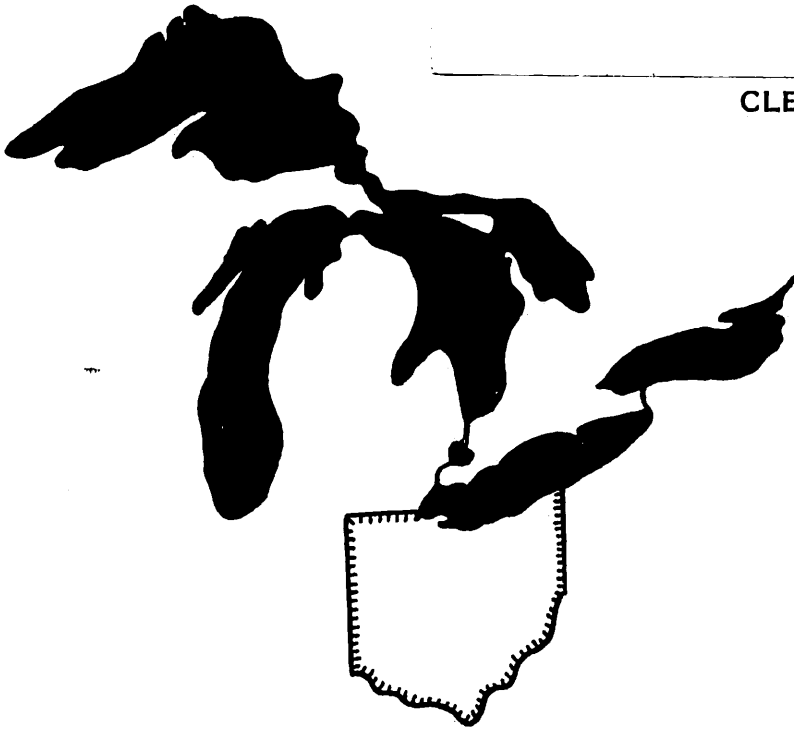


CLEAR TECHNICAL REPORT NO. 295



Chlorine Plume Analysis at the
Bayshore Power Station

Prepared by

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Prepared for

The Toledo Edison Company, Toledo, Ohio

**THE OHIO STATE UNIVERSITY
CENTER FOR LAKE ERIE AREA RESEARCH
COLUMBUS, OHIO**

1984

CHLORINE ANALYSIS IN THE
BAY SHORE POWER STATION
THERMAL PLUME: A PROPOSAL

INTRODUCTION

Periodically during the course of each day the Toledo Edison Company chlorinates for a two-hour period at their cooling water intake at the Bay Shore Power Station to prevent algal growth on surfaces within the plant and condensers. This study is designed to measure chlorine residuals and the decay rate within the thermal plume during the period of chlorination.

SAMPLING STATION LOCATION

Samples will be collected from three stations within the thermal plume. Station 1 will be located in the center of the discharge channel under a small bridge leading to the U.S. Army Corps of Engineers diked disposal area. Stations 2 and 3 will be located in the middle of the plume at distances of 750 and 1500 feet, respectively, from the bridge.

EQUIPMENT

Samples will be collected from the surface at each station from a 14-foot outboard motor boat provided by the Center for Lake Erie Area Research (CLEAR). The amperometric method for chlorine analysis will be performed using equipment provided by the Toledo Edison Company.

METHODS

During one two-hour chlorination period on each of 5 separate days during May 1984, 3 samples (one each at approximately half hour intervals) will be collected from each station. Chlorine decay rate will be performed on a sample collected from Station 1. All analyses will be performed within the field.

Approximately one hour prior to chlorination a slug of dye will be released at Station 1 and tracked to get exact locations for Stations 2 and 3. The time required to reach Stations 2 and 3 will also be recorded. This time, added to the time required to traverse the power station, will be used to determine the time following initial chlorination that the chlorine plume will reach Stations 2 and 3 to allow sampling to begin.

TABLE 1. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
FIELD SURVEY NO.1 MAY 7, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated: 1400 hours Wind: Water Level:
Chlorination Terminated: 1600 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|-------------|------------|-----------|----------|---------------|-------|------------|------------------|------------|
| | | COLLECTED | ANALYZED | FREE* | TOTAL | | | |
| 1-B | 1 | 1320 | 1323 | 0.00 | 0.00 | | | Background |
| 2-A | 2 | 1323 | 1326 | 0.00 | 0.00 | | | Background |
| 1000'-A | 3 | 1326 | 1329 | 0.00 | 0.00 | | | Background |
| Crib | 4 | 1329 | 1332 | 0.00 | 0.00 | | | Background |
| 3-A | 5 | 1332 | 1335 | 0.00 | 0.00 | | | Background |
| Tap Water | 23 | 1340 | 1345 | 0.00 | 0.24 | | | |
| 1-B | 7 | 1427 | 1435 | 0.00 | 0.47 | | | Residual |
| 1-B | 9 | 1427 | 1430 | 0.00 | 0.48 | | | Residual |
| 1-B | 8 | 1427 | 1437 | 0.00 | 0.48 | | | Residual |
| 1-B | 16 | 1513 | 1517 | 0.00 | 0.84 | | | Residual |
| 1-B | 18 | 1513 | 1520 | T | 0.84 | | | Residual |
| 1-B | 17 | 1513 | 1522 | 0.00 | 0.85 | | | Residual |
| 2-A | 12 | 1445 | 1448 | 0.00 | 0.69 | 17.2 | 365 | Residual |
| 2-A | 10 | 1445 | 1451 | 0.05 | 0.69 | 17.2 | 365 | Residual |
| 2-A | 11 | 1445 | 1454 | T | 0.74 | 17.2 | 365 | Residual |
| 2-A | 21 | 1518 | 1525 | T | 1.02 | 17.5 | 360 | Residual |
| 2-A | 20 | 1518 | 1525 | T | 1.03 | 17.5 | 360 | Residual |
| 2-A | 19 | 1518 | 1525 | 0.00 | 1.03 | 17.5 | 360 | Residual |
| 3-A | 15 | 1450 | 1457 | 0.00 | 0.10 | 16.9 | 370 | Residual |
| 3-A | 14 | 1450 | 1502 | 0.00 | 0.15 | 16.9 | 370 | Residual |
| 3-A | 13 | 1450 | 1500 | 0.00 | 0.57 | 16.9 | 370 | Residual |
| 3-A | 25 | 1528 | 1541 | T | 0.84 | 17.6 | 365 | Residual |
| 3-A | 22 | 1528 | 1535 | 0.00 | 0.86 | 17.6 | 365 | Residual |
| 3-A | 23 | 1528 | 1538 | 0.00 | 0.86 | 17.6 | 365 | Residual |

*T = Trace

TABLE 2. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
FIELD SURVEY NO.2 MAY 8, 1984 (MORNING CHLORINATION)

Chlorination Initiated: 0700 hours Wind: Water Level:
Chlorination Terminated: 0900 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME COLLECTED | TIME ANALYZED | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|----------------|---------------|-------------------|------------------|---------------|-------|---------------|---------------------|------------|
| | | | | FREE* | TOTAL | | | |
| 1-B | 2 | 0705 | 0715 | 0.00 | 0.00 | 15.0 | 370 | Background |
| 2-B | 3 | 0708 | 0716 | 0.00 | 0.00 | 15.0 | 370 | Background |
| 3-B | 4 | 0720 | 0731 | 0.00 | 0.00 | 14.5 | 360 | Background |
| Crib | 5 | 0723 | 0734 | 0.00 | 0.00 | -- | -- | Background |
| 4-B | 6 | 0726 | 0736 | 0.00 | 0.00 | 14.5 | 360 | Background |
| 1-A | 8 | 0745 | 0754 | 0.00 | 1.05 | 16.0 | 360 | Residual |
| 1-A | 7 | 0745 | 0757 | 0.00 | 1.07 | 16.0 | 360 | Residual |
| 1-B | 9 | 0747 | 0802 | 0.00 | 1.05 | 16.0 | 360 | Residual |
| 1-B | 10 | 0747 | 0804 | 0.00 | 1.09 | 16.0 | 360 | Residual |
| 1-C | 11 | 0750 | 0811 | 0.00 | 1.17 | 16.4 | 360 | Residual |
| 1-C | 12 | 0750 | 0808 | 0.00 | 1.38 | 16.4 | 360 | Residual |
| 2-A | 13 | 0809 | 0818 | T | 1.13 | 15.7 | 360 | Residual |
| 2-A | 14 | 0809 | 0822 | 0.00 | 1.18 | 15.7 | 360 | Residual |
| 2-B | 15 | 0805 | 0825 | 0.00 | 0.30 | 15.8 | 350 | Residual |
| 2-B | 16 | 0805 | 0828 | 0.00 | 0.31 | 15.8 | 350 | Residual |
| 2-C | 17 | 0802 | 0831 | 0.00 | 0.10 | 14.5 | 340 | Residual |
| 2-C | 18 | 0802 | 0833 | 0.00 | 0.10 | 14.5 | 340 | Residual |
| 3-A | 13 | 0851 | 0902 | 0.00 | 0.92 | 16.0 | 370 | Residual |
| 3-A | 14 | 0851 | 0912 | T | 0.93 | 16.0 | 370 | Residual |
| 3-B | 15 | 0854 | 0905 | 0.00 | 0.65 | 16.2 | 370 | Residual |
| 3-B | 16 | 0854 | 0915 | T | 0.66 | 16.2 | 370 | Residual |
| 3-C | 17 | 0857 | 0909 | 0.00 | 0.35 | 16.0 | 360 | Residual |
| 3-C | 18 | 0857 | 0918 | 0.00 | 0.38 | 16.0 | 360 | Residual |
| 4-A | 19 | 0913 | 0924 | 0.00 | 0.35 | 15.8 | 365 | Residual |
| 4-A | 20 | 0913 | 0937 | 0.00 | 0.38 | 15.8 | 365 | Residual |
| 4-B | 21 | 0915 | 0928 | T | 0.93 | 15.8 | 370 | Residual |
| 4-B | 22 | 0915 | 0940 | 0.04 | 0.93 | 15.8 | 370 | Residual |
| 4-C | 24 | 0917 | 0943 | 0.00 | 0.65 | 16.1 | 370 | Residual |
| 4-C | 23 | 0917 | 0931 | T | 0.71 | 16.1 | 370 | Residual |
| 5-B | 20 | 0958 | 1020 | 0.00 | 0.00 | 14.8 | 340 | Residual |
| 6-A | 14 | 1001 | 1022 | 0.00 | 0.00 | 13.1 | 300 | Residual |
| 6-A | 15 | 1001 | 1030 | 0.00 | 0.00 | 13.1 | 300 | Residual |
| 6-B | 17 | 1004 | 1032 | 0.00 | 0.00 | 13.8 | 320 | Residual |
| 6-B | 16 | 1004 | 1024 | 0.00 | 0.00 | 13.8 | 320 | Residual |
| 6-C | 18 | 1006 | 1027 | 0.00 | 0.00 | 14.2 | 330 | Residual |
| 6-C | 19 | 1006 | 1034 | 0.00 | 0.00 | 14.2 | 330 | Residual |

