

AD-A150 294 W KERR SCOTT RESERVOIR SEDIMENTATION RESURVEYS FOR MAY 1978 AND SEPTEMBER 1979(U) CORPS OF ENGINEERS CHARLESTON SC CHARLESTON DISTRICT MAR 80 1/2

W KERR SCOTT RESERVOIR SEDIMENTATION RESURVEYS FOR MAY  
1978 AND SEPTEMBER 1979(U) CORPS OF ENGINEERS  
CHARLESTON SC CHARLESTON DISTRICT MAR 80

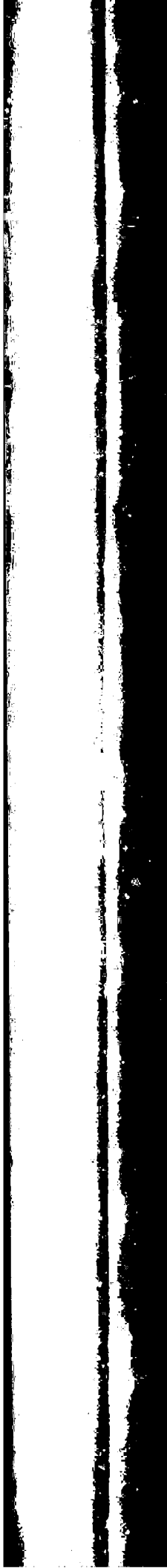
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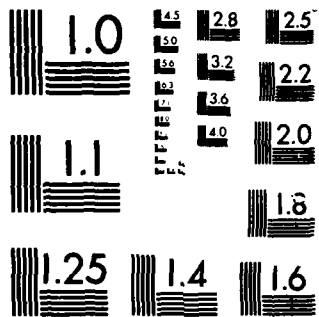
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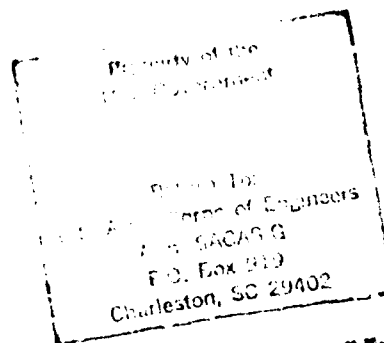
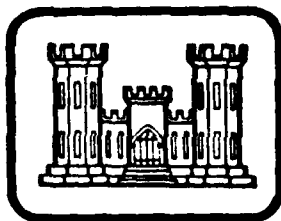
MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A150 294

# REPORT ON SEDIMENTATION RESURVEY

## W. KERR SCOTT RESERVOIR

SURVEYS OF MAY 1978 AND SEPTEMBER 1979



U.S. ARMY ENGINEER DISTRICT, CHARLESTON

CORPS OF ENGINEERS

CHARLESTON, SOUTH CAROLINA

MARCH 1980

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SACEN-PH

9 October 1980

SUBJECT: Reservoir Sedimentation Data Summary

Division Engineer, South Atlantic  
ATTN: SAGEN-TH

Pursuant to telephone request by OCE of 6 October 1980, subject as above, item 43 of the reservoir sediment data sheet for W. Kerr Scott Reservoir has been revised to conform to instructions compiled by the Inter-Agency Subcommittee on sedimentation. Five copies are inclosed.

FOR THE DISTRICT ENGINEER:

1 Incl (5 cys)  
as

JACK J. LESEMAN  
Chief, Engineering Division

Copy furnished:  
SAHEN  
w/incl

BILLUE/236/kw

MEREDITH/P

LESEMAN/EN

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RESERVOIR SEDIMENT  
DATA SUMMARY

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS

W. Kerr Scott Reservoir  
NAME OF RESERVOIR

DATA SHEET NO.

|             |                                                |                                     |                                                 |                                    |                                               |                            |                                  |                                     |
|-------------|------------------------------------------------|-------------------------------------|-------------------------------------------------|------------------------------------|-----------------------------------------------|----------------------------|----------------------------------|-------------------------------------|
| DAM         | 1. OWNER Dept. of Army, C of E                 |                                     | 2. STREAM Yadkin                                |                                    | 3. STATE North Carolina                       |                            |                                  |                                     |
|             | 4. SEC.                                        | TWP. RANGE                          | 5. NEAREST P O Wilkesboro, NC                   |                                    | 6. COUNTY Wilkes                              |                            |                                  |                                     |
|             | 7. LAT 36° 9' N LONG 81° 14' W                 |                                     | 8. TOP OF DAM ELEVATION 1,107.5                 |                                    | 9. SPILLWAY CREST ELEV. 1,1075.0              |                            |                                  |                                     |
| RESERVOIR   | 10. STORAGE ALLOCATION                         | 11. ELEVATION TOP OF POOL           | 12. ORIGINAL SURFACE AREA, ACRES                | 13. ORIGINAL CAPACITY, ACRE-FEET   | 14. GROSS STORAGE, ACRE-FEET                  | 15. DATE STORAGE BEGAN     |                                  |                                     |
|             | a. FLOOD CONTROL                               | 1,075.0                             | 4,000                                           | 112,600                            | 154,000                                       | Aug. 22, 62                |                                  |                                     |
|             | b. MULTIPLE USE                                |                                     |                                                 |                                    |                                               |                            |                                  |                                     |
|             | c. POWER                                       |                                     |                                                 |                                    |                                               |                            |                                  |                                     |
|             | d. WATER SUPPLY                                | 1,030.0                             | 1,475                                           | 33,100                             | 41,400                                        | 16. DATE NORMAL OPER BEGAN |                                  |                                     |
|             | e. IRRIGATION                                  |                                     |                                                 |                                    |                                               |                            |                                  |                                     |
|             | f. CONSERVATION                                |                                     |                                                 |                                    |                                               |                            |                                  |                                     |
|             | g. INACTIVE                                    | 1,000.0                             | 675                                             | 8,300                              | 8,300                                         | Jan. 19, 63                |                                  |                                     |
| WATERSHED   | 17. LENGTH OF RESERVOIR 4.73 MILES             |                                     | AV. WIDTH OF RESERVOIR 0.49 MILES               |                                    |                                               |                            |                                  |                                     |
|             | 18. TOTAL DRAINAGE AREA 348 SQ. MI.            |                                     | 22. MEAN ANNUAL PRECIPITATION 52.84 (41) INCHES |                                    |                                               |                            |                                  |                                     |
|             | 19. NET SEDIMENT CONTRIBUTING AREA 348 SQ. MI. |                                     | 23. MEAN ANNUAL RUNOFF 22.22 (57) INCHES        |                                    |                                               |                            |                                  |                                     |
|             | 20. LENGTH 38.5 MILES                          |                                     | AV. WIDTH 9.04 MILES                            |                                    | 24. MEAN ANNUAL RUNOFF 412,482 AC.-FT.        |                            |                                  |                                     |
|             | 21. MAX. ELEV. 4,100                           |                                     | MIN. ELEV. 965.0                                |                                    | 25. ANNUAL TEMP MEAN 55.8 RANGE -5 to 98 (16) |                            |                                  |                                     |
| SURVEY DATA | 26. DATE OF SURVEY                             | 27. PERIOD YEARS                    | 28. ACCL. YEARS                                 | 29. TYPE OF SURVEY                 | 30. NO. OF RANGES OR CONTOUR INT.             | 31. SURFACE AREA, ACRES    | 32. CAPACITY, ACRE-FEET          | 33. C/I. RATIO, AC.-FT. PER AC.-FT. |
|             | Aug. 1962                                      | -                                   | -                                               | Range                              | 8 Ranges                                      | 4,000                      | 154,000                          | 0.40                                |
|             | May 1971                                       | 8.8                                 | 8.8                                             | Range (D)                          | 20 Ranges                                     | 4,000                      | 153,826                          | 0.40                                |
|             | May 1978                                       | 7.0                                 | 15.8                                            | Range (D)                          | 20 Ranges                                     | 4,000                      | 151,700                          | 0.39                                |
|             | 26. DATE OF SURVEY                             | 34. PERIOD ANNUAL PRECIPITATION     |                                                 | 35. PERIOD WATER INFLOW, ACRE-FEET |                                               |                            | 36. WATER INFL. TO DATE, AC.-FT. |                                     |
|             |                                                | a. MEAN ANNUAL                      | b. MAX. ANNUAL                                  | c. PERIOD TOTAL                    | a. MEAN ANNUAL                                | b. TOTAL TO DATE           |                                  |                                     |
|             | Aug. 1962                                      | -                                   | -                                               | -                                  | -                                             | -                          | -                                | -                                   |
|             | May 1971                                       | 51.5                                | 400,326                                         | 496,973                            | 3,502,854                                     | 400,326                    | 3,502,854                        |                                     |
|             | May 1978                                       | 60.78                               | 566,505                                         | 694,033                            | 3,965,535                                     | 472,683                    | 7,468,389                        |                                     |
|             | 26. DATE OF SURVEY                             | 37. PERIOD CAPACITY LOSS, ACRE-FEET |                                                 |                                    | 38. TOTAL SED. DEPOSITS TO DATE, ACRE-FEET    |                            |                                  |                                     |
|             |                                                | a. PERIOD TOTAL                     | b. AV. ANNUAL                                   | c. PER SQ. MI.-YEAR                | a. TOTAL TO DATE                              | b. AV. ANNUAL              | c. PER SQ. MI.-YEAR              |                                     |
|             | Aug. 1962                                      | -                                   | -                                               | -                                  | -                                             | -                          | -                                | -                                   |
|             | May 1971                                       | 140                                 | 15.9                                            | .046                               | 140                                           | 15.9                       | .046                             |                                     |
|             | May 1978                                       | 1191                                | 170.1                                           | .489                               | 1331                                          | 84.2                       | .242                             |                                     |
|             | 26. DATE OF SURVEY                             | 39. AV. DRY WGT., LBS. PER CU. FT.  | 40. SED. DEP., TONS PER SQ. MI.-YR.             |                                    | 41. STORAGE LOSS, PCT.                        |                            | 42. SED INFLOW, PPM              |                                     |
|             |                                                | a. PERIOD                           | b. TOTAL TO DATE                                | a. AV. ANN.                        | b. TOT. TO DATE                               | a. PERIOD                  | b. TOT. TO DATE                  |                                     |
| Aug. 1962   | -                                              | -                                   | -                                               | -                                  | -                                             | -                          | -                                |                                     |
| May 1971    | No sediment samples taken                      |                                     |                                                 | .01                                | .11                                           |                            |                                  |                                     |
| May 1978    |                                                |                                     |                                                 | .05                                | .86                                           |                            |                                  |                                     |

| 26. DATE OF SURVEY | 43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION |        |       |       |       |       |       |       |       |       |  |
|--------------------|-----------------------------------------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|                    | 15-105                                                                | 105-95 | 95-85 | 85-75 | 75-65 | 65-55 | 55-45 | 45-35 | 35-30 | 30- 0 |  |
|                    | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION            |        |       |       |       |       |       |       |       |       |  |
| Aug. 1962          | -                                                                     | -      | -     | -     | -     | -     | -     | -     | -     |       |  |
| May 1971           | 9                                                                     | 33     | 1     | 15    | 25    | 17    | -     | -     | -     |       |  |
| May 1978           | 10                                                                    | 17     | 23    | 17    | 10    | 9     | 14    | -     | -     |       |  |

| 26. DATE OF SURVEY | 44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR |       |       |       |       |       |       |       |       |        |      |      |      |      |      |
|--------------------|---------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|------|------|------|------|
|                    | 0-10                                                                | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | -105 | -110 | -115 | -120 | -125 |
|                    | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION          |       |       |       |       |       |       |       |       |        |      |      |      |      |      |
|                    |                                                                     |       |       |       |       |       |       |       |       |        |      |      |      |      |      |

| 45. RANGE IN RESERVOIR OPERATION |            |            |                 |            |            |            |                 |
|----------------------------------|------------|------------|-----------------|------------|------------|------------|-----------------|
| WATER YEAR                       | MAX. ELEV. | MIN. ELEV. | INFLOW, AC.-FT. | WATER YEAR | MAX. ELEV. | MIN. ELEV. | INFLOW, AC.-FT. |
| 1962 Sep                         | 1,024.8    | 975.8      | 27,093          | 1973       | 1,044.20   | 1,025.80   | 654,455         |
| 1963                             | 1,031.1    | 1,024.8    | 369,026         | 1974       | 1,041.40   | 1,029.30   | 611,470         |
| 1964                             | 1,032.5    | 1,026.7    | 327,642         | 1975       | 1,047.30   | 1,029.10   | 617,477         |
| 1965                             | 1,039.4    | 1,026.1    | 496,973         | 1976       | 1,043.40   | 1,023.30   | 465,284         |
| 1966                             | 1,044.0    | 1,029.7    | 380,647         | 1977       | 1,044.35   | 1,021.10   | 473,641         |
| 1967                             | 1,031.3    | 1,029.8    | 334,730         | 1978       | 1,061.20   | 1,027.00   | 482,176         |
| 1968                             | 1,031.6    | 1,029.8    | 440,321         | Oct-May    |            |            |                 |
| 1969                             | 1,037.3    | 1,029.4    | 471,693         |            |            |            |                 |
| 1970                             | 1,060.2    | 1,028.5    | 468,121         |            |            |            |                 |
| 1971 2/                          | 1,032.7    | 1,021.3    | 426,077         |            |            |            |                 |
| 1972                             | 1,047.7    | 1,027.65   | 537,446         |            |            |            |                 |

| 46. ELEVATION-AREA-CAPACITY DATA |       |          |                 |       |          |           |       |          |
|----------------------------------|-------|----------|-----------------|-------|----------|-----------|-------|----------|
| ELEVATION                        | AREA  | CAPACITY | ELEVATION       | AREA  | CAPACITY | ELEVATION | AREA  | CAPACITY |
| Original Capacity - 1962         |       |          | 1,050           | 2,225 | 77,800   | 1,010     | 1,025 | 15,388   |
| 970                              | 50    | 250      | 1,060           | 2,775 | 103,000  | 1,020     | 1,225 | 26,443   |
| 980                              | 125   | 1,125    | 1,070           | 3,550 | 134,500  | 1,030     | 1,475 | 39,701   |
| 990                              | 318   | 3,340    | 1,075           | 4,000 | 154,000  | 1,040     | 1,800 | 55,627   |
| 1,000                            | 675   | 8,300    | Capacity - 1978 |       |          | 1,050     | 2,225 | 76,500   |
| 1,010                            | 1,025 | 16,700   | 970             | 50    | 75       | 1,060     | 2,775 | 101,700  |
| 1,020                            | 1,225 | 27,900   | 980             | 125   | 667      | 1,070     | 3,550 | 132,700  |
| 1,030                            | 1,475 | 41,400   | 990             | 318   | 2,493    | 1,075     | 4,000 | 151,700  |
| 1,040                            | 1,800 | 57,000   | 1,000           | 675   | 7,169    |           |       |          |

47. REMARKS AND REFERENCES

1/ Previous data sheet (June 1972) was to elevation 1,040. Revised to elevation 1,045 for uniformity with 1978 data.

2/ Temporary change in normal pool from elevation 1,030 to 1,033 beginning September 1971 until September 1973.

Sedimentation Reports

W. Kerr Scott Reservoir, Yadkin River, N.C. Surveys of Aug. 1962 and 1971 dated Nov. 1972.

W. Kerr Scott Reservoir, Yadkin River, N.C. Surveys of May 1978 and Sept. 1979, dated Mar. 1980.

48. AGENCY MAKING SURVEY    U.S. Army Corps of Engineers

49. AGENCY SUPPLYING DATA    Charleston District

50. DATE    May 1979

SACEN-PH (31 Mar 80) 4th Ind

SUBJECT: W. Kerr Scott Reservoir, Report on Sedimentation Resurvey

DA, Charleston District, Corps of Engineers, P. O. Box 919, Charleston,  
South Carolina 29402 23 September 1980

TO: District Engineer, Wilmington, ATTN: SAWEN

The subject report has been approved. Back-up data for this report will  
be forwarded in the near future.

FOR THE DISTRICT ENGINEER:

wd all incl

JACK J. LESEMAN  
Chief, Engineering Division

HAUSER/263/tmc

BILLUE/PH

MEREDITH/P

LESEMAN/EN

SACEN-PH

15 September 1980

SUBJECT: Reservoir Sedimentation Data Summary

Division Engineer, South Atlantic  
ATTN: SADEN-TH

1. Pursuant to your letter dated 28 August 1980, subject as above, the reservoir sediment data sheet for W. Kerr Scott Reservoir has been revised to conform to instructions compiled by the Inter-Agency Subcommittee on Sedimentation. Five copies are inclosed.

2. Clarification of OCE comments are as follows:

a. All capacities given in item 32 are for elevation 1075 in accordance with instructions compiled by the Inter-Agency Subcommittee on Sedimentation.

b. The sediment accumulation of 174 acre-ft in item 37a was measured to elevation 1040. This value has been revised to reflect sediment accumulation to elevation 1045. This was done for uniformity since the 1978 data for this item was measured to elevation 1045. Footnote 1 on the new summary sheet (Inclosure 1) reflects this change.

FOR THE DISTRICT ENGINEER:

1 Incl (5 cys)  
as

JACK J. LESEMAN  
Chief, Engineering Division

HAUSER/263/pr

BILLUE/PH

MEREDITH/P

LESEMAN/EN

RESERVOIR SEDIMENT  
DATA SUMMARY

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS

W. Kerr Scott Reservoir  
NAME OF RESERVOIR

DATA SHEET NO.

|             |                                                |                           |                                     |                                 |                                                 |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|-------------|------------------------------------------------|---------------------------|-------------------------------------|---------------------------------|-------------------------------------------------|---------------------------------|----------------------------------|-----------------|-----------------------------------|-----------|-----------------------------|-----------------|-------------------------|--|-------------------------------------|--|
| DAM         | 1. OWNER Dept. of Army, C of E                 |                           |                                     | 2. STREAM Yadkin                |                                                 | 3. STATE North Carolina         |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | 4. SEC. TWP. RANGE                             |                           |                                     | 5. NEAREST P O Wilkesboro, NC   |                                                 | 6. COUNTY Wilkes                |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | 7. LAT 36° 9' N LONG 81° 14' W                 |                           |                                     | 8. TOP OF DAM ELEVATION 1,107.5 |                                                 | 9. SPILLWAY CREST ELEV 1,1075.0 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
| RESERVOIR   | 10. STORAGE ALLOCATION                         |                           | 11. ELEVATION TOP OF POOL           |                                 | 12. ORIGINAL SURFACE AREA, ACRES                |                                 | 13. ORIGINAL CAPACITY, ACRE-Feet |                 | 14. GROSS STORAGE, ACRE-Feet      |           | 15. DATE STORAGE BEGAN      |                 |                         |  |                                     |  |
|             | a. FLOOD CONTROL                               |                           | 1,075.0                             |                                 | 4,000                                           |                                 | 112,600                          |                 | 154,000                           |           | Aug. 22, 62                 |                 |                         |  |                                     |  |
|             | b. MULTIPLE USE                                |                           |                                     |                                 |                                                 |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | c. POWER                                       |                           |                                     |                                 |                                                 |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | d. WATER SUPPLY                                |                           | 1,030.0                             |                                 | 1,475                                           |                                 | 33,100                           |                 | 41,400                            |           | 16. DATE NORMAL OPER. BEGAN |                 |                         |  |                                     |  |
|             | e. IRRIGATION                                  |                           |                                     |                                 |                                                 |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | f. CONSERVATION                                |                           |                                     |                                 |                                                 |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | g. INACTIVE                                    |                           | 1,000.0                             |                                 | 675                                             |                                 | 8,300                            |                 | 8,300                             |           | Jan. 19, 63                 |                 |                         |  |                                     |  |
| WATERSHED   | 17. LENGTH OF RESERVOIR 4.73 MILES             |                           |                                     |                                 | AV. WIDTH OF RESERVOIR 0.49 MILES               |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | 18. TOTAL DRAINAGE AREA 348 SQ. MI.            |                           |                                     |                                 | 22. MEAN ANNUAL PRECIPITATION 52.84 (41) INCHES |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | 19. NET SEDIMENT CONTRIBUTING AREA 348 SQ. MI. |                           |                                     |                                 | 23. MEAN ANNUAL RUNOFF 22.22 (57) INCHES        |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | 20. LENGTH 38.5 MILES                          |                           |                                     |                                 | 24. MEAN ANNUAL RUNOFF 412,482 AC.-FT.          |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             | 21. MAX. ELEV. 4,100                           |                           |                                     |                                 | 25. ANNUAL TEMP MEAN 55.8 RANGE -5 to 98 (16)   |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
| SURVEY DATA | 26. DATE OF SURVEY                             |                           | 27. PERIOD YEARS                    |                                 | 28. ACCL. YEARS                                 |                                 | 29. TYPE OF SURVEY               |                 | 30. NO. OF RANGES OR CONTOUR INT. |           | 31. SURFACE AREA, ACRES     |                 | 32. CAPACITY, ACRE-Feet |  | 33. C/I. RATIO, AC.-FT. PER AC.-FT. |  |
|             | Aug. 1962                                      |                           | -                                   |                                 | -                                               |                                 | Range                            |                 | 8 Ranges                          |           | 4,000                       |                 | 154,000                 |  | 0.40                                |  |
|             | May 1971                                       |                           | 8.8                                 |                                 | 8.8                                             |                                 | Range (D)                        |                 | 20 Ranges                         |           | 4,000                       |                 | 153,826                 |  | 0.40                                |  |
|             | May 1978                                       |                           | 7.0                                 |                                 | 15.8                                            |                                 | Range (D)                        |                 | 20 Ranges                         |           | 4,000                       |                 | 151,700                 |  | 0.39                                |  |
|             | 26. DATE OF SURVEY                             |                           | 34. PERIOD ANNUAL PRECIPITATION     |                                 | 35. PERIOD WATER INFLOW, ACRE-Feet              |                                 | 36. WATER INFL. TO DATE, AC.-FT. |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             |                                                |                           | a. MEAN ANNUAL                      |                                 | b. MAX. ANNUAL                                  |                                 | c. PERIOD TOTAL                  |                 | a. MEAN ANNUAL                    |           | b. TOTAL TO DATE            |                 |                         |  |                                     |  |
|             | Aug. 1962                                      |                           | -                                   |                                 | -                                               |                                 | -                                |                 | -                                 |           | -                           |                 |                         |  |                                     |  |
|             | May 1971                                       |                           | 51.5                                |                                 | 400,326                                         |                                 | 496,973                          |                 | 3,502,854                         |           | 400,326                     |                 | 3,502,854               |  |                                     |  |
|             | May 1978                                       |                           | 60.78                               |                                 | 566,505                                         |                                 | 694,033                          |                 | 3,965,535                         |           | 472,683                     |                 | 7,468,389               |  |                                     |  |
|             | 26. DATE OF SURVEY                             |                           | 37. PERIOD CAPACITY LOSS, ACRE-Feet |                                 | 38. TOTAL SED. DEPOSITS TO DATE, ACRE-Feet      |                                 |                                  |                 |                                   |           |                             |                 |                         |  |                                     |  |
|             |                                                |                           | a. PERIOD TOTAL                     |                                 | b. AV. ANNUAL                                   |                                 | c. PER SQ. MI.-YEAR              |                 | a. TOTAL TO DATE                  |           | b. AV. ANNUAL               |                 | c. PER SQ. MI.-YEAR     |  |                                     |  |
|             | Aug. 1962                                      |                           | -                                   |                                 | -                                               |                                 | -                                |                 | -                                 |           | -                           |                 | -                       |  |                                     |  |
|             | May 1971                                       |                           | 140                                 |                                 | 15.9                                            |                                 | .046                             |                 | 140                               |           | 15.9                        |                 | .046                    |  |                                     |  |
|             | May 1978                                       |                           | 1191                                |                                 | 170.1                                           |                                 | .489                             |                 | 1331                              |           | 84.2                        |                 | .242                    |  |                                     |  |
|             | 26. DATE OF SURVEY                             |                           | 39. AV. DRY WGT., LBS. PER CU. FT.  |                                 | 40. SED. DEP., TONS PER SQ. MI.-YR.             |                                 | 41. STORAGE LOSS, PCT.           |                 | 42. SED. INFLOW, PPM              |           |                             |                 |                         |  |                                     |  |
|             |                                                | a. PERIOD                 |                                     | b. TOTAL TO DATE                |                                                 | a. AV. ANN.                     |                                  | b. TOT. TO DATE |                                   | a. PERIOD |                             | b. TOT. TO DATE |                         |  |                                     |  |
| Aug. 1962   |                                                | -                         |                                     | -                               |                                                 | -                               |                                  | -               |                                   | -         |                             | -               |                         |  |                                     |  |
| May 1971    |                                                | No sediment samples taken |                                     | -                               |                                                 | .01                             |                                  | .11             |                                   | -         |                             | -               |                         |  |                                     |  |
| May 1978    |                                                | -                         |                                     | -                               |                                                 | .05                             |                                  | .86             |                                   | -         |                             | -               |                         |  |                                     |  |

|                                                                                                                      |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------|-----------------|------------|-------------------|------------|-----------------|----------|-------|--------|------|------|------|------|------|
| 26. DATE OF SURVEY                                                                                                   | 43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
|                                                                                                                      | 15-105                                                                | 105-95     | 95-85           | 85-75      | 75-65             | 65-55      | 55-45           | 45-35    | 35-30 | 30-0   |      |      |      |      |      |
|                                                                                                                      | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION            |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| Aug. 1962                                                                                                            | -                                                                     | -          | -               | -          | -                 | -          | -               | -        | -     |        |      |      |      |      |      |
| May 1971                                                                                                             | 15.7                                                                  | 59.3       | -29.3           | 26.4       | 45.7              | 30.7       | -0.7            | -20.0    | -27.8 |        |      |      |      |      |      |
| May 1978                                                                                                             | 13.1                                                                  | 21.3       | 29.2            | 21.7       | 13.6              | 10.9       | 18.2            | -24.5    | 3.5   |        |      |      |      |      |      |
| 26. DATE OF SURVEY                                                                                                   | 44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR   |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
|                                                                                                                      | 0-10                                                                  | 10-20      | 20-30           | 30-40      | 40-50             | 50-60      | 60-70           | 70-80    | 80-90 | 90-100 | -105 | -110 | -115 | -120 | -125 |
|                                                                                                                      | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION            |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
|                                                                                                                      |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 45. RANGE IN RESERVOIR OPERATION                                                                                     |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| WATER YEAR                                                                                                           | MAX. ELEV.                                                            | MIN. ELEV. | INFLOW, AC.-FT. | WATER YEAR | MAX. ELEV.        | MIN. ELEV. | INFLOW, AC.-FT. |          |       |        |      |      |      |      |      |
| 1962 Sep                                                                                                             | 1,024.8                                                               | 975.8      | 27,093          | 1973       | 1,044.20          | 1,025.80   | 654,455         |          |       |        |      |      |      |      |      |
| 1963                                                                                                                 | 1,031.1                                                               | 1,024.8    | 369,026         | 1974       | 1,041.40          | 1,029.30   | 611,470         |          |       |        |      |      |      |      |      |
| 1964                                                                                                                 | 1,032.5                                                               | 1,026.7    | 327,642         | 1975       | 1,047.30          | 1,029.10   | 617,477         |          |       |        |      |      |      |      |      |
| 1965                                                                                                                 | 1,039.4                                                               | 1,026.1    | 496,973         | 1976       | 1,043.40          | 1,023.30   | 465,284         |          |       |        |      |      |      |      |      |
| 1966                                                                                                                 | 1,044.0                                                               | 1,029.7    | 380,647         | 1977       | 1,044.35          | 1,021.10   | 473,641         |          |       |        |      |      |      |      |      |
| 1967                                                                                                                 | 1,031.3                                                               | 1,029.8    | 334,730         | 1978       | 1,061.20          | 1,027.00   | 482,176         |          |       |        |      |      |      |      |      |
| 1968                                                                                                                 | 1,031.6                                                               | 1,029.8    | 440,321         | Oct-May    |                   |            |                 |          |       |        |      |      |      |      |      |
| 1969                                                                                                                 | 1,037.3                                                               | 1,029.4    | 471,693         |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 1970                                                                                                                 | 1,060.2                                                               | 1,028.5    | 468,121         |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 1971 2/                                                                                                              | 1,032.7                                                               | 1,021.3    | 426,077         |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 1972                                                                                                                 | 1,047.7                                                               | 1,027.65   | 537,446         |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 46. ELEVATION-AREA-CAPACITY DATA                                                                                     |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| ELEVATION                                                                                                            | AREA                                                                  | CAPACITY   | ELEVATION       | AREA       | CAPACITY          | ELEVATION  | AREA            | CAPACITY |       |        |      |      |      |      |      |
| Original Capacity - 1962                                                                                             |                                                                       |            | 1,050           | 2,225      | 77,800            | 1,010      | 1,025           | 15,388   |       |        |      |      |      |      |      |
| 970                                                                                                                  | 50                                                                    | 250        | 1,060           | 2,775      | 103,000           | 1,020      | 1,225           | 26,443   |       |        |      |      |      |      |      |
| 980                                                                                                                  | 125                                                                   | 1,125      | 1,070           | 3,550      | 134,500           | 1,030      | 1,475           | 39,701   |       |        |      |      |      |      |      |
| 990                                                                                                                  | 318                                                                   | 3,340      | 1,075           | 4,000      | 154,000           | 1,040      | 1,800           | 55,627   |       |        |      |      |      |      |      |
| 1,000                                                                                                                | 675                                                                   | 8,300      | Capacity - 1978 |            |                   | 1,050      | 2,225           | 76,500   |       |        |      |      |      |      |      |
| 1,010                                                                                                                | 1,025                                                                 | 16,700     | 970             | 50         | 75                | 1,060      | 2,775           | 101,700  |       |        |      |      |      |      |      |
| 1,020                                                                                                                | 1,225                                                                 | 27,900     | 980             | 125        | 667               | 1,070      | 3,550           | 132,700  |       |        |      |      |      |      |      |
| 1,030                                                                                                                | 1,475                                                                 | 41,400     | 990             | 318        | 2,493             | 1,075      | 4,000           | 151,700  |       |        |      |      |      |      |      |
| 1,040                                                                                                                | 1,800                                                                 | 57,000     | 1,000           | 675        | 7,169             |            |                 |          |       |        |      |      |      |      |      |
| 47. REMARKS AND REFERENCES                                                                                           |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 1/ Previous data sheet (June 1972) was to elevation 1,040. Revised to elevation 1,045 for uniformity with 1978 data. |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 2/ Temporary change in normal pool from elevation 1,030 to 1,033 beginning September 1971 until September 1973.      |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| <u>Sedimentation Reports</u>                                                                                         |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| W. Kerr Scott Reservoir, Yadkin River, N.C. Surveys of Aug. 1962 and 1971 dated Nov. 1972.                           |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| W. Kerr Scott Reservoir, Yadkin River, N.C. Surveys of May 1978 and Sept. 1979, dated Mar. 1980.                     |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |
| 48. AGENCY MAKING SURVEY U.S. Army Corps of Engineers                                                                |                                                                       |            |                 |            | 50. DATE May 1979 |            |                 |          |       |        |      |      |      |      |      |
| 49. AGENCY SUPPLYING DATA Charleston District                                                                        |                                                                       |            |                 |            |                   |            |                 |          |       |        |      |      |      |      |      |



DEPARTMENT OF THE ARMY

SOUTH ATLANTIC DIVISION, CORPS OF ENGINEERS

510 TITLE BUILDING, 30 PRYOR STREET, S.W.

ATLANTA, GEORGIA 30303

REPLY TO  
ATTENTION OF:

SADEN-TH

28 August 1980

SUBJECT: Reservoir Sedimentation Data Summary

District Engineer, Charleston, ATTN: SACEN-PH

1. Reference is made to DAEN-CWE-HY letter dated 8 August 1980, subject as above.
2. The reservoir sediment data sheet for W. Kerr Scott Reservoir should be revised according to OCE comments noted in Inclosure 1. The Inter-Agency Subcommittee on Sedimentation have compiled instructions for completing sediment data forms and they are inclosed for your information and use. Also inclosed is the SCS-34 Form which is referenced on page 2 of the W. Kerr Scott sediment data summary form.
3. The revised summary form should be submitted to SADEN-TH by 25 September 1980.

FOR THE DIVISION ENGINEER:

3 Incl  
as

*for* *C P Davis*  
WILLIAM N. McCORMICK, JR.  
Chief, Engineering Division



DEPARTMENT OF THE ARMY  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON, D.C. 20314

ACTION COPY EN-

REPLY TO  
ATTENTION OF:

DAEN-CWE-HY

8 August 1980

SUBJECT: Reservoir Sedimentation Data Summary

SEE DISTRIBUTION

1. The Soil Conservation Service has returned the attached annotated reservoir sediment data summary sheets with the general comments and problems for resolution of questionable items.
2. FOA's are requested to furnish HQDA (DAEN-CWE-HY) the revised version by 1 October 1980.
3. For further information concerning this request, please contact Dr. Yung H. Kuo, DAEN-CWE-HY, (202) 272-0224.

