ 849.50

+ 849.80

+ 851.10

+ 857.00

LAKE

+ 849.10

+ 849.50

+ 849.80

+ 851.10

+ 857.70

LAKE

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.60

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.30

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.50

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.70

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

+ 837.40

+ 849.70

+ 850.40

+ 849.70

+ 850.40

+ 858.00

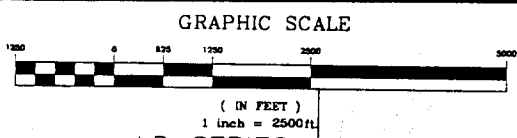
+ 837.40

+ 849.70

+

LEGEND

+ GROUNDWATER ELEVATION (ft)



TCAAP BOUNDARY

LD SERIES

CO. RD. I

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

+839.70

RUSH LAKE

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

ST. HWY. 51

CO. RD. E

HE3U18.PRN-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 3, LB-Series, Winter Quarter 1988(Q17)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr. Maple Plain, MN 55359

MAR 1990

R.14

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

+ 835.00

RUSH LAKE

LAKE

+ 833.50  
+ 833.30  
+ 833.40  
+ 833.40  
+ 833.40  
+ 833.40  
+ 833.60  
+ 833.20  
+ 832.00

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

U.S. INT. HWY. 35W

VALENTINE LAKE

U.S. INT. 694

CO. RD. E

HE3U19.PRN-LB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Level Contours, Unit 3, LB-Series, Spring Quarter 1988(Q18)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.15

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

LD SERIES

TCAAP BOUNDARY

CO. RD. I

LC SERIES

ST. HWY. 65

U.S. HWY. 10

U.S. INT. HWY. 35W

LEXINGTON AVE.

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

LE SERIES

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

833.40

+ 834.60  
+ 834.50  
+ 834.60  
+ 834.10  
+ 835.00

+ 844.90

+ 847.00

+ 847.30

+ 848.40

+ 848.00

+ 848.00

+ 848.90

+ 849.60

+ 848.80

+ 849.40

+ 844.90

+ 847.20

+ 847.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 848.00

+ 855.80

+ 856.10

+ 856.00

+ 858.30

+ 861.60

+ 861.70

+ 853.40

+ 854.90

+ 858.00

+ 849.10

+ 853.50

+ 854.50

+ 858.00

+ 848.00

+ 852.10

+ 854.90

+ 858.00

+ 847.00

+ 852.70

+ 854.90

+ 858.00

+ 846.60

+ 852.50

+ 854.90

+ 858.00

+ 847.20

+ 852.90

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

+ 846.60

+ 852.40

+ 854.90

+ 858.00

+ 847.00

+ 852.60

+ 854.90

+ 858.00

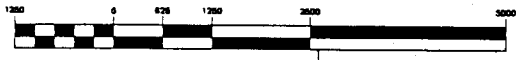
+ 846.60

+ 852.40

LEGEND

+ GROUNDWATER ELEVATION (ft)

GRAPHIC SCALE



( IN FEET )

1 inch = 2500ft

LD SERIES

CO. RD. I

TCAAP BOUNDARY

LC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

+ 855.70

CO. RD. H

CREEK

RICE

MARSDEN LAKE

+ 846.50

+ 849.90

+ 850.50

+ 846.90

+ 847.30

+ 848.00

+ 845.80

+ 847.40

+ 847.80

+ 843.20

+ 842.90

+ 843.20

+ 847.00

+ 843.20

+ 839.70

+ 835.00

+ 831.10

+ 833.70

+ 830.40

+ 833.10

+ 834.20

+ 830.10

+ 829.80

+ 830.10

+ 834.20

+ 830.10

+ 828.80

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40

+ 829.40



LONG

+ 832.10

+ 834.70

+ 834.80

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10

+ 830.10





LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

CO. RD. H

CREEK

RICE

LONG

RUSH

LAKE

LAKE

ROUND LAKE

VALENTINE LAKE

MARSDEN LAKE

QE SERIES

CO. RD. G

LEXINGTON AVE.

HAMLIN AVE.

LEXINGTON AVE.

U.S. HWY. 10

U.S. INT. 694

U.S. INT. 694

U.S. INT. HWY. 35W

ST. HWY. 51

CO. RD. E

3UTV.Q16-08

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Isoconcentration Contours  
Total VOC's, Upper Unit 3, QB-Series, Fall Quarter 1987(Q16)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

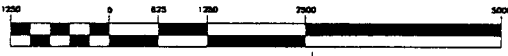
MAR 1990

R.19

LEGEND

+ CONCENTRATION (ug/l)

GRAPHIC SCALE



( IN FEET )  
1 inch = 2500ft

QD SERIES

CO. RD. I

TCAAP BOUNDARY

QC SERIES

U.S. HWY. 10

ST. HWY. 65

U.S. INT. HWY. 35W

0.00

CO. RD. H

CREEK

RICE

MARSDEN LAKE

LONG

RUSH

CO. RD. G

QE SERIES

LAKE

LAKE

ROUND LAKE

U.S. HWY. 10

HAMLIN AVE.

LEXINGTON AVE.

U.S. INT. 694

+ 950.00

+ 950.00

+ 210.00

+ 950.00

+ 100.00

+ 22.50

+ 460.00

+ 210.00

+ 950.00

+ 100.00

+ 22.50

+ 100.00

+ 22.50

+ 100.00

+ 22.50

+ 100.00

+ 22.50

+ 100.00

+ 22.50

S. INT. HWY. 35W

ST. HWY. 51

U.S. INT. 694

VALENTINE LAKE

CO. RD. E

4UTRCL. Q16-QB

TWIN CITIES ARMY AMMUNITION PLANT

Groundwater Quality Isoconcentration Contours  
Trichloroethene, Unit 4, QB-Series, Fall Quarter 1987(Q16)



Wenck Associates, Inc.

Consulting Engineers

1800 Pioneer Creek Dr.  
Maple Plain, MN 55359

MAR 1990

R.20