*T = TRACE

TABLE 3. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
FIELD SURVEY NO.3 MAY 8, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated: 1400 hours Wind: Water Level:
Chlorination Terminated: 1600 hours Air Temperature:

| STATION | BOTTLE NO. | TIME COLLECTED | TIME ANALYZED | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|---------|------------|----------------|---------------|---------------|-------|------------|------------------|------------|
| | | | | FREE* | TOTAL | | | |
| 1-B | 24 | 1357 | 1409 | 0.00 | 0.00 | | | Background |
| Crib | 25 | 1359 | 1406 | 0.00 | 0.00 | | | Background |
| 1-A | 3 | 1432 | 1440 | 0.00 | 1.29 | 16.6 | 380 | Residual |
| 1-A | 2 | 1432 | 1450 | 0.00 | 1.31 | 16.6 | 380 | Residual |
| 1-B | 4 | 1434 | 1454 | 0.00 | -- | 17.8 | 400 | Residual |
| 1-B | 5 | 1434 | 1443 | 0.00 | 1.01 | 17.8 | 400 | Residual |
| 1-C | 6 | 1436 | 1447 | 0.02 | 0.93 | 18.0 | 390 | Residual |
| 1-C | 7 | 1436 | 1457 | 0.00 | 0.95 | 18.0 | 390 | Residual |
| 2-A | 8 | 1441 | 1500 | T | 0.93 | 16.8 | 390 | Residual |
| 2-A | 13 | 1441 | 1513 | 0.01 | 0.94 | 16.8 | 390 | Residual |
| 2-B | 14 | 1443 | 1508 | 0.00 | 0.69 | 17.1 | 385 | Residual |
| 2-B | 15 | 1443 | 1511 | 0.00 | 0.00 | 17.1 | 385 | Residual |
| 2-C | 16 | 1445 | 1511 | 0.00 | 0.00 | 15.0 | 335 | Residual |
| 2-C | 17 | 1445 | 1517 | 0.00 | 0.00 | 15.0 | 335 | Residual |
| 3-A | 3 | 1509 | 1528 | 0.00 | 0.57 | 16.8 | 390 | Residual |
| 3-A | 1 | 1509 | 1519 | 0.00 | 0.66 | 16.8 | 390 | Residual |
| 3-B | 6 | 1511 | 1530 | 0.00 | 1.19 | 17.1 | 400 | Residual |
| 3-B | 5 | 1511 | 1522 | 0.00 | 1.22 | 17.1 | 400 | Residual |
| 3-C | 24 | 1514 | 1533 | 0.00 | 0.55 | 17.5 | 390 | Residual |
| 3-C | 11 | 1514 | 1526 | 0.00 | 0.78 | 17.5 | 390 | Residual |
| 4-A | 2 | 1522 | 1537 | 0.00 | 0.00 | 13.7 | 310 | Residual |
| 4-A | 4 | 1522 | 1544 | 0.00 | 0.00 | 13.7 | 310 | Residual |
| 4-B | 7 | 1525 | 1539 | 0.00 | 0.00 | 15.0 | 340 | Residual |
| 4-B | 8 | 1525 | 1546 | 0.00 | 0.00 | 15.0 | 340 | Residual |
| 4-C | 18 | 1527 | 1541 | 0.00 | 0.25 | 15.8 | 355 | Residual |
| 4-C | 25 | 1527 | 1548 | 0.00 | 0.26 | 15.8 | 355 | Residual |
| 4-D | 8 | 1600 | 1608 | 0.00 | 0.75 | 17.0 | 390 | Residual |
| 4-D | 18 | 1600 | 1611 | 0.00 | 0.76 | 17.0 | 390 | Residual |
| 4-E | 1 | 1614 | 1628 | 0.00 | 0.69 | 17.5 | 400 | Residual |
| 4-E | 3 | 1614 | 1637 | 0.00 | 0.70 | 17.5 | 400 | Residual |
| 4-F | 5 | 1615 | 1639 | 0.00 | 0.06 | 17.0 | 385 | Residual |
| 4-F | 4 | 1615 | 1631 | 0.00 | 0.08 | 17.0 | 385 | Residual |
| 4-G | 7 | 1620 | 1633 | 0.00 | 0.00 | 15.5 | 360 | Residual |
| 4-G | 2 | 1620 | 1642 | 0.00 | 0.00 | 15.5 | 360 | Residual |
| 5-A | 11 | 1538 | 1554 | 0.00 | 0.00 | 13.2 | 290 | Residual |
| 5-A | 13 | 1538 | 1613 | 0.00 | 0.00 | 13.2 | 290 | Residual |
| 5-B | 14 | 1541 | 1555 | 0.00 | 0.00 | 13.0 | 285 | Residual |
| 5-B | 15 | 1541 | 1615 | 0.00 | 0.00 | 13.0 | 285 | Residual |
| 5-C | 16 | 1544 | 1557 | 0.00 | 0.00 | 13.2 | 290 | Residual |
| 5-C | 17 | 1544 | 1618 | 0.00 | 0.00 | 13.2 | 290 | Residual |
| 5-D | 25 | 1608 | 1635 | 0.00 | 0.00 | 14.0 | 330 | Residual |

*T = Trace

TABLE 4. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
 FIELD SURVEY NO.4 MAY 9, 1984 (MORNING CHLORINATION)

Chlorination Initiated: 0700 hours Wind: Water Level:
 Chlorination Terminated: 0900 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME COLLECTED | TIME ANALYZED | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|-------------|------------|----------------|---------------|---------------|-------|------------|------------------|------------|
| | | | | FREE* | TOTAL | | | |
| 1-B | 23 | 0659 | 0709 | 0.00 | 0.00 | | | Background |
| Crib | 9 | 0704 | 0711 | 0.00 | 0.00 | | | Background |
| 1-A | 1 | 0737 | 0752 | 0.02 | 1.18 | 15.0 | 355 | Residual |
| 1-A | 2 | 0737 | 0802 | 0.00 | 1.20 | 15.0 | 355 | Residual |
| 1-B | 4 | 0740 | 0805 | 0.00 | 0.73 | 16.0 | 360 | Residual |
| 1-B | 3 | 0740 | 0756 | 0.00 | 0.81 | 16.0 | 360 | Residual |
| 1-C | 5 | 0745 | 0758 | 0.00 | 0.67 | 16.3 | 360 | Residual |
| 1-C | 6 | 0745 | 0807 | 0.00 | 0.72 | 16.3 | 360 | Residual |
| 2-A | 7 | 0750 | 0812 | 0.00 | 0.94 | 15.0 | 350 | Residual |
| 2-A | 8 | 0750 | 0821 | 0.00 | 0.99 | 15.0 | 350 | Residual |
| 2-B | 9 | 0752 | 0816 | 0.00 | 0.69 | 15.2 | 360 | Residual |
| 2-B | 10 | 0752 | 0823 | 0.00 | 0.70 | 15.2 | 360 | Residual |
| 2-C | 11 | 0754 | 0819 | 0.00 | 0.00 | 13.5 | 340 | Residual |
| 2-C | 13 | 0754 | 0826 | 0.00 | 0.00 | 13.5 | 340 | Residual |
| 3-A | 17 | 0803 | 0829 | 0.00 | 0.77 | 14.3 | 360 | Residual |
| 3-A | 18 | 0803 | 0837 | 0.00 | 0.80 | 14.3 | 360 | Residual |
| 3-B | 5 | 0807 | 0831 | 0.00 | 1.14 | 14.7 | 360 | Residual |
| 3-B | 22 | 0807 | 0839 | 0.00 | 1.15 | 14.7 | 360 | Residual |
| 3-C | 25 | 0808 | 0843 | 0.00 | 0.23 | 14.0 | 350 | Residual |
| 3-C | 24 | 0808 | 0835 | 0.00 | 0.25 | 14.0 | 350 | Residual |
| 4-A | 5 | 0831 | 0847 | 0.00 | 0.07 | 14.0 | 360 | Residual |
| 4-A | 8 | 0831 | 0856 | 0.00 | 0.07 | 14.0 | 360 | Residual |
| 4-B | 1 | 0833 | 0850 | 0.00 | 0.80 | 15.0 | 360 | Residual |
| 4-B | 3 | 0833 | 0858 | 0.00 | 0.88 | 15.0 | 360 | Residual |
| 4-C | 23 | 0835 | 0900 | 0.00 | 0.34 | 14.2 | 360 | Residual |
| 4-C | 16 | 0835 | 0853 | 0.00 | 0.35 | 14.2 | 360 | Residual |
| 5-A | 9 | 0847 | 0906 | 0.00 | 0.00 | 11.0 | 290 | Residual |
| 5-A | 11 | 0847 | 0915 | 0.00 | 0.00 | 11.0 | 290 | Residual |
| 5-C | 6 | 0852 | 0908 | 0.00 | 0.00 | 12.5 | 330 | Residual |
| 5-C | 7 | 0852 | 0917 | 0.00 | 0.00 | 12.5 | 330 | Residual |
| 5-D | 2 | 0857 | 0910 | 0.00 | 0.00 | 14.0 | 360 | Residual |
| 5-D | 4 | 0857 | 0914 | 0.00 | 0.00 | 14.0 | 360 | Residual |