FOR THE CHIEF OF ENGINEERS:

LLOYD A. DUSCHA  
Chief, Engineering Division  
Directorate of Civil Works

2 Incl

1. Res. Sed. Data Sum.
2. Gen. Comments

DISTRIBUTION  
(See page 2)

Incl 1

DAEN-CWE-HY

8 August 1980

SUBJECT: Reservoir Sedimentation Data Summary

DISTRIBUTION:

Division Engineer, Lower Mississippi Valley, ATTN: LMVED

Division Engineer, Missouri River, ATTN: MRDED

Division Engineer, North Atlantic, ATTN: NADEN

Division Engineer, North Central, ATTN: NCDED

Division Engineer, Ohio River, ATTN: ORDED

✓ Division Engineer, South Atlantic, ATTN: SADEN ✓

Division Engineer, South Pacific, ATTN: SPDED

Division Engineer, Southwestern, ATTN: SWDED

RESERVOIR SEDIMENT  
DATA SUMMARY

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS

W. Kerr Scott Reservoir

NAME OF RESERVOIR

6-14

DATA SHEET NO.

|                        |                                   |                             |                                     |                                    |                                |                                          |                                                |                              |
|------------------------|-----------------------------------|-----------------------------|-------------------------------------|------------------------------------|--------------------------------|------------------------------------------|------------------------------------------------|------------------------------|
| DAM                    | 1 OWNER Dept. of Army, C of E     |                             |                                     | 2 STREAM Yadkin                    |                                | 3 STATE North Carolina                   |                                                |                              |
|                        | 4 SEC TWP RANGE                   |                             |                                     | 5 NEAREST P.O. Wilkesboro, NC      |                                | 6 COUNTY Wilkes                          |                                                |                              |
|                        | 7 LAT 36° 9' N LONG 81° 14' W     |                             |                                     | 8 TOP OF DAM ELEVATION 1,107.5     |                                | 9 SPILLWAY CREST ELEV 1,075.0            |                                                |                              |
| RESERVOIR              | 10 STORAGE ALLOCATION             |                             | 11 ELEVATION TOP OF POOL            |                                    | 12 ORIGINAL SURFACE AREA ACRES |                                          | 13 ORIGINAL CAPACITY, ACRES FEET               |                              |
|                        | a FLOOD CONTROL                   |                             | 1,075.0                             |                                    | 4,000                          |                                          | 112,600                                        |                              |
|                        | b MULTIPLE USE                    |                             |                                     |                                    |                                |                                          | 154,000                                        |                              |
|                        | c POWER                           |                             |                                     |                                    |                                |                                          |                                                |                              |
|                        | d WATER SUPPLY                    |                             | 1,030.0                             |                                    | 1,475                          |                                          | 33,100                                         |                              |
|                        | e IRRIGATION                      |                             |                                     |                                    |                                |                                          | 41,400                                         |                              |
|                        | f CONSERVATION                    |                             |                                     |                                    |                                |                                          |                                                |                              |
|                        | g INACTIVE                        |                             | 1,000.0                             |                                    | 675                            |                                          | 8,300                                          |                              |
|                        |                                   |                             |                                     |                                    |                                | 8,300                                    | Jan. 19, 63                                    |                              |
| 17 LENGTH OF RESERVOIR |                                   | 4.73                        |                                     | MILES                              |                                | AV WIDTH OF RESERVOIR 0.49 MILES         |                                                |                              |
| WATERSHED              | 18 TOTAL DRAINAGE AREA            |                             | 348                                 |                                    | SQ MI                          |                                          | 22 MEAN ANNUAL PRECIPITATION 51.52 (34) INCHES |                              |
|                        | 19 NET SEDIMENT CONTRIBUTING AREA |                             | 348                                 |                                    | SQ MI                          |                                          | 23 MEAN ANNUAL RUNOFF 21.01 (49) INCHES        |                              |
|                        | 20 LENGTH 38.5                    |                             | MILES                               |                                    | AV WIDTH 9.04                  |                                          | 24 MEAN ANNUAL RUNOFF 384,934 AC FT            |                              |
|                        | 21 MAX ELEV 4,100                 |                             | MIN ELEV 965.0                      |                                    |                                |                                          | 25 ANNUAL TEMP MEAN 55.8 RANGE -5 to 98 (16)   |                              |
| SURVEY DATA            | 26 DATE OF SURVEY                 | 27 PERIOD YEARS             | 28 ACCL YEARS                       | 29 TYPE OF SURVEY                  | 30 NO OF RANGES OR CONTOUR INT | 31 SURFACE AREA ACRES                    | 32 CAPACITY ACRES FEET                         | 33 SED. RATE AC FT PER AC FT |
|                        | Aug. 1962                         | -                           | -                                   | Range                              | 8 Ranges                       | 4,000                                    | 154,000                                        | 0.40                         |
|                        | May 1971                          | 8.8                         | 8.8                                 | Range De-tailed                    | 20 Ranges                      | 4,000                                    | 153,826                                        | 0.40                         |
|                        | 26 DATE OF SURVEY                 |                             | 34 PERIOD ANNUAL PRECIPITATION      | 35 PERIOD WATER INFLOW, ACRES FEET |                                |                                          | 36 WATER INFLO TO DATE AC FT                   |                              |
|                        |                                   |                             | a MEAN ANNUAL                       | b MAX ANNUAL                       | c PERIOD TOTAL                 | d MEAN ANNUAL                            | e TOTAL TO DATE                                |                              |
|                        | Aug. 1962                         |                             | -                                   | -                                  | -                              | -                                        | -                                              | -                            |
|                        | May 1971                          |                             | 51.5                                | 400,326                            | 496,973                        | 3,502,854                                | 400,326                                        | 3,502,854                    |
|                        | 26 DATE OF SURVEY                 |                             | 37 PERIOD CAPACITY LOSS, ACRES FEET |                                    |                                | 38 TOTAL SED DEPOSITS TO DATE ACRES FEET |                                                |                              |
|                        |                                   |                             | a PERIOD TOTAL                      | b ANNUAL                           | c PER SQ MI YEAR               | d TOTAL TO DATE                          | e ANNUAL                                       | f PER SQ MI YEAR             |
|                        | Aug. 1962                         |                             | 174 1/2                             | -                                  | -                              | -                                        | -                                              | -                            |
| May 1971               |                                   |                             | 19.8                                | .056                               | 174                            | 19.8                                     | .056                                           |                              |
| 26 DATE OF SURVEY      |                                   | 39 AV DRY WGT LBS PER CU FT | 40 SED DEP. TONS PER SQ MI-YR       |                                    | 41 STORAGE LOSS PCT            |                                          | 42 SED INFLOW PER MI                           |                              |
|                        |                                   | a PERIOD                    | b TOTAL TO DATE                     | c ANNUAL                           | d TOTAL TO DATE                | e PERIOD                                 | f TOTAL TO DATE                                |                              |
| Aug. 1962              |                                   | -                           | -                                   | -                                  | -                              | -                                        | -                                              |                              |
| May 1971               |                                   | No sediment                 | samples taken                       |                                    | .01                            | .11                                      |                                                |                              |

ENG FORM 1787  
NOV 66

PREVIOUS EDITIONS ARE OBSOLETE

Cap 154,000 was at elev 1075  
Cap 153,826 was at elev 1040  
Is the loss 174 measured from elev 1075?  
Footnote 1 implies that there was a loss of  
elev 1040.

Does not  
with for  
u

| 26 DATE OF SURVEY | 44 DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION |              |               |   |   |   |   |   |   |   |
|-------------------|----------------------------------------------------------------------|--------------|---------------|---|---|---|---|---|---|---|
|                   | Inactive Pool                                                        | Water Supply | Flood Control |   |   |   |   |   |   |   |
|                   | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION           |              |               |   |   |   |   |   |   |   |
| Aug. 1962         | -                                                                    | -            | -             | - | - | - | - | - | - | - |
| May 1971          | 58%                                                                  | 58.6%        | -16.6%        |   |   |   |   |   |   |   |

| 27 DATE OF SURVEY | 44 REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR |       |       |       |       |       |       |       |       |        |      |      |      |  |  |
|-------------------|--------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|------|------|--|--|
|                   | 0-10                                                               | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | -105 | -110 | -115 |  |  |
|                   | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION         |       |       |       |       |       |       |       |       |        |      |      |      |  |  |
|                   |                                                                    |       |       |       |       |       |       |       |       |        |      |      |      |  |  |
|                   |                                                                    |       |       |       |       |       |       |       |       |        |      |      |      |  |  |
|                   |                                                                    |       |       |       |       |       |       |       |       |        |      |      |      |  |  |

| 45 RANGE IN RESERVOIR OPERATION |            |            |               |            |            |            |      |
|---------------------------------|------------|------------|---------------|------------|------------|------------|------|
| WATER YEAR                      | MAX. ELEV. | MIN. ELEV. | INFLOW, AC FT | WATER YEAR | MAX. ELEV. | MIN. ELEV. | INF. |
| 1962 Sep                        | 1,024.8    | 975.8      | 27,093        |            |            |            |      |
| 1963                            | 1,031.1    | 1,024.8    | 369,026       |            |            |            |      |
| 1964                            | 1,032.5    | 1,026.7    | 327,642       |            |            |            |      |
| 1965                            | 1,039.4    | 1,026.1    | 496,973       |            |            |            |      |
| 1966                            | 1,044.0    | 1,029.7    | 380,647       |            |            |            |      |
| 1967                            | 1,031.3    | 1,029.8    | 334,730       |            |            |            |      |
| 1968                            | 1,031.6    | 1,029.8    | 440,321       |            |            |            |      |
| 1969                            | 1,037.3    | 1,029.4    | 471,693       |            |            |            |      |
| 1970                            | 1,060.2    | 1,028.5    | 468,121       |            |            |            |      |
| 1971                            | 1,032.7    | 1,026.0    | 302,491       |            |            |            |      |
| Oct-May                         |            |            |               |            |            |            |      |

| 46 ELEVATION-AREA-CAPACITY DATA 2/ |      |          |           |      |          |           |      |
|------------------------------------|------|----------|-----------|------|----------|-----------|------|
| ELEVATION                          | AREA | CAPACITY | ELEVATION | AREA | CAPACITY | ELEVATION | AREA |
| 970                                | 50   | 250      | 1040      | 1800 | 57,000   |           |      |
| 980                                | 125  | 1125     | 1050      | 2225 | 77,800   |           |      |
| 990                                | 318  | 3340     | 1060      | 2775 | 103,000  |           |      |
| 1000                               | 675  | 8300     | 1070      | 3550 | 134,500  |           |      |
| 1010                               | 1025 | 16700    | 1075      | 4000 | 154,000  |           |      |
| 1020                               | 1225 | 27900    |           |      |          |           |      |
| 1030                               | 1475 | 41400    |           |      |          |           |      |

47 REMARKS AND REFERENCES

1/ Due to inadequacies of 1962 survey, data reflects sediment accumulated elevation 1040.

2/ The total capacity reduction to the elevation studied (1040) is so sma adjustment was made to the original capacity curve at this time.

48 AGENCY MAKING SURVEY Corps of Engineers

49 AGENCY SUPPLYING DATA Charleston District

50 DATE June 197

C. E

LEGEND (To accompany annotated reservoir survey data sheets)

DNC: Does not comply with instructions provided by the Subcommittee on Sedimentation (ICWR), Rev. 3/66.

NCOMP: Data not compatible with preceding or proceeding items for purposes of determining net change.

PL47: Item should be placed in the remarks section.

Inc 12

1. 1. 2

## COMMENTS ON RESERVOIR SEDIMENTATION SURVEYS

### Field Work

Range spacing - a great variability exists, as would be expected, considering the great variety of natural conditions. However, ranges spaced hundreds of thousands of feet apart make you wonder about the validity of the work.

Density samples represent the weakest link in the reservoir survey. Estimates are out. Determination of densities from numerous samples is required. Consider the variation possible within a reservoir on a given survey (100%). Lateral and vertical density distribution must be considered in order to provide a reasonable weighted average. Density sectioning would be appropriate. A 100-acre lake sampled at five locations seems unreasonable.

Watershed conditions have been practically overlooked. Do you do more than give a percent of land use or geologic formations? At the present time, each survey should produce a watershed condition map, showing where and how such things as construction, agriculture, etc., are occurring. Have you included stream density, stream lengths, cover conditions, etc., in your report? (Not on 34)

### Nonfield

These comments relate mostly to the information presented on the Form 34.

Submerged, aerated, and combined unit weights and resulting computations (items 40 and 41) should be reported separately for each survey.

Report the water surface elevation on the date of survey.

Item 32 (capacity) should be reported for the same elevation on each survey. Several capacities can be reported such as sediment pool, total, etc., and computed separately.

The number of ranges and the contour interval should be reported if a range-contour survey is used.

Indicate if any portion of the total pool was not sampled for sediment density or volume. Is the water level usually at the principal spillway crest? Is the sediment pool wet? -

Report unit weights as submerged, aerated, or compounded, as well as belonging to the sediment pool or the detention pool. Sediment pool weights might be aerated.

Average footnotes on continuation sheets in order. Eliminate footnotes with the same number.

Comments

-2-

Look over previous reports - is what you are reporting reasonable and compatible with previous surveys?

Complete all information on the forms. Indicate where and if additional information is available.

"Duplicate" area-capacity tables provided on continuation sheets are inconsistent--how?

## PROBLEMS

### Field Use of Form - Reservoir Sedimentation Data Sheet

1. Items 27 to 32 do not contain enough information to compute sedimentation (item 37).
2. Nonsedimentation survey data should be put into item 47.
3. Elevation-area capacity data does not include crest elevation or other elevations which correspond to specific allocations.
4. Elevation-area capacity data for new surveys contains no area information.
5. Items 43, unclear depth designations (we have been inputting depths or elevations).
6. "Assumed" note added, but nothing in text has an asterisk.
7. Date normal operation began, item 16, not completed.
8. Surveys not made to the spillway crest elevation, only to normal pool, yet reservoir operation data shows inflows exceeding normal elevation.
9. Capacity under item 32 for original does not correspond to anything under 14.
10. Under item 46, area measurements subsequent to original survey are not included or indicated as maybe unchanged.
11. Reference is made to additional sheets which are missing.
12. Spillway crest elevation does not match maximum pool elevation, with no explanation.
13. Footnotes in 47 not identified with anything on the sheet.
14. Lowest elevation in elevation-capacity data (46) is lower than lowest watershed elevation (21).
15. No date for item 46.
16. Contour interval is indicated for a range survey, also a 200' C.I.
17. Lowest watershed elevation (21) is higher than stated pool elevation (11).
18. Original capacities do not sum correctly to gross storage (14).

Problems

-2-

19. Items in parentheses are unexplained.
20. Maximum pool allocations not included in 11-14, but in 47.
21. Type of survey not indicated.
22. Reservoir cleanout not clearly indicated.
23. Capacity at each survey not indicated, nor period or total sediment deposits.

SUBCOMMITTEE ON SEDIMENTATION (ICWR)

INSTRUCTIONS FOR COMPILING THE RESERVOIR  
SEDIMENT DATA SUMMARY FORM

Prepared by the following agencies represented on the  
Subcommittee on Sedimentation  
Inter-Agency Committee on Water Resources

DEPARTMENT OF AGRICULTURE  
Agricultural Research Service  
Forest Service  
Soil Conservation Service

DEPARTMENT OF HEALTH, EDUCATION  
AND WELFARE  
Water Pollution Control  
Administration

DEPARTMENT OF COMMERCE  
Bureau of Public Roads  
Environmental Science Services  
Administration

DEPARTMENT OF THE INTERIOR  
Bureau of Mines  
Bureau of Reclamation  
Geological Survey

DEPARTMENT OF DEFENSE  
Corps of Engineers  
Naval Oceanographic Office

FEDERAL POWER COMMISSION  
TENNESSEE VALLEY AUTHORITY

Foreword

(REVISED MARCH 1966)

The following instructions were prepared by members of the Subcommittee as a guide for use in the completion of Reservoir Sediment Data Summary forms. The purpose of the summary form is to provide for the uniform compilation and dissemination of pertinent basic data obtained from reservoir sedimentation surveys. A summary is desired for each reservoir on which one or more sedimentation surveys have been made. New summaries should be prepared when additional sedimentation surveys are made and should carry forward the results of previous surveys, as indicated in the instructions. A typed copy of each new summary in condition suitable for offset printing should be furnished for publication. After a summary is prepared it will be reproduced by the Subcommittee in sufficient numbers to meet the needs of each agency represented on the Subcommittee. This will permit each agency to maintain a file of basic data prepared in a uniform manner suitable for analysis and interpretation. The Subcommittee recognizes that all items of data provided for on the summary will not be readily available for every reservoir. The early compilation and dissemination of available data is preferable to postponement until all items can be completed. However, it is important that every item be filled out for which data are obtainable. The following instructions are based on the instructions issued by the Subcommittee on Sedimentation in 1961 but are revised to apply to the new summary form.

### General Notes

- A. In all cases where data are estimated or assumed, insert an asterisk, and show an asterisk with the word "assumed" at the bottom of the front page of the form.
- B. Where other information is presented that needs clarification, footnotes should be used and shown by numbers, as 1/, 2/, etc. All footnotes are to be explained in the space provided under Item 47.
- C. All data should be shown to at least three significant figures, if available, and if accuracy of the survey warrants. However, it is common practice and permissible to show all items of data to the nearest whole number, even though the accuracy of the survey may not give significance to the last one or two whole numbers. For example, for Item 14: 167,624, 16,762, 1676, 168, 16.8, 1.68.
- D. Items 31, 32, 33, 37, 38, 40, 41.  
Where the sedimentation survey of a multiple-purpose reservoir has covered only the pool level or levels used for storage most of the year (as irrigation, power, inactive) and has not covered the flood-control pool above such levels, the data should be shown for the pool levels surveyed. However, any data obtained concerning sedimentation in the controllable flood-control pool (not including surcharge storage) should be shown under the above items with a footnote reference of explanation under Item 47.
- E. Use continuation sheets when all data cannot be placed on one sheet.

### Specific Items

Name of Reservoir: Give the official or most commonly used name. If the dam has another name, give it in parentheses, i.e., Lake Mead (Hoover Dam).

Data Sheet No.: The Data Sheet Number is composed of two parts, the first being the river basin map number as shown in the hydrologic atlas compiled under the auspices of the Subcommittee on Hydrology, ICWR, and the second is the sheet reference number supplied by the Subcommittee on Sedimentation periodically when data are compiled for publication. If the map number for the river basin in which the reservoir is located is available, it should be shown here. The data sheet reference number will be supplied later by the Subcommittee on Sedimentation.

### Item

- 1. The name of the person or the organization that owns or operates the structure. If a Federal or State government, give both the department and agency having supervision or control over the operation of the dam. (Abbreviate as necessary).
- 2. If the reservoir is located on a small stream, the name of which is not known, list as a tributary of the next largest stream.

For example, "Trib. of Rock R."

3. If the dam lies in two states, both states should be given, the first state being that in which the headquarters for operation of the dam are located.
4. Give the location of the dam by section, township and range.
5. Give the name of the nearest post office. If space permits, adding the distance in miles and direction of the dam from the nearest post office helps to pinpoint the location of the dam, as Tulsa 2 SE.
6. Give the county in which the dam is located. If the dam is in two counties, the first-named county should be the one in which headquarters for operation of the dam are located, followed by a hyphen and the name of the second county.
7. Give the latitude and longitude of the dam in degrees and minutes (seconds, if known).

In Items 8, 9 and 21, if no actual sea level datum elevation is available, an assumed elevation or local datum plane should be given for these items wherever possible, so that the height of the dam and the spillway above stream bed can be determined. (Observe A under General Notes, page 2.)

8. The elevation of the top of the dam which is equal to the highest spillway elevation (Item 9) plus freeboard.
9. This is the elevation of the highest spillway. If the spillway is topped by movable gates, give the elevation of the top of the gates in closed position, with an explanatory footnote in Item 47, "REMARKS AND REFERENCES." (See B under General Notes, page 2.)
- 10-14. All data corresponding to storage allocations 10a-g refer to original storages in the reservoir, if these data are available, or otherwise, to the first accurate capacities determined after the beginning of storage. Show revisions of the initial storages if recent surveys yield more accurate data than the early surveys.
- 10a-b. These items designate the purpose of storage space allocation. Multiple use storage space (Item 10b) refers to that which is purposely varied, seasonally or alternately, as required to serve two or more purposes. Use a footnote to explain the specific uses in Item 47.
- 10c. This item ordinarily refers to storage for hydroelectric or direct power development. However, storage developed or allocated specifically for cooling purposes in steam power plant operation should be listed under this item with a footnote explanation in Item 47.
- 10d. This item refers to water supply for municipal, industrial, domestic or livestock use, and fire protection.
- 10e. This item refers to storage space allocated specifically for water used to irrigate agricultural land.

- 10f. This item refers to storage allocated for regulation of low-water flow of streams, navigation pools, recharge of ground water, recreation, fish and wildlife, etc. Specify by footnote.
- 10g. This refers to storage below the lowest outlet in the dam which cannot be withdrawn for any consumptive or beneficial use and is not generally considered to be of significant value for any purposes listed under Item 10f, "Conservation". This pool elevation in small reservoirs generally is considered by the Department of Agriculture to be the sediment pool elevation. It is the level below which sediment is generally continually submerged and above which the sediment deposits tend to be more compacted due to periodic exposure to the air.
- 11a-g. These elevations should correspond to the top of pools listed under Item 10, in terms of mean sea level, if known. Otherwise, an assumed elevation or local datum should be given, as relative elevation to the streambed level, the top of the dam or the spillway crest. If regulation schedules provide for variation (seasonal or otherwise) in the top-of-pool levels the maximum elevation should be shown with a reference to the footnote explanation of the other pertinent pool levels.
- 12a-g. Give the original surface area in acres at the elevation at the top of each pool shown in Item 11.
- 13a-g. Give the original storage capacity in acre-feet in each allocation.
- 14a-g. Give the total original accumulated storage in acre-feet from the bottom of the reservoir to the top of each pool elevation indicated. Thus, the uppermost item recorded should be the original capacity of the reservoir below the spillway crest elevation shown in Item 9.
- 15. Give the date when water was first impounded (month, day, and year, if possible).
- 16. Give the date (month, day, and year, if possible) that the initial operation for any function started.
- 17. Give the length of the reservoir, from the dam to the head of the backwater of the contributing stream. If the reservoir is composed of two or more principal arms, give the sum of the lengths and specify the length of each main arm in a footnote in Item 47. Give the average width by dividing the surface area by the summation of the lengths.
- 18. Give the entire flow-contributing drainage area above the dam.
- 19. Give the drainage area exclusive of the surface area of the reservoir at the spillway crest elevation (Item 9) and exclusive of the upstream non-contributing basins or the watersheds above the larger reservoirs that are effective sediment traps.

20. Give the length of the total drainage area along the center line of the main stream valley. The average width is the area in Item 18 divided by the length in Item 20.
21. The maximum elevation would be the highest point of the watershed boundary. The minimum elevation of the watershed should be the lowest original stream-bed elevation at the axis of the dam. This elevation is used to determine the height of the dam.
- 22-24. Give the longest available recorded mean value. If known, include in parentheses the number of years of record.
22. Give the average annual precipitation value for the total drainage area. If the mean annual precipitation varies widely for different parts of the watershed, record the range of values, for example, "18-35".
23. Mean annual runoff in inches may be obtained from direct measurement; from published reports such as USGS Water Supply Papers; by transposing known data from similar adjacent watersheds; or from average annual runoff maps such as USGS Circular 52. The source of data may be shown by footnote with explanation under Item 47.
24. The mean annual runoff in acre-feet may be obtained by multiplying Item 23, mean annual runoff in inches, by Item 18, total drainage area in sq. mi., times the conversion factor 53.33.
25. The mean annual temperature and the average annual range in temperature should be given in degrees Fahrenheit.
26. Give the date of the beginning of storage, if used to compute sedimentation, or the average date (month, day, and year) of the first reservoir survey, and of all succeeding surveys used in computing sedimentation. The original data from which the sedimentation record begins and the subsequent data should be given under Items 26, 29, 30, 31, 32, and 33, but the original data should not be repeated under Item 26 below or in parallel boxes from Item 34 through Item 42, inclusive.
27. Give the elapsed period between the beginning of storage or the first survey used to compute sedimentation (whichever is the more recent date) and between the average dates of each succeeding sedimentation survey. Compute to the nearest 0.1 year. If computations have been carried out to the nearest 0.01 year, two decimal places may be shown.
28. Give the accumulative period from the beginning of storage or the first survey used to compute the sedimentation (whichever is the more recent date) to each succeeding sedimentation survey. Compute to the nearest 0.01 year, two decimal places may be shown.

29. Indicate "Range" or "Contour" and "Detailed" or "Reconnaissance" as applicable. Detailed may be shown by the symbol "(D)"; reconnaissance by "(R)". A detailed range survey is defined as one in which instrumental control of all sounding and spudding positions in the lake was maintained. Where this was not done, the survey should be labeled as "(R)". In a few cases, where instrumental control was not maintained, but the number of ranges and observations per range were substantially the same as those made on a detailed survey the designation "Semi-Detailed" may be used. The symbol for this should be "(S)". A contour survey to be labeled "(D)" should conform with at least standards of third order accuracy for topographic mapping (1 in 5000). If the contouring was of a sketchy or very generalized nature, designation should be "(R)". All contouring done with Kelsh Plotters and similar equipment shall be considered "(D)", but sketching of contours with portable stereoscope shall be considered "(R)".
30. Give the number of ranges or the contour interval. If a reconnaissance survey, give the number of individual measurements. The letter "(M)" should follow to indicate that they are measurements and not ranges. Where a combination range and contour survey is made the symbol "(R)" should follow the number of ranges and "(CI)" should follow the contour interval.
31. The surface area at the spillway crest elevation (use the elevation of Item 9 to obtain the first entry). If the areas of different allocated storages have been determined each should be referenced with a footnote to be shown in Item 47.
32. The first figure entered should be the original capacity (below the spillway crest elevation, Item 9). If the capacities for different allocated storages have been determined these should be shown and each referenced with a footnote in Item 47. If the original capacity was not determined, give the first accurate capacity determined after the beginning of storage and note the date.
33. Capacity-Inflow ratio.  $C/I = \text{Item 32} \div \text{Item 24}$ . Use the maximum capacity for the date (Item 32) for which the C/I ratio is being calculated and divide by the mean annual runoff in acre-feet (Item 24). This ratio should be adjusted if there are one or more upstream reservoirs that have a significant trap efficiency and control a substantial part of the drainage area (usually more than 25 percent).
34. Give the mean annual precipitation over the drainage area for each period of years given in Item 27. If there is a substantial variation in precipitation for different parts of the drainage area, give the range as "10-23".
35. In 35a give the average annual water inflow to the reservoir, in acre-feet, for each period of years given in Item 27. The highest

annual for each period, in acre-feet, is to be given in Item 35b, and the total for each period is given in Item 35c.

36. Give the water inflow, in acre-feet, to the reservoir for the accumulated periods of years given in Item 28.
37. In Item 37a, give the volume of capacity loss below crest (Item 9) for the periods of years given in Item 27. Item 37b is obtained by dividing the volume given in Item 37a by the corresponding period of years shown in Item 27. Item 37c is obtained by dividing the value in 37b by the net sediment contributing area shown in Item 19.
38. In Item 38a give the accumulative total sediment deposits below crest for the period or periods of years given in Item 28. Item 38b is obtained by dividing the value of Item 38a by the corresponding accumulative years shown in Item 28. Item 38c is determined by dividing Item 38b by the net sediment contributing area shown in Item 19. If the above-crest deposits exist and are measured, add their volume to the below-crest deposits in Items 38a, b, and c, and also give these total values just under the other values. Where above-crest deposits are included, they should be referenced with a footnote and explained in Item 47, REMARKS AND REFERENCES. (See Notes C and D).
39. Weighted average dry weight in pounds per cubic foot of sediment in place in the reservoir. Since the dry weight of deposits tends to increase with time due to compaction, an average dry weight for the total deposit should be measured or estimated at the time of each survey. If assumed values are used, indicate by asterisk. (See Note A).

40. Compute the values as follows:

Item 40a = for first survey, Item 38c x Item 39 x 21.78

Item 40a = for subsequent surveys:

$$\left[ \frac{\left( \begin{array}{cc} \text{Item 38a} & \text{Item 39} \\ \text{for latest} & \text{for latest} \\ \text{survey} & \text{survey} \end{array} \right) - \left( \begin{array}{cc} \text{Item 38a} & \text{Item 39} \\ \text{for preced-} & \text{for preced-} \\ \text{ing survey} & \text{ing survey} \end{array} \right)}{(\text{Item 27 for latest period}) \times (\text{Item 19})} \right] 21.78$$

It is imperative that samples of the sediment representative of the entire period of sediment accumulation be obtained at the time of each survey.

Item 40b = Item 38c x Item 39 x 21.78

41. Compute the values as follows:

Item 41a =  $\frac{\text{Item 38b} \times 100}{\text{Item 14}}$  (Maximum value in item)

$$\text{Item 41b} = \frac{\text{Item 38a} \times 100}{\text{Item 14} \text{ (Maximum value in item)}}$$

42. Compute as follows:

$$\text{Item 42a} = \frac{\text{Item 40a} \times \text{Item 27} \times \text{Item 19} \times 10^6}{\text{Item 35c} \times 1359} = \text{PPM by weight}$$

$$\text{Item 42b} = \frac{\text{Item 38a} \times \text{Item 39} \times 1,000,000}{\text{Item 36b} \times 62.4} = \text{PPM by weight}$$

43. If elevation-capacity curves are developed, select the appropriate intervals in feet below and above the crest. Give the percentage of the total sediment deposits located within each depth designation (elevation zone). For example:

$$\begin{array}{l} \text{(depth range)} \\ \text{(\% of sed't)} \end{array} = \begin{array}{cccccccc} \frac{122-100}{4} & \frac{100-85}{5} & \frac{85-70}{6} & \frac{70-60}{7} & \frac{60-50}{7} & \frac{50-40}{9} & \frac{40-30}{10} \\ \frac{30-20}{12} & \frac{20-10}{15} & \frac{10-\text{Crest}}{18} & \frac{\text{Crest}+15}{5} & \frac{+15+25}{2} \end{array}$$

44. The sediment distribution in percent according to distance from the dam. The reach designation is the percent of the distance from the dam to the maximum upstream extent of the spillway-crest contour at the elevation given in Item 9 at the date of the beginning of storage. Thus, 20 percent would be 1/5 of the distance from the dam to the head of backwater at the original crest stage.
45. List the maximum and minimum water elevations and the total inflow in acre-feet for each water year of record.
46. Give data from the elevation-capacity curve for the latest survey shown on Item 26. Be sure to label each survey date on the form. If space permits, give data from the elevation-capacity curve for the original survey.
47. List here all published and unpublished reports on sedimentation surveys of this reservoir. All footnote explanations are to be shown in this space. Also note and give any pertinent data, including dates of abnormal operational occurrences, such as reservoir evacuation; sluicing out sediment; releasing density currents; extreme floods and droughts; changes in spillway-crest elevation; use of flash boards; and the installation of upstream control structures. Briefly describe the sediment and any available textural analyses. If needed, use continuation sheets.
48. Give the department, agency, and division, branch, or field office responsible for each survey.
49. Give the agency and department reporting the data.
50. Give the date this form was prepared by the office listed in Item 49.

RESERVOIR SEDIMENT  
DATA SUMMARY  
SCS-34 Rev. 6-66

Six Mile Creek, Site No. 3  
NAME OF RESERVOIR

U. S. DEPT. OF AGRICULTURE  
SOIL CONSERVATION SERVICE

23-  
DATA SHEET

|                    |                                                 |                                                   |                                     |                                     |                                               |                             |                                  |  |
|--------------------|-------------------------------------------------|---------------------------------------------------|-------------------------------------|-------------------------------------|-----------------------------------------------|-----------------------------|----------------------------------|--|
| DAM                | 1. OWNER Enlo Conserv. District                 |                                                   |                                     |                                     | 2. STREAM Six Mile Creek                      |                             | 3. STATE New                     |  |
|                    | 4. SEC. 25 TWP. 2N RANGE 4W                     |                                                   |                                     |                                     | 5. NEAREST P.O. 2 mi. E of Nebo               |                             | 6. COUNTY C                      |  |
|                    | 7. LAT. 37° 17' 24" N LONG. 87° 34' 15" W       |                                                   |                                     |                                     | 8. TOP OF DAM ELEVATION 131.0                 |                             | 9. SPILLWAY CRES                 |  |
| RESERVOIR          | 10. STORAGE ALLOCATION                          |                                                   | 11. ELEVATION TOP OF POOL           |                                     | 12. ORIGINAL SURFACE AREA, ACRES              |                             | 13. ORIGINAL CAPACITY, ACRE-Feet |  |
|                    | a. FLOOD CONTROL                                |                                                   | 123.0                               |                                     | 198.0                                         |                             | 2091.9                           |  |
|                    | b. MULTIPLE USE                                 |                                                   |                                     |                                     |                                               |                             |                                  |  |
|                    | c. POWER                                        |                                                   |                                     |                                     |                                               |                             |                                  |  |
|                    | d. WATER SUPPLY                                 |                                                   | 111.0                               |                                     | 124.8                                         |                             | 1002.0                           |  |
|                    | e. IRRIGATION                                   |                                                   |                                     |                                     |                                               |                             |                                  |  |
|                    | f. CONSERVATION                                 |                                                   |                                     |                                     |                                               |                             |                                  |  |
|                    | g. INACTIVE 1/                                  |                                                   | 97.0                                |                                     | 60.2                                          |                             | 491.0                            |  |
| WATERSHED          | 17. LENGTH OF RESERVOIR 1.34 MILES              |                                                   |                                     |                                     | AV. WIDTH OF RESERVOIR 0.23                   |                             |                                  |  |
|                    | 18. TOTAL DRAINAGE AREA 10.14 SQ. MI.           |                                                   |                                     |                                     | 22. MEAN ANNUAL PRECIPITATION 25.13           |                             |                                  |  |
|                    | 19. NET SEDIMENT CONTRIBUTING AREA 9.83 SQ. MI. |                                                   |                                     |                                     | 23. MEAN ANNUAL RUNOFF 1.6                    |                             |                                  |  |
|                    | 20. LENGTH 5.17 MILES AV. WIDTH 1.96 MILES      |                                                   |                                     |                                     | 24. MEAN ANNUAL RUNOFF 865                    |                             |                                  |  |
|                    | 21. MAX. ELEV. 398.0 MIN. ELEV. 76.0            |                                                   |                                     |                                     | 25. ANNUAL TEMP: MEAN 58°F RANGE              |                             |                                  |  |
|                    |                                                 |                                                   |                                     |                                     |                                               |                             |                                  |  |
| SURVEY DATA        | 26. DATE OF SURVEY                              |                                                   | 27. PERIOD YEARS                    |                                     | 28. ACCL. YEARS                               |                             | 29. TYPE OF SURVEY               |  |
|                    | 4-18-48                                         |                                                   | -                                   |                                     | -                                             |                             |                                  |  |
|                    | 6-23-64                                         |                                                   | 16.18                               |                                     | 16.18                                         |                             | Range - Contour(D)               |  |
|                    |                                                 |                                                   |                                     |                                     |                                               |                             | 21 R<br>2 CI                     |  |
|                    |                                                 |                                                   |                                     |                                     |                                               |                             | 60.2 1/2<br>198.0 2/2            |  |
|                    |                                                 |                                                   |                                     |                                     |                                               |                             | 491.0 1/2<br>3584.9 2/2          |  |
|                    | 26. DATE OF SURVEY                              |                                                   | 34. PERIOD ANNUAL PRECIPITATION     |                                     | 35. PERIOD WATER INFLOW, ACRE-Feet            |                             | 36. WATER INFL                   |  |
|                    |                                                 |                                                   |                                     |                                     | a. MEAN ANNUAL b. MAX. ANNUAL c. PERIOD TOTAL |                             | a. MEAN ANNUAL                   |  |
|                    | 6-23-64                                         |                                                   | 24.81                               |                                     | 860                                           |                             | 1033                             |  |
|                    |                                                 |                                                   |                                     |                                     |                                               |                             | 13,930                           |  |
|                    |                                                 |                                                   |                                     |                                     |                                               |                             | 860                              |  |
|                    | 26. DATE OF SURVEY                              |                                                   | 37. PERIOD CAPACITY LOSS, ACRE-Feet |                                     | 38. TOTAL SED. DEPOSITS TO                    |                             |                                  |  |
|                    |                                                 | a. PERIOD TOTAL b. AV. ANNUAL c. PER SQ. MI. YEAR |                                     | a. TOTAL TO DATE b. AV. ANNUAL      |                                               |                             |                                  |  |
| 6-23-64            |                                                 | 197.80 1/2<br>262.44 2/2                          |                                     | 12.22 1/2<br>16.22 2/2              |                                               | 1.24 1/2<br>1.65 2/2        |                                  |  |
|                    |                                                 |                                                   |                                     |                                     |                                               | 197.80 1/2<br>262.44 2/2    |                                  |  |
|                    |                                                 |                                                   |                                     |                                     |                                               | 12.22 1/2<br>16.22 2/2      |                                  |  |
| 26. DATE OF SURVEY |                                                 | 39. AV. DRY WGT., LBS. PER CU. FT.                |                                     | 40. SED. DEP., TONS PER SQ. MI.-YR. |                                               | 41. STORAGE LOSS, PCT.      |                                  |  |
|                    |                                                 |                                                   |                                     | a. PERIOD b. TOTAL TO DATE          |                                               | a. AV. ANN. b. TOT. TO DATE |                                  |  |
| 6-23-64            |                                                 | 67.4 (8)                                          |                                     | 1820 1/2<br>2422 2/2                |                                               | 2.48 1/2<br>0.45 2/2        |                                  |  |
|                    |                                                 |                                                   |                                     |                                     |                                               | 40.28 1/2<br>7.32 2/2       |                                  |  |
|                    |                                                 |                                                   |                                     |                                     |                                               | 20,1                        |                                  |  |

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|                                                                                                                              |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------|-----------------|------------|------------|------------|-----------------|----------|-------|--------|-------|-------|------|------|------|
| 26. DATE OF SURVEY                                                                                                           | 43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
|                                                                                                                              | 123-120                                                               | 120-116    | 116-112         | 112-108    | 108-104    | 104-100    | 100-97          | 97-96    | 96-92 | 92-88  | 88-84 | 84-76 |      |      |      |
|                                                                                                                              | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION            |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| 6-23-64                                                                                                                      |                                                                       |            |                 | 1          | 6          | 19         | 19              | 4        | 10    | 12     | 25    | 4     |      |      |      |
| 26. DATE OF SURVEY                                                                                                           | 44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR   |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
|                                                                                                                              | 0-10                                                                  | 10-20      | 20-30           | 30-40      | 40-50      | 50-60      | 60-70           | 70-80    | 80-90 | 90-100 | -105  | -110  | -115 | -120 | -125 |
|                                                                                                                              | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION            |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
|                                                                                                                              | 2                                                                     | 17         | 19              | 14         | 17         | 10         | 9               | 7        | 10    | 5      |       |       |      |      |      |
| 45. RANGE IN RESERVOIR OPERATION                                                                                             |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| WATER YEAR                                                                                                                   | MAX. ELEV.                                                            | MIN. ELEV. | INFLOW, AC.-FT. | WATER YEAR | MAX. ELEV. | MIN. ELEV. | INFLOW, AC.-FT. |          |       |        |       |       |      |      |      |
| 1949                                                                                                                         | 123                                                                   | 111        | 1011            | 1957       | 115        | 83         | 694             |          |       |        |       |       |      |      |      |
| 50                                                                                                                           | 120                                                                   | 113        | 863             | 58         | 117        | 92         | 912             |          |       |        |       |       |      |      |      |
| 51                                                                                                                           | 118                                                                   | 112        | 996             | 59         | 119        | 96         | 892             |          |       |        |       |       |      |      |      |
| 52                                                                                                                           | 123                                                                   | 111        | 1024            | 60         | 123        | 112        | 1033            |          |       |        |       |       |      |      |      |
| 53                                                                                                                           | 123                                                                   | 108        | 989             | 61         | 123        | 111        | 943             |          |       |        |       |       |      |      |      |
| 54                                                                                                                           | 119                                                                   | 106        | 1002            | 62         | 119        | 109        | 862             |          |       |        |       |       |      |      |      |
| 55                                                                                                                           | 114                                                                   | 97         | 868             | 63         | 123        | 109        | 834             |          |       |        |       |       |      |      |      |
| 56                                                                                                                           | 117                                                                   | 84         | 623             |            |            |            |                 |          |       |        |       |       |      |      |      |
| 46. ELEVATION-AREA-CAPACITY DATA                                                                                             |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| ELEVATION                                                                                                                    | AREA                                                                  | CAPACITY   | ELEVATION       | AREA       | CAPACITY   | ELEVATION  | AREA            | CAPACITY |       |        |       |       |      |      |      |
| Original Capacity - 1948                                                                                                     |                                                                       |            | 96              | 58.0       | 442.3      | 112        | 127.4           | 1587.0   |       |        |       |       |      |      |      |
| 123                                                                                                                          | 198.0                                                                 | 3584.9     | 92              | 45.7       | 330.0      | 108        | 104.5           | 1125.0   |       |        |       |       |      |      |      |
| 120                                                                                                                          | 178.4                                                                 | 2832.0     | 88              | 32.1       | 265.7      | 104        | 83.4            | 750.9    |       |        |       |       |      |      |      |
| 116                                                                                                                          | 151.8                                                                 | 2394.2     | 84              | 21.3       | 170.0      | 100        | 62.1            | 461.6    |       |        |       |       |      |      |      |
| 112                                                                                                                          | 128.9                                                                 | 1679.0     | 80              | 11.7       | 73.0       | 97         | 50.3            | 293.2    |       |        |       |       |      |      |      |
| 108                                                                                                                          | 109.0                                                                 | 1228.3     | 1964 Capacity   |            |            | 96         | 43.1            | 247.0    |       |        |       |       |      |      |      |
| 104                                                                                                                          | 94.2                                                                  | 931.9      | 123             | 198.0      | 3322.4     | 92         | 26.4            | 109.6    |       |        |       |       |      |      |      |
| 100                                                                                                                          | 75.3                                                                  | 658.0      | 120             | 167.5      | 2774.8     | 88         | 17.2            | 23.2     |       |        |       |       |      |      |      |
| 97                                                                                                                           | 60.2                                                                  | 491.0      | 116             | 150.5      | 2140.8     | 84         | 1.27            | 0.0      |       |        |       |       |      |      |      |
| 47. REMARKS AND REFERENCES                                                                                                   |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| 1/ Sediment pool only                                                                                                        |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| 2/ Total reservoir below crest elevation (123.0')                                                                            |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| Land Use in Watershed: 21 percent Woodland; 47 percent Pasture; 18 percent Crop-land; 6 percent Idle; 8 percent Residential. |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| Geology: 25 percent Chaco shale; 18 percent Thomas ls.; 57 percent Orville ss.                                               |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| 48. AGENCY MAKING SURVEY New State Watershed Planning Party, Soil Conservation Service                                       |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |
| 49. AGENCY SUPPLYING DATA Soil Conservation Service 50. DATE Sept. 3, 1966                                                   |                                                                       |            |                 |            |            |            |                 |          |       |        |       |       |      |      |      |



|                                                                         |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------|------------|-------|------------|-------|-----------------|-------|------------|-------|------------|------|------------|------|-----------------|------|----------|--|
| 26. DATE OF SURVEY                                                      | 43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
|                                                                         |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
|                                                                         | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION            |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
|                                                                         |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
| 26. DATE OF SURVEY                                                      | 44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR   |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
|                                                                         | 0-10                                                                  | 10-20      | 20-30 | 30-40      | 40-50 | 50-60           | 60-70 | 70-80      | 80-90 | 90-100     | -105 | -110       | -115 | -120            | -125 |          |  |
|                                                                         | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION            |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
|                                                                         |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
| 45. RANGE IN RESERVOIR OPERATION                                        |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
| WATER YEAR                                                              |                                                                       | MAX. ELEV. |       | MIN. ELEV. |       | INFLOW, AC.-FT. |       | WATER YEAR |       | MAX. ELEV. |      | MIN. ELEV. |      | INFLOW, AC.-FT. |      |          |  |
|                                                                         |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
| 46. ELEVATION-AREA-CAPACITY DATA                                        |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
| ELEVATION                                                               |                                                                       | AREA       |       | CAPACITY   |       | ELEVATION       |       | AREA       |       | CAPACITY   |      | ELEVATION  |      | AREA            |      | CAPACITY |  |
|                                                                         |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
| 47. REMARKS AND REFERENCES                                              |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |
| 48. AGENCY MAKING SURVEY<br>49. AGENCY SUPPLYING DATA<br>50. DATE _____ |                                                                       |            |       |            |       |                 |       |            |       |            |      |            |      |                 |      |          |  |

RESERVOIR SEDIMENT  
DATA SUMMARY

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS

W. Kerr Scott Reservoir  
NAME OF RESERVOIR

DATA SHEET NO.

|                    |                                        |                                    |                                     |                                     |                                    |                        |                                            |                       |                                          |           |                             |                 |                         |      |                                    |
|--------------------|----------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|------------------------------------|------------------------|--------------------------------------------|-----------------------|------------------------------------------|-----------|-----------------------------|-----------------|-------------------------|------|------------------------------------|
| DAM                | 1. OWNER Dept. of Army, C of E         |                                    |                                     |                                     | 2. STREAM Yadkin                   |                        |                                            |                       | 3. STATE North Carolina                  |           |                             |                 |                         |      |                                    |
|                    | 4. SEC. TWP                            |                                    | RANGE                               |                                     | 5. NEAREST P O Wilkesboro, NC      |                        |                                            |                       | 6. COUNTY Wilkes                         |           |                             |                 |                         |      |                                    |
| RESERVOIR          | 7. LAT 36° 9' N " LONG 81° 14' W "     |                                    |                                     |                                     | 8. TOP OF DAM ELEVATION 1,107.5    |                        |                                            |                       | 9. SPILLWAY CREST ELEV 1,075.0           |           |                             |                 |                         |      |                                    |
|                    | 10. STORAGE ALLOCATION                 |                                    | 11. ELEVATION TOP OF POOL           |                                     | 12. ORIGINAL SURFACE AREA, ACRES   |                        | 13. ORIGINAL CAPACITY, ACRE-Feet           |                       | 14. GROSS STORAGE, ACRE-Feet             |           | 15. DATE STORAGE BEGAN      |                 |                         |      |                                    |
|                    | a. FLOOD CONTROL                       |                                    | 1,075.0                             |                                     | 4,000                              |                        | 112,600                                    |                       | 154,000                                  |           | Aug. 22, 62                 |                 |                         |      |                                    |
|                    | b. MULTIPLE USE                        |                                    |                                     |                                     |                                    |                        |                                            |                       |                                          |           |                             |                 |                         |      |                                    |
|                    | c. POWER                               |                                    |                                     |                                     |                                    |                        |                                            |                       |                                          |           |                             |                 |                         |      |                                    |
|                    | d. WATER SUPPLY                        |                                    | 1,030.0                             |                                     | 1,475                              |                        | 33,100                                     |                       | 41,400                                   |           | 16. DATE NORMAL OPER. BEGAN |                 |                         |      |                                    |
|                    | e. IRRIGATION                          |                                    |                                     |                                     |                                    |                        |                                            |                       |                                          |           |                             |                 |                         |      |                                    |
|                    | f. CONSERVATION                        |                                    |                                     |                                     |                                    |                        |                                            |                       |                                          |           |                             |                 |                         |      |                                    |
|                    | g. INACTIVE                            |                                    | 1,000.0                             |                                     | 675                                |                        | 8,300                                      |                       | 8,300                                    |           | Jan. 19, 63                 |                 |                         |      |                                    |
|                    | 17. LENGTH OF RESERVOIR 4.73           |                                    |                                     |                                     | MILES                              |                        |                                            |                       | AV. WIDTH OF RESERVOIR 0.49              |           |                             |                 | MILES                   |      |                                    |
| WATERSHED          | 18. TOTAL DRAINAGE AREA 348            |                                    |                                     |                                     | SQ. MI.                            |                        |                                            |                       | 22. MEAN ANNUAL PRECIPITATION 52.84 (41) |           |                             |                 | INCHES                  |      |                                    |
|                    | 19. NET SEDIMENT CONTRIBUTING AREA 348 |                                    |                                     |                                     | SQ. MI.                            |                        |                                            |                       | 23. MEAN ANNUAL RUNOFF 22.22 (57)        |           |                             |                 | INCHES                  |      |                                    |
|                    | 20. LENGTH 38.5                        |                                    | MILES                               |                                     | AV. WIDTH 9.04                     |                        | MILES                                      |                       | 24. MEAN ANNUAL RUNOFF 412,482           |           |                             |                 | AC. FT.                 |      |                                    |
|                    | 21. MAX. ELEV. 4,100                   |                                    |                                     |                                     | MIN. ELEV. 965.0                   |                        |                                            |                       | 25. ANNUAL TEMP. MEAN 55.8               |           |                             |                 | RANGE -5 to 98 (16)     |      |                                    |
|                    | 26. DATE OF SURVEY                     |                                    | 27. PERIOD YEARS                    |                                     | 28. ACCL. YEARS                    |                        | 29. TYPE OF SURVEY                         |                       | 30. NO. OF RANGES OR CONTOUR INT.        |           | 31. SURFACE AREA, ACRES     |                 | 32. CAPACITY, ACRE-Feet |      | 33. C I RATIO, AC. FT. PER AC. FT. |
| Aug. 1962          |                                        | -                                  |                                     | -                                   |                                    | Range                  |                                            | 8 Ranges              |                                          | 4,000     |                             | 154,000         |                         | 0.40 |                                    |
| May 1971           |                                        | 8.8                                |                                     | 8.8                                 |                                    | Range (D)              |                                            | 20 Ranges             |                                          | 4,000     |                             | 153,826         |                         | 0.40 |                                    |
| May 1978           |                                        | 7.0                                |                                     | 15.8                                |                                    | Range (D)              |                                            | 20 Ranges             |                                          | 4,000     |                             | 151,700         |                         | 0.39 |                                    |
| SURVEY DATA        | 26. DATE OF SURVEY                     |                                    | 34. PERIOD ANNUAL PRECIPITATION     |                                     | 35. PERIOD WATER INFLOW, ACRE-Feet |                        |                                            |                       | 36. WATER INFL. TO DATE, AC.-Feet.       |           |                             |                 |                         |      |                                    |
|                    |                                        |                                    |                                     |                                     | a. MEAN ANNUAL                     |                        | b. MAX. ANNUAL                             |                       | c. PERIOD TOTAL                          |           | d. MEAN ANNUAL              |                 | e. TOTAL TO DATE        |      |                                    |
|                    | Aug. 1962                              |                                    | -                                   |                                     | -                                  |                        | -                                          |                       | -                                        |           | -                           |                 | -                       |      |                                    |
|                    | May 1971                               |                                    | 51.5                                |                                     | 400,326                            |                        | 496,973                                    |                       | 3,502,854                                |           | 400,326                     |                 | 3,502,854               |      |                                    |
|                    | May 1978                               |                                    | 60.78                               |                                     | 566,505                            |                        | 694,033                                    |                       | 3,965,535                                |           | 472,683                     |                 | 7,468,389               |      |                                    |
|                    | 26. DATE OF SURVEY                     |                                    | 37. PERIOD CAPACITY LOSS, ACRE-Feet |                                     |                                    |                        | 38. TOTAL SED. DEPOSITS TO DATE, ACRE-Feet |                       |                                          |           |                             |                 |                         |      |                                    |
|                    |                                        |                                    | a. PERIOD TOTAL                     |                                     | b. AV. ANNUAL                      |                        | c. PER SQ. MI. YEAR                        |                       | d. TOTAL TO DATE                         |           | e. AV. ANNUAL               |                 | f. PER SQ. MI. YEAR     |      |                                    |
|                    | Aug. 1962                              |                                    | -                                   |                                     | -                                  |                        | -                                          |                       | -                                        |           | -                           |                 | -                       |      |                                    |
|                    | May 1971                               |                                    | 174                                 |                                     | 19.8                               |                        | .056                                       |                       | 174                                      |           | 19.8                        |                 | .056                    |      |                                    |
|                    | May 1978                               |                                    | 1191                                |                                     | 170.1                              |                        | .489                                       |                       | 1331                                     |           | 84.2                        |                 | .242                    |      |                                    |
| 26. DATE OF SURVEY |                                        | 39. AV. DRY WGT., LBS. PER CU. FT. |                                     | 40. SED. DEP., TONS PER SQ. MI.-YR. |                                    | 41. STORAGE LOSS, PCT. |                                            | 42. SED. INFLOW, PPM. |                                          |           |                             |                 |                         |      |                                    |
|                    |                                        | a. PERIOD                          |                                     | b. TOTAL TO DATE                    |                                    | a. AV. ANN.            |                                            | b. TOT. TO DATE       |                                          | a. PERIOD |                             | b. TOT. TO DATE |                         |      |                                    |
| Aug. 1962          |                                        | -                                  |                                     | -                                   |                                    | -                      |                                            | -                     |                                          | -         |                             | -               |                         |      |                                    |
| May 1971           |                                        | No sediment samples                |                                     | taken                               |                                    | .01                    |                                            | .11                   |                                          | -         |                             | -               |                         |      |                                    |
| May 1978           |                                        |                                    |                                     |                                     |                                    | .05                    |                                            | .86                   |                                          |           |                             |                 |                         |      |                                    |

|                                                                                                               |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------|-----------------|--------------|------------|------------|-----------------|----------|-------|--------|------|------|------|------|------|
| 26. DATE OF SURVEY                                                                                            | 43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
|                                                                                                               | Inactive Pool                                                         |            |                 | Water Supply |            |            | Flood Control   |          |       |        |      |      |      |      |      |
|                                                                                                               | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION            |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| Aug. 1962                                                                                                     | -                                                                     | -          | -               | -            | -          | -          | -               | -        | -     | -      | -    | -    | -    |      |      |
| May 1971                                                                                                      | 58.0%                                                                 |            |                 | 58.6%        |            |            |                 | -16.6%   |       |        |      |      |      |      |      |
| May 1978                                                                                                      | 85.3%                                                                 |            |                 | 42.7%        |            |            |                 | -28.0%   |       |        |      |      |      |      |      |
| 26. DATE OF SURVEY                                                                                            | 44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR   |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
|                                                                                                               | 0-10                                                                  | 10-20      | 20-30           | 30-40        | 40-50      | 50-60      | 60-70           | 70-80    | 80-90 | 90-100 | -105 | -110 | -115 | -120 | -125 |
|                                                                                                               | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION            |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
|                                                                                                               |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 45. RANGE IN RESERVOIR OPERATION                                                                              |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| WATER YEAR                                                                                                    | MAX. ELEV.                                                            | MIN. ELEV. | INFLOW, AC.-FT. | WATER YEAR   | MAX. ELEV. | MIN. ELEV. | INFLOW, AC.-FT. |          |       |        |      |      |      |      |      |
| 1962 Sep                                                                                                      | 1,024.8                                                               | 975.8      | 27,093          | 1973         | 1,044.20   | 1,025.80   | 654,455         |          |       |        |      |      |      |      |      |
| 1963                                                                                                          | 1,031.1                                                               | 1,024.8    | 369,026         | 1974         | 1,041.40   | 1,029.30   | 611,470         |          |       |        |      |      |      |      |      |
| 1964                                                                                                          | 1,032.5                                                               | 1,026.7    | 327,642         | 1975         | 1,047.30   | 1,029.10   | 617,477         |          |       |        |      |      |      |      |      |
| 1965                                                                                                          | 1,039.4                                                               | 1,026.1    | 496,973         | 1976         | 1,043.40   | 1,023.30   | 465,284         |          |       |        |      |      |      |      |      |
| 1966                                                                                                          | 1,044.0                                                               | 1,029.7    | 380,647         | 1977         | 1,044.35   | 1,021.10   | 473,641         |          |       |        |      |      |      |      |      |
| 1967                                                                                                          | 1,031.3                                                               | 1,029.8    | 334,730         | 1978         | 1,061.20   | 1,027.00   | 482,176         |          |       |        |      |      |      |      |      |
| 1968                                                                                                          | 1,031.6                                                               | 1,029.8    | 440,321         | Oct-May      |            |            |                 |          |       |        |      |      |      |      |      |
| 1969                                                                                                          | 1,037.3                                                               | 1,029.4    | 471,693         |              |            |            |                 |          |       |        |      |      |      |      |      |
| 1970                                                                                                          | 1,060.2                                                               | 1,028.5    | 468,121         |              |            |            |                 |          |       |        |      |      |      |      |      |
| 1971 1/                                                                                                       | 1,032.7                                                               | 1,021.3    | 426,077         |              |            |            |                 |          |       |        |      |      |      |      |      |
| 1972                                                                                                          | 1,047.7                                                               | 1,027.65   | 537,446         |              |            |            |                 |          |       |        |      |      |      |      |      |
| 46. ELEVATION-AREA-CAPACITY DATA                                                                              |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| ELEVATION                                                                                                     | AREA                                                                  | CAPACITY   | ELEVATION       | AREA         | CAPACITY   | ELEVATION  | AREA            | CAPACITY |       |        |      |      |      |      |      |
| 970                                                                                                           | 50                                                                    | 75         | 1050            | 2225         | 76,500     |            |                 |          |       |        |      |      |      |      |      |
| 980                                                                                                           | 125                                                                   | 667        | 1060            | 2775         | 101,700    |            |                 |          |       |        |      |      |      |      |      |
| 990                                                                                                           | 318                                                                   | 2,493      | 1070            | 3550         | 132,700    |            |                 |          |       |        |      |      |      |      |      |
| 1000                                                                                                          | 675                                                                   | 7,169      | 1075            | 4000         | 151,700    |            |                 |          |       |        |      |      |      |      |      |
| 1010                                                                                                          | 1025                                                                  | 15,388     |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 1020                                                                                                          | 1225                                                                  | 26,443     |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 1030                                                                                                          | 1475                                                                  | 39,701     |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 1040                                                                                                          | 1800                                                                  | 55,627     |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 47. REMARKS AND REFERENCES                                                                                    |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 1/ Temporary change in normal pool from elevation 1030 to 1033 beginning September 1971 until September 1973. |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 48. AGENCY MAKING SURVEY U. S. Army Corps of Engineers                                                        |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 49. AGENCY SUPPLYING DATA Charleston District                                                                 |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |
| 50. DATE May 1979                                                                                             |                                                                       |            |                 |              |            |            |                 |          |       |        |      |      |      |      |      |

#### ACKNOWLEDGEMENT

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2. This report was prepared by W. Ted Hauser with the assistance of  
S. Dean Herndon, William H. Durdin, and John L. Sherrill.

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## DEPARTMENT OF THE ARMY

CHARLESTON DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 818  
CHARLESTON, SOUTH CAROLINA 29402

SACEN-PH

31 March 1980

SUBJECT: Sedimentation Report on W. Kerr Scott Reservoir, N. C.

Division Engineer, South Atlantic  
Atlanta, Georgia

### INTRODUCTION

1. Authorization. This report is prepared in accordance with EM 1110-2-4000, dated 15 November 1961, and is the second in a series of reports designed to present comparative results of sedimentation investigations.

2. Purpose and scope. The purpose of this report is to make an evaluation of sedimentation problems related to the presence and operation of the W. Kerr Scott Reservoir, and determine if the accumulated volume of sediment is sufficient to warrant revising the original stage-capacity curve. This report will evaluate the monitoring program for the project and will serve as an instrument for documenting basic field data essential for this and future efforts.

### PROJECT DESCRIPTION

3. Location. The project is located on the Yadkin River in northwestern North Carolina, about 160 miles northwest of Raleigh; 90 miles north of Charlotte and about 5.5 miles west of Wilkesboro. A map showing the dam and reservoir and the vicinity area is presented on Figure 1.

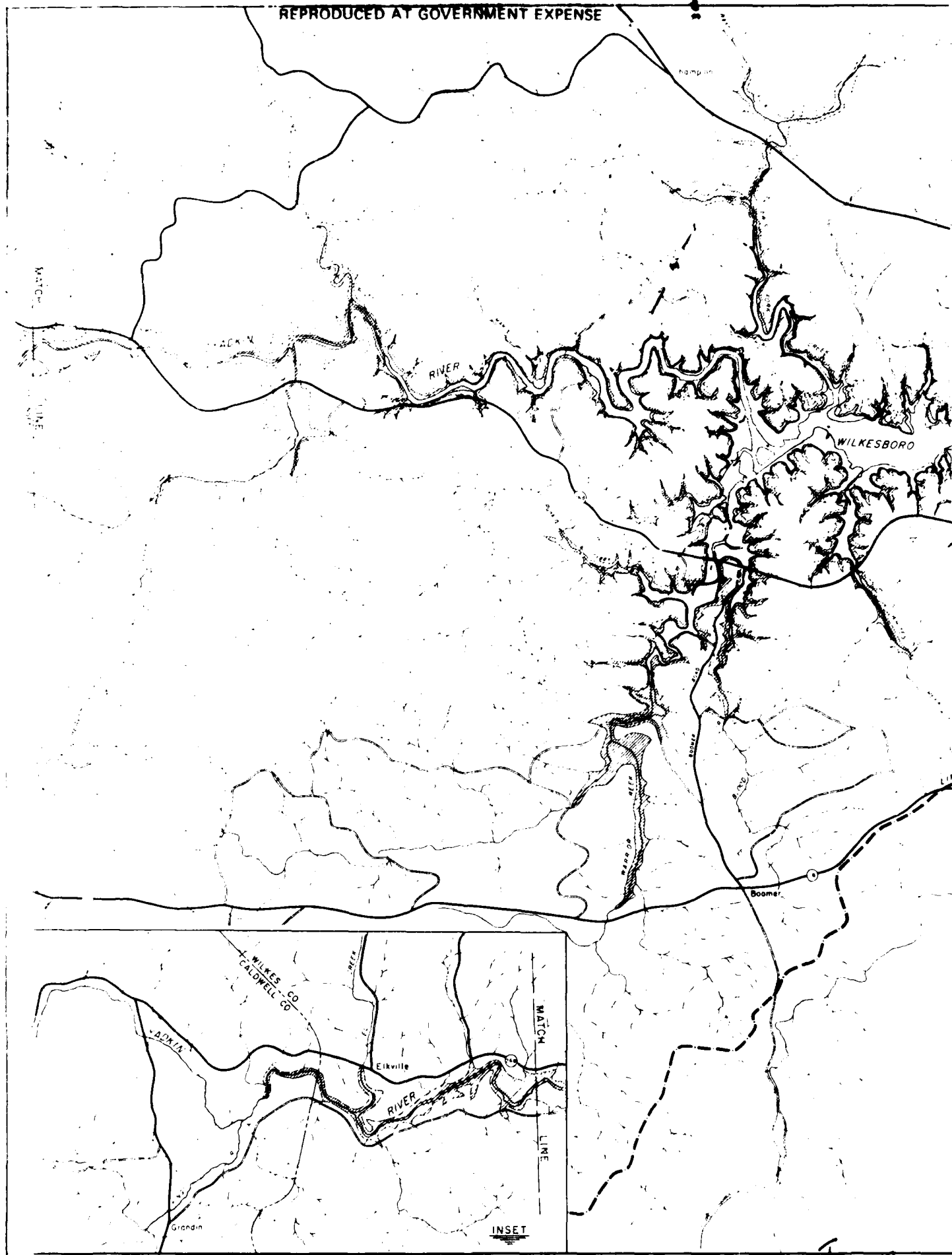
4. Purpose. The W. Kerr Scott Reservoir is a multiple-purpose project operated for flood control and water supply. The original controlled capacity at spillway elevation of 1,075 feet was 154,000 acre-feet. Allocated capacities, related pool elevations and water surface areas for original conditions are shown in Table 1.

TABLE 1  
ORIGINAL AREA - CAPACITY DATA

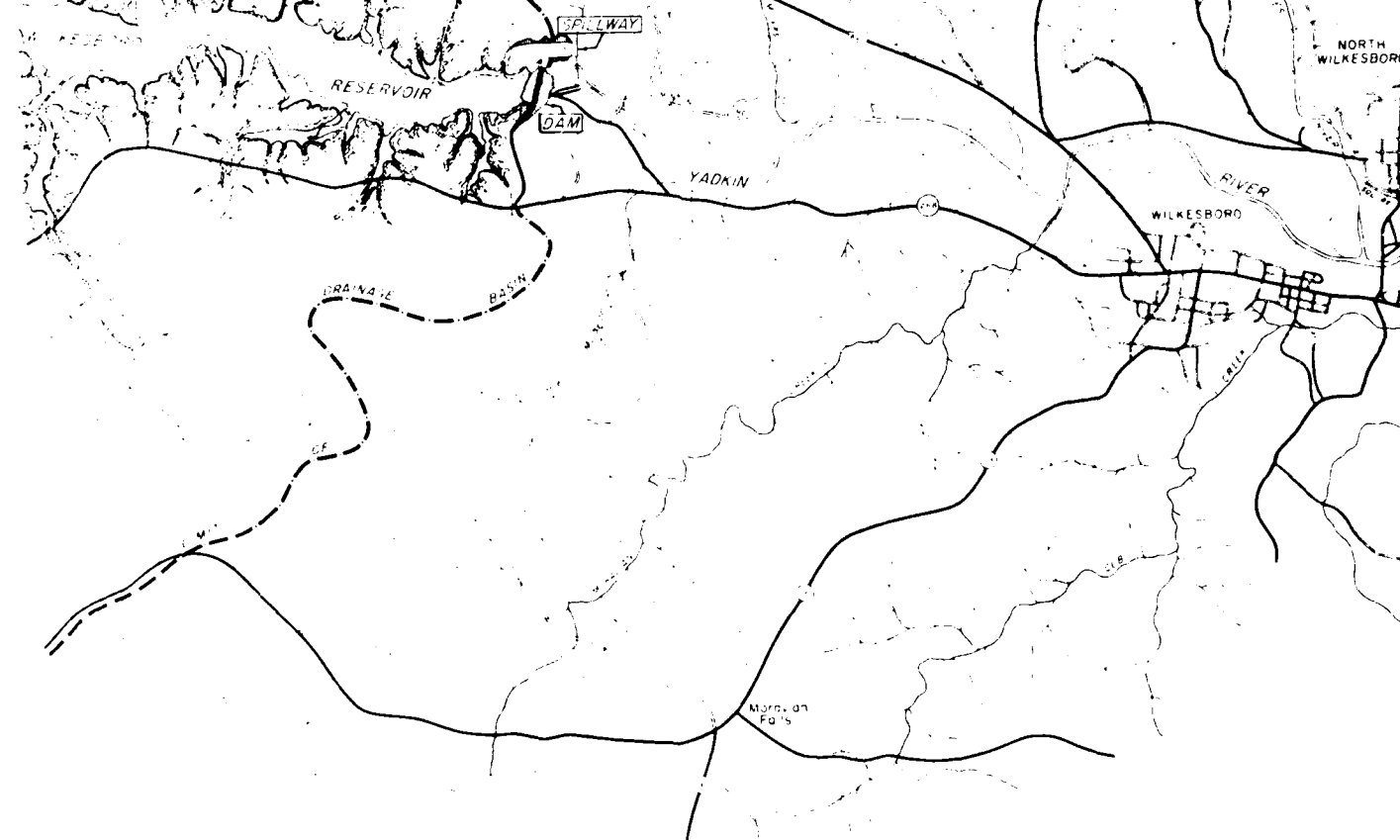
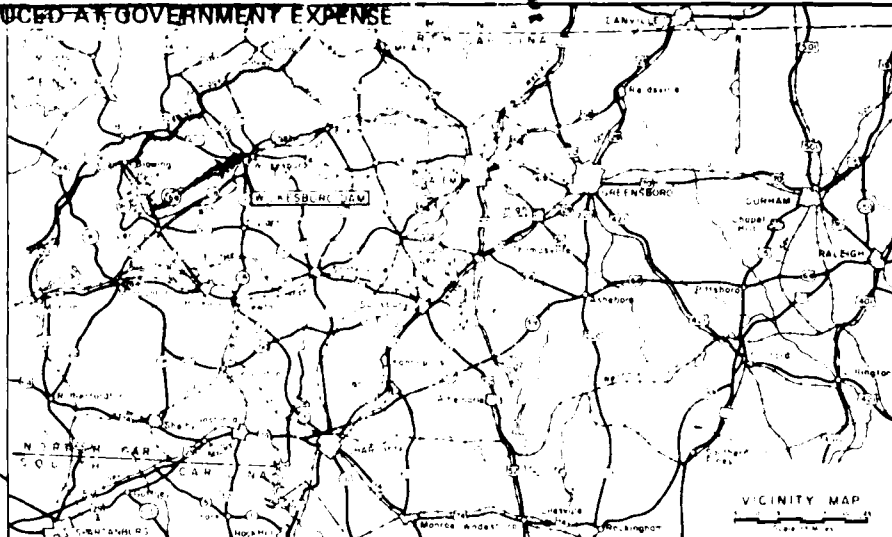
|                                      | Elevation<br>(Ft., M.S.L.) | Surface<br>Area<br>(Ac.) | Total<br>Capacity<br>(AF) | Allocated<br>Capacity<br>(AF) |
|--------------------------------------|----------------------------|--------------------------|---------------------------|-------------------------------|
| Top of flood control pool            | 1075                       | 4000                     | 154,000                   | --                            |
| Flood control storage                | --                         | --                       | --                        | 112,600                       |
| Normal pool                          | 1030                       | 1475                     | 41,400                    | --                            |
| Water supply storage                 | --                         | --                       | --                        | 33,100                        |
| Minimum operative pool               | 1000                       | 675                      | 8,300                     | --                            |
| Sediment and conservation<br>storage | --                         | --                       | --                        | 8,300                         |

5. Watershed characteristics. The Yadkin River Basin above the dam site is a mountainous area of about 348 square miles. Its northerly boundary is the crest of the Blue Ridge Mountains and its southerly boundary the crest of the Brushy Mountains. Location of the drainage area is shown on the vicinity map on Figure 1. The entire watershed with the exception of a narrow valley between the two mountain ranges is a system of ravine-like slopes producing rapid runoff, with the result that storm runoff reaches a crest and recedes in a short time after the occurrence of a storm. The main stem of the river is characterized by relatively steep slopes in the upper reaches and flat gradients in the lower reaches. The average slope of the main stream is about six feet per mile with relatively small valley storage capacity. In contrast, tributaries of the river have steep slopes, particularly those on the north side having headwaters in the Blue Ridge Mountains. In their upper reaches, they flow through steep valleys having little or no flood plain. Stream gradients in some of these regions exceed 500 feet per mile. In their lower reaches, the gradients gradually become less steep as the tributaries flow to their confluence with the Yadkin River. Since the southside tributaries head in the Brushy Mountains, a range of much less elevation than the Blue Ridge, they have correspondingly flatter stream gradients.