*T = Trace

TABLE 5. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
FIELD SURVEY NO.5 MAY 9, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated: 1215 hours Wind: Water Level:
Chlorination Terminated: 1415 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME COLLECTED | TIME ANALYZED | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|----------------|---------------|-------------------|------------------|---------------|-------|---------------|---------------------|------------|
| | | | | FREE | TOTAL | | | |
| 1-B | 1 | 1207 | 1226 | 0.00 | 0.00 | | | Background |
| 2-B | 3 | 1208 | 1236 | 0.00 | 0.00 | | | Background |
| Crib | 4 | 1210 | 1235 | 0.00 | 0.00 | | | Background |
| 4-B | 2 | 1211 | 1239 | 0.00 | 0.00 | | | Background |
| 4-E | 5 | 1217 | 1232 | 0.00 | 0.00 | 15.8 | 370 | Background |
| 1-B | 2 | 1243 | 1306 | 0.00 | 0.82 | 16.0 | 390 | Residual |
| 1-B | 1 | 1243 | 1257 | 0.00 | 0.86 | 16.0 | 390 | Residual |
| 2-B | 4 | 1246 | 1308 | 0.00 | 0.81 | 16.5 | 395 | Residual |
| 2-B | 3 | 1246 | 1300 | 0.00 | 0.84 | 16.5 | 395 | Residual |
| 3-B | 5 | 1250 | 1254 | 0.00 | 0.78 | 16.5 | 390 | Residual |
| 3-B | 6 | 1250 | 1303 | 0.00 | 0.79 | 16.5 | 390 | Residual |
| Crib | 7 | 1305 | 1340 | 0.00 | 0.00 | 13.0 | 750 | Residual |
| Crib | 8 | 1305 | 1405 | 0.00 | 0.05 | 13.0 | 750 | Residual |
| 3-D | 9 | 1308 | 1351 | 0.00 | 0.00 | 15.0 | 370 | Residual |
| 3-D | 10 | 1308 | 1403 | 0.00 | 0.00 | 15.0 | 370 | Residual |
| 4-D | 11 | 1315 | 1348 | 0.00 | 0.00 | 16.0 | 390 | Residual |
| 4-D | 13 | 1315 | 1401 | 0.00 | 0.00 | 16.0 | 390 | Residual |
| 4-E | 20 | 1405 | 1435 | 0.00 | 0.30 | 16.0 | 395 | Residual |
| 4-E | 22 | 1405 | 1446 | 0.00 | 0.30 | 16.0 | 395 | Residual |
| 5-C | 2 | 1418 | 1449 | 0.00 | 0.02 | 14.7 | 355 | Residual |
| 5-C | 25 | 1418 | 1438 | 0.00 | 0.05 | 14.7 | 355 | Residual |
| 5-D | 14 | 1318 | 1346 | 0.00 | 0.00 | 15.2 | 360 | Residual |
| 5-D | 16 | 1318 | 1400 | 0.00 | 0.00 | 15.2 | 360 | Residual |
| 5-G | 23 | 1415 | 1441 | 0.00 | 0.00 | 15.5 | 370 | Residual |
| 5-G | 24 | 1415 | 1451 | 0.00 | 0.00 | 15.5 | 370 | Residual |
| 6-F | 17 | 1328 | 1343 | 0.00 | 0.14 | 13.3 | 345 | Residual |
| 6-F | 18 | 1328 | 1355 | 0.00 | 0.14 | 13.3 | 345 | Residual |
| 6-G | 4 | 1425 | 1443 | 0.00 | 0.16 | 13.5 | 340 | Residual |
| 6-G | 6 | 1425 | 1453 | 0.00 | 0.19 | 13.5 | 340 | Residual |

TABLE 6. BAYSHORE POWER STATION CHLORINE DECAY ANALYSIS (SET 1)
 FIELD SURVEY NO. 1 MAY 7, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated 1400 hours
 Chlorination Terminated 1600 hours

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C ^o) | COND. (umhos/cm) | TIME (hrs.) ELAPSED |
|----------------|---------------|-----------|----------|---------------|-------|----------------------------|---------------------|------------------------|
| | | COLLECTED | ANALYZED | FREE | TOTAL | | | |
| 1-B | 3 | 1420 | 1423 | 0.00 | 0.45 | | | 0.05 |
| 1-B | 2 | 1420 | 1426 | 0.00 | 0.49 | | | 0.10 |
| 1-B | 4 | 1420 | 1430 | 0.00 | 0.34 | | | 0.17 |
| 1-B | 1 | 1420 | 1439 | 0.00 | 0.46 | | | 0.32 |
| 1-B | 6 | 1420 | 1510 | 0.00 | 0.50 | | | 0.83 |
| 1-B | 5 | 1420 | 1600 | 0.00 | 0.47 | | | 1.67 |

TABLE 7. BAYSHORE POWER STATION CHLORINE DECAY ANALYSIS (SET 2)
 FIELD SURVEY NO. 1 MAY 7, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated 1400 hours
 Chlorination Terminated 1600 hours

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | TIME ELAPSED |
|----------------|---------------|-----------|----------|---------------|-------|---------------|---------------------|-----------------|
| | | COLLECTED | ANALYZED | FREE | TOTAL | | | |
| 1-B | 2 | 1550 | 1555 | 0.00 | 1.10 | 18.3 | 360 | 0.08 |
| 1-B | 7 | 1550 | 1700 | 0.00 | 1.10 | 18.3 | 360 | 1.17 |
| 1-B | 6 | 1550 | 2130 | 0.00 | 0.78 | 18.3 | 360 | 5.67 |
| 1-B | 4 | 1550 | 2400 | 0.00 | 0.70 | 18.3 | 360 | 8.17 |
| 1-B | 3 | 1550 | 0545* | 0.00 | 0.60 | 18.3 | 360 | 13.92 |
| 1-B | 1 | 1550 | 1420* | 0.00 | 0.53 | 18.3 | 360 | 22.50 |

* Analyzed May 8, 1984

TABLE 8. BAYSHORE POWER STATION CHLORINE DECAY ANALYSIS
 FIELD SURVEY NO. 2 MAY 8, 1984 (MORNING CHLORINATION)

Chlorination Initiated 0700 hours
 Chlorination Terminated 0900 hours

| STATION NO. | BOTTLE NO. | TIME COLLECTED | TIME ANALYZED | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | TIME ELAPSED |
|-------------|------------|----------------|---------------|---------------|-------|------------|------------------|--------------|
| | | | | FREE* | TOTAL | | | |
| 1-B | 7 | 0825 | 0836 | T | 0.94 | 17.0 | 365 | 0.18 |
| 1-B | 8 | 0825 | 0948 | 0.00 | 0.90 | 17.0 | 365 | 1.38 |
| 1-B | 11 | 0825 | 1425 | 0.00 | 0.74 | 17.0 | 365 | 6.00 |
| 1-B | 10 | 0825 | 1925 | 0.00 | 0.67 | 17.0 | 365 | 11.00 |
| 1-B | 9 | 0825 | 0600* | 0.00 | 0.48 | 17.0 | 365 | 21.58 |
| 1-B | 12 | 0825 | 1425* | 0.00 | 0.44 | 17.0 | 365 | 30.00 |

* Analyzed May 9, 1984

T = Trace

TABLE 9. BAYSHORE POWER STATION CHLORINE DECAY ANALYSIS
 FIELD SURVEY NO. 3 MAY 8, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated 1400 hours
 Chlorination Terminated 1600 hours

| STATION NO. | BOTTLE NO. | TIME COLLECTED | TIME ANALYZED | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | TIME ELAPSED |
|-------------|------------|----------------|---------------|---------------|-------|------------|------------------|--------------|
| | | | | FREE | TOTAL | | | |
| 1-B | 18 | 1451 | 1505 | 0.00 | 1.21 | 17.2 | 400 | 0.23 |
| 1-B | 23 | 1451 | 1645 | 0.00 | 1.06 | 17.2 | 400 | 1.90 |
| 1-B | 22 | 1451 | 2400 | 0.00 | 0.77 | 17.2 | 400 | 9.15 |
| 1-B | 5 | 1451 | 0545* | 0.00 | 0.74 | 17.2 | 400 | 14.90 |
| 1-B | 19 | 1451 | 0919* | 0.00 | 0.74 | 17.2 | 400 | 18.47 |
| 1-B | 21 | 1451 | 1427* | 0.00 | 0.84 | 17.2 | 400 | 23.60 |

* Analyzed May 9, 1984

TABLE 10. BAYSHORE POWER STATION CHLORINE DECAY ANALYSIS
 FIELD SURVEY NO. 4 MAY 9, 1984 (MORNING CHLORINATION)

Chlorination Initiated 0700 hours
 Chlorination Terminated 0900 hours

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | TIME ELAPSED |
|----------------|---------------|-----------|----------|---------------|-------|---------------|---------------------|-----------------|
| | | COLLECTED | ANALYZED | FREE | TOTAL | | | |
| 1-B | 16 | 0743 | 0749 | 0.00 | 0.84 | 16.0 | 360 | 0.10 |
| 1-B | 14 | 0743 | 1219 | 0.00 | 0.67 | 16.0 | 360 | 4.60 |
| 1-B | 15 | 0743 | 1431 | 0.00 | 0.68 | 16.0 | 360 | 6.80 |

TABLE 11. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
FIELD SURVEY NO.6 MAY 29, 1984 (MORNING CHLORINATION)