6. Geology. The characteristic rock formations apparent in the upper portions of the Yadkin River Basin are of igneous origin consisting of granite, granite gneiss, schist, and quartzite that have been



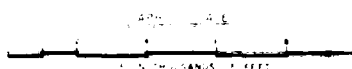
REPRODUCED AT GOVERNMENT EXPENSE



## -LEGEND-

|             |                 |
|-------------|-----------------|
| WATER       | —               |
| RAILROADS   | —+—             |
| MAJOR ROADS | —+—+—           |
| MINOR ROADS | —+—+—+—         |
| POWERS      | —+—+—+—+—       |
| WATER       | —+—+—+—+—+—     |
| WATER       | —+—+—+—+—+—+—   |
| WATER       | —+—+—+—+—+—+—+— |

WATER IN DAM RESERVOIR MEANING



YADKIN RIVER, NORTH CAROLINA

W. KERR SCOTT DAM AND RESERVOIR  
PROJECT LOCATION

U. S. ARMY ENGINEER DISTRICT, CHARLESTON, S. C.

SCALE AS SHOWN

DRAWN BY J. C. C. SHEET 1 OF 1 SHEET FILE NO.

FIGURE 1

subjected to igneous intrusions of traprock or diabase. In general, the overlying material is composed of a deep blanket of silt and clay resulting from the oxidation in place of the granite rocks. The diabase intrusions are evident as narrow dikes or hard durable rocks that have resisted erosion and oxidation.

7. Reservoir features. The dam is a compacted earthfill structure with 1 on 3 side slopes, a top width of 28 feet, and a maximum height of 148 feet above the streambed. A heavy rock blanket of varying thickness is provided on the upstream slope. The embankment is zoned to provide a core of selected impervious material. The zones upstream and downstream of the core are constructed of random fill with the coarser material toward the exterior. A core trench to firm rock with a grout curtain is provided across the flood plain deposits. A combined foundation drainage blanket and inclined chimney drain is provided downstream of the impervious core. The plan and sections of the dam are shown on Figures 2 and 3. Pertinent data for the project are tabulated in Table 2.

8. Spillway. The emergency spillway was excavated through earth and rock in the north abutment. It is ungated and unlined with a crest length of 400 feet at elevation 1075. The training wall along the south side of the spillway is a cantilever T-wall supported on firm rock. Maximum height of exposed wall is about 17 feet. A small concrete sill forms the spillway crest.

9. Outlet works. The outlet works are located at the base of the dam parallel to the southerly boundary of the original flood plain. It consists of an approach channel, an intake structure, a concrete conduit, stilling basin, and discharge channel. A service bridge provides access from the top of the dam to the intake tower.

10. Approach channel. The gate approach channel walls are cantilever T-walls supported on rock. Height of the north wall varies from 16 to 34 feet above the base and the top of the south wall is a constant 42 feet above the base.

11. Gate structure. The gate structure is a reinforced concrete wet well tower with two gate bays. The gate openings are 6.0 by 12.25 feet and transition to a single circular conduit 12.25 feet in diameter. The gate sills are at elevation 965 and the tower roof deck is at maximum pool elevation 1102.5 giving a tower height of 137.5 feet above the base.

TABLE 2  
W. KERR SCOTT DAM AND RESERVOIR  
PERTINENT DATA

DRAINAGE AREAS:

|                               |                  |
|-------------------------------|------------------|
| Yadkin River above dam        | 348 square miles |
| Wilkesboro gage (USGS 2-1120) | 493 square miles |

RESERVOIR DATA:

| <u>Feature</u>                                       | <u>Elevation<br/>(Ft., msl)</u> | <u>Area<br/>(Acres)</u> | <u>Original<br/>Capacity<br/>(Ac.-Ft.)</u> |
|------------------------------------------------------|---------------------------------|-------------------------|--------------------------------------------|
| Top of dam                                           | 1,107.5                         | -                       | -                                          |
| Maximum pool, spillway<br>design flood               | 1,102.5                         | 7,170                   | 306,000                                    |
| Maximum pool, project<br>design flood                | 1,083.0                         | 4,820                   | 190,000                                    |
| Spillway crest                                       | 1,075.0                         | 4,000                   | 154,000                                    |
| Normal pool                                          | 1,030.0                         | 1,475                   | 41,400                                     |
| Minimum pool, (sediment<br>and conservation storage) | 1,000.0                         | 675                     | 8,300                                      |

EMBANKMENT:

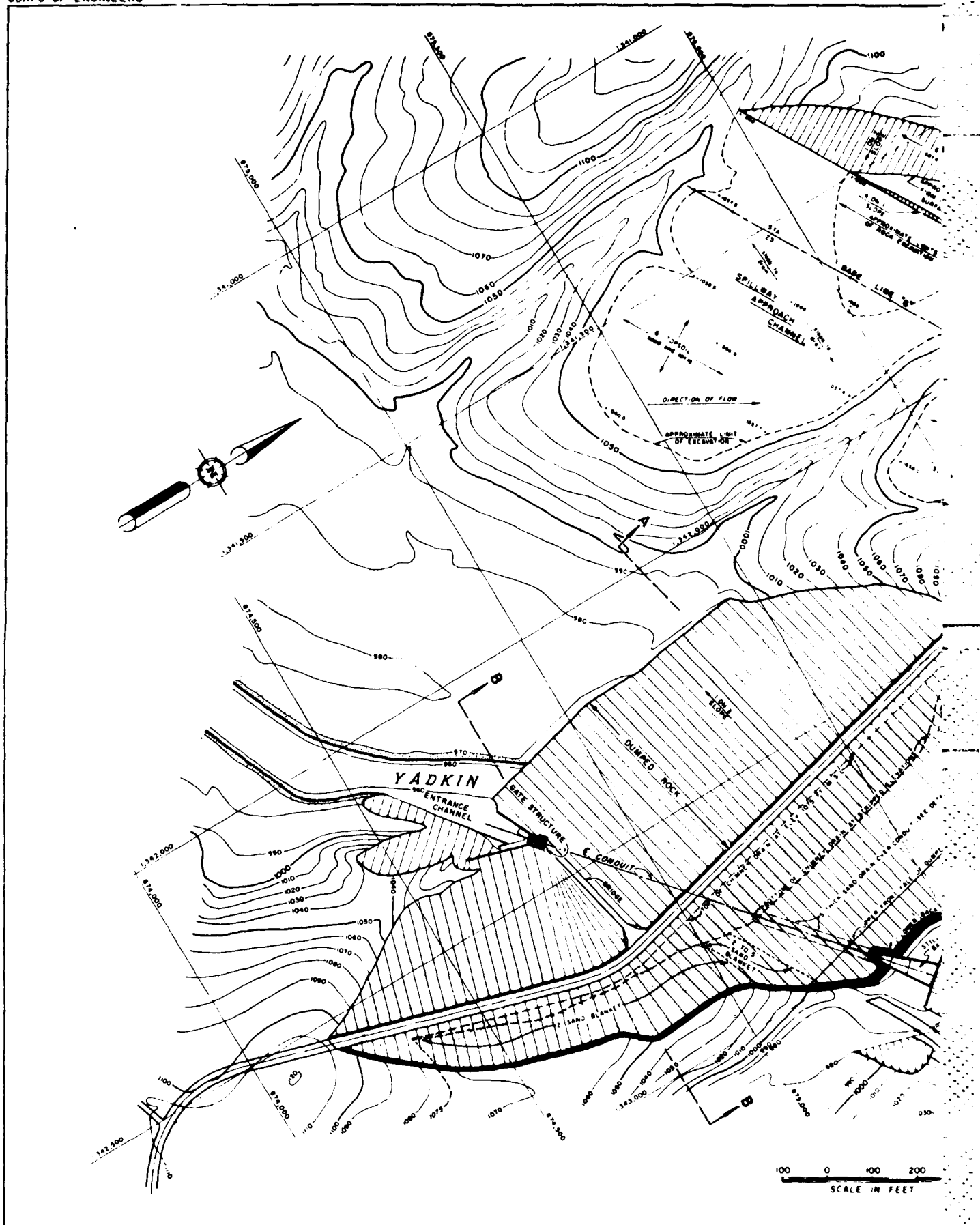
|                                  |                     |
|----------------------------------|---------------------|
| Type                             | Compacted earthfill |
| Height (maximum above streambed) | 148 feet            |
| Length (crest)                   | 1,750 feet          |
| Width (crest)                    | 28 feet             |
| Freeboard                        | 5 feet              |

OUTLET WORKS:

|                                         |                               |
|-----------------------------------------|-------------------------------|
| Type                                    | Circular, reinforced concrete |
| Diameter                                | 12.25 feet                    |
| Length (service gates to outlet portal) | 749 feet                      |
| Invert elevation (entrance)             | 965.0 feet msl                |
| Invert elevation (exit portal)          | 960.0 feet msl                |
| Discharge capacity:                     |                               |
| Normal pool elevation                   | 5,400 cfs                     |
| Maximum pool                            | 6,800 cfs                     |

SPILLWAY:

|                                  |                                                                                             |
|----------------------------------|---------------------------------------------------------------------------------------------|
| Type                             | Ungated, unpaved chute-type with<br>small concrete sill crest and<br>side-channel discharge |
| Location                         | North abutment                                                                              |
| Crest elevation                  | 1,075.0 feet msl                                                                            |
| Crest length                     | 400 feet                                                                                    |
| Capacity (maximum water surface) | 176,500 cfs                                                                                 |
| Side slopes                      | 4 vert. : 1 horiz.                                                                          |





YADKIN-PEE DEE RIVER BASIN

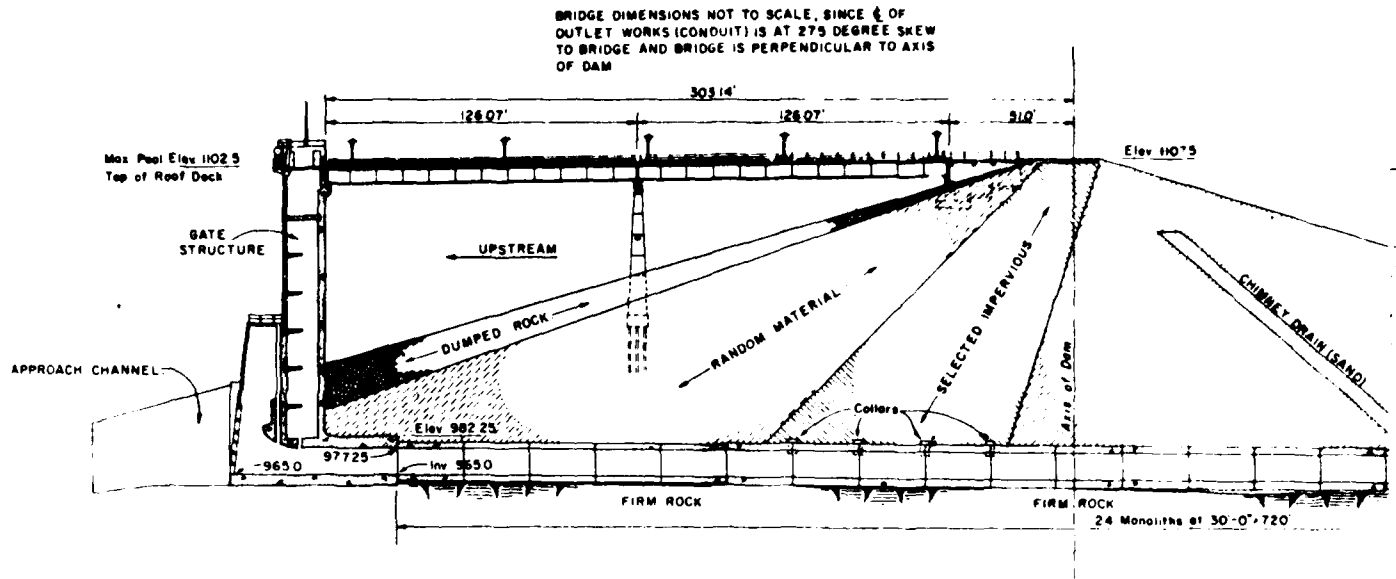
W. KERR SCOTT RESERVOIR  
YADKIN RIVER, N. C.

PLAN OF DAM & SPILLWAY

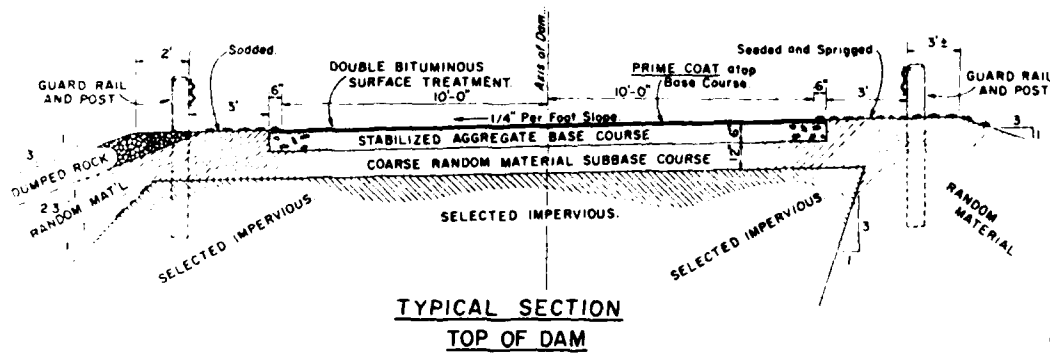
FIGURE 2

# REPRODUCED AT GOVERNMENT EXPENSE

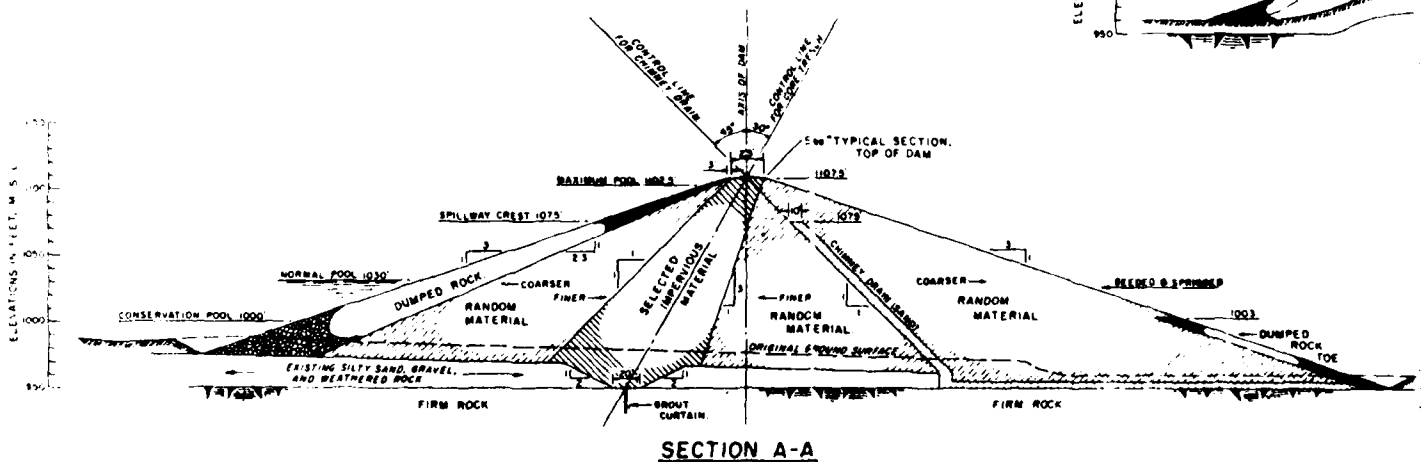
CORPS OF ENGINEERS



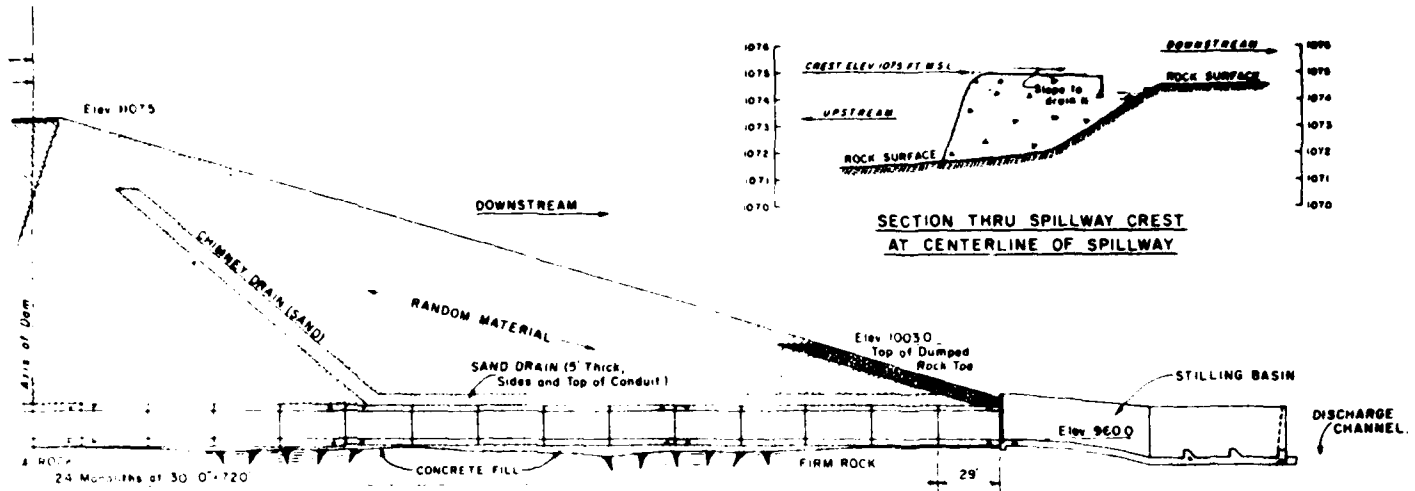
## LONGITUDINAL SECTION THRU CONDUIT



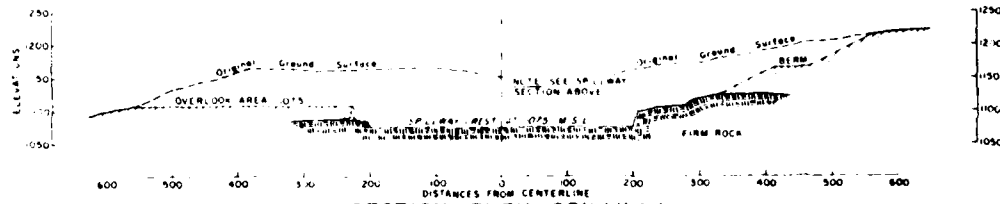
## TYPICAL SECTION TOP OF DAM



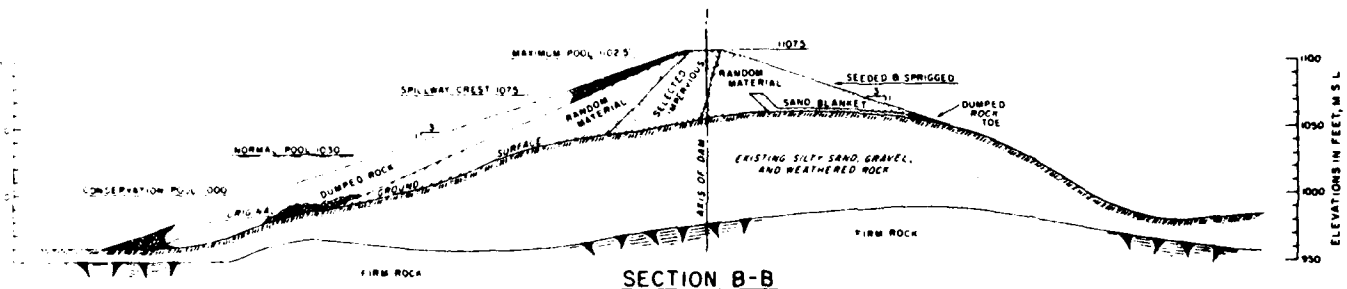
## SECTION A-A



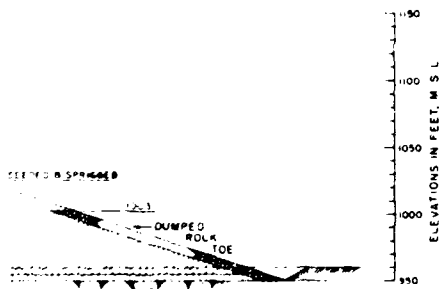
THRU CONDUIT



SECTION THRU SPILLWAY  
AT CREST



SECTION B-B



YADKIN-PEE DEE RIVER BASIN

W. KERR SCOTT RESERVOIR  
YADKIN RIVER, N. C.

SECTIONS OF DAM & SPILLWAY

II

12. Conduit. The 12.25-foot diameter conduit is 749 feet long with monolith joints every 30 feet. Seepage collars are provided at the joints beneath the impervious core. The conduit rests on firm rock or on concrete fill where firm rock is below the base. Maximum height of fill above the conduit is about 129 feet at the axis of the dam.

13. Stilling basin. The chute and stilling basin is a reinforced concrete U-shaped structure with rock anchors and weep holes. It flares from a 12.25-foot width at the conduit outlet to about 54.5 feet at the end sill. The walls extend 23 feet above the basin slab in the stilling basin.

14. Tailwater characteristics. Preconstruction engineering studies revealed that the W. Kerr Scott Reservoir could be operated in an efficient manner without improving the Yadkin River below the dam. A point of control was found three miles below the dam and the channel capacity was rated at 5400 cfs. A routing of the reservoir with average inflow and the outflow limited to 5400 cfs showed that the reservoir could be drawn down from full flood control pool in about two weeks. Hence, 5400 cfs has been adopted as the maximum flood control release rate.

#### NETWORK OF RANGES

15. Original network. Prior to filling the reservoir, plans were formulated for sedimentation studies of W. Kerr Scott Reservoir and degradation studies of the channel below the dam. The original plan included fourteen sedimentation ranges (1-A through 14-A) within the reservoir and three degradation ranges (1-C through 3-C) below the dam. The location of the sedimentation and degradation ranges are shown on Figure A-1, Appendix A. Of these fourteen ranges only eight (1-A through 8-A) were permanently established and surveyed before the initial filling of the reservoir. The survey method used was level and rod for vertical control and chaining for horizontal control.

16. Deficiencies. In 1971, as plans were being formulated to resurvey the eight existing ranges and to permanently establish the remaining six ranges, it was realized that additional coverage was needed in the upper portion of the reservoir for the purpose of monitoring sedimentation. It was determined that six additional ranges were needed. A request was forwarded to higher authority to add ranges 15-A through 20-B to the network as shown on Figure A-1. Verbal permission was received to proceed with their installation.

17. Revised network. The total network now consists of 20 sediment ranges upstream of the dam and three degradation ranges below the dam, as shown on Figure A-1. In 1971, all ranges were surveyed and permanent markers installed for those which had not previously been established. Permanent markers were not installed for degradation ranges, however, field notes contain sufficient data on witness points for location in the future. Terrestrial survey methods used in 1971 were identical to those used in 1962. Hydrographic surveys were made using a fathometer and a tag line.

#### RANGE SURVEYS

18. Results of 1971 survey. Results of the 1971 investigation were presented in a report entitled, "Report on Sedimentation, W. Kerr Scott Reservoir, Yadkin River, North Carolina, Surveys of August 1962 and March, May and June 1971" dated November 1972.

19. The 1978 resurvey. The 1978 resurvey was also a detailed range survey with all sediment and degradation ranges being surveyed as in the 1971 survey. A comparison of the results of the 1978 resurvey with previous surveys at each range is shown in Appendix A.

#### OCCURRENCES OF SEDIMENT

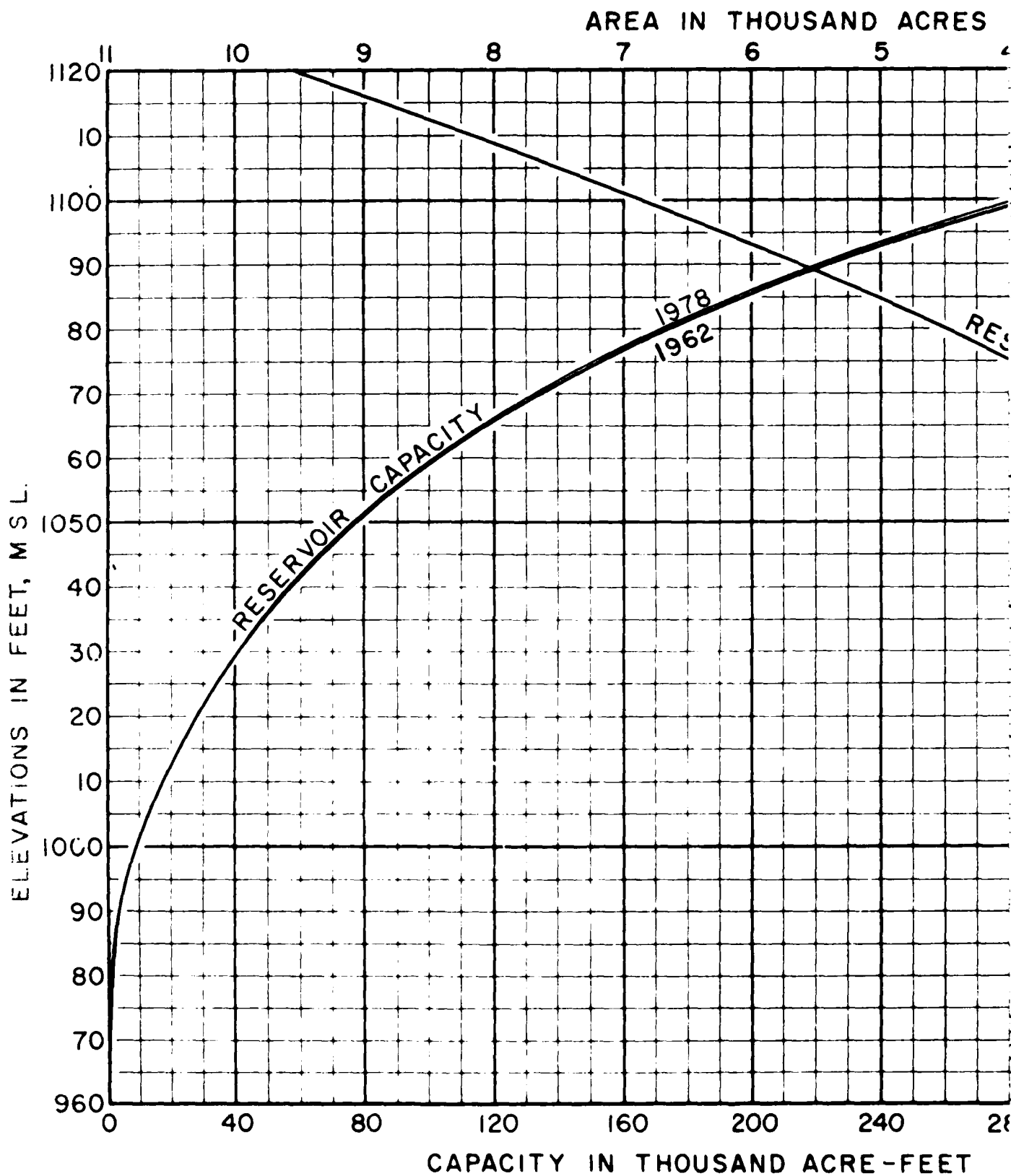
20. Computations. To facilitate computations of volumetric change, coefficients were developed after the 1971 survey which relate increments of cross-sectional area to increments of volume. Derivation of the method, tabulations of coefficients, and an explanation of their use is contained in Appendix B.

21. Volume of sediment in the reservoir. The volume of sediments deposited in W. Kerr Scott Reservoir during the 15.8 years of reservoir operation has been 1,331 acre-feet to elevation 1045.0 or an average of 84 acre-feet per year. During the period between surveys, from May 1971 to May 1978 (7.0 years), a total of 1,191 acre-feet of sediments was deposited with an increased average of 170 acre-feet per year. The change in reservoir capacity in ten-foot increments is shown in Table 3. The original and updated area-capacity curves are shown on Figure 4.

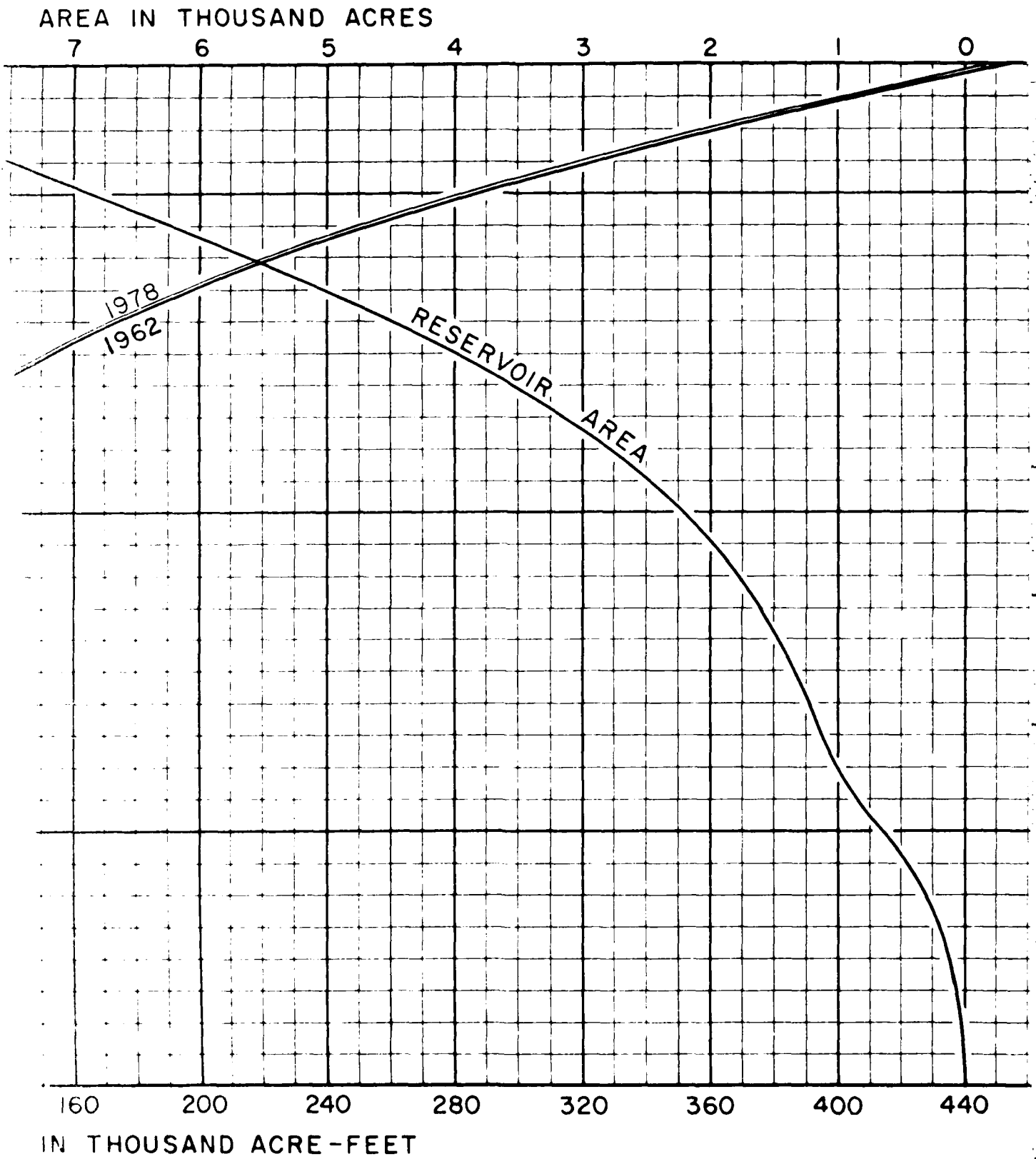
22. Distribution of sediment in the reservoir. Sediment distribution with respect to elevation was calculated to elevation 1045.0 or 15 feet above normal pool. It was anticipated that most of the sediment deposits would be found between elevations 1020 and 1040 since normal pool is 1030; however, 85.3 percent of the total sediment deposits were located below elevation 1000, while 42.7 percent were deposited between elevations 1000 and 1030. A -28.0 percent was found in the flood control pool (above elevation 1030). A comparison of reservoir profiles drawn through the

TABLE 3  
W. KERR SCOTT RESERVOIR  
CHANGE IN RESERVOIR CAPACITY BETWEEN SURVEYS

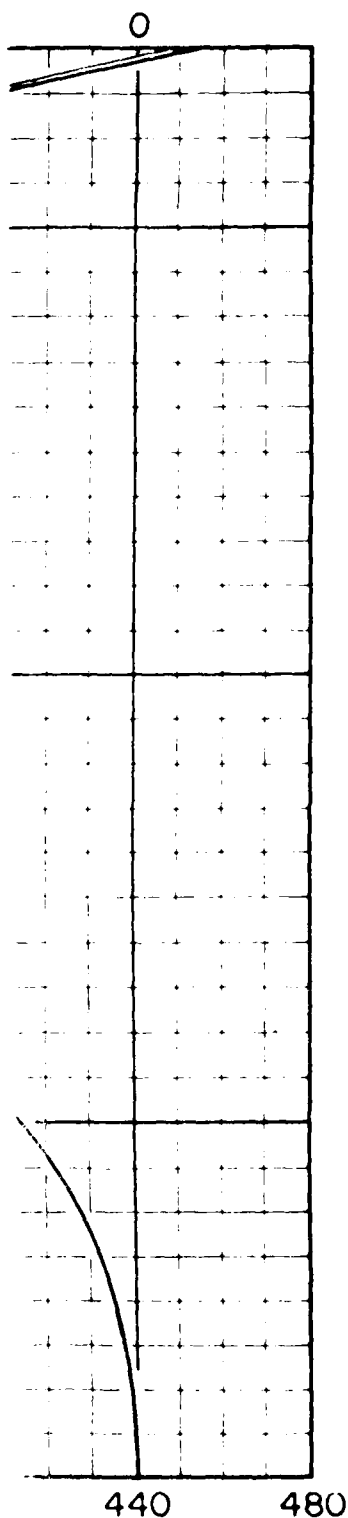
| Range in<br>Elevation<br>(msl) | Capacity (ac-ft)   |                |                  | Change in Capacity (ac-ft) |                      |                          |
|--------------------------------|--------------------|----------------|------------------|----------------------------|----------------------|--------------------------|
|                                | Original<br>Survey | 1971<br>Survey | 1978<br>Resurvey | Original-1971<br>Surveys   | 1971-1978<br>Surveys | Original-1978<br>Surveys |
| 960 - 970                      | 250                | 228            | 75               | - 22                       | - 153                | - 175                    |
| 970 - 980                      | 875                | 792            | 592              | - 83                       | - 200                | - 283                    |
| 980 - 990                      | 2,215              | 2,256          | 1,826            | + 41                       | - 430                | - 389                    |
| 990 - 1000                     | 4,965              | 4,928          | 4,676            | - 37                       | - 252                | - 289                    |
| 1000 - 1010                    | 8,400              | 8,336          | 8,219            | - 64                       | - 117                | - 181                    |
| 1010 - 1020                    | 11,200             | 11,157         | 11,055           | - 43                       | - 102                | - 145                    |
| 1020 - 1030                    | 13,500             | 13,501         | 13,258           | + 1                        | - 243                | - 242                    |
| 1030 - 1040                    | 15,600             | 15,628         | 15,926           | + 28                       | + 298                | + 326                    |
| 1040 - 1045                    | 10,000             | 10,039         | 10,047           | + 39                       | + 8                  | + 47                     |



I



## RESERVOIR AREA AND CAPACITY



| POOL<br>ELEV.<br>(Ft.-M.S.L.) | TOTAL<br>STORAGE<br>(Acre-Ft.) | TOTAL<br>AREA<br>(Acres) | POOL<br>ELEV.<br>(Ft.-M.S.L.) | TOTAL<br>STORAGE<br>(Acre-Ft.) | TOTAL<br>AREA<br>(Acres) |
|-------------------------------|--------------------------------|--------------------------|-------------------------------|--------------------------------|--------------------------|
| 1000                          | 7,169                          | 675                      | 1038                          | 52,442                         | 1,725                    |
| 1001                          | 7,991                          | 700                      | 1039                          | 54,034                         | 1,750                    |
| 1002                          | 8,813                          | 750                      | 1040                          | 55,627                         | 1,800                    |
| 1003                          | 9,635                          | 800                      | 1041                          | 57,636                         | 1,825                    |
| 1004                          | 10,457                         | 850                      | 1042                          | 59,645                         | 1,875                    |
| 1005                          | 11,279                         | 875                      | 1043                          | 61,655                         | 1,925                    |
| 1006                          | 12,100                         | 900                      | 1044                          | 63,664                         | 1,950                    |
| 1007                          | 12,922                         | 925                      | 1045                          | 65,674                         | 2,000                    |
| 1008                          | 13,744                         | 975                      | 1046                          | 67,700                         | 2,050                    |
| 1009                          | 14,566                         | 998                      | 1047                          | 69,700                         | 2,100                    |
| 1010                          | 15,388                         | 1,025                    | 1048                          | 71,700                         | 2,150                    |
| 1011                          | 16,494                         | 1,050                    | 1049                          | 73,900                         | 2,175                    |
| 1012                          | 17,599                         | 1,052                    | 1050                          | 76,500                         | 2,225                    |
| 1013                          | 18,704                         | 1,098                    | 1051                          | 78,700                         | 2,275                    |
| 1014                          | 19,810                         | 1,100                    | 1052                          | 81,000                         | 2,325                    |
| 1015                          | 20,915                         | 1,148                    | 1053                          | 82,900                         | 2,375                    |
| 1016                          | 22,021                         | 1,150                    | 1054                          | 85,700                         | 2,430                    |
| 1017                          | 23,126                         | 1,175                    | 1055                          | 88,200                         | 2,500                    |
| 1018                          | 24,232                         | 1,200                    | 1056                          | 90,700                         | 2,550                    |
| 1019                          | 25,338                         | 1,204                    | 1057                          | 92,700                         | 2,600                    |
| 1020                          | 26,443                         | 1,225                    | 1058                          | 95,700                         | 2,650                    |
| 1021                          | 27,769                         | 1,250                    | 1059                          | 98,700                         | 2,725                    |
| 1022                          | 29,095                         | 1,275                    | 1060                          | 101,700                        | 2,775                    |
| 1023                          | 30,420                         | 1,300                    | 1061                          | 104,700                        | 2,850                    |
| 1024                          | 31,746                         | 1,325                    | 1062                          | 107,700                        | 2,900                    |
| 1025                          | 33,072                         | 1,350                    | 1063                          | 110,700                        | 3,000                    |
| 1026                          | 34,398                         | 1,375                    | 1064                          | 113,700                        | 3,075                    |
| 1027                          | 35,724                         | 1,400                    | 1065                          | 116,700                        | 3,150                    |
| 1028                          | 37,049                         | 1,425                    | 1066                          | 119,700                        | 3,200                    |
| 1029                          | 38,375                         | 1,450                    | 1067                          | 122,700                        | 3,300                    |
| 1030                          | 39,701                         | 1,475                    | 1068                          | 126,200                        | 3,400                    |
| 1031                          | 41,294                         | 1,500                    | 1069                          | 129,700                        | 3,475                    |
| 1032                          | 42,886                         | 1,548                    | 1070                          | 132,700                        | 3,550                    |
| 1033                          | 44,479                         | 1,575                    | 1071                          | 136,200                        | 3,650                    |
| 1034                          | 46,071                         | 1,600                    | 1072                          | 140,700                        | 3,750                    |
| 1035                          | 47,664                         | 1,625                    | 1073                          | 144,700                        | 3,825                    |
| 1036                          | 49,257                         | 1,650                    | 1074                          | 148,700                        | 3,925                    |
| 1037                          | 50,849                         | 1,700                    | 1075                          | 151,700                        | 4,000                    |

YADKIN-PEE DEE RIVER BASIN

W. KERR SCOTT RESERVOIR  
SEDIMENTATION RESURVEY

## AREA-CAPACITY CURVE &amp; TABLE

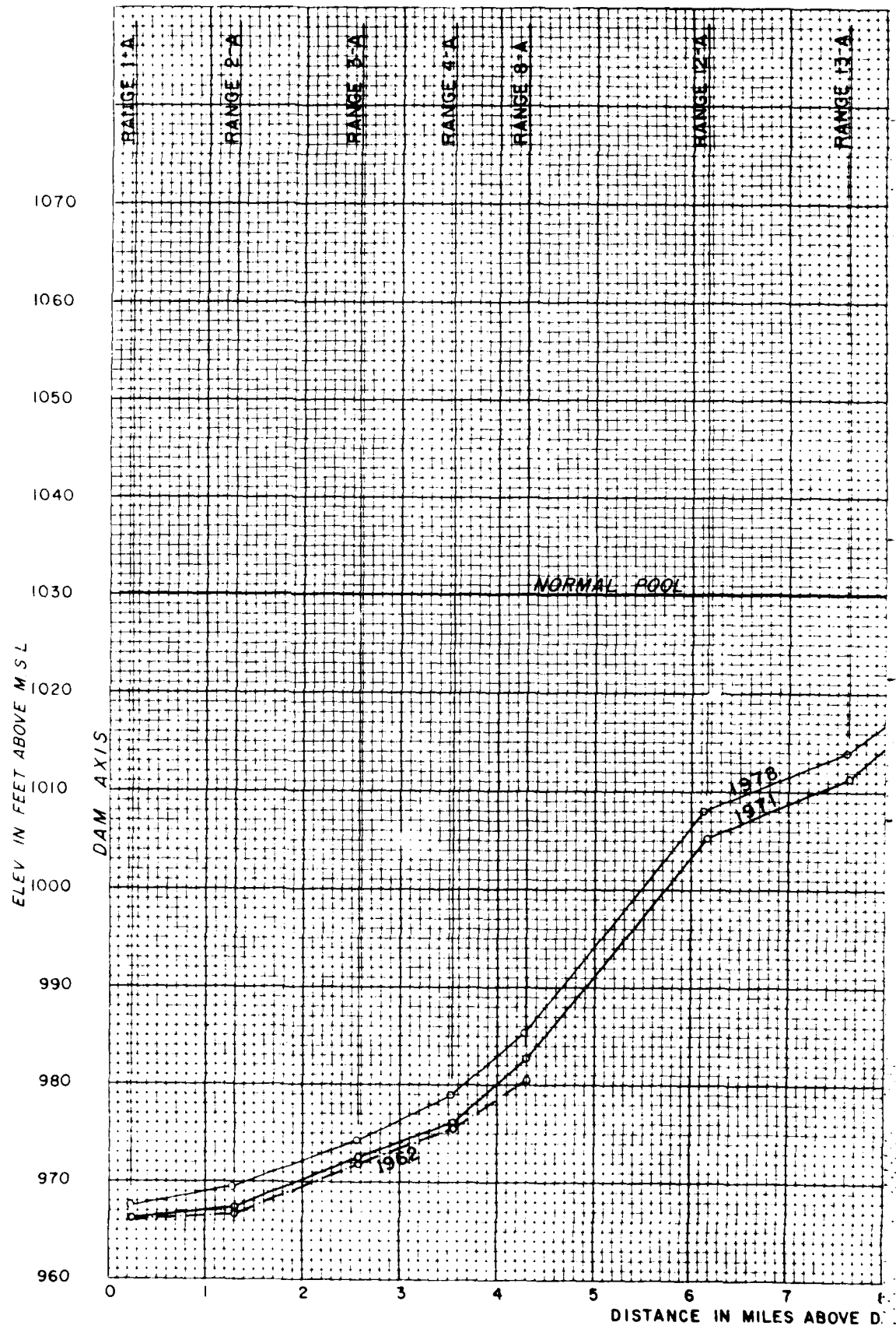
FIGURE 4

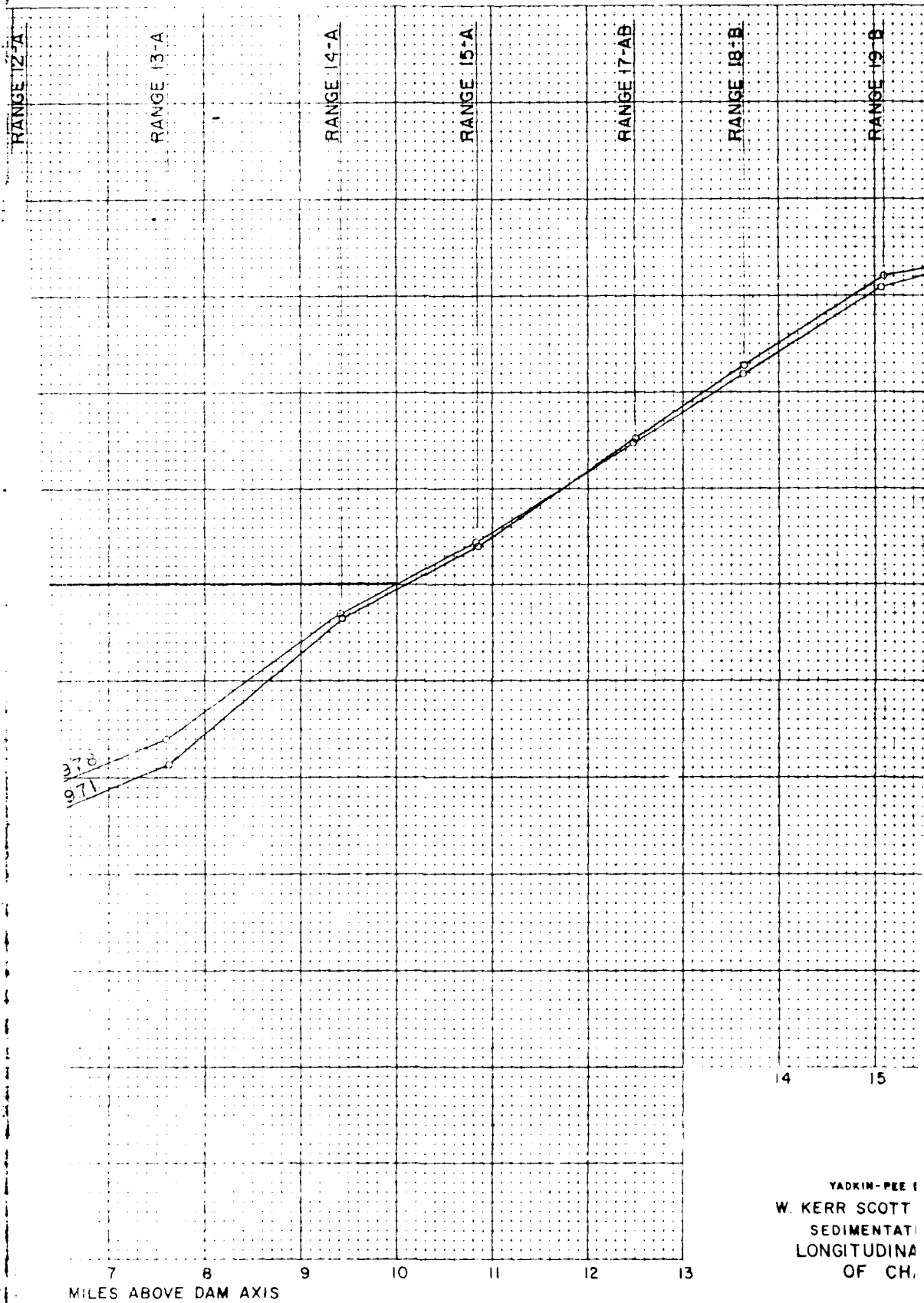
invert of each sedimentation range for each survey are shown on Figure 5. These profiles show that the sediment deposits are fairly evenly distributed below elevation 1020.

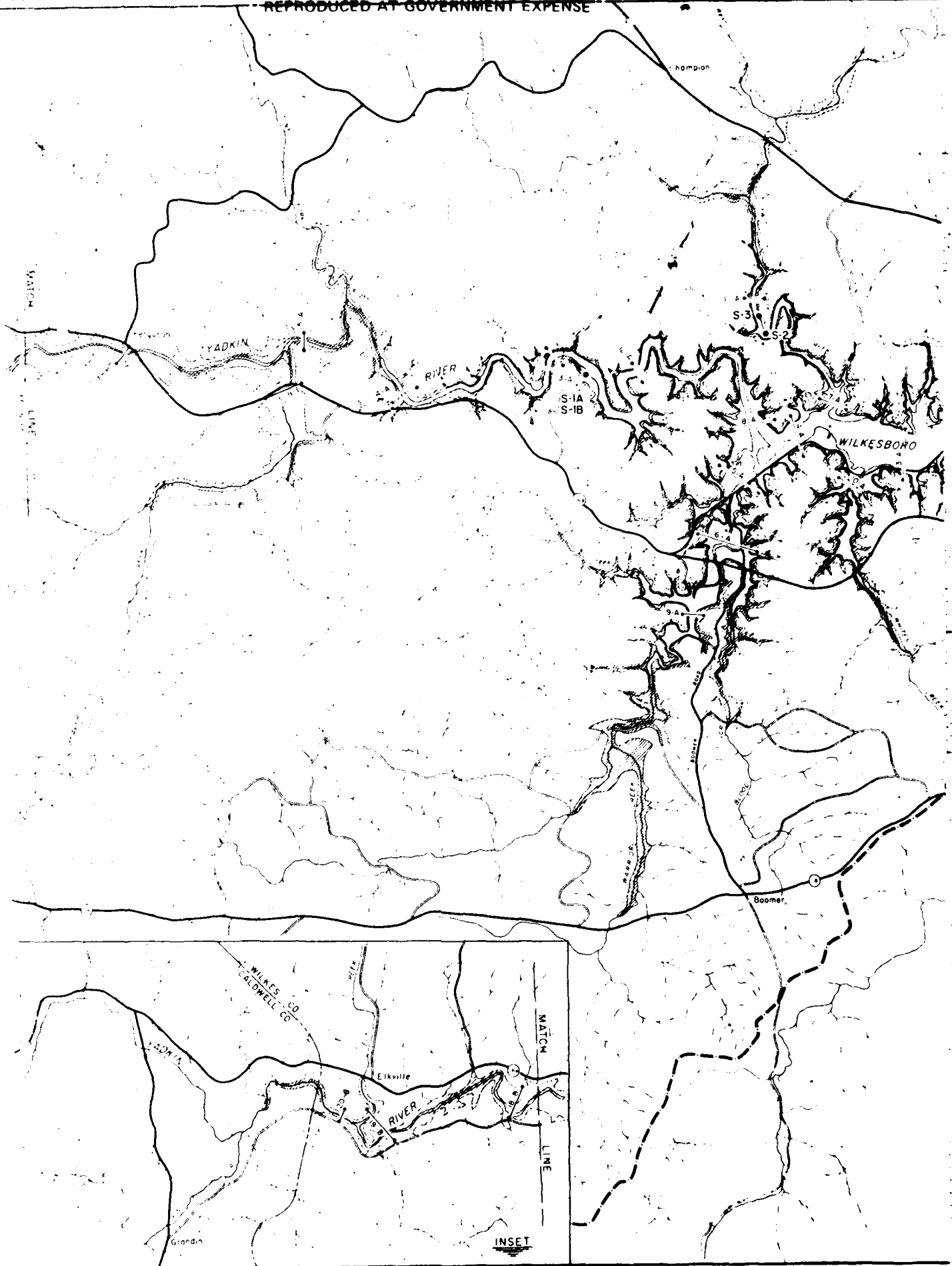
23. Grain size analysis. Taking advantage of a pool drawdown that exposed sediment deposit areas, four sediment samples were obtained on 21 November 1978. The locations from which these samples were taken are shown on Figure 6. A grain size analysis, using a hydrometer, was conducted on all samples taken. Results of these tests are shown in Table 4. Samples S-1A and S-1B were taken at the same location to show the layering of sediment present. Sample S-1A was taken below S-1B. The material contained in each of these samples (S-1A, S-1B) was classified as slightly micaceous with the lower sample containing a poorly graded sand (SP), while the upper sample contained a fine silty sand (ML). The material contained in sample S-2 was classified as a slightly micaceous fine silty sand (SM) and that contained in sample S-3, a slightly micaceous fine clayey sand (SM - SC). All samples were taken in areas where the reservoir bottom was exposed.

24. Densities. To date no density tests have been conducted to determine the amount of compaction occurring in previous sediment deposits.

25. Sediment sources. Cross-sectional plots show that there has been minor redistribution of material along the bottom of the reservoir; however, the major source of sediments is probably from farm lands and apparent lack of reforestation in the tributary areas. Due to stability of the shoreline, bank erosion has not been a major problem except along the banks where old Highway 268 cuts are exposed. Inspection of one of these cuts was made in September 1978 by members of the District staff and reservoir personnel. The following conclusions stem from this inspection as well as from consideration of previous observations. The slope, under no influence of wind, water and wave appears to be adequately stable. However, there is a predominance of sandy and granular soils which readily erode when subjected to wind and wave action. While it is concluded that the periodic fluctuation of the lake level takes its toll on the slope, the largest erosion contributor is the wind and wave action at the base of the slope. The water erodes the slope by undercutting the base and causing the soils upslope to slough downward. This condition is further aggravated by steep slopes that either cannot or will not maintain a vegetative cover. Also, the minor effects of surface runoff cause additional erosion. Once the erosion has advanced to the point of sloughing, the slope will be temporarily stabilized and the mechanism will start all over. Photographs 1, 2 & 3 of Appendix C taken on 21 November 1978 during a pool drawdown show the old Highway 268 cuts. The remaining photographs presented in Appendix C show the sediment deposits that have occurred during the 15.8 years W. Kerr Scott Reservoir has been in existence.







REPRODUCED AT GOVERNMENT EXPENSE

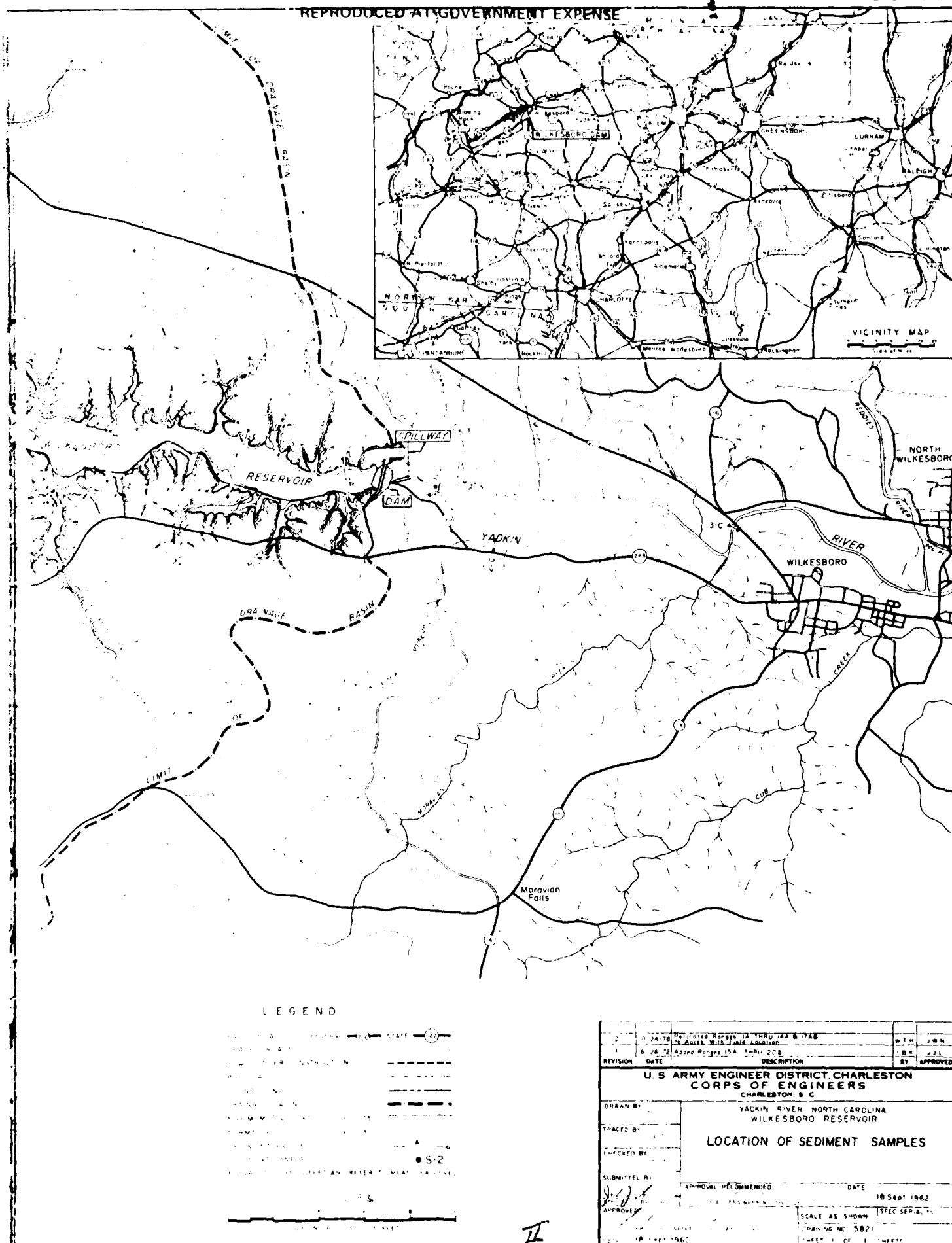


TABLE 4

## RESERVOIR SEDIMENT SAMPLE ANALYSIS

| Sample Number              | <u>S-1A</u> | <u>S-1B</u> | <u>S-2</u> | <u>S-3</u> |
|----------------------------|-------------|-------------|------------|------------|
| Specific Gravity           | 2.70        | 2.68        | 2.64       | 2.64       |
| Mechanical Analysis -      |             |             |            |            |
| Percent of Grain Size (MM) |             |             |            |            |
| 2.380                      | 100.00      | 100.00      | 100.00     | 100.00     |
| 2.000                      | 99.94       | 99.92       | 99.23      | 99.84      |
| .840                       | 99.82       | 98.48       | 96.24      | 99.41      |
| .420                       | 99.18       | 96.11       | 89.83      | 96.62      |
| .250                       | 82.09       | 94.17       | 78.46      | 74.01      |
| .149                       | 25.01       | 91.46       | 61.89      | 33.89      |
| .074                       | 1.82        | 78.53       | 35.98      | 15.04      |
| .051                       | 1.00        | 61.39       | 19.17      | 10.52      |
| .036                       | 0.69        | 46.55       | 13.65      | 7.40       |
| .023                       | 0.10        | 31.40       | 9.40       | 5.70       |
| .011                       | -           | 15.50       | 4.70       | 2.00       |
| .005                       | -           | 7.90        | 2.00       | 2.00       |

## HYDROLOGIC EVENTS OF THE EVALUATION PERIOD

26. Storm of significance. Numerous minor storms have occurred above W. Kerr Scott dam since the last sedimentation survey in 1971. Only one, that of November 1977, has major significance. Runoff stored during this event caused a rise in the flood control pool of 31.2 feet for a record peak pool stage of 1061.2 feet. Releases from the dam were not commenced until it could be assured that they would not increase downstream flooding. An account of this storm, including a history of reservoir operations, is recorded in the "Report of the Flood of 4 through 9 November 1977, Yadkin-Pee Dee River, North and South Carolina," prepared by the U. S. Army Engineer District, Charleston, South Carolina. Monthly peak reservoir stages for the 16-year project life, April 1963 to February 1979, are shown on Figures 7 and 8.

27. Normal inflow conditions. Annual runoff at the reservoir site has averaged 412,482 acre-feet during the past 57 years. The mean annual runoff for the period May 1971 to May 1978 was 566,505 acre-feet, somewhat higher than the 57-year mean. The maximum and minimum monthly inflow was 119,981 and 10,845 acre-feet in November 1977 and October 1963, respectively. Monthly inflows and outflows are given in Table 5 for the 16-year period 1963 to 1978.

28. Drought conditions. During the past seven years since the last sedimentation survey the water supply pool has been drawn down below the elevation 1024 three times. The beginning and ending period and minimum pool obtained during these drawdowns are shown in Table 6. It was noted during the November 1978 field trip that during the time of lowered pool elevations, sediment was sluffing off and being carried downstream into lower pool elevations. This can be observed in several of the photographs in Appendix C.

TABLE 6  
WATER SUPPLY DRAWDOWNS

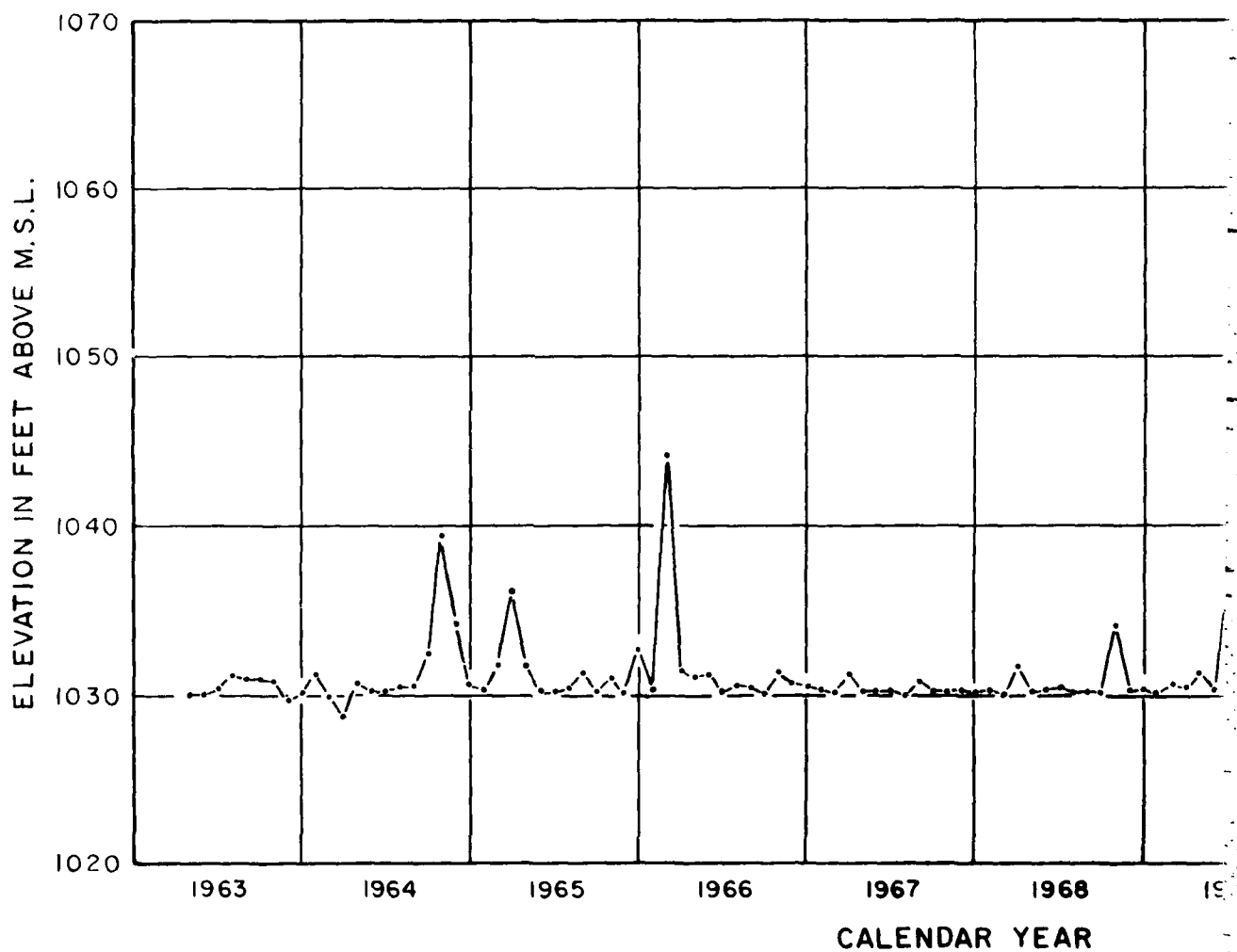
| <u>Beginning</u> | <u>Period</u>  | <u>Ending</u> | <u>Minimum Pool</u> |
|------------------|----------------|---------------|---------------------|
| August 1971      | September 1971 |               | 1021.30             |
| July 1976        | October 1976   |               | 1023.30             |
| July 1977        | September 1977 |               | 1021.10             |

TABLE 5  
INFLOW-OUTFLOW W. KERR SCOTT RESERVOIR

| CALENDAR YEAR               | 1963   | 1964   | 1965   | 1966   | 1967   | 1968   | 1969   | 1970   | 1971   |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <u>Inflow (Acre-feet):</u>  |        |        |        |        |        |        |        |        |        |
| January                     | 30,351 | 38,199 | 37,055 | 19,844 | 33,558 | 41,537 | 28,754 | 38,579 | 29,669 |
| February                    | 22,900 | 45,791 | 52,683 | 78,831 | 28,602 | 28,722 | 40,269 | 37,051 | 50,717 |
| March                       | 91,106 | 40,809 | 77,517 | 41,371 | 40,891 | 44,010 | 45,099 | 35,921 | 43,863 |
| April                       | 31,680 | 44,061 | 51,891 | 31,595 | 22,963 | 34,533 | 49,244 | 41,622 | 33,571 |
| May                         | 32,074 | 19,704 | 35,563 | 44,474 | 25,771 | 32,841 | 33,405 | 33,126 | 47,771 |
| June                        | 23,781 | 18,681 | 28,483 | 23,268 | 21,296 | 29,658 | 67,280 | 24,234 | 28,431 |
| July                        | 21,404 | 22,548 | 25,525 | 16,789 | 25,878 | 21,370 | 27,105 | 18,274 | 32,722 |
| August                      | 15,811 | 25,676 | 33,799 | 22,382 | 25,001 | 18,954 | 36,373 | 98,354 | 27,706 |
| September                   | 15,310 | 24,965 | 19,382 | 31,864 | 19,580 | 13,213 | 29,760 | 25,906 | 34,727 |
| October                     | 10,845 | 61,120 | 33,021 | 26,011 | 20,823 | 34,633 | 30,390 | 33,123 | 52,073 |
| November                    | 17,218 | 34,610 | 19,168 | 34,584 | 29,932 | 22,903 | 36,448 | 37,317 | 49,886 |
| December                    | 19,145 | 39,345 | 18,040 | 30,595 | 40,117 | 25,596 | 48,216 | 26,460 | 47,644 |
| <u>Outflow (Acre-feet):</u> |        |        |        |        |        |        |        |        |        |
| January                     | 20,361 | 37,899 | 37,055 | 20,194 | 33,958 | 41,537 | 28,754 | 39,527 | 29,669 |
| February                    | 25,250 | 46,541 | 52,683 | 79,281 | 28,602 | 28,722 | 40,269 | 36,901 | 50,717 |
| March                       | 91,106 | 40,434 | 77,517 | 41,771 | 40,891 | 43,810 | 45,299 | 35,921 | 43,863 |
| April                       | 31,080 | 41,911 | 51,891 | 29,595 | 22,963 | 34,533 | 49,244 | 41,622 | 33,371 |
| May                         | 32,474 | 22,004 | 35,563 | 46,474 | 25,771 | 33,041 | 33,405 | 33,126 | 47,971 |
| June                        | 23,981 | 17,181 | 28,633 | 23,718 | 21,296 | 29,958 | 67,280 | 24,534 | 28,581 |
| July                        | 19,404 | 22,698 | 25,525 | 16,339 | 25,878 | 21,670 | 27,105 | 19,124 | 32,572 |
| August                      | 17,611 | 24,726 | 33,649 | 22,382 | 24,801 | 18,954 | 36,373 | 97,204 | 34,556 |
| September                   | 13,510 | 21,815 | 19,382 | 31,864 | 19,780 | 13,213 | 29,760 | 26,206 | 26,677 |
| October                     | 14,495 | 64,870 | 33,021 | 26,011 | 20,823 | 34,483 | 32,190 | 32,823 | 47,733 |
| November                    | 16,118 | 34,810 | 19,168 | 34,384 | 29,932 | 22,903 | 36,448 | 38,317 | 50,246 |
| December                    | 17,895 | 39,345 | 17,846 | 30,395 | 40,117 | 25,596 | 47,416 | 26,460 | 47,974 |