Chlorination Initiated: 09:00 hours Wind: Water Level:
Chlorination Terminated: 11:00 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|----------------|---------------|-----------|----------|---------------|-------|---------------|---------------------|------------|
| | | COLLECTED | ANALYZED | FREE | TOTAL | | | |
| 0-B | 21 | 08:45 | 09:12 | 0.00 | 0.00 | 20.0 | 410 | Background |
| 0-B | 22 | 08:45 | 09:15 | 0.00 | 0.00 | 20.0 | 410 | Background |
| 0-B | 3 | 09:26 | 09:40 | 0.00 | 0.31 | 20.0 | 410 | Residual |
| 0-B | 2 | 09:26 | 09:47 | 0.00 | 0.31 | 20.0 | 410 | Residual |
| 0-C | 16 | 10:57 | 11:08 | 0.00 | 0.43 | 19.8 | 410 | Residual |
| 0-C | 17 | 10:57 | 11:12 | 0.00 | 0.41 | 19.8 | 410 | Residual |
| 10-B | 4 | 09:31 | 09:38 | 0.00 | 0.20 | 19.7 | 410 | Residual |
| 10-B | 5 | 09:31 | 09:45 | 0.00 | 0.18 | 19.7 | 410 | Residual |
| 15-B | 2 | 10:10 | 10:30 | 0.00 | 0.33 | 19.8 | 410 | Residual |
| 15-B | 3 | 10:10 | 10:34 | 0.00 | 0.35 | 19.8 | 410 | Residual |
| 15-B | 18 | 11:03 | 11:15 | 0.00 | 0.34 | 19.5 | 410 | Residual |
| 15-B | 19 | 11:03 | 11:17 | 0.00 | 0.34 | 19.5 | 410 | Residual |
| 15-Crib | 1 | 08:54 | 09:10 | 0.00 | 0.00 | 18.5 | 390 | Residual |
| 15-Crib | 7 | 08:54 | 09:21 | 0.00 | 0.00 | 18.5 | 390 | Residual |
| 20-A | 4 | 10:13 | 10:36 | 0.00 | 0.00 | 19.0 | 385 | Residual |
| 20-A | 5 | 10:13 | 10:46 | 0.00 | 0.00 | 19.0 | 385 | Residual |
| 20-C | 6 | 09:47 | 09:58 | 0.00 | 0.02 | 19.8 | 410 | Residual |
| 20-C | 7 | 09:47 | 10:01 | 0.00 | 0.00 | 19.8 | 410 | Residual |
| 20-C | 10 | 10:17 | 10:40 | 0.00 | 0.15 | 19.0 | 405 | Residual |
| 20-C | 11 | 10:17 | 10:48 | 0.00 | 0.14 | 19.0 | 405 | Residual |
| 20-C | 20 | 11:04 | 11:19 | 0.00 | 0.25 | 19.0 | 410 | Residual |
| 20-C | 21 | 11:04 | 11:21 | 0.00 | 0.26 | 19.0 | 410 | Residual |
| 20-E | 14 | 10:24 | 10:42 | 0.00 | 0.08 | 19.2 | 410 | Residual |
| 20-E | 15 | 10:24 | 10:50 | 0.00 | 0.09 | 19.2 | 410 | Residual |
| 20-G | 12 | 10:21 | 10:44 | 0.00 | 0.00 | 18.6 | 400 | Residual |
| 20-G | 13 | 10:21 | 10:55 | 0.00 | 0.00 | 18.6 | 400 | Residual |
| 25-B | 23 | 11:08 | 11:33 | 0.00 | 0.00 | 15.2 | 370 | Residual |
| 25-B | 22 | 11:08 | 11:47 | 0.00 | 0.00 | 15.2 | 370 | Residual |
| 25-E | 8 | 09:51 | 10:03 | 0.00 | 0.04 | 18.3 | 395 | Residual |
| 25-E | 9 | 09:51 | 10:05 | 0.00 | 0.04 | 18.3 | 395 | Residual |
| 25-G | 24 | 11:12 | 11:35 | 0.00 | 0.00 | 16.3 | 390 | Residual |
| 25-G | 25 | 11:12 | 11:50 | 0.00 | 0.00 | 16.3 | 390 | Residual |
| 25-I | 14 | 11:16 | 11:37 | 0.00 | 0.02 | 17.0 | 400 | Residual |
| 25-I | 10 | 11:16 | 11:44 | 0.00 | 0.02 | 17.0 | 400 | Residual |
| 25-K | 8 | 11:19 | 11:40 | 0.00 | 0.00 | 15.0 | 370 | Residual |
| 25-K | 7 | 11:19 | 11:52 | 0.00 | 0.00 | 15.0 | 370 | Residual |
| 30-G | 1 | 11:26 | 11:42 | 0.00 | 0.00 | 14.8 | 375 | Residual |
| 30-G | 9 | 11:26 | 11:53 | 0.00 | 0.00 | 14.8 | 375 | Residual |

TABLE 12. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
 FIELD SURVEY NO.7 MAY 29, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated: 15:00 hours Wind: Water Level:
 Chlorination Terminated: 17:00 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|-------------|------------|-----------|----------|---------------|-------|------------|------------------|----------|
| | | COLLECTED | ANALYZED | FREE* | TOTAL | | | |
| 0-C | 1 | 15:37 | 15:45 | 0.00 | 0.43 | 20.0 | 410 | Residual |
| 0-C | 2 | 15:37 | 15:48 | T | 0.44 | 20.0 | 410 | Residual |
| 15-A | 25 | 17:07 | 17:36 | 0.00 | 0.23 | 18.1 | 410 | Residual |
| 15-A | 23 | 17:07 | 18:04 | 0.00 | 0.21 | 18.1 | 410 | Residual |
| 15-B | 3 | 16:11 | 16:24 | 0.00 | 0.44 | 18.4 | 420 | Residual |
| 15-B | 4 | 16:11 | 16:26 | 0.00 | 0.44 | 18.4 | 420 | Residual |
| 15-B | 1 | 17:11 | 17:38 | 0.00 | 0.41 | 19.2 | 420 | Residual |
| 15-B | 3 | 17:11 | 18:07 | 0.00 | 0.40 | 19.2 | 420 | Residual |
| 15-C | 8 | 17:14 | 17:41 | 0.00 | 0.29 | 19.0 | 420 | Residual |
| 15-C | 5 | 17:14 | 18:10 | 0.00 | 0.30 | 19.0 | 420 | Residual |
| 15-D | 5 | 16:14 | 16:30 | 0.00 | 0.17 | 17.2 | 410 | Residual |
| 15-D | 6 | 16:14 | 16:32 | 0.00 | 0.18 | 17.2 | 410 | Residual |
| 15-D | 12 | 17:15 | 17:44 | 0.00 | 0.24 | 18.4 | 410 | Residual |
| 15-D | 15 | 17:15 | 18:13 | 0.00 | 0.23 | 18.4 | 410 | Residual |
| 15-E | 10 | 17:16 | 17:47 | 0.00 | 0.16 | 18.0 | 400 | Residual |
| 15-E | 9 | 17:16 | 18:17 | 0.00 | 0.17 | 18.0 | 400 | Residual |
| 15-F | 7 | 16:16 | 16:34 | 0.00 | 0.00 | 16.0 | 395 | Residual |
| 15-F | 8 | 16:16 | 16:36 | 0.00 | 0.00 | 16.0 | 395 | Residual |
| 15-F | 4 | 17:18 | 17:49 | 0.00 | 0.00 | 17.0 | 400 | Residual |
| 15-F | 11 | 17:18 | 18:20 | 0.00 | 0.00 | 17.0 | 400 | Residual |
| 15-H | 14 | 17:22 | 17:51 | 0.00 | 0.00 | 16.3 | 390 | Residual |
| 15-H | 13 | 17:22 | 18:22 | 0.00 | 0.00 | 16.3 | 390 | Residual |
| 20-A | 9 | 16:23 | 16:43 | 0.00 | 0.05 | 17.2 | 410 | Residual |
| 20-A | 10 | 16:23 | 16:45 | 0.00 | 0.01 | 17.2 | 410 | Residual |
| 20-B | 12 | 16:26 | 16:47 | 0.00 | 0.17 | 17.6 | 415 | Residual |
| 20-B | 11 | 16:26 | 16:56 | 0.00 | 0.19 | 17.6 | 415 | Residual |
| 20-C | 13 | 16:28 | 16:50 | 0.00 | 0.27 | 17.7 | 415 | Residual |
| 20-C | 14 | 16:28 | 16:59 | 0.00 | 0.24 | 17.7 | 415 | Residual |
| 20-D | 15 | 16:32 | 16:52 | 0.00 | 0.19 | 17.0 | 405 | Residual |
| 20-D | 16 | 16:32 | 17:01 | 0.00 | 0.19 | 17.0 | 405 | Residual |
| 20-H | 17 | 16:34 | 16:55 | 0.00 | 0.00 | 16.0 | 400 | Residual |
| 20-H | 18 | 16:34 | 17:03 | 0.00 | 0.00 | 16.0 | 400 | Residual |
| 25-B | 19 | 16:45 | 17:08 | 0.00 | 0.00 | 16.8 | 390 | Residual |
| 25-B | 20 | 16:45 | 17:16 | 0.00 | 0.00 | 16.8 | 390 | Residual |
| 25-D | 21 | 16:48 | 17:10 | 0.00 | 0.08 | 17.9 | 400 | Residual |
| 25-D | 22 | 16:48 | 17:22 | 0.00 | 0.08 | 17.9 | 400 | Residual |
| 25-G | 6 | 16:52 | 17:12 | 0.00 | 0.01 | 17.0 | 395 | Residual |
| 25-G | 7 | 16:52 | 17:30 | 0.00 | 0.02 | 17.0 | 395 | Residual |

TABLE 12. (CONTINUED)

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|-------------|------------|-----------|----------|---------------|-------|------------|------------------|----------|
| | | COLLECTED | ANALYZED | FREE* | TOTAL | | | |
| 30-C | 2 | 17:30 | 17:53 | 0.00 | 0.08 | 16.5 | 400 | Residual |
| 30-C | 19 | 17:30 | 18:24 | 0.00 | 0.08 | 16.5 | 400 | Residual |
| 30-D | 2 | 16:57 | 17:14 | 0.00 | 0.00 | 16.7 | 390 | Residual |
| 30-D | 24 | 16:57 | 17:31 | 0.00 | 0.00 | 16.7 | 390 | Residual |
| 30-D | 10 | 18:12 | 18:40 | 0.00 | 0.19 | 16.8 | 400 | Residual |
| 30-D | 6 | 18:12 | 18:59 | 0.00 | 0.14 | 16.8 | 400 | Residual |
| 30-E | 20 | 17:34 | 17:56 | 0.00 | 0.07 | 16.0 | 390 | Residual |
| 30-E | 16 | 17:34 | 18:27 | 0.00 | 0.06 | 16.0 | 390 | Residual |
| 30-F | 21 | 17:40 | 18:01 | 0.00 | 0.00 | 15.0 | 375 | Residual |
| 30-F | 22 | 17:40 | 18:32 | 0.00 | 0.00 | 15.0 | 375 | Residual |
| 30-G | 17 | 17:37 | 17:58 | 0.00 | 0.09 | 16.8 | 390 | Residual |
| 30-G | 18 | 17:37 | 18:29 | 0.00 | 0.10 | 16.8 | 390 | Residual |
| 30-G | 17 | 18:15 | 18:43 | 0.00 | 0.16 | 17.3 | 400 | Residual |
| 30-G | 12 | 18:15 | 19:03 | 0.00 | 0.17 | 17.3 | 400 | Residual |
| 30-I | 8 | 18:18 | 18:46 | 0.00 | 0.07 | 16.7 | 390 | Residual |
| 30-I | 23 | 18:18 | 19:05 | 0.00 | 0.07 | 16.7 | 390 | Residual |
| 30-K | 21 | 18:21 | 18:49 | 0.00 | 0.05 | 16.2 | 385 | Residual |
| 30-K | 24 | 18:21 | 19:07 | 0.00 | 0.05 | 16.2 | 385 | Residual |
| 35-F | 21 | 17:40 | 18:01 | 0.00 | 0.00 | 15.0 | 375 | Residual |
| 35-F | 22 | 17:40 | 18:32 | 0.00 | 0.00 | 15.0 | 375 | Residual |
| 35-H | 2 | 18:26 | 18:52 | 0.00 | 0.00 | 15.0 | 370 | Residual |
| 35-H | 14 | 18:26 | 19:09 | 0.00 | 0.00 | 15.0 | 370 | Residual |
| 35-K | 1 | 18:22 | 18:55 | 0.00 | 0.02 | 15.5 | 380 | Residual |
| 35-K | 20 | 18:22 | 19:11 | 0.00 | 0.02 | 15.5 | 380 | Residual |

*T = Trace

TABLE 13. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
FIELD SURVEY NO.8 MAY 30, 1984 (MORNING CHLORINATION)