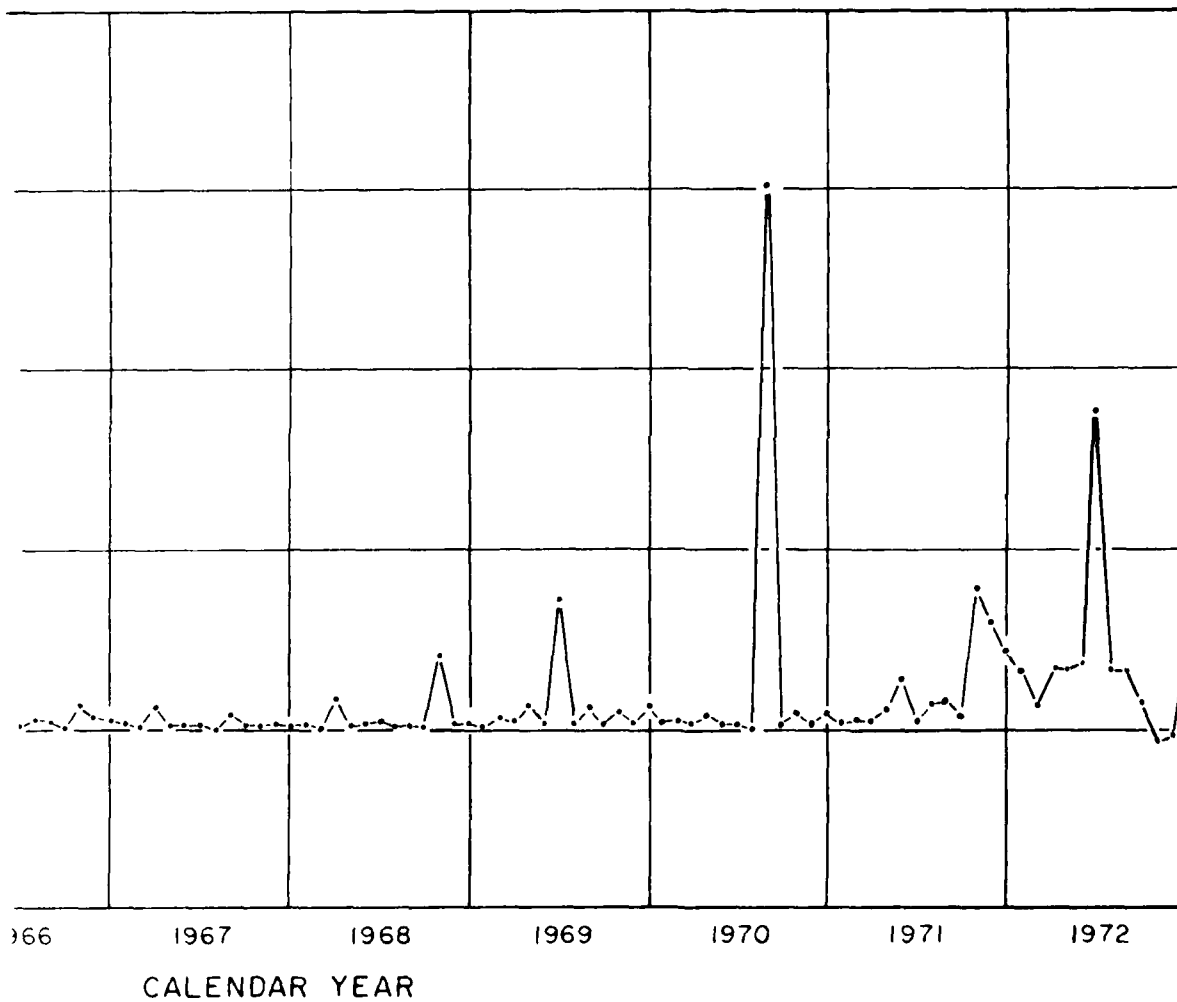
TABLE 5 (Cont.)  
INFLOW-OUTFLOW W. KERR SCOTT RESERVOIR

| CALENDAR YEAR               | 1972   | 1973   | 1974   | 1975    | 1976   | 1977    | 1978   |
|-----------------------------|--------|--------|--------|---------|--------|---------|--------|
| <u>Inflow (Acre-feet):</u>  |        |        |        |         |        |         |        |
| January                     | 50,445 | 42,178 | 59,308 | 42,735  | 50,777 | 28,443  | 79,314 |
| February                    | 40,024 | 60,590 | 51,537 | 46,862  | 36,244 | 24,306  | 37,791 |
| March                       | 42,705 | 86,513 | 46,238 | 108,964 | 35,354 | 62,347  | 68,736 |
| April                       | 42,593 | 82,738 | 77,374 | 63,846  | 38,120 | 65,559  | 46,790 |
| May                         | 66,179 | 86,039 | 50,253 | 65,417  | 36,024 | 34,671  | 56,996 |
| June                        | 64,389 | 57,219 | 47,173 | 82,726  | 61,012 | 31,110  |        |
| July                        | 32,627 | 42,337 | 42,072 | 43,462  | 29,253 | 21,090  |        |
| August                      | 26,487 | 69,872 | 53,738 | 31,492  | 22,462 | 20,463  |        |
| September                   | 22,394 | 32,009 | 49,734 | 43,474  | 22,440 | 34,512  |        |
| October                     | 22,107 | 31,787 | 27,534 | 58,985  | 76,758 | 26,509  |        |
| November                    | 29,301 | 27,970 | 26,167 | 42,466  | 31,211 | 119,981 |        |
| December                    | 43,552 | 74,781 | 34,798 | 32,147  | 43,171 | 46,059  |        |
| <u>Outflow (Acre-feet):</u> |        |        |        |         |        |         |        |
| January                     | 55,295 | 42,178 | 60,708 | 42,735  | 54,302 | 28,727  | 79,314 |
| February                    | 37,724 | 60,590 | 51,537 | 46,862  | 36,244 | 23,826  | 37,595 |
| March                       | 39,645 | 86,153 | 46,138 | 99,043  | 33,389 | 62,543  | 68,032 |
| April                       | 42,953 | 82,198 | 77,479 | 63,767  | 40,322 | 65,559  | 46,594 |
| May                         | 66,179 | 86,219 | 50,253 | 64,434  | 35,787 | 34,376  | 57,192 |
| June                        | 64,209 | 57,939 | 47,323 | 83,709  | 60,914 | 31,405  |        |
| July                        | 32,717 | 42,337 | 41,997 | 43,462  | 29,729 | 25,614  |        |
| August                      | 29,202 | 69,872 | 53,163 | 31,587  | 24,649 | 25,525  |        |
| September                   | 25,894 | 36,809 | 49,734 | 43,379  | 26,761 | 25,824  |        |
| October                     | 26,082 | 31,987 | 27,759 | 59,181  | 69,872 | 25,611  |        |
| November                    | 23,436 | 27,970 | 25,742 | 42,466  | 31,495 | 119,687 |        |
| December                    | 38,177 | 72,381 | 34,998 | 28,622  | 42,887 | 46,353  |        |



NOTE:

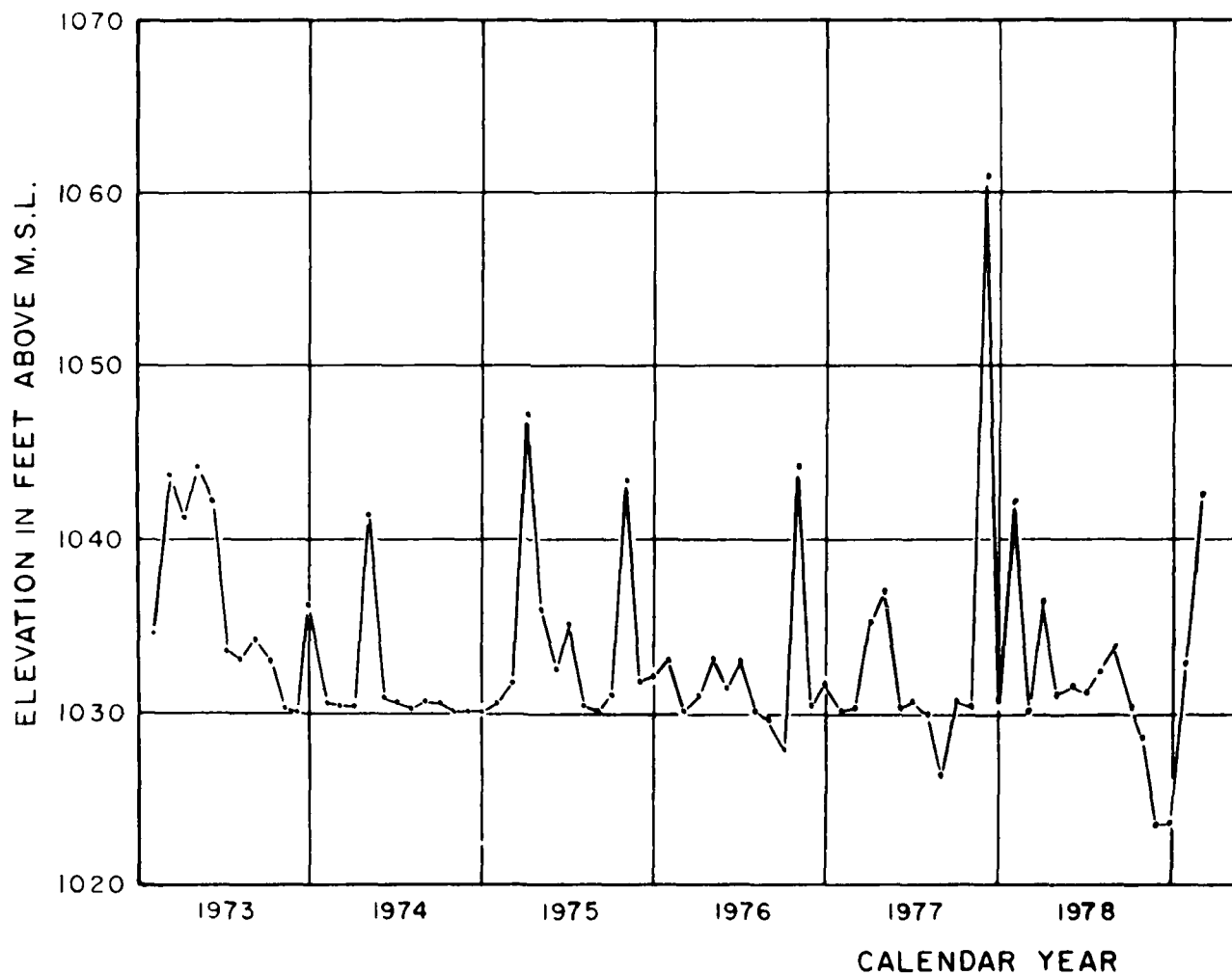
- INDICATES THE HIGHEST POOL STAGE DURING THE MONTH FROM DAILY OPERATION REPORTS.



YADKIN-PEE DEE RIVER BASIN  
W. KERR SCOTT RESERVOIR & DAM  
SEDIMENTATION RESURVEY  
MONTHLY RESERVOIR STAGE  
SCALE AS SHOWN

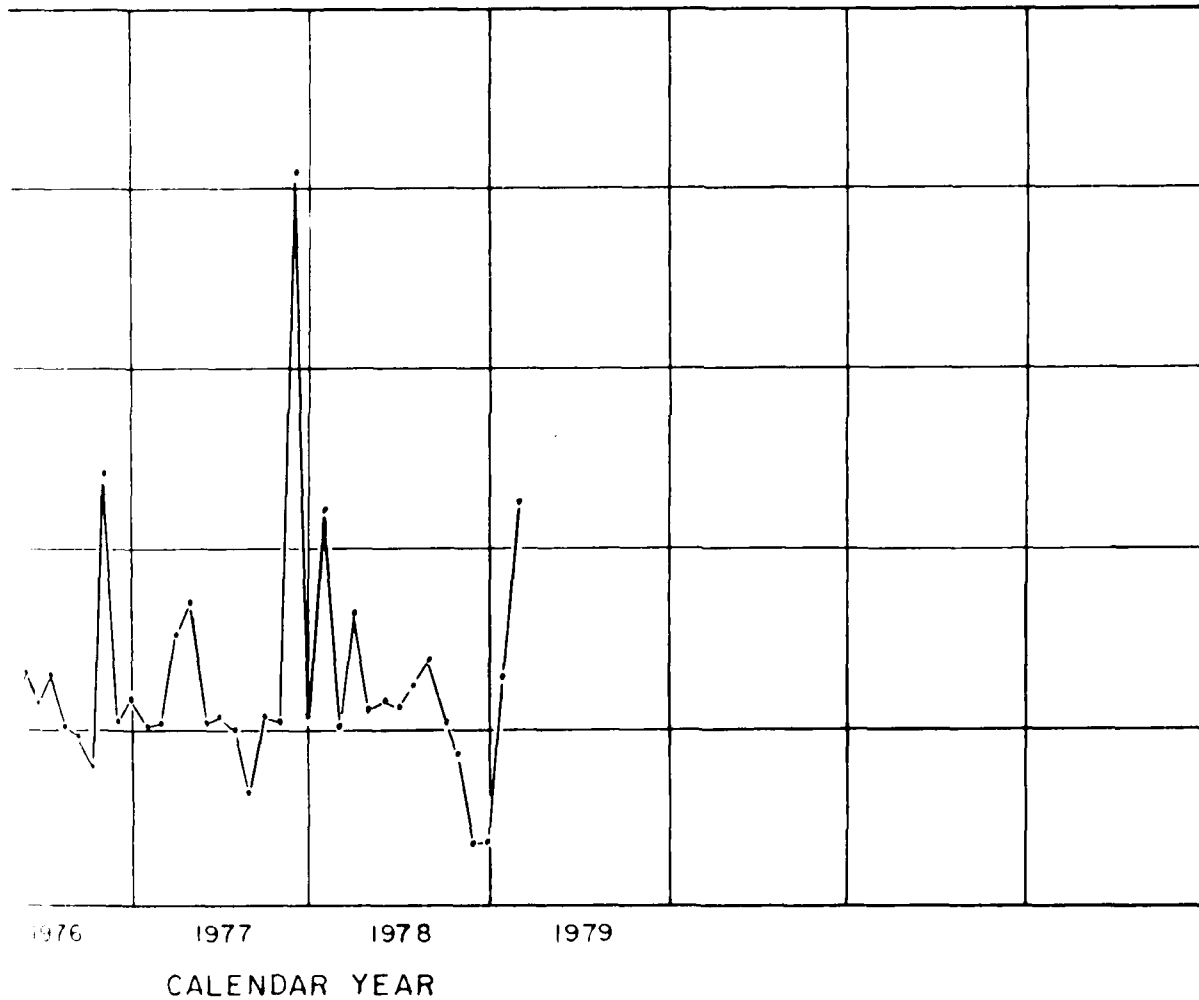
FIGURE 7

II



NOTE:

- INDICATES THE HIGHEST POOL STAGE DURING THE MONTH FROM DAILY OPERATION REPORTS.



STAGE  
FEET

YADKIN-PEE DEE RIVER BASIN  
W. KERR SCOTT RESERVOIR & DAM  
SEDIMENTATION RESURVEY  
MONTHLY RESERVOIR STAGE  
SCALE AS SHOWN

FIGURE 8

## RELATIONSHIP OF HYDROLOGIC EVENTS FOR SEDIMENTATION RATES

29. Effects of sediment on storage. Sediment deposits having their source outside the reservoir deplete available storage while those originating from within tend only to redistribute stage capacity relationships. Effects of sediment deposits on project purposes, based on the information collected to date, are discussed in the following paragraphs.

30. Adequacy of storage allocated to sediment. The original allocation of storage for sediment was based upon siltation data for 13 reservoirs in North Carolina having similar watershed topography and ground cover. Their average annual sediment accumulation value of 0.4 acre-foot per square mile of drainage area was adopted. Thus far the sedimentation pool has been reduced 1136 acre-feet or 14.2 percent. Based on a 50-year project life the sediment pool appears to be adequately sized for the incoming sediment load.

31. Effect of sediment on storage allocated to water supply. Wilkes County, North Carolina, and the city of Winston-Salem, North Carolina, have contracted with the United States Government to purchase for municipal and industrial water supply that storage lying between elevations 1000 and 1030. Releases from this storage are made in accordance with their dictates, provided that such releases, when combined with normal runoff below the dam do not cause damaging floods. The 1978 sedimentation resurvey reveals that capacity between elevations 1000 and 1030 has been reduced 567 acre-feet, a reduction in capacity of 1.7 percent.

32. Effects of sediment on storage allocated to flood control. The effect of sedimentation on the flood control pool was computed to elevation 1045, or the lower 15 feet. Calculations above this elevation were not made since this pool level has only been exceeded four times during the 15.8 years of project operation. Table 3 shows there is a 373 acre-feet or 1.4 percent increase in storage capacity between elevation 1030 and 1045. This indicates degradation is occurring between these elevations; however, the sediment range plots show minor erosion has taken place since the last survey.

33. Effects of shoaling on tributary conveyance. No analysis was made regarding tributary conveyance during this study, nor is one planned. However, some photographs showing shoaling have been taken, some of which are shown in Appendix C.

34. Effects of operation on the tailwater channel. The outlet works were designed so that the maximum discharge to the channel below the dam is about 5400 cfs. There has been only two sustained periods where

the discharge has been maintained at this rate, and that was after the floods of August 1970 and November 1977. Two reports of damage, one as a claim, have been received, neither of which occurred as a result of these sustained releases. In 1975, the release schedule for flood pool drawdowns was revised to decrease the discharge as the water reached normal pool level. This was done to reduce the static pressure in the saturated river banks. The degradation ranges below the dam were resurveyed in September 1979. Comparison of this survey with the 1971 survey (Figure A-10, Appendix A) shows that minor changes have occurred and are not causing any problems.

35. Effect of operation on sedimentation. Reservoir stage has a great bearing on the location of delta formations. A review of the monthly reservoir operation reports have shown that the normal reservoir fluctuation is confined to a rather narrow range of several feet except during periods when floodwaters were being stored or when releases were being made to augment downstream flows. Areas where conditions are suitable for delta formations are, therefore, found immediately downstream of points of tributary confluence with the normal pool. During flood periods, the reservoir manager has observed that the inflow and outflow are muddy while the reservoir surface remains relatively clear. This phenomenon may be attributed to the underflow of heavier silt-charged inflows beneath the lighter, desilted stored waters. Gate location and operating practices help to pass some of the suspended material through the reservoir thereby preventing it from settling out.

#### CONCLUSIONS

36. Project future sediment rates. If shoaling rates identified by this analysis are representative of those that will be experienced in the future, then the storage allocated to sediment is adequate. It is evident that some of the load carried into the reservoir is passing through without being trapped. This fact implies that the sediment load of tributaries to the reservoir is higher than it appears to be when looking only at the accumulation of sediments within the reservoir.

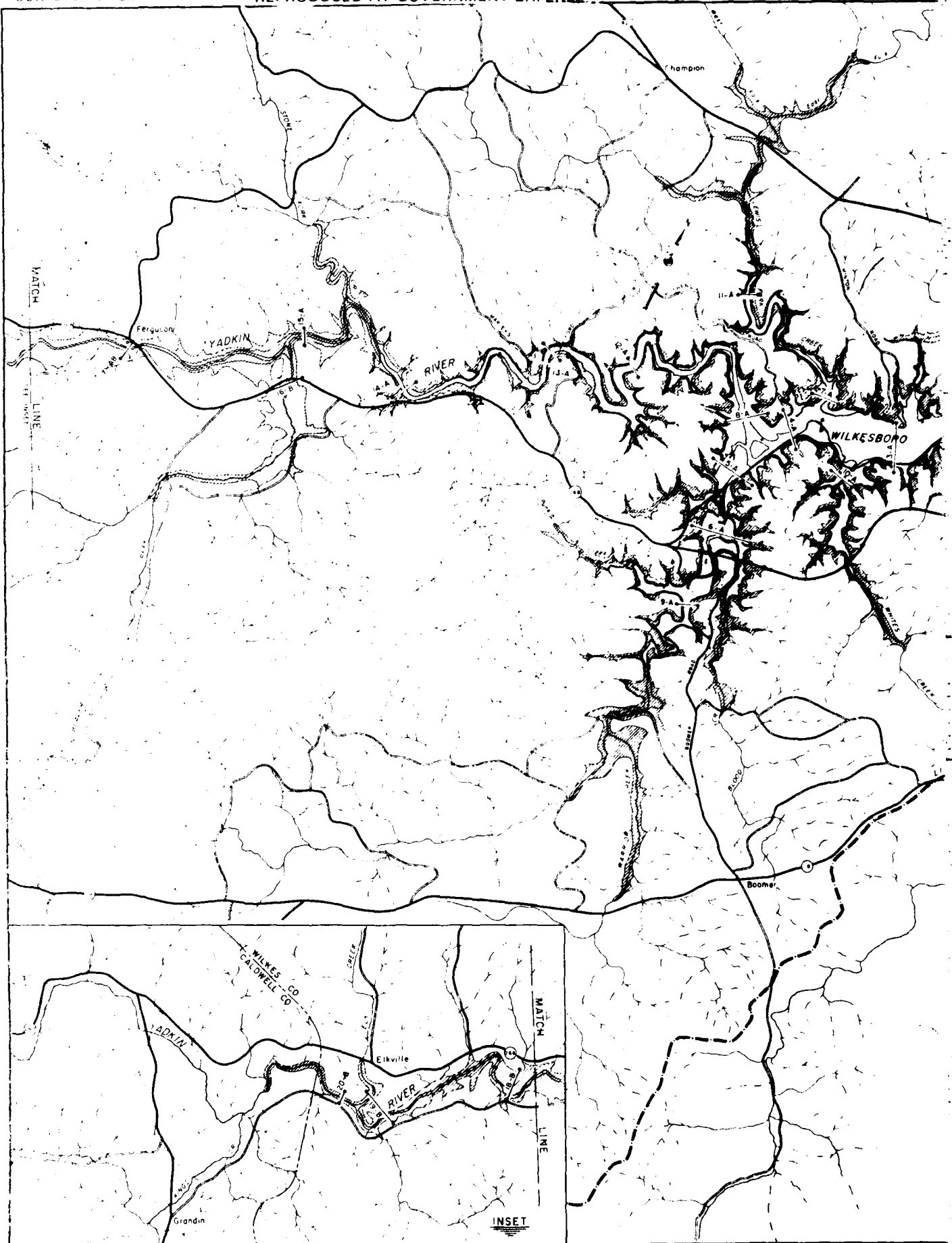
37. Need for operational changes. No problems were uncovered that would suggest the need for a change in operational procedures.

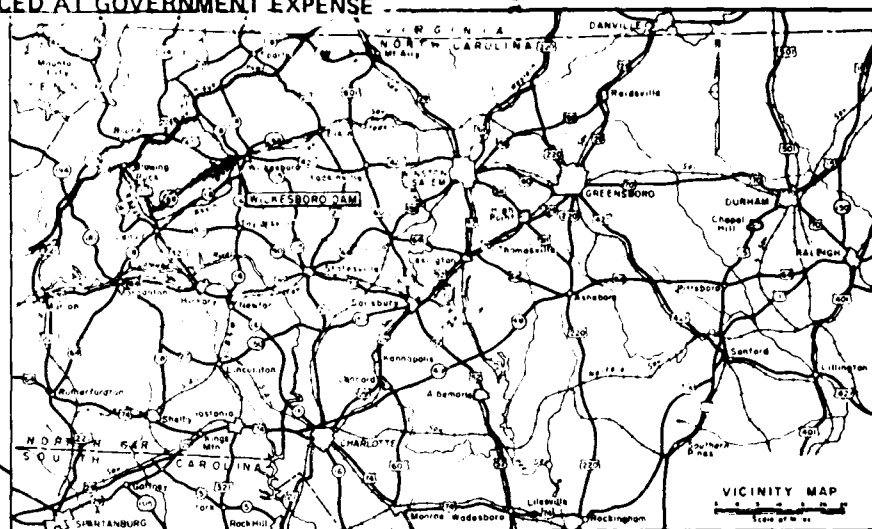
38. Need for erosion control structure. There is no apparent need for erosion control structures. Local problem areas, particularly

APPENDIX A  
CROSS SECTIONS, SEDIMENT & DEGRADATION RANGES

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LEVEL 4 ADS      SERIAL ( )      STATE ( )

RACE      RANK

SUBJECT IDENTIFICATION      - - - - -

RA      A      - - - - -

JOINT LINE      - - - - -

JOINT LINE      - - - - -

MINIMUM FLOOR ROOM      107A      - - - - -

SUMMA      603B      - - - - -

SEGMENT RANGE      ←      A      →

ELEVATIONS ARE IN FEET AND REFER TO MEAN SEA LEVEL

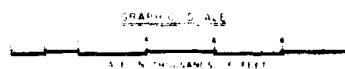
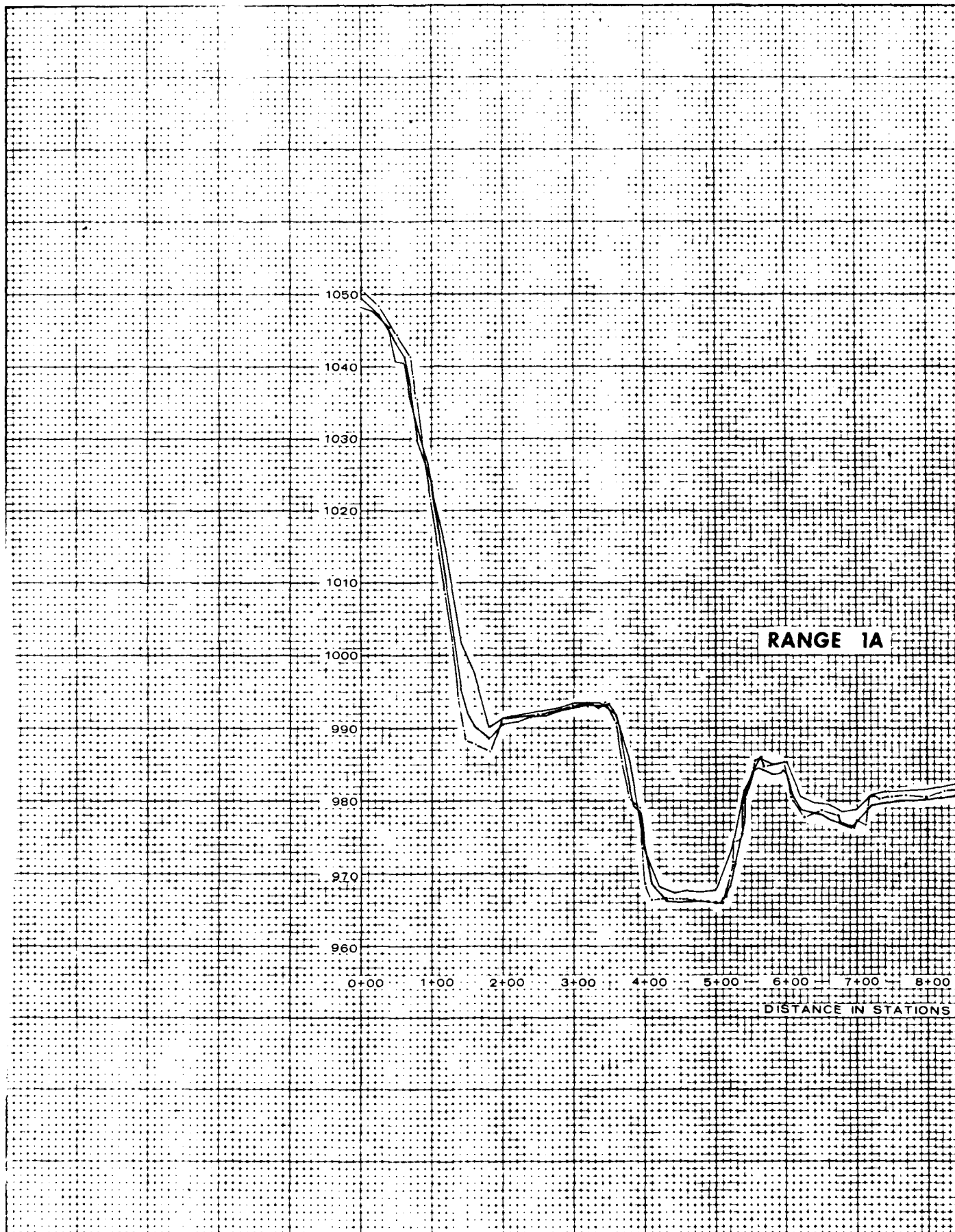
[illegible]

**FIGURE A-**

2

II



ANGE 1A

ANCE IN STATIONS

ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL

LEGEND

- August 1962
- May 1971
- May 1978

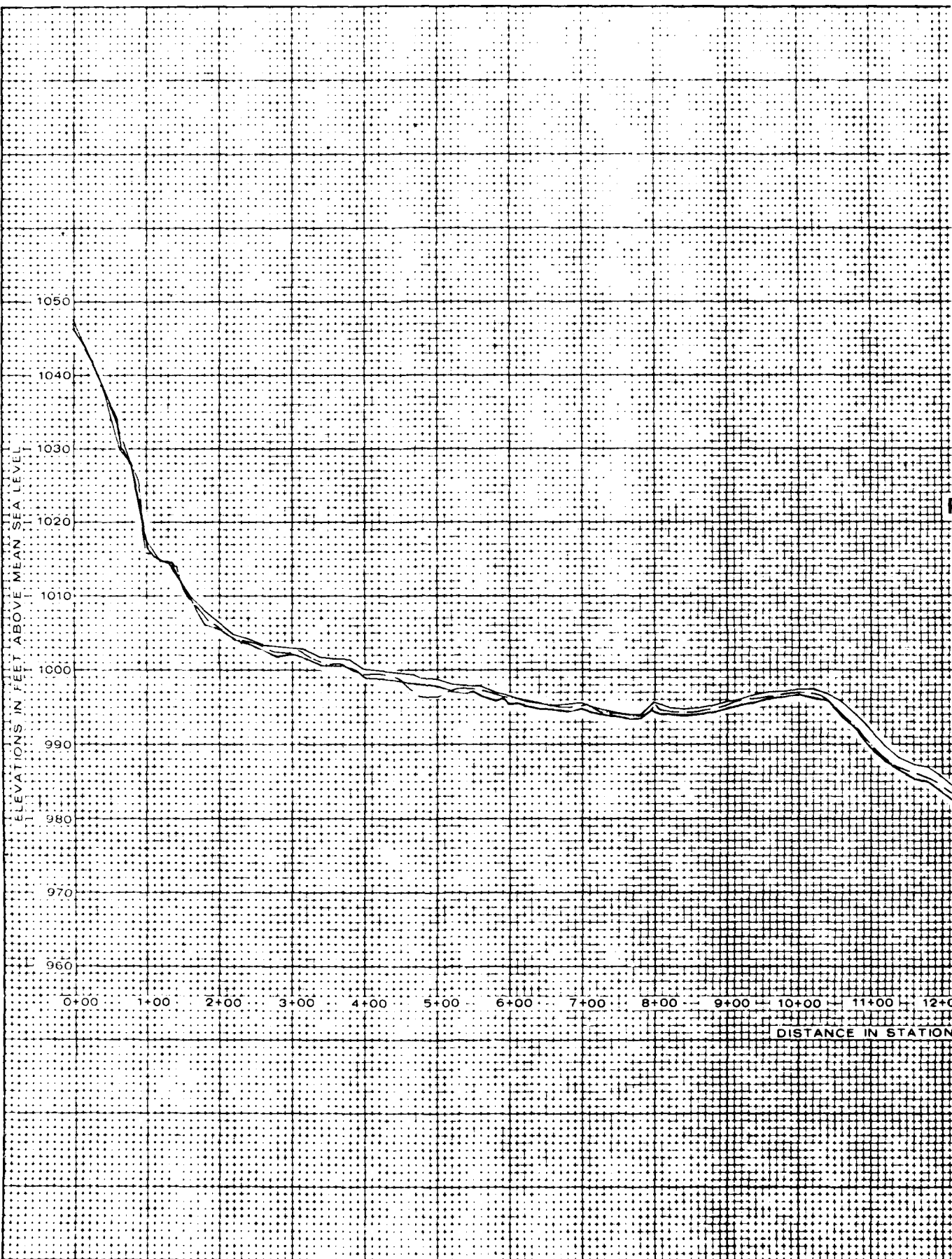
YADKIN RIVER

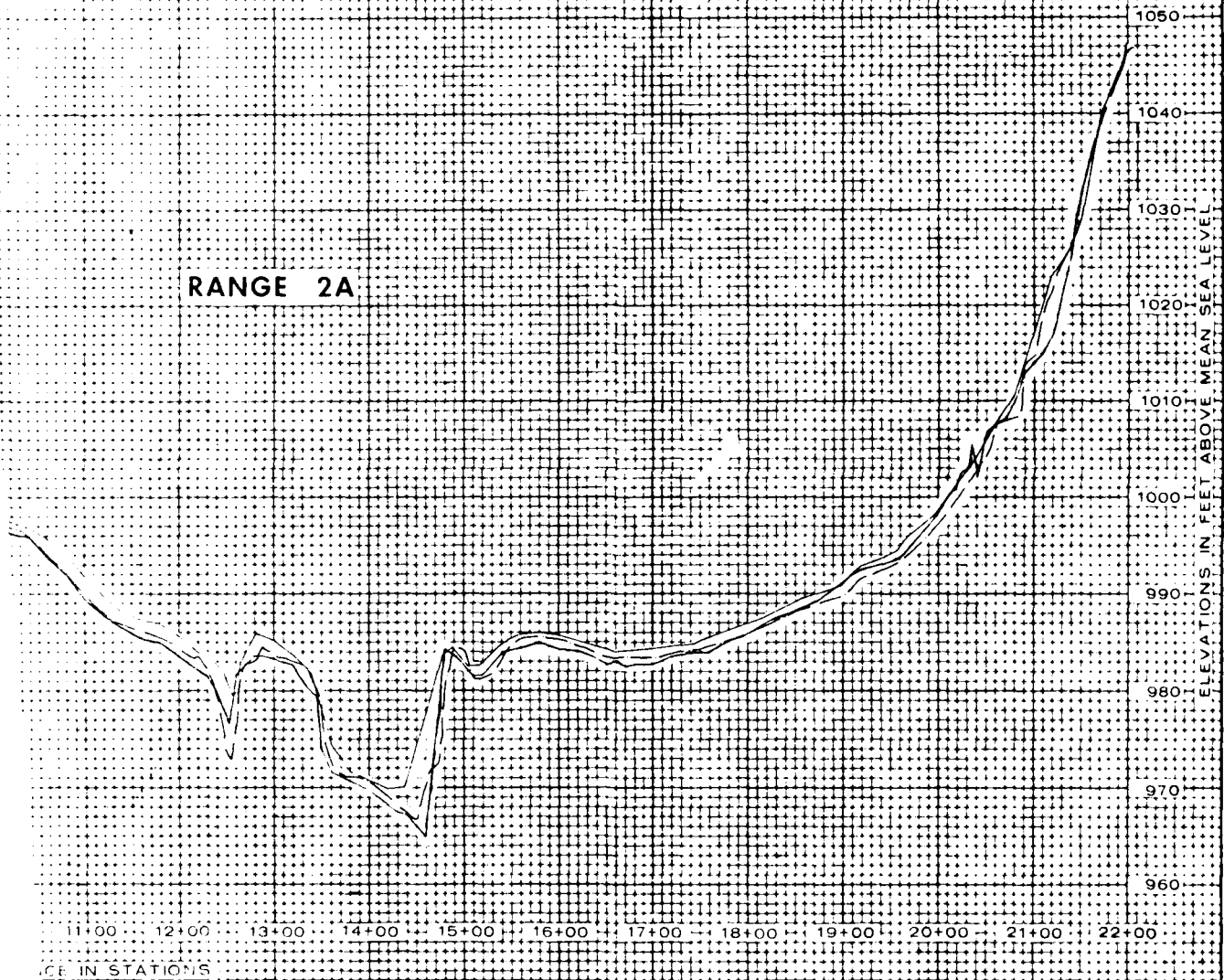
W. KERR SCOTT DAM & RESERVOIR

SEDIMENT RANGE  
1A

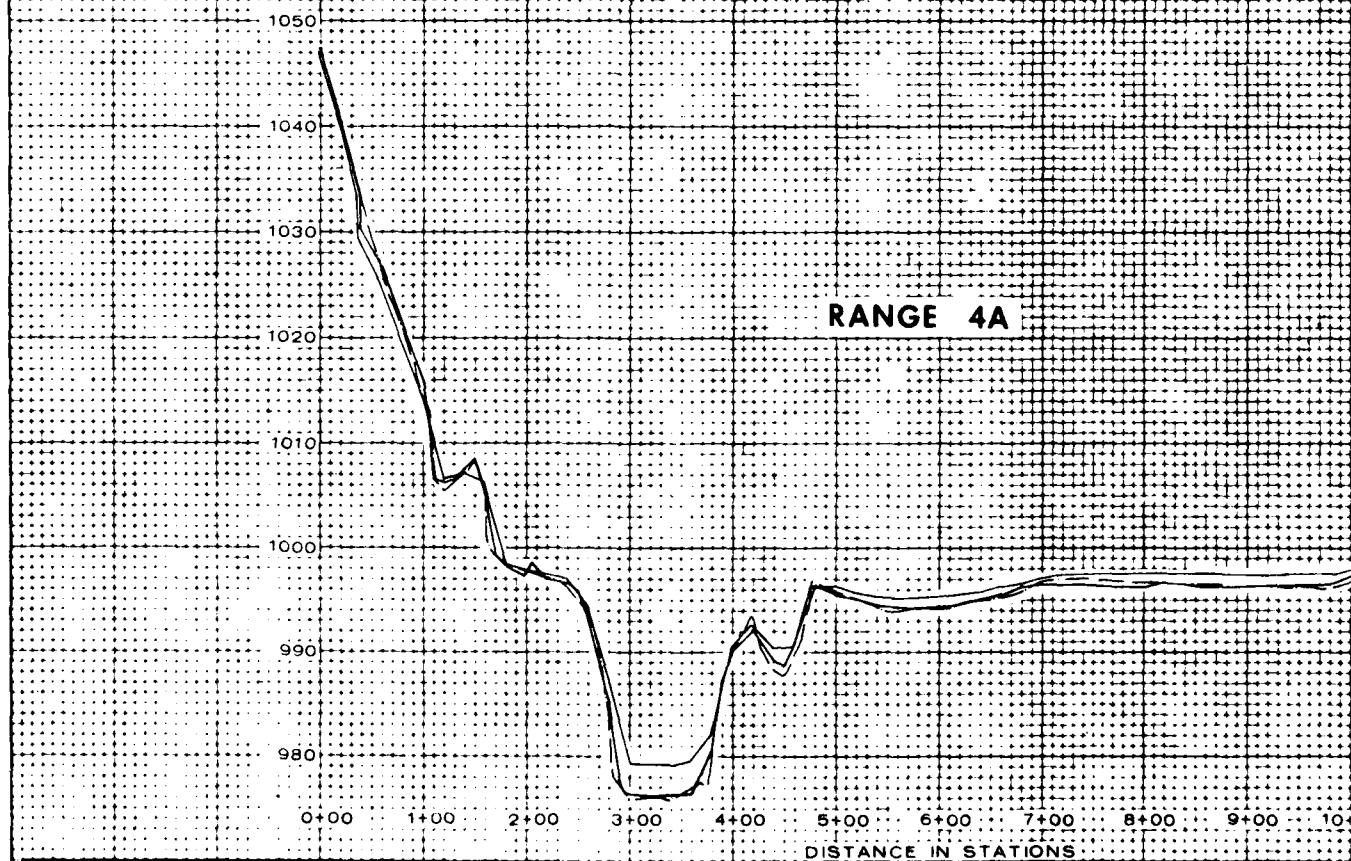
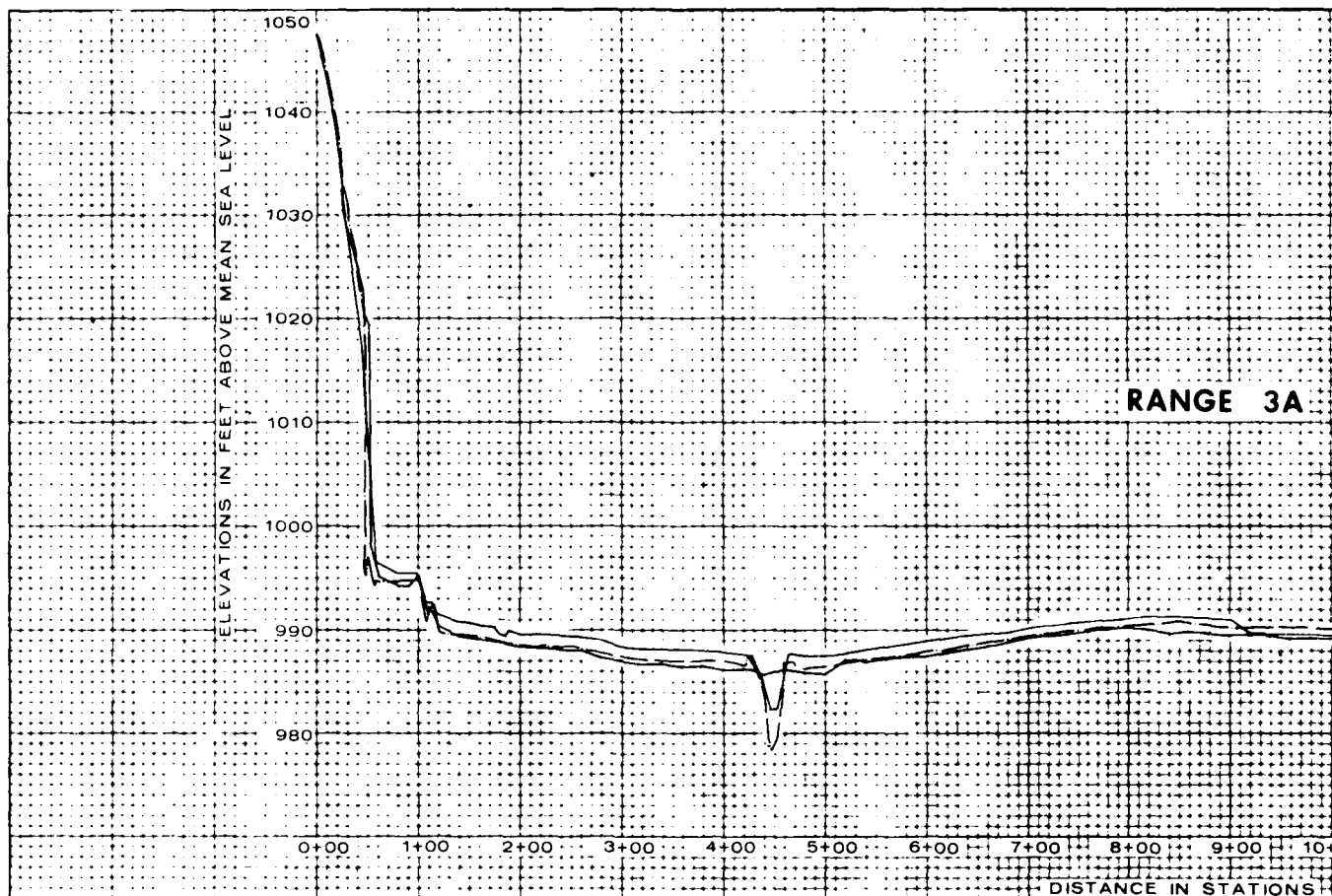
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.

FIGURE A-2





II



RANGE 3A

CE IN STATIONS

ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL

LEGEND

- August 1962
- May 1971
- May 1978

YADKIN RIVER

W. KERR SCOTT DAM & RESERVOIR

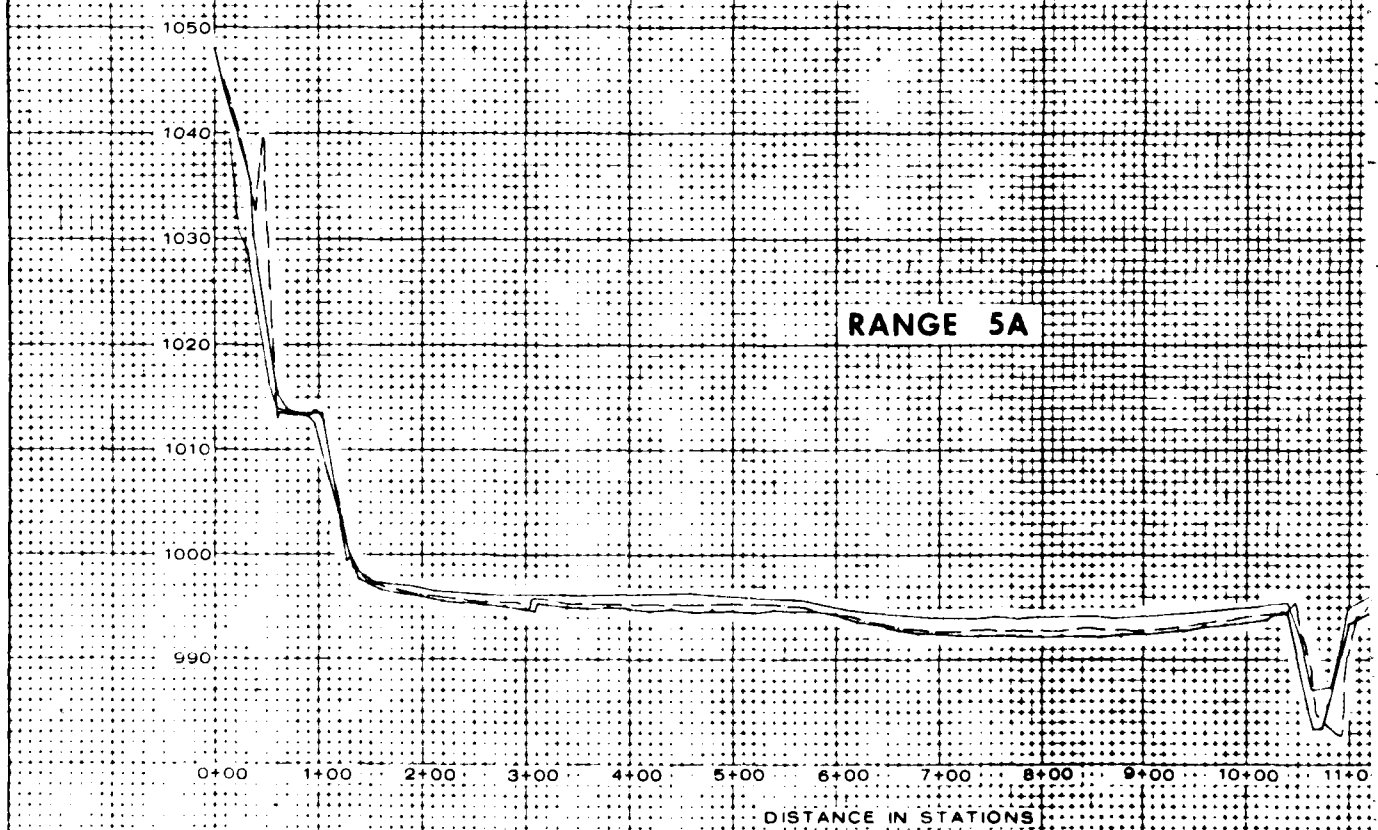
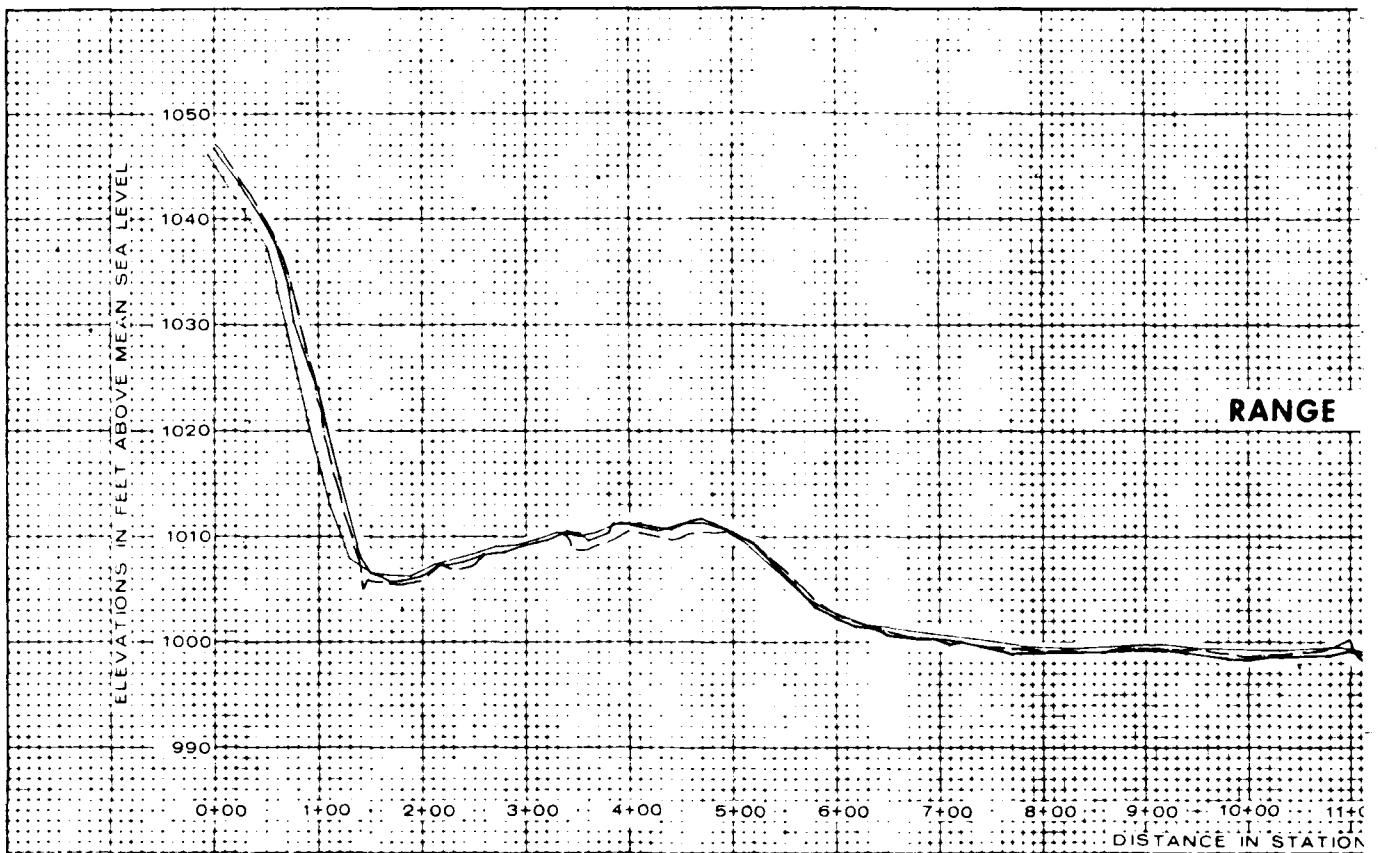
SEDIMENT RANGES  
3A AND 4A

U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.

FIGURE A-4

2

11



RANGE 6A



ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL

LEGEND

- August 1962
- ... May 1971
- May 1978

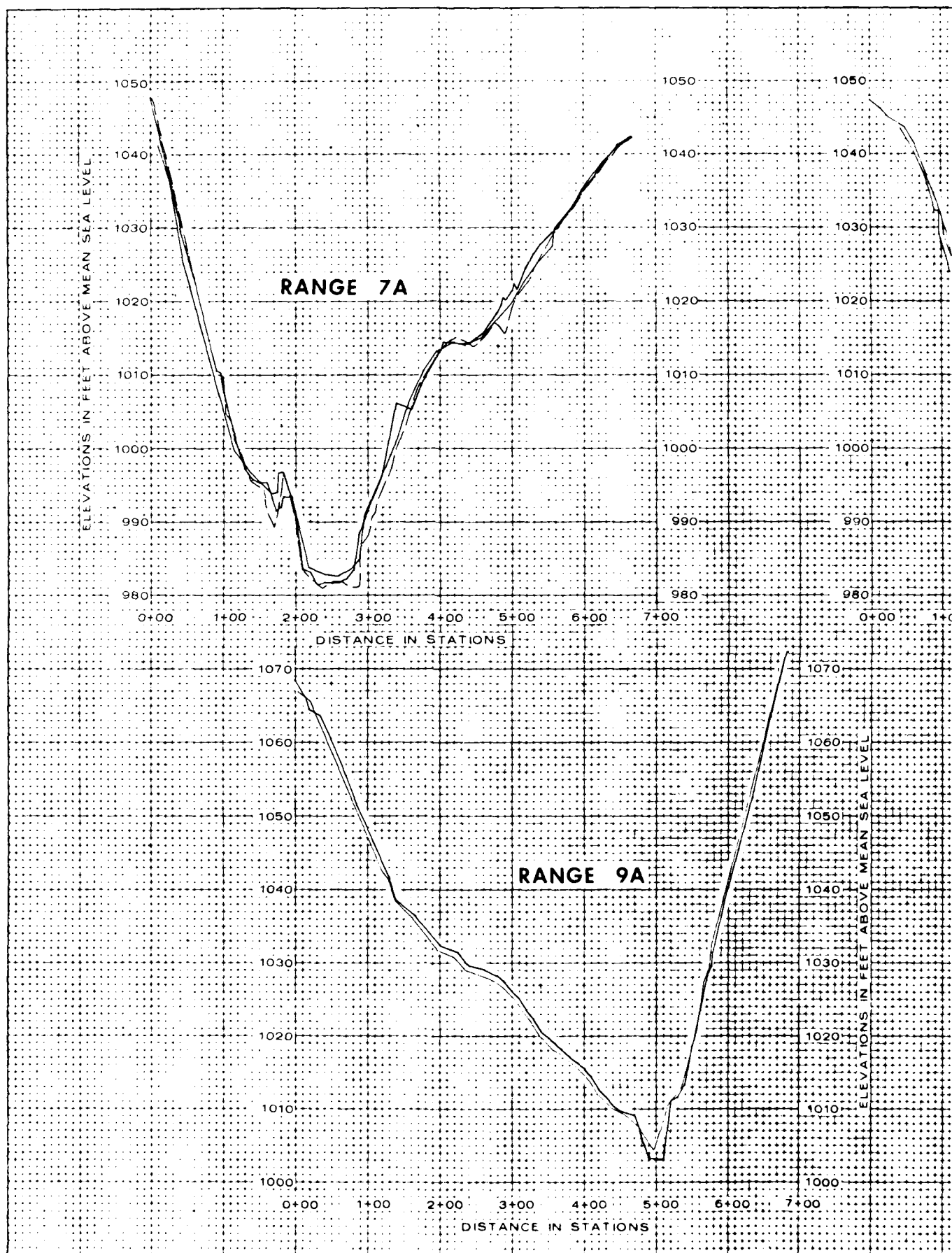
JACKIN RIVER  
W KERR SCOTT DAM & RESERVOIR  
**SEDIMENT RANGES  
5A AND 6A**

ARMY ENGINEER DISTRICT, CHARLESTON, SC

FIGURE A-5

2

TH



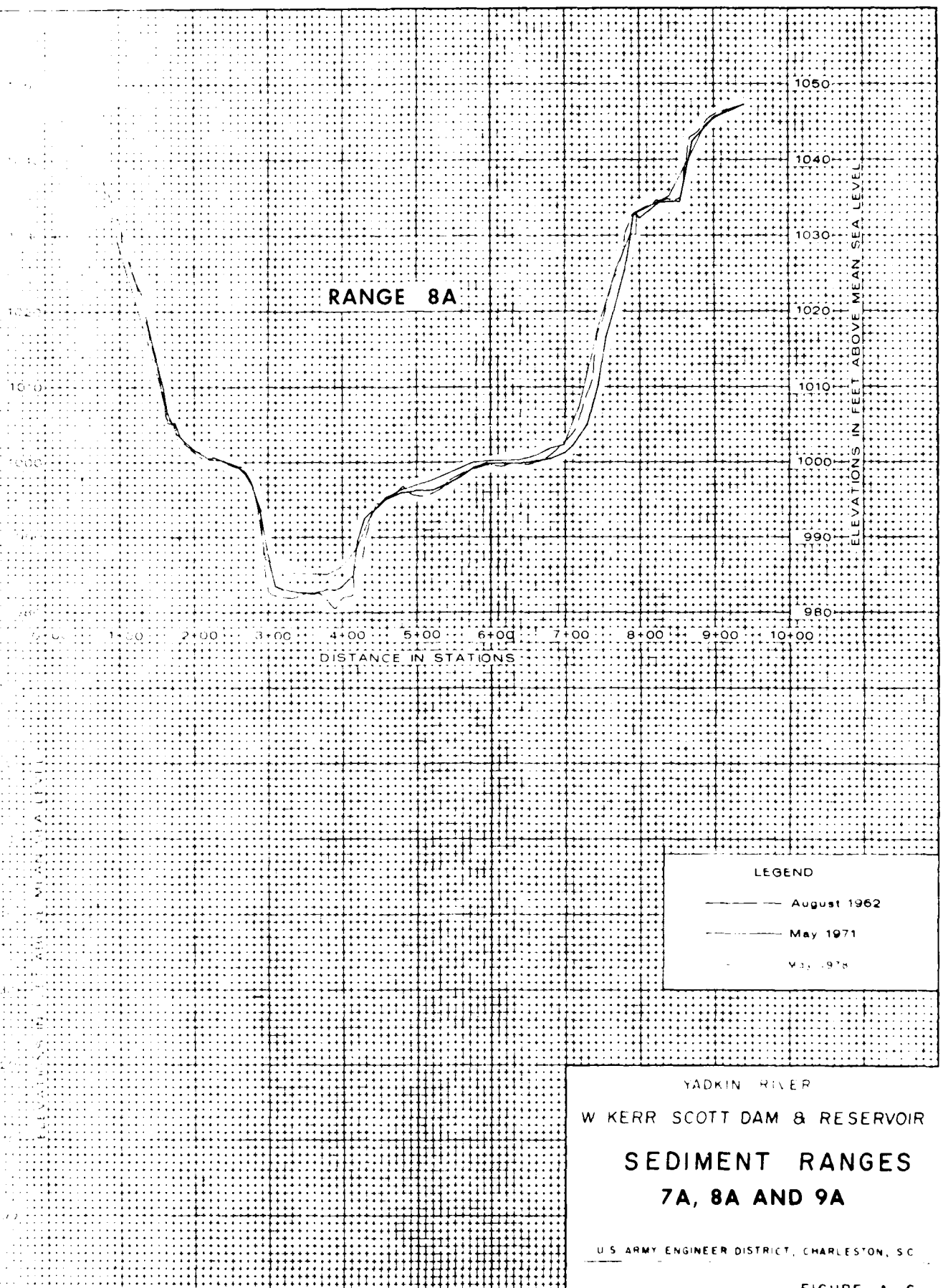
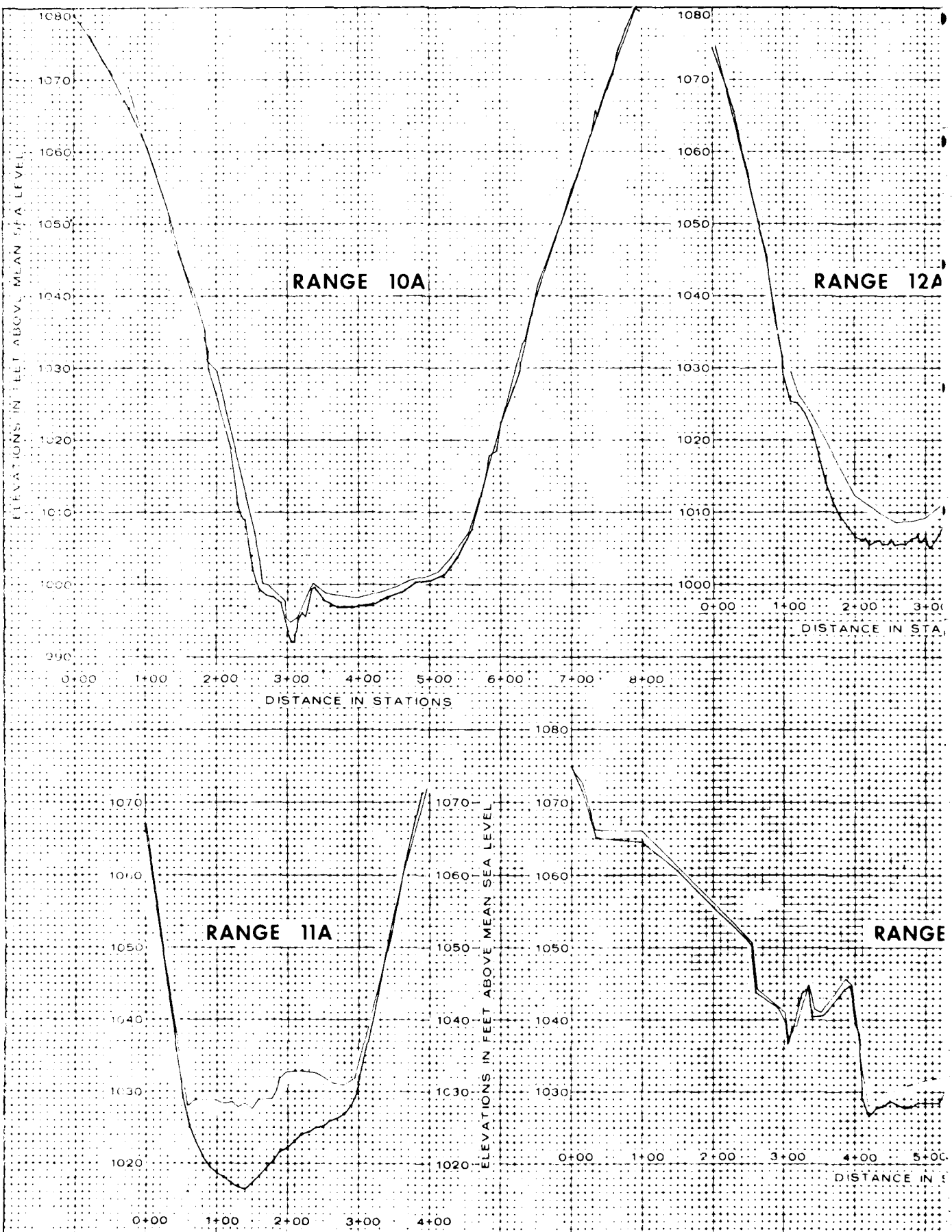
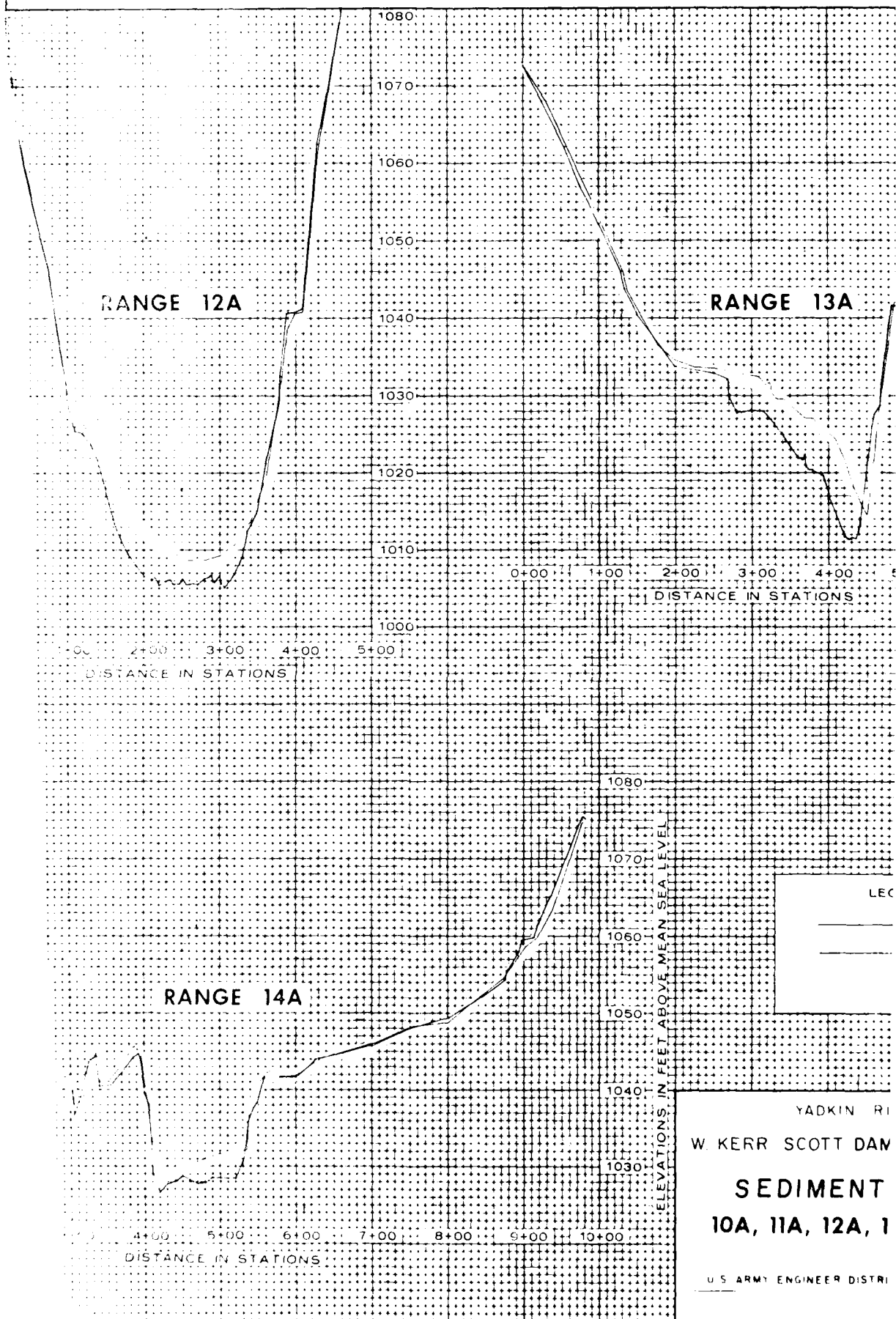
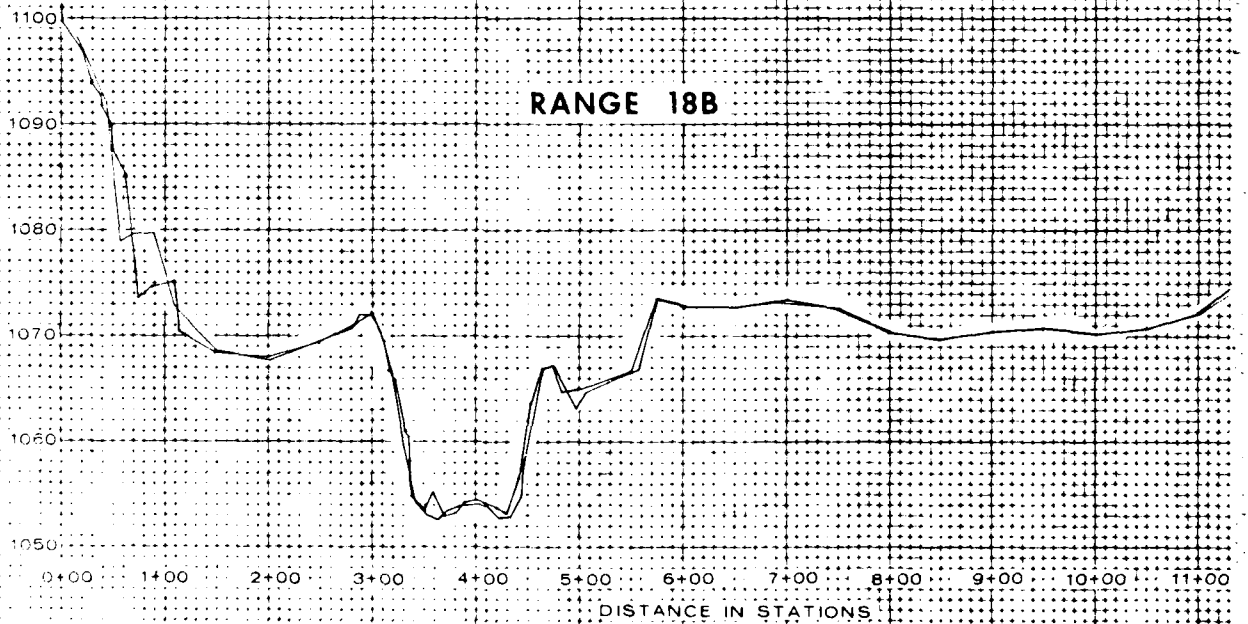
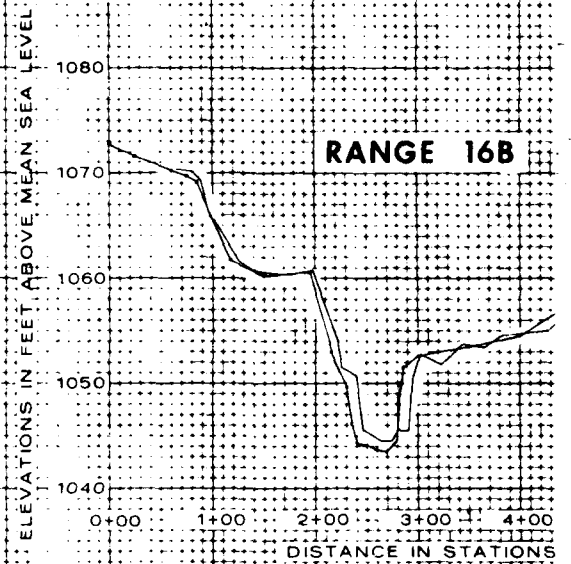
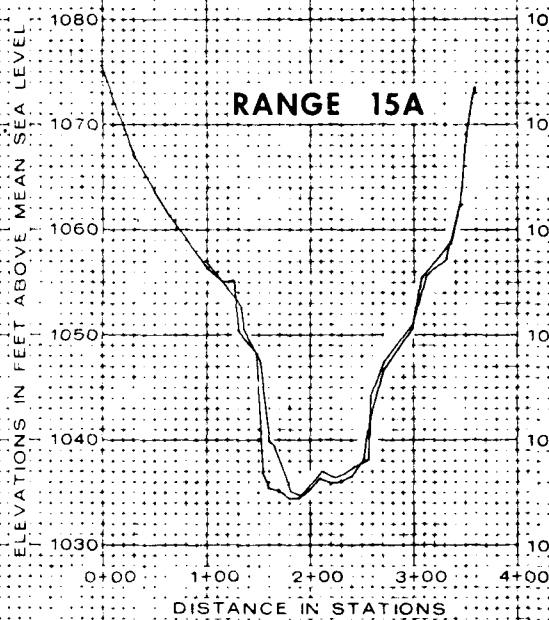
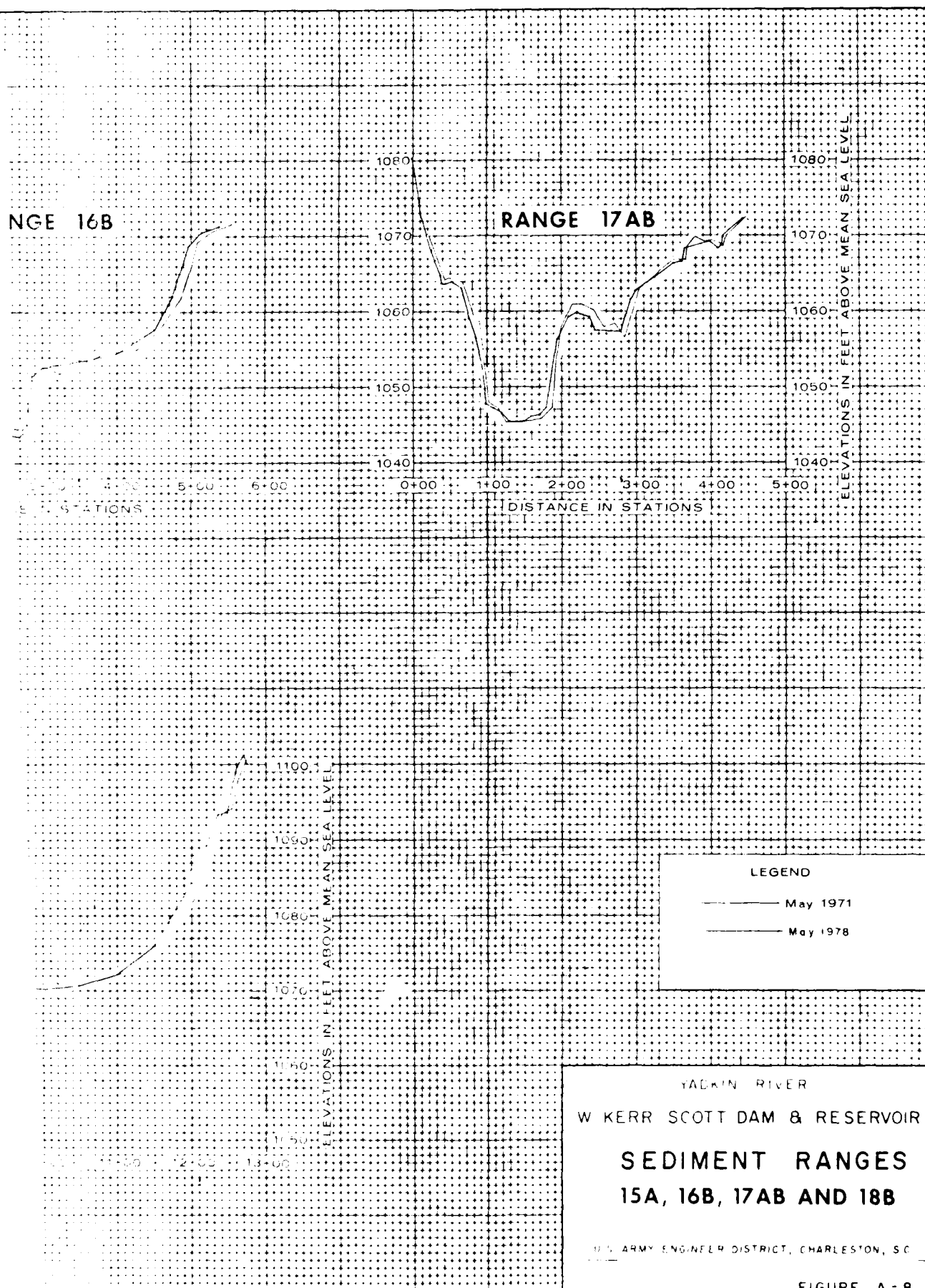