Chlorination Initiated: 07:00 hours Wind: Water Level:
Chlorination Terminated: 09:00 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|-------------|------------|-----------|----------|---------------|-------|------------|------------------|----------|
| | | COLLECTED | ANALYZED | FREE | TOTAL | | | |
| 0-A | 1 | 08:30 | 09:01 | 0.00 | 0.44 | 18.6 | 410 | Residual |
| 0-B | 2 | 08:31 | 09:04 | 0.00 | 0.44 | 19.0 | 415 | Residual |
| 0-C | 3 | 08:32 | 09:07 | 0.00 | 0.42 | 19.3 | 410 | Residual |
| 5-B | 4 | 08:39 | 09:10 | 0.00 | 0.43 | 18.7 | 410 | Residual |
| 5-D | 6 | 08:37 | 09:12 | 0.00 | 0.04 | 17.0 | 390 | Residual |
| 10-B | 9 | 08:41 | 09:14 | 0.00 | 0.44 | 18.9 | 410 | Residual |
| 10-C | 7 | 08:43 | 09:17 | 0.00 | 0.14 | 17.5 | 400 | Residual |
| 10-D | 8 | 08:45 | 09:19 | 0.00 | 0.03 | 16.8 | 390 | Residual |
| 15-A | 5 | 08:48 | 09:21 | 0.00 | 0.45 | 17.5 | 400 | Residual |
| 15-B | 10 | 08:52 | 09:25 | 0.00 | 0.45 | 18.6 | 410 | Residual |
| 15-C | 11 | 08:53 | 09:53 | 0.00 | 0.16 | 18.0 | 400 | Residual |
| 15-D | 25 | 08:55 | 09:30 | 0.00 | 0.16 | 17.8 | 400 | Residual |
| 15-E | 12 | 08:57 | 09:30 | 0.00 | T | 16.8 | 390 | Residual |
| 20-A | 17 | 09:05 | 09:48 | 0.00 | 0.38 | 17.8 | 400 | Residual |
| 20-B | 16 | 09:04 | 09:44 | 0.00 | 0.46 | 18.2 | 410 | Residual |
| 20-B | 19 | 12:19 | 12:40 | 0.00 | 0.00 | 16.6 | 400 | Residual |
| 20-C | 15 | 09:03 | 09:40 | 0.00 | 0.37 | 18.0 | 405 | Residual |
| 20-D | 14 | 09:01 | 09:38 | 0.00 | 0.08 | 17.0 | 400 | Residual |
| 20-E | 13 | 08:58 | 09:35 | 0.00 | 0.05 | 16.6 | 390 | Residual |
| 25-A | 1 | 09:47 | 10:05 | 0.00 | 0.24 | 17.7 | 390 | Residual |
| 25-B | 2 | 09:48 | 10:12 | 0.00 | 0.35 | 18.2 | 400 | Residual |
| 25-B | 10 | 12:22 | 12:42 | 0.00 | 0.00 | 15.0 | 390 | Residual |
| 25-C | 3 | 09:52 | 10:10 | 0.00 | 0.32 | 18.3 | 405 | Residual |
| 25-D | 4 | 09:53 | 10:15 | 0.00 | 0.26 | 18.0 | 400 | Residual |
| 25-E | 5 | 09:54 | 10:18 | 0.00 | 0.26 | 17.9 | 400 | Residual |
| 25-G | 6 | 09:57 | 10:20 | 0.00 | 0.16 | 17.4 | 395 | Residual |
| 25-I | 7 | 09:59 | 10:08 | 0.00 | 0.09 | 17.0 | 395 | Residual |
| 25-K | 21 | 10:21 | 10:29 | 0.00 | 0.00 | 16.2 | 390 | Residual |
| 30-A | 8 | 10:06 | 10:31 | 0.00 | 0.00 | 14.0 | 360 | Residual |
| 30-B | 9 | 10:08 | 10:33 | 0.00 | 0.15 | 16.2 | 385 | Residual |
| 30-C | 10 | 10:09 | 10:41 | 0.00 | 0.18 | 16.8 | 390 | Residual |
| 30-D | 12 | 10:12 | 10:44 | 0.00 | 0.18 | 16.8 | 390 | Residual |
| 30-E | 11 | 10:13 | 10:38 | 0.00 | 0.22 | 17.2 | 395 | Residual |
| 30-E | 18 | 12:26 | 12:44 | 0.00 | 0.04 | 15.3 | 390 | Residual |
| 30-G | 18 | 10:15 | 10:46 | 0.00 | 0.17 | 17.0 | 395 | Residual |
| 30-I | 19 | 10:17 | 10:50 | 0.00 | 0.15 | 16.8 | 390 | Residual |
| 30-K | 20 | 10:18 | 10:35 | 0.00 | 0.10 | 16.8 | 390 | Residual |

TABLE 13. (CONTINUED)

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|----------------|---------------|-----------|----------|---------------|-------|---------------|---------------------|----------|
| | | COLLECTED | ANALYZED | FREE | TOTAL | | | |
| 35-C | 20 | 11:07 | 11:46 | 0.00 | 0.00 | 14.2 | 370 | Residual |
| 35-E | 21 | 11:10 | 11:49 | 0.00 | 0.03 | 15.0 | 380 | Residual |
| 35-G | 14 | 11:13 | 11:51 | 0.00 | 0.03 | 15.3 | 385 | Residual |
| 35-I | 25 | 11:15 | 11:53 | 0.00 | 0.04 | 15.3 | 385 | Residual |
| 35-K | 16 | 11:17 | 11:40 | 0.00 | 0.10 | 16.0 | 390 | Residual |
| 35-K | 23 | 12:32 | 12:47 | 0.00 | 0.06 | 15.0 | 385 | Residual |
| 35-N | 2 | 11:20 | 11:56 | 0.00 | 0.05 | 15.8 | 390 | Residual |
| 35-P | 3 | 11:23 | 11:58 | 0.00 | 0.00 | 15.8 | 395 | Residual |
| 35-R | 5 | 11:25 | 12:00 | 0.00 | 0.00 | 14.5 | 380 | Residual |
| 40-G | 24 | 11:02 | 11:45 | 0.00 | 0.00 | 14.3 | 370 | Residual |
| 40-K | 22 | 10:52 | 11:42 | 0.00 | 0.00 | 15.2 | 380 | Residual |
| 40-N | 23 | 10:55 | 11:37 | 0.00 | 0.00 | 16.0 | 385 | Residual |

*T = Trace

TABLE 14. BAYSHORE POWER STATION CHLORINE PLUME ANALYSIS
FIELD SURVEY NO.8 MAY 30, 1984 (AFTERNOON CHLORINATION)

Chlorination Initiated: 13:00 hours Wind: Water Level:
Chlorination Terminated: 15:00 hours Air Temperature:

| STATION NO. | BOTTLE NO. | TIME COLLECTED | TIME ANALYZED | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|-------------|------------|----------------|---------------|---------------|--------|------------|------------------|----------|
| | | | | FREE* | TOTAL | | | |
| 15-A | 5 | 15:45 | 15:47 | 0.00 | 0.18 | 17.0 | 400 | Residual |
| 15-B | 5 | 15:33 | 15:41 | T | 0.14** | 16.7 | 400 | Residual |
| 15-B | 5 | 16:50 | 17:16 | 0.00 | 0.00 | 18.0 | 400 | Residual |
| 15-C | 6 | 16:00 | 16:43 | 0.00 | 0.23 | 17.2 | 400 | Residual |
| 15-D | 4 | 16:02 | 16:39 | 0.00 | 0.03 | 17.0 | 385 | Residual |
| 15-I | 22 | 15:55 | 16:04 | 0.00 | 0.00 | 16.7 | 395 | Residual |
| 15-K | 25 | 15:53 | 16:02 | 0.00 | 0.00 | 17.0 | 400 | Residual |
| 20-A | 12 | 15:37 | 16:06 | 0.00 | 0.17 | 17.5 | 415 | Residual |
| 20-B | 24 | 15:38 | 16:13 | 0.00 | 0.31 | 18.0 | 420 | Residual |
| 20-C | 23 | 15:40 | 16:08 | 0.00 | 0.27 | 17.3 | 410 | Residual |
| 20-D | 11 | 15:41 | 16:11 | 0.00 | 0.08 | 16.4 | 420 | Residual |
| 20-E | 20 | 15:43 | 16:16 | 0.00 | 0.09 | 17.5 | 400 | Residual |
| 20-G | 18 | 15:44 | 16:48 | 0.00 | 0.00 | 17.3 | 405 | Residual |
| 20-I | 19 | 15:46 | 16:50 | 0.00 | 0.00 | 17.0 | 400 | Residual |
| 20-N | 14 | 15:50 | 16:51 | 0.00 | 0.00 | 17.0 | 400 | Residual |
| 25-A | 3 | 16:03 | 16:26 | 0.00 | 0.14 | 17.9 | 405 | Residual |
| 25-B | 8 | 16:05 | 16:22 | 0.00 | 0.27 | 18.2 | 400 | Residual |
| 25-C | 21 | 16:07 | 16:20 | 0.00 | 0.18 | 17.7 | 400 | Residual |
| 25-D | 10 | 16:08 | 16:29 | 0.00 | 0.19 | 17.6 | 400 | Residual |
| 25-E | 2 | 16:09 | 16:31 | 0.00 | 0.08 | 17.2 | 400 | Residual |
| 25-G | 13 | 16:12 | 16:44 | 0.00 | 0.10 | 16.8 | 395 | Residual |
| 25-I | 15 | 16:14 | 16:46 | 0.00 | 0.06 | 16.2 | 390 | Residual |
| 30-A | 20 | 16:27 | 16:53 | 0.00 | 0.10 | 17.2 | 400 | Residual |
| 30-B | 24 | 16:28 | 16:56 | 0.00 | 0.19 | 17.8 | 395 | Residual |
| 30-C | 25 | 16:29 | 16:58 | 0.00 | 0.19 | 18.0 | 400 | Residual |
| 30-D | 22 | 16:30 | 17:01 | 0.00 | 0.09 | 17.0 | 395 | Residual |
| 30-E | 8 | 16:41 | 17:10 | 0.00 | 0.10 | 16.2 | 390 | Residual |
| 35-A | 9 | 16:35 | 17:08 | 0.00 | 0.03 | 15.8 | 390 | Residual |
| 35-B | 11 | 16:37 | 17:12 | 0.00 | 0.09 | 17.0 | 395 | Residual |
| 35-C | 1 | 16:33 | 17:03 | 0.00 | 0.17 | 16.8 | 400 | Residual |
| 35-D | 23 | 16:32 | 17:14 | 0.00 | 0.15 | 17.3 | 400 | Residual |
| 35-E | 7 | 16:39 | 17:05 | 0.00 | 0.16 | 16.8 | 395 | Residual |
| 35-G | 17 | 17:22 | 17:32 | 0.00 | 0.10 | 16.5 | 390 | Residual |
| 40-A | 14 | 17:12 | 17:34 | 0.00 | 0.00 | 14.0 | 360 | Residual |
| 40-B | 2 | 17:13 | 17:36 | 0.00 | 0.00 | 14.2 | 370 | Residual |
| 40-C | 6 | 17:14 | 17:37 | 0.00 | 0.02 | 14.5 | 370 | Residual |
| 40-D | 16 | 17:16 | 17:40 | 0.00 | 0.10 | 16.8 | 395 | Residual |
| 40-E | 21 | 17:17 | 17:42 | 0.00 | 0.09 | 16.9 | 395 | Residual |
| 40-F | 4 | 17:20 | 17:44 | 0.00 | 0.00 | 15.0 | 370 | Residual |

TABLE 14. (CONTINUED)

| STATION NO. | BOTTLE NO. | TIME | | CHLORINE(ppm) | | TEMP. (C°) | COND. (umhos/cm) | COMMENTS |
|----------------|---------------|-----------|----------|---------------|-------|---------------|---------------------|----------|
| | | COLLECTED | ANALYZED | FREE* | TOTAL | | | |
| 45-C | 24 | 17:29 | 17:55 | 0.00 | 0.00 | 14.2 | 365 | Residual |
| 45-E | 20 | 17:32 | 17:57 | 0.00 | 0.02 | 14.3 | 370 | Residual |
| 45-G | 25 | 17:34 | 17:59 | 0.00 | 0.05 | 16.4 | 390 | Residual |
| 45-I | 10 | 17:37 | 18:01 | 0.00 | 0.00 | 15.2 | 375 | Residual |
| 50-G | 12 | 17:46 | 18:03 | 0.00 | 0.00 | 14.3 | 370 | Residual |
| 50-I | 23 | 17:44 | 18:05 | 0.00 | 0.00 | 14.3 | 370 | Residual |

*T = Trace

** = Questionable reading

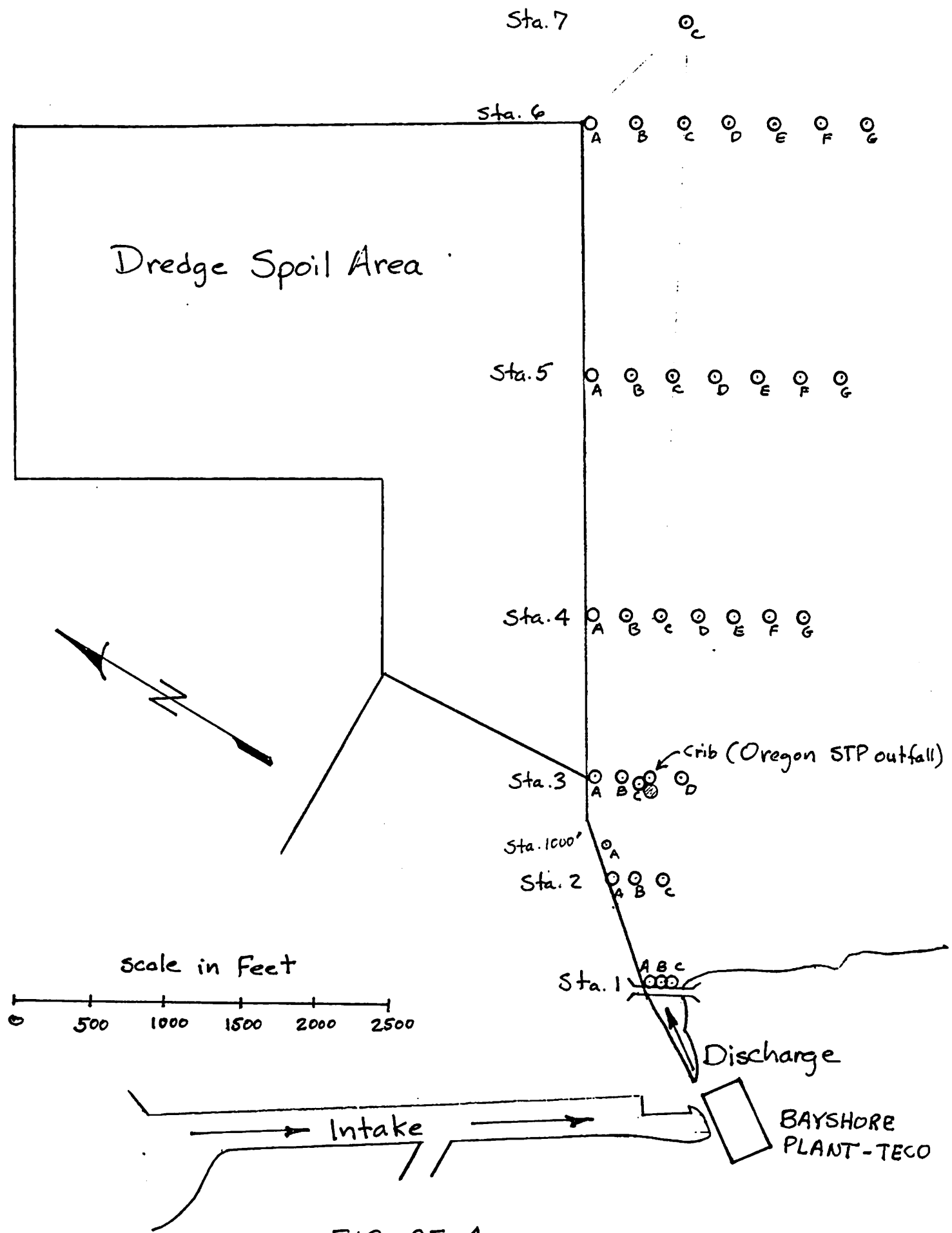


FIGURE 1.
STATION PLAN FOR BAYSHORE Cl_2 PLUME STUDY

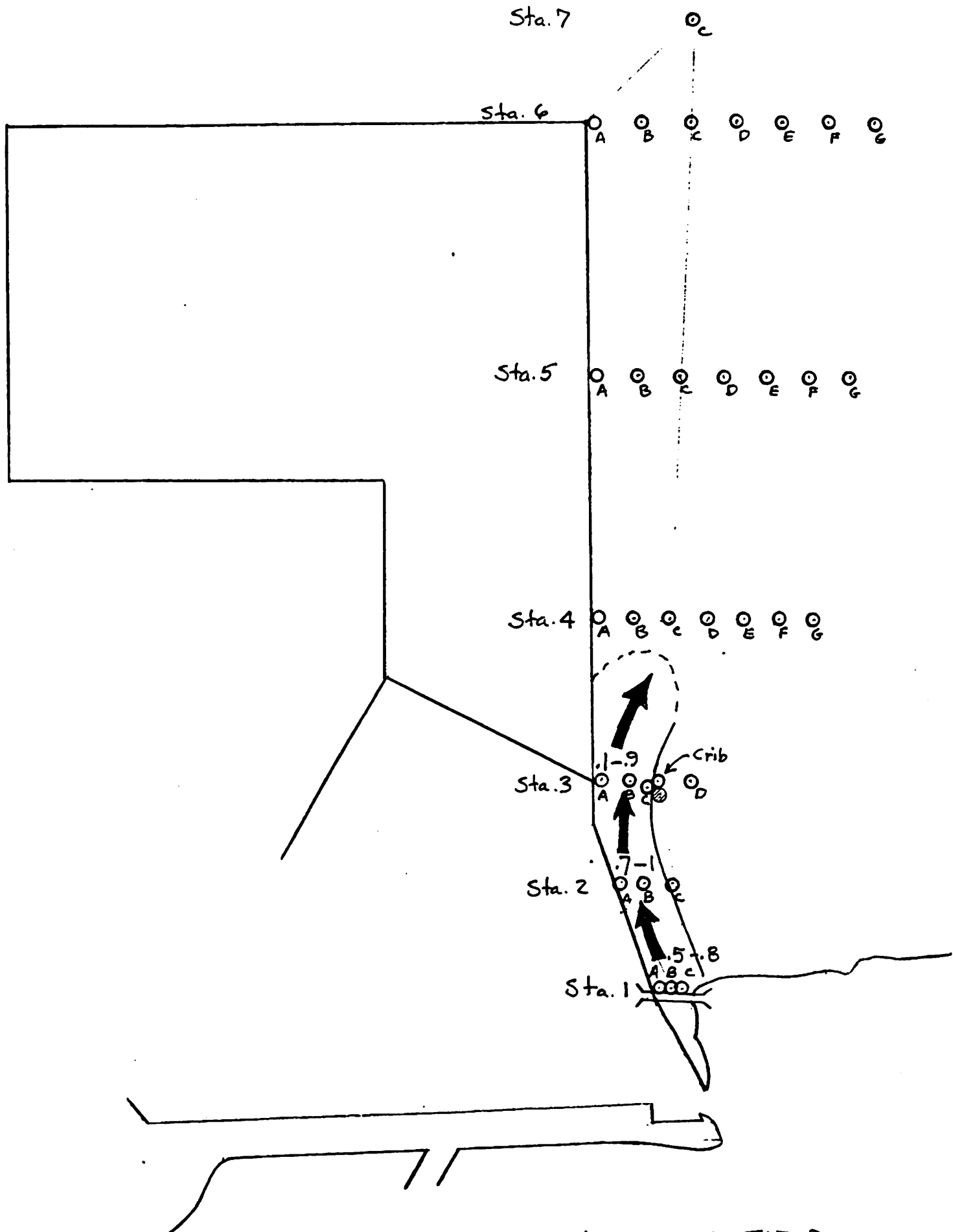


FIGURE 2. TOTAL CHLORINE CONC. (ppm) DURING FIELD SURVEY NO. 1 (May 7, 1984 - Afternoon)

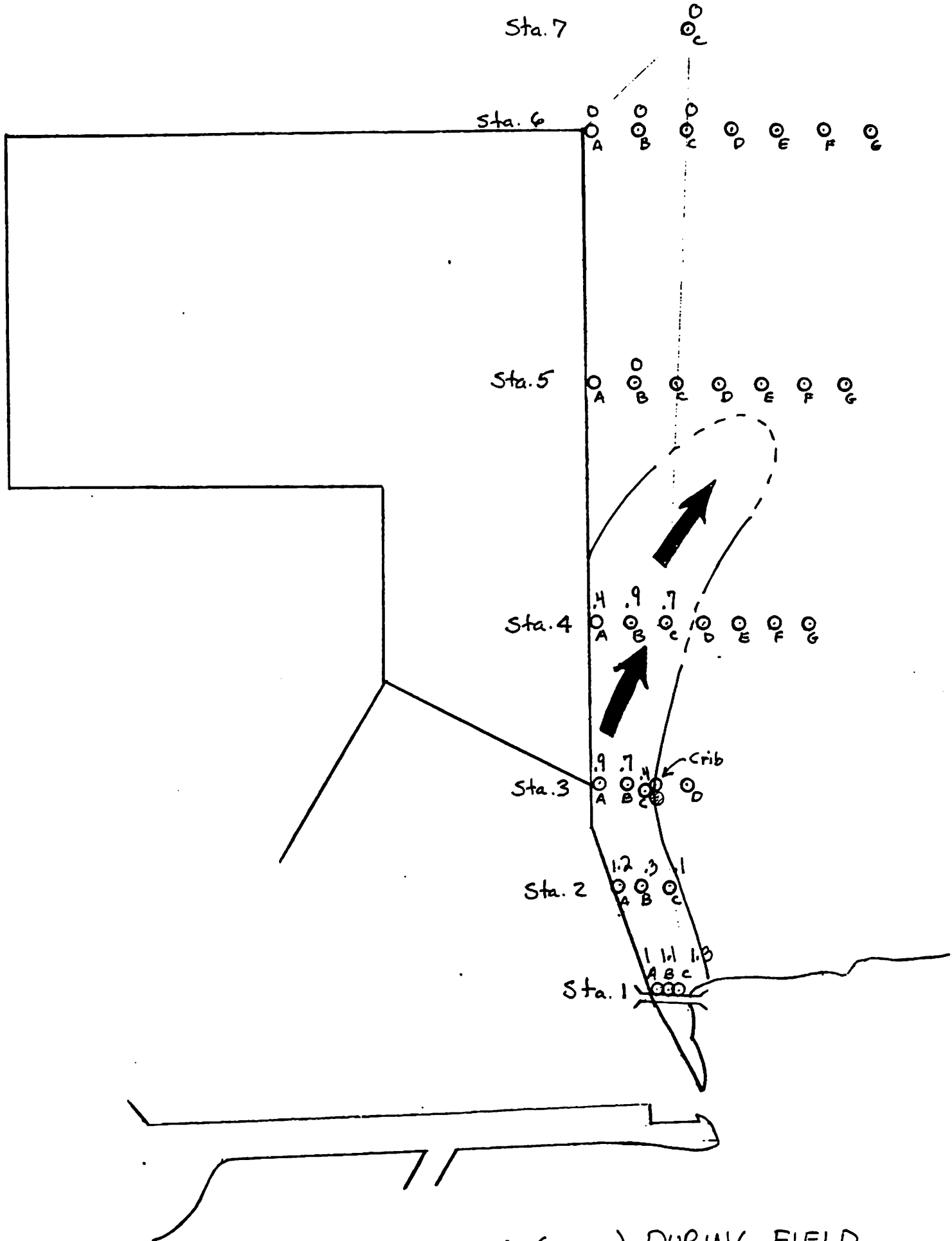


FIGURE 3. TOTAL CHLORINE CONC. (ppm) DURING FIELD SURVEY NO. 2 (May 8, 1984 - Morning)

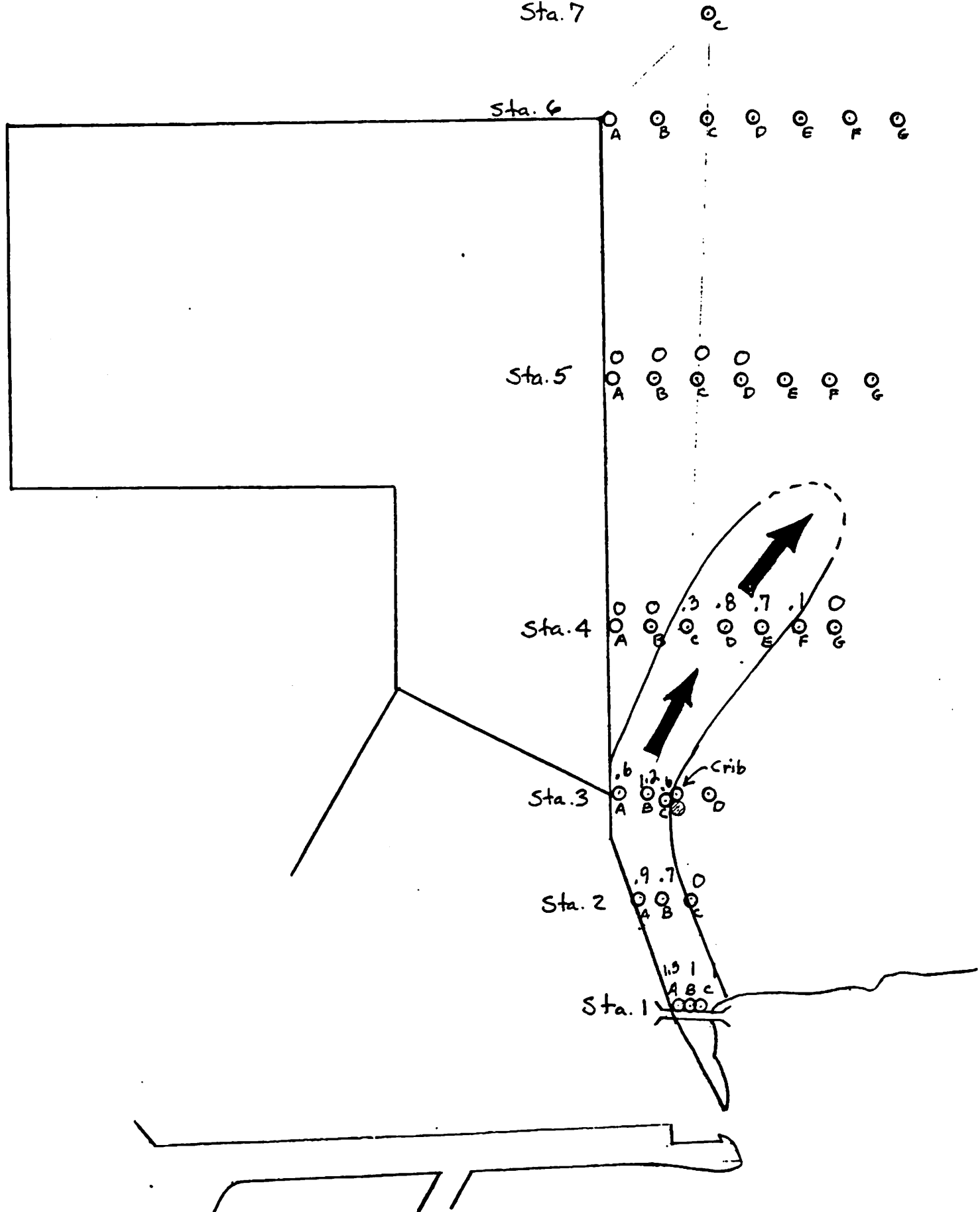


FIGURE 4. TOTAL CHLORINE CONC. (ppm) DURING FIELD SURVEY NO. 3 (May 8, 1984 - Afternoon)

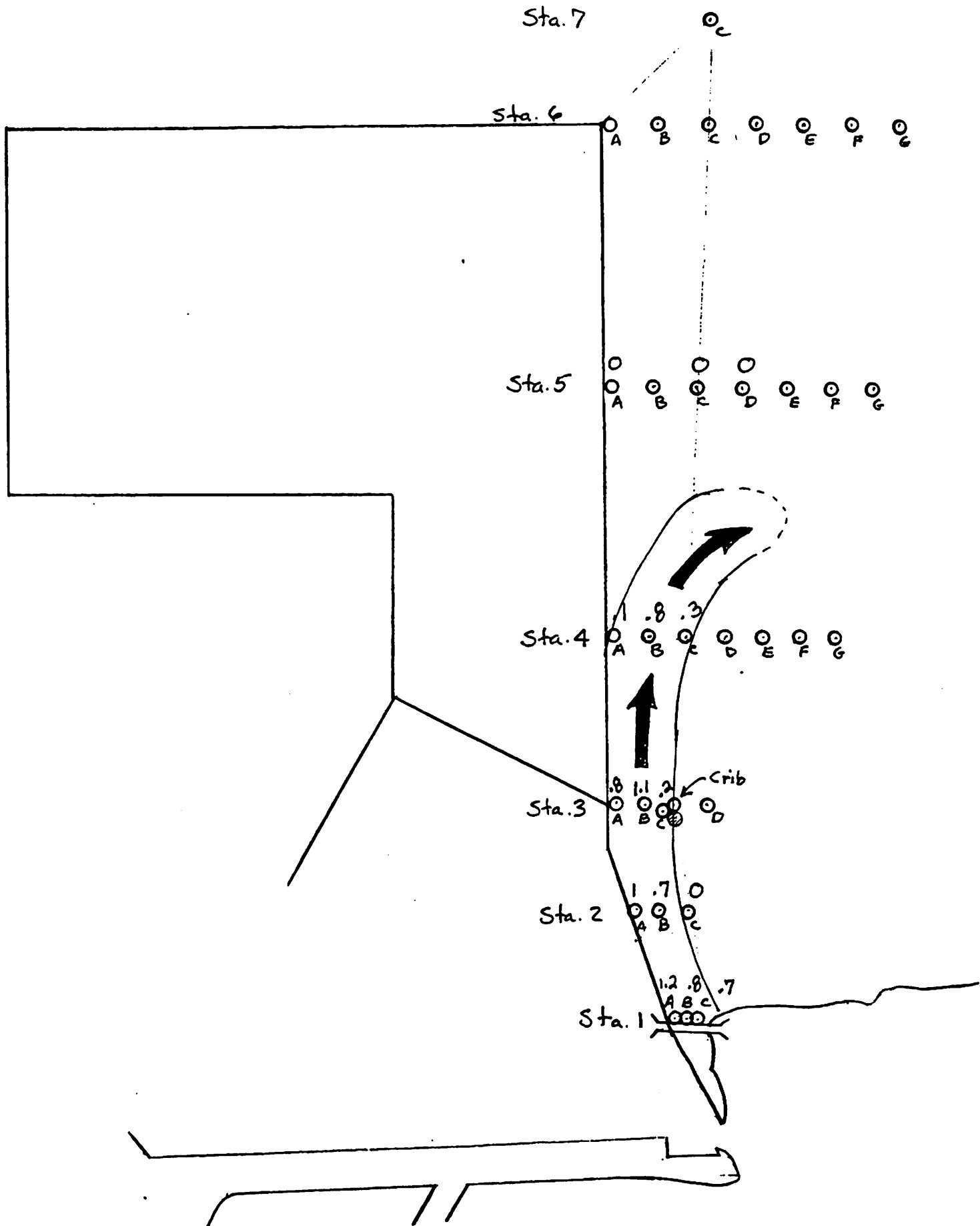


FIGURE 5. TOTAL CHLORINE CONC. (ppm) DURING FIELD SURVEY NO. 4 (May 9, 1984 - Morning)

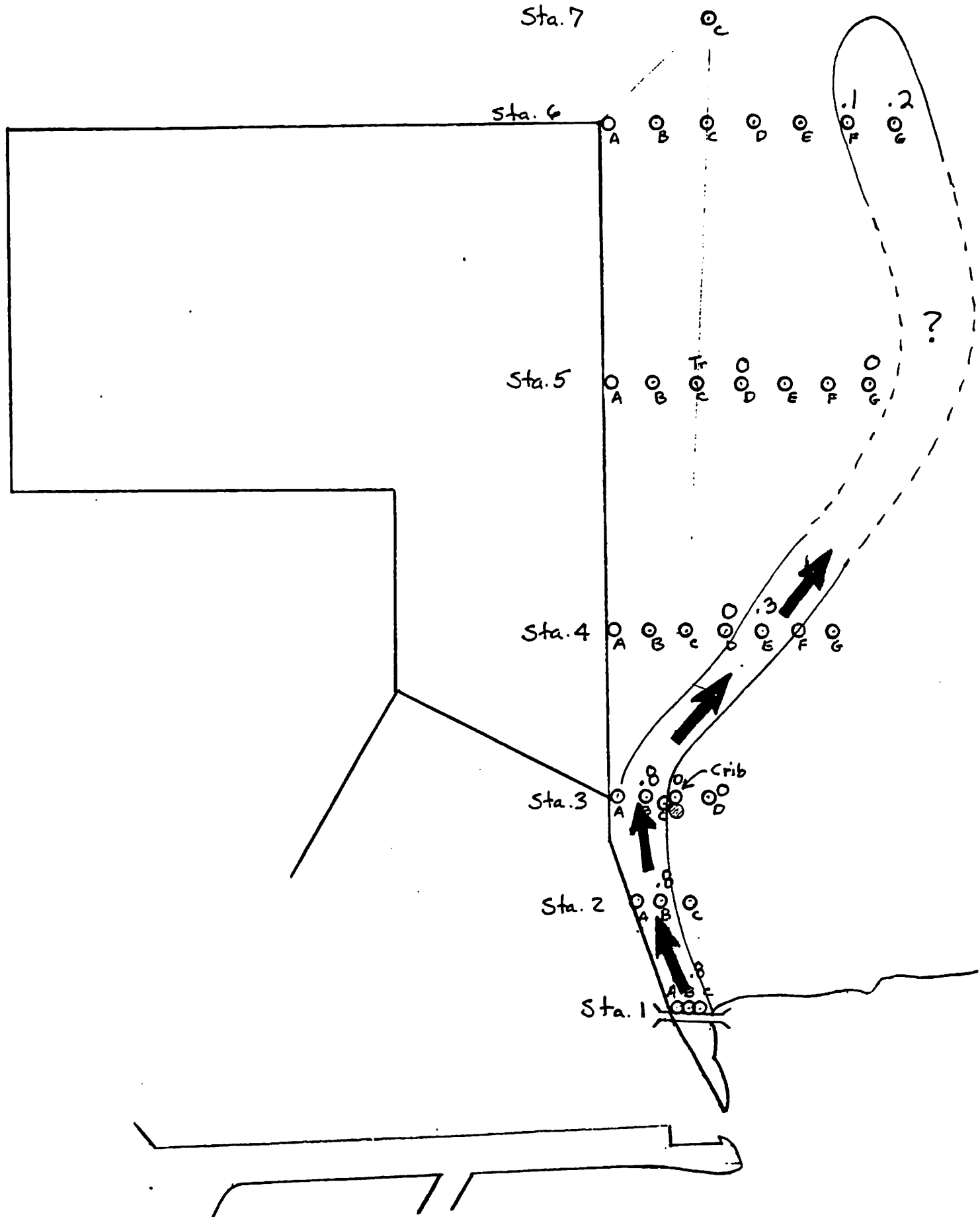


FIGURE 6. TOTAL CHLORINE CONC. (ppm) DURING FIELD SURVEY NO. 5 (May 9, 1984 - Afternoon)

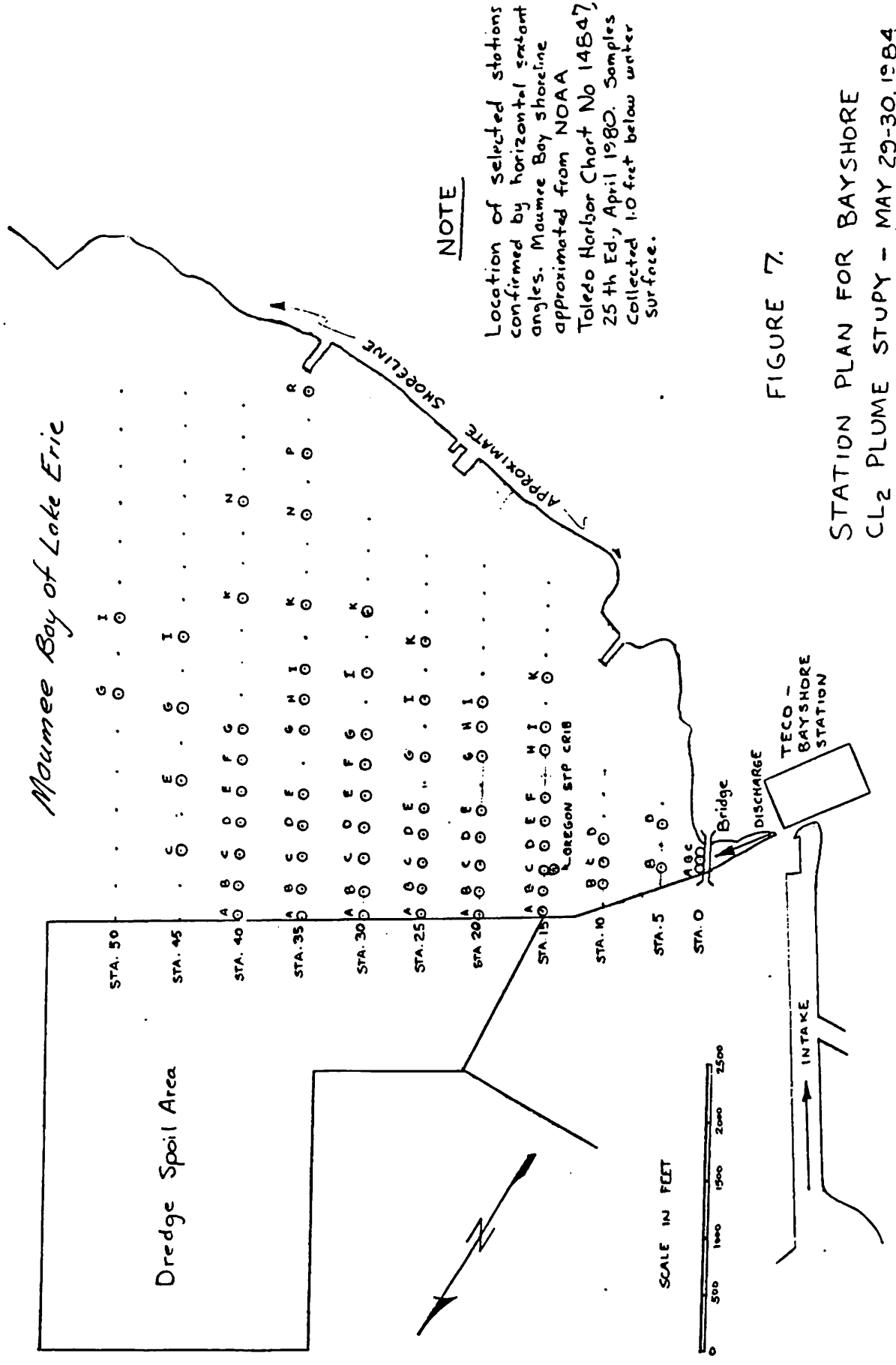


FIGURE 7.

LINEAR REGRESSION WITH COEFFICIENT R
FIELD SURVEY NO 4, STA 1A - 5A

SLOPE = 2.42953911
Y INTERCEPT = 12.3974175
COEFFICIENT R = .625309088

| CL | TEMP MEASURED | CALCULATED |
|------|---------------|------------|
| 1.18 | 15 | 15.2642736 |
| 1.2 | 15 | 15.3128644 |
| .94 | 15 | 14.6811842 |
| .99 | 15 | 14.8026612 |
| .77 | 14.3 | 14.2681626 |
| .8 | 14.3 | 14.3410487 |
| .07 | 14 | 12.5674852 |
| .07 | 14 | 12.5674852 |
| 0 | 11 | 12.3974175 |
| 0 | 11 | 12.3974175 |

LINEAR REGRESSION WITH COEFFICIENT R
FIELD SURVEY NO 4, STA 1(A-C) - 5(A-C)

SLOPE = .226329404
Y INTERCEPT = -2.68959368
COEFFICIENT R = .160255657

| TEMP | CL | MEASURED | CALCULATED |
|------|----|----------|-------------|
| 15 | | 1.19 | .705347391 |
| 16 | | .77 | .931676795 |
| 16.3 | | .7 | .999575615 |
| 15 | | .97 | .705347391 |
| 15.2 | | .7 | .750613271 |
| 13.5 | | 0 | .365853284 |
| 14.3 | | .79 | .546916808 |
| 14.7 | | 1.15 | .637448569 |
| 14 | | .24 | .479017986 |
| 14 | | .07 | .479017986 |
| 15 | | .84 | .705347391 |
| 14.2 | | .35 | .524283867 |
| 11 | | 0 | -.199970227 |
| 12.5 | | 0 | .13952388 |

LINEAR REGRESSION WITH COEFFICIENT R
FIELD SURVEY NO 4, STA 1(A-C) - 5(A-C)

SLOPE = 12.1191812
Y INTERCEPT = 176.867454
COEFFICIENT R = .772654522

TEMP COND MEASURED CALCULATED

| | | |
|------|-----|------------|
| 15 | 355 | 358.655171 |
| 16 | 360 | 370.774353 |
| 16.3 | 360 | 374.410107 |
| 15 | 350 | 358.655171 |
| 15.2 | 360 | 361.079008 |
| 13.5 | 340 | 340.476399 |
| 14.3 | 360 | 350.171744 |
| 14.7 | 360 | 355.019417 |
| 14 | 350 | 346.53599 |
| 14 | 360 | 346.53599 |
| 15 | 360 | 358.655171 |
| 14.2 | 360 | 348.959826 |
| 11 | 290 | 310.178446 |
| 12.5 | 330 | 328.357218 |
| 14 | 360 | 346.53599 |

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