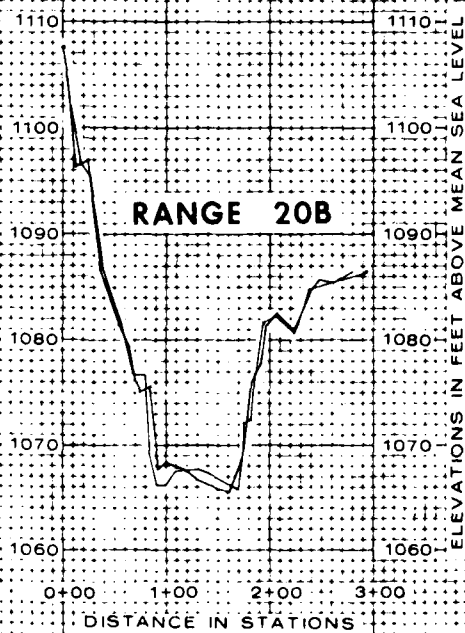
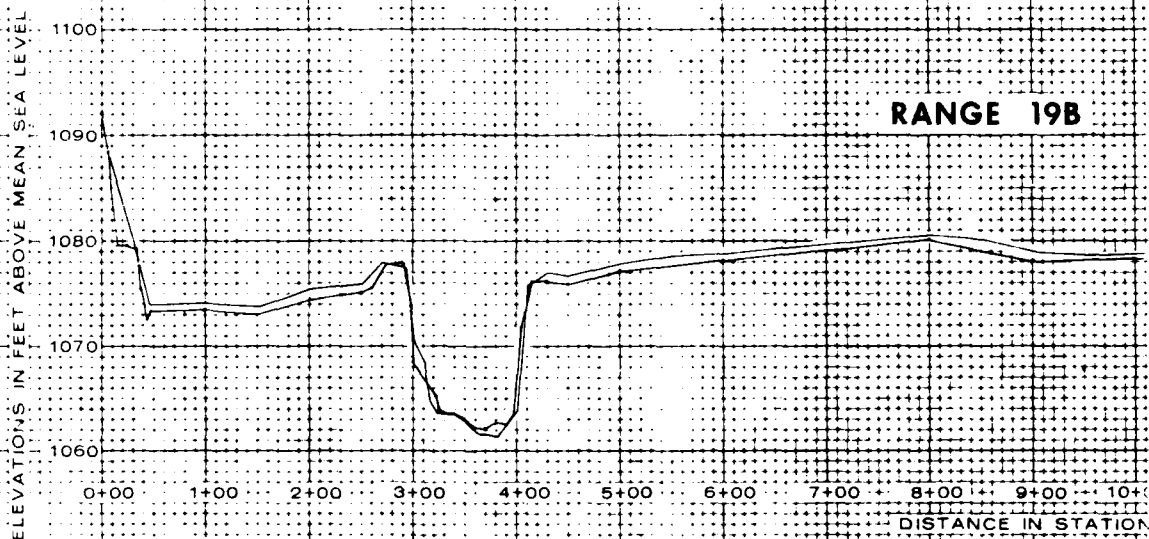
FIGURE A-6











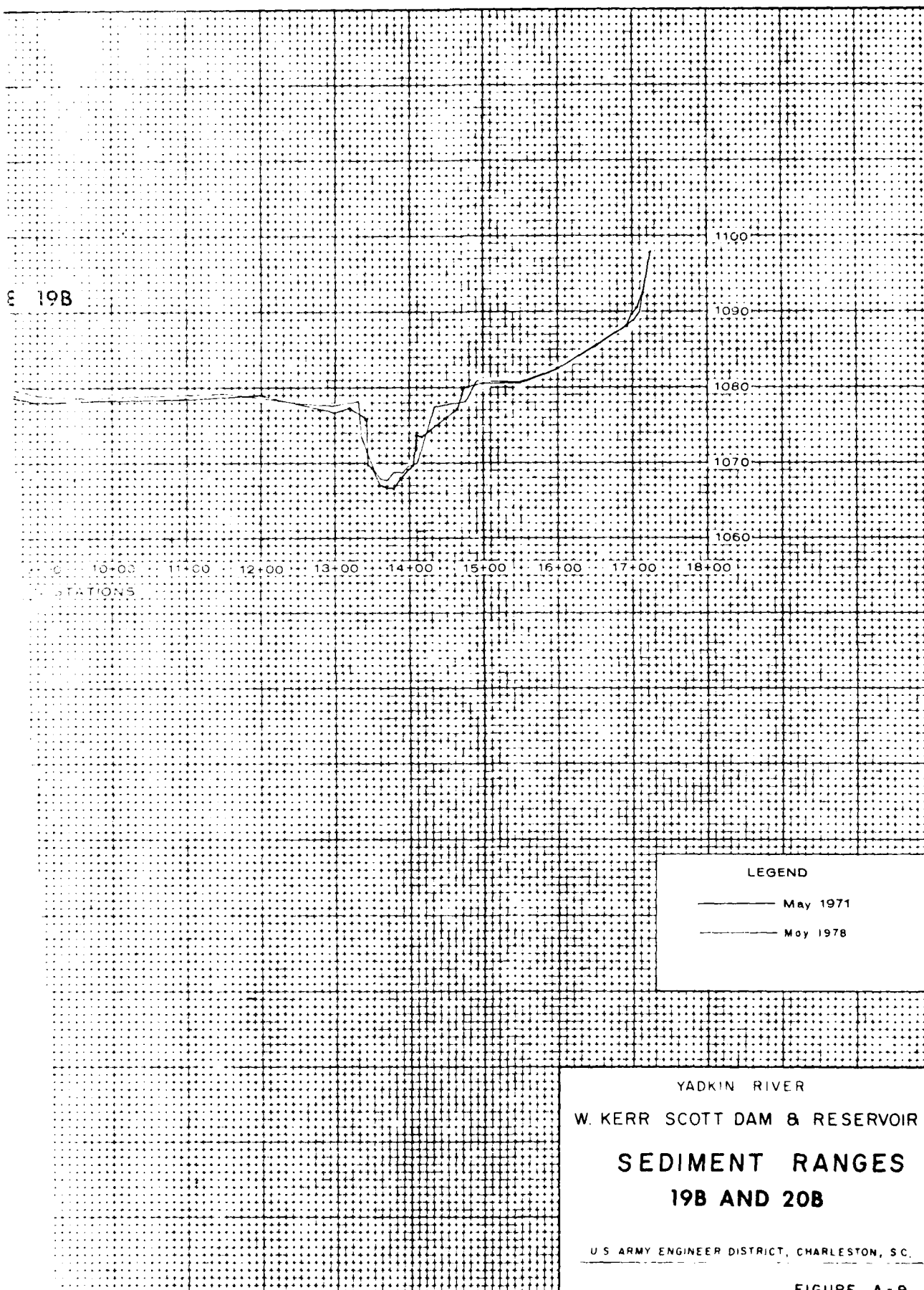
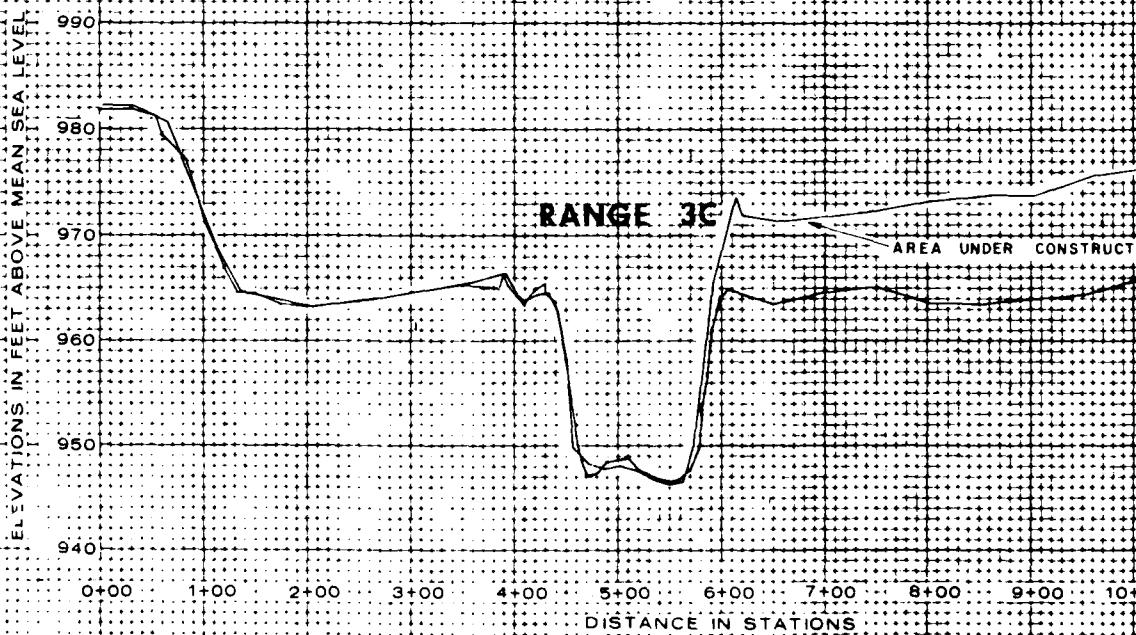
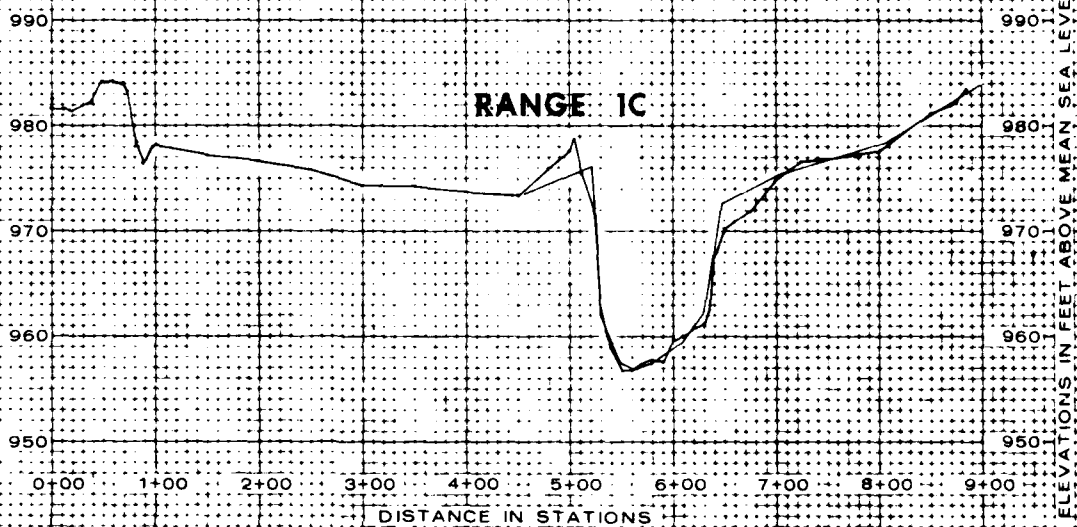
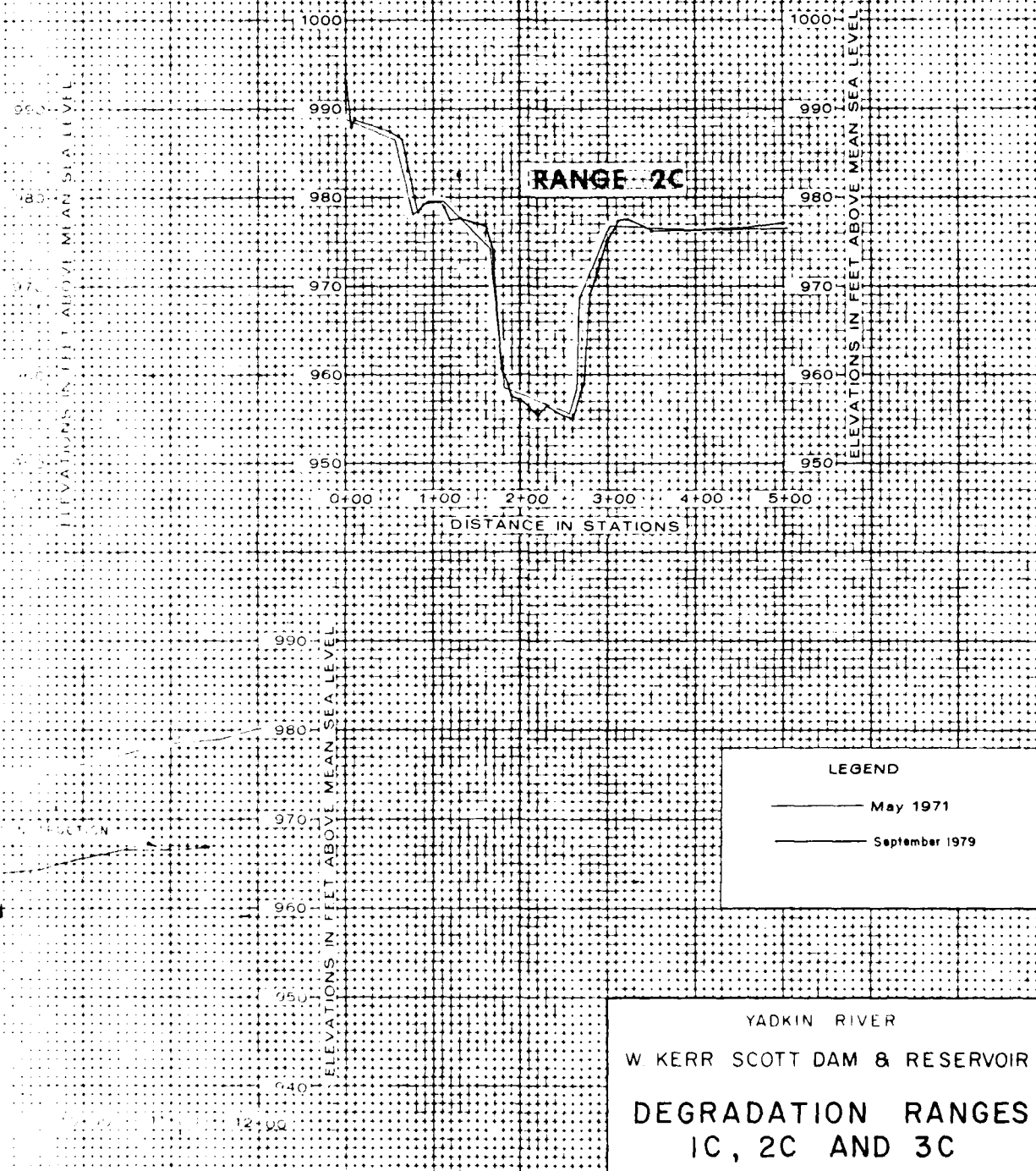


FIGURE A-9





YADKIN RIVER  
W KERR SCOTT DAM & RESERVOIR  
**DEGRADATION RANGES  
1C, 2C AND 3C**

U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.

FIGURE A-10

II

APPENDIX B  
METHOD FOR REVISING STAGE-CAPACITY CURVES

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### TEXT

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| Discussion of Method | 2                | B-1             |

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## APPENDIX B

### METHOD OF REVISING STAGE-CAPACITY CURVES

#### DISCUSSION

1. Purpose. The purpose of this appendix is to explain the method used to convert data on incremental areas at survey ranges to incremental volume.
2. Discussion of method. The reservoir is divided into reaches separated by sedimentation range lines. Reaches are bounded by range lines and by natural or artificial physical features. For example, that portion of the reservoir lying between the dam and range 1A constitutes a single reach, and that portion between range lines 1A and 2A constitutes a second reach. The sum of the capacities in all reaches equals the total reservoir capacity. Results of computations of the original reservoir capacity are presented in Table B-1. These values are based on topographic maps prepared by Piedmont Engineering Service in January 1958. Surface areas at 10-foot increments of stage were planimeted from these maps, and the volume computed using the average-end-area method.
3. Coefficients were then developed by reach to relate the sum of the area between contour intervals at range lines to incremental capacity. These coefficients vary for each contour interval and between reaches. The coefficients are empirical and have the dimensions of acre-feet per square feet. For range 1A through 8A, 1962 range survey data was used to develop the coefficients. Survey data collected in 1971 was used for the remaining ranges. Coefficients above elevation 1045 were not developed since this pool level has only been exceeded four times during the 15.8 years of project operation.
4. An example of coefficients derivation is as follows: The capacity in acre-feet between elevation 1,000 and 1,010 in the reach from 1A to 2A is 1928.95 acre-feet (1962 survey). The incremental area between elevation 1,000 and 1,010 of range line 1A and 2A is 10,609 and 18,178 square feet, respectively (1962 survey). The corresponding coefficient therefore, is as follows:

$$C = \frac{1928.95 \text{ Ac. Ft.}}{10609 \text{ Sq. Ft.} + 18178 \text{ Sq. Ft.}} = .0670 \frac{\text{Ac. Ft.}}{\text{Sq. Ft.}}$$

This and other coefficients are presented in Table B-2.

5. An example of coefficient use is as follows: Incremental capacity in 1978 between elevation 1,000 and 1,010 in reach from 1A to 2A is computed by multiplying the sum of cross sectional areas between these limits (see Table B-3) by the coefficient .0670 (see Table B-2). Incremental capacity for the example therefore equals:

$$(10550 \text{ Sq. Ft.} + 18140 \text{ Sq. Ft.}) \times .0670 \frac{\text{Ac. Ft.}}{\text{Sq. Ft.}} = 1922.23 \text{ Ac. Ft.}$$

Capacities to elevation 1045 using 1978 survey data were computed using this same procedure with results being tabulated in Table B-4.

6. Coefficients developed thus far will facilitate the derivation of stage-capacity relationships in future years to elevation 1045.

TABLE B-1  
ORIGINAL CAPACITY (AC-FT)

(Computed Using Topographic Map Prepared in 1958)

| Reach<br>Defined<br>By   | 960<br>to<br>970 | 970<br>to<br>980 | 980<br>to<br>990 | 990<br>to<br>1000 | 1000<br>to<br>1010 | 1010<br>to<br>1020 | 1020<br>to<br>1030 | 1030<br>to<br>1040 | 1040<br>to<br>1045 |
|--------------------------|------------------|------------------|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Dam to 1-A               | 16.55            | 86.35            | 156.55           | 209.25            | 263.88             | 297.29             | 322.75             | 340.10             | 203.20             |
| 1-A to 2-A               | 93.60            | 281.60           | 762.25           | 1457.25           | 1928.95            | 2271.18            | 2599.85            | 2854.10            | 1733.00            |
| 2-A to 3-A               | 111.15           | 325.80           | 825.50           | 1487.75           | 1953.56            | 2312.91            | 2553.25            | 2736.80            | 1650.02            |
| 3-A to 7-A<br>to         |                  |                  |                  |                   |                    |                    |                    |                    |                    |
| 4-A to 10-A              | 28.70            | 136.10           | 291.20           | 1056.65           | 1966.33            | 2259.09            | 2426.60            | 2475.50            | 1373.51            |
| 4-A to 5-A<br>to 8-A     | -                | 45.05            | 109.30           | 311.90            | 748.71             | 1082.82            | 1212.70            | 1266.60            | 731.29             |
| 5-A to 6-A               | -                | -                | 1.55             | 87.20             | 311.05             | 521.35             | 684.00             | 867.86             | 558.96             |
| 6-A to 9-A               | -                | -                | .002             | 30.45             | 264.60             | 655.62             | 974.45             | 1184.30            | 770.63             |
| 9-A to<br>Upstream       | -                | -                | -                | -                 | .003               | 44.39              | 164.95             | 154.81             | 255.64             |
| 14-A to 15-A             | -                | -                | -                | -                 | -                  | -                  | -                  | 146.67             | 185.44             |
| 8-A to 12-A              | -                | -                | 44.90            | 213.60            | 532.60             | 804.38             | 973.60             | 1149.24            | 715.88             |
| 12-A to 13-A             | -                | -                | -                | -                 | 122.22             | 352.70             | 525.55             | 724.67             | 515.10             |
| 13-A to 14-A             | -                | -                | -                | -                 | -                  | 8.00               | 168.25             | 403.94             | 326.98             |
| 10-A to<br>Upstream      | -                | -                | -                | 5.85              | 57.56              | 181.74             | 329.00             | 485.21             | 337.64             |
| 7-A to 11-A              | -                | -                | 24.20            | 104.60            | 250.20             | 408.61             | 543.30             | 688.56             | 455.04             |
| 11-A to<br>Upstream      | -                | -                | -                | -                 | -                  | .02                | 21.55              | 121.23             | 133.88             |
| 15-A to 16-B<br>to 17-AB | -                | -                | -                | -                 | -                  | -                  | -                  | -                  | 53.42              |
| 16-B to<br>Upstream      | -                | -                | -                | -                 | -                  | -                  | -                  | -                  | .58                |
| Total                    | 250.             | 875.             | 2215.            | 4965.             | 8400.              | 11200.             | 13500.             | 15600.             | 10000.             |
| Accumulated<br>Total     | 250              | 1125.            | 3340.            | 8305.             | 16705.             | 27905.             | 41405.             | 57005.             | 67025.             |

TABLE B-2  
COEFFICIENTS USING MIXED DATA

| Range                    | 960<br>to<br>970 | 970<br>to<br>980 | 980<br>to<br>990 | 990<br>to<br>1000 | 1000<br>to<br>1010 | 1010<br>to<br>1020 | 1020<br>to<br>1030 | 1030<br>to<br>1040 | 1040<br>to<br>1045 |
|--------------------------|------------------|------------------|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Dam to 1-A               | .0396            | .0548            | .0285            | .0220             | .0249              | .0264              | .0275              | .0274              | .0320              |
| 1-A to 2-A               | .1839            | .0998            | .0729            | .0684             | .0670              | .0732              | .0807              | .0853              | .1000              |
| 2-A to 3-A               | 1.2082           | .1365            | .0943            | .0556             | .0577              | .0650              | .0699              | .0729              | .0844              |
| 3-A to 7-A<br>to         |                  |                  |                  |                   |                    |                    |                    |                    |                    |
| 4-A to 10-A              | 28.7             | .0909            | .0514            | .0480             | .0641              | .0678              | .0680              | .0652              | .0683              |
| 4-A to 5-A<br>to 8-A     | -                | .1273            | .0467            | .0244             | .0295              | .0394              | .0420              | .0414              | .0447              |
| 5-A to 6-A               | -                | -                | .0070            | .0127             | .0140              | .0184              | .0233              | .0285              | .0340              |
| 6-A to 9-A               | -                | -                | .0001            | .0339             | .0221              | .0354              | .0478              | .0524              | .0617              |
| 9-A to<br>Upstream       | -                | -                | -                | -                 | .0100              | .0318              | .0637              | .0380              | .1052              |
| 14-A to 15-A             | -                | -                | -                | -                 | -                  | -                  | -                  | .0830              | .0950              |
| 8-A to 12-A              | -                | -                | .0443            | .1003             | .0899              | .1022              | .1082              | .1111              | .1245              |
| 12-A to 13-A             | -                | -                | -                | -                 | .2214              | .1616              | .1412              | .1305              | .1515              |
| 13-A to 14-A             | -                | -                | -                | -                 | -                  | .0252              | .1157              | .1008              | .1025              |
| 10-A to<br>Upstream      | -                | -                | -                | .0086             | .0193              | .0512              | .0809              | .1058              | .1401              |
| 7-A to 11-A              | -                | -                | .0334            | .0621             | .0990              | .1064              | .0829              | .0827              | .0960              |
| 11-A to<br>Upstream      | -                | -                | -                | -                 | -                  | .0001              | .0122              | .0460              | .0917              |
| 15-A to 16-B<br>to 17-AB | -                | -                | -                | -                 | -                  | -                  | -                  | .0367              | .0934              |
| 16-B to<br>Upstream      | -                | -                | -                | -                 | -                  | -                  | -                  | -                  | .0193              |

TABLE B-3

CROSS SECTION AREA OF SEDIMENT RANGE LINES, IN SQUARE FEET, 1978 SURVEY

| Range | 960<br>to<br>970 | 970<br>to<br>980 | 980<br>to<br>990 | 990<br>to<br>1000 | 1000<br>to<br>1010 | 1010<br>to<br>1020 | 1020<br>to<br>1030 | 1030<br>to<br>1040 | 1040<br>to<br>1045 |
|-------|------------------|------------------|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 1-A   | 210              | 1350             | 4950             | 9190              | 10550              | 11200              | 11880              | 12470              | 6670               |
| 2-A   | 20               | 930              | 4400             | 11280             | 18140              | 19880              | 20650              | 21360              | 11050              |
| 3-A   | 0                | 690              | 2770             | 14990             | 15730              | 15820              | 15880              | 16610              | 8570               |
| 4-A   | 0                | 30               | 980              | 3950              | 9470               | 10390              | 10810              | 14310              | 5840               |
| 5-A   | 0                | 0                | 40               | 4670              | 10470              | 11230              | 11770              | 12090              | 6370               |
| 6-A   | 0                | 0                | 0                | 500               | 11380              | 17080              | 17990              | 18470              | 10070              |
| 7-A   | 0                | 0                | 500              | 1400              | 2510               | 3590               | 4890               | 5630               | 3280               |
| 8-A   | 0                | 0                | 490              | 1890              | 5250               | 5970               | 6720               | 7480               | 4180               |
| 9-A   | 0                | 0                | 0                | 0                 | 120                | 1410               | 2610               | 4130               | 2430               |
| 10-A  | 0                | 0                | 0                | 380               | 2890               | 3470               | 4020               | 4540               | 2410               |
| 11-A  | 0                | 0                | 0                | 0                 | 0                  | 0                  | 200                | 2370               | 1450               |
| 12-A  | 0                | 0                | 0                | 0                 | 120                | 1570               | 2440               | 2880               | 1660               |
| 13-A  | 0                | 0                | 0                | 0                 | 0                  | 90                 | 660                | 2570               | 1750               |
| 14-A  | 0                | 0                | 0                | 0                 | 0                  | 0                  | 20                 | 1230               | 1370               |
| 15-A  | 0                | 0                | 0                | 0                 | 0                  | 0                  | 0                  | 320                | 500                |
| 16-B  | 0                | 0                | 0                | 0                 | 0                  | 0                  | 0                  | 0                  | 20                 |
| 17-AB | 0                | 0                | 0                | 0                 | 0                  | 0                  | 0                  | 0                  | 0                  |
| 18-B  | 0                | 0                | 0                | 0                 | 0                  | 0                  | 0                  | 0                  | 0                  |
| 19-B  | 0                | 0                | 0                | 0                 | 0                  | 0                  | 0                  | 0                  | 0                  |
| 20-B  | 0                | 0                | 0                | 0                 | 0                  | 0                  | 0                  | 0                  | 0                  |

AD-A150 294

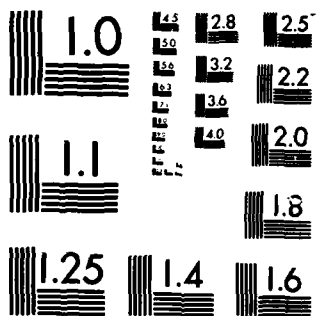
W KERR SCOTT RESERVOIR SEDIMENTATION RESURVEYS FOR MAY 2/2  
1978 AND SEPTEMBER 1979(U) CORPS OF ENGINEERS  
CHARLESTON SC CHARLESTON DISTRICT MAR 80

UNCLASSIFIED

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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE B-4  
CAPACITY (AC-FT)

(Using 1978 Survey Data)

| Range                           | 960<br>to<br>970 | 970<br>to<br>980 | 980<br>to<br>990 | 990<br>to<br>1000 | 1000<br>to<br>1010 | 1010<br>to<br>1020 | 1020<br>to<br>1030 | 1030<br>to<br>1040 | 1040<br>to<br>1045 |
|---------------------------------|------------------|------------------|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Dam to 1-A                      | 8.32             | 73.98            | 141.08           | 202.18            | 262.70             | 295.68             | 326.70             | 341.68             | 213.44             |
| 1-A to 2-A                      | 42.30            | 227.54           | 681.62           | 1400.15           | 1922.23            | 2275.06            | 2625.17            | 2885.70            | 1772.00            |
| 2-A to 3-A                      | 24.16            | 221.13           | 676.13           | 1460.61           | 1954.30            | 2320.50            | 2553.45            | 2768.01            | 1655.93            |
| 3-A to 7-A<br>to<br>4-A to 10-A | 0                | 65.45            | 218.45           | 994.56            | 1961.46            | 2255.71            | 2420.80            | 2679.07            | 1372.83            |
| 4-A to 5-A<br>to 8-A            | -                | 3.82             | 70.52            | 256.44            | 743.11             | 1087.05            | 1230.60            | 1402.63            | 732.63             |
| 5-A to 6-A                      | -                | -                | .28              | 65.66             | 305.90             | 520.90             | 693.41             | 870.96             | 558.96             |
| 6-A to 9-A                      | -                | -                | -                | 16.95             | 254.15             | 654.55             | 984.68             | 1184.24            | 771.25             |
| 9-A to<br>Upstream              | -                | -                | -                | -                 | 1.20               | 44.84              | 166.25             | 156.94             | 255.64             |
| 14-A to 15-A                    | -                | -                | -                | -                 | -                  | -                  | -                  | 128.65             | 177.65             |
| 8-A to 12-A                     | -                | -                | 21.71            | 189.57            | 482.76             | 770.59             | 991.11             | 1151.00            | 727.08             |
| 12-A to 13-A                    | -                | -                | -                | -                 | 26.57              | 268.26             | 437.72             | 711.23             | 516.62             |
| 13-A to 14-A                    | -                | -                | -                | -                 | -                  | 2.27               | 78.68              | 383.04             | 319.80             |
| 10-A to<br>Upstream             | -                | -                | -                | 3.27              | 55.78              | 177.66             | 325.22             | 480.33             | 337.64             |
| 7-A to 11-A                     | -                | -                | 16.70            | 86.94             | 248.49             | 381.98             | 421.96             | 661.60             | 454.08             |
| 11-A to<br>Upstream             | -                | -                | -                | -                 | -                  | 0                  | 2.44               | 109.02             | 132.96             |
| 15-A to 16-B<br>to 17-AB        | -                | -                | -                | -                 | -                  | -                  | -                  | 11.74              | 48.57              |
| 16-B to<br>Upstream             | -                | -                | -                | -                 | -                  | -                  | -                  | -                  | .39                |
| Total                           | 75.              | 592.             | 1826.            | 4676.             | 8219.              | 11055.             | 13258.             | 15926.             | 10047.             |
| Accumulated<br>Total            | 75.              | 667.             | 2493.            | 7169.             | 15388.             | 26443.             | 39701.             | 55627.             | 65674.             |

APPENDIX C  
SELECTED PHOTOGRAPHS

Ground views taken 21 November 1978.  
Aerial views taken 30 November 1978.

Photograph 1: Old Highway 268 cut between sediment ranges 4-A and 5-A. Pool elevation 1020.55.

Photograph 2: Looking downstream at old Highway 268 cut between sediment ranges 4-A and 5-A. Pool elevation 1020.55.

Photograph 3: Looking upstream at old Highway 268 cut above sediment range 2-A. Pool elevation 1020.55.



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Photograph 4: Looking upstream on Warrior Creek above sediment range 9-A. Pool elevation 1020.55.

Photograph 5: Looking upstream on Punkin Creek above confluence with Warrior Creek. Pool elevation 1020.55.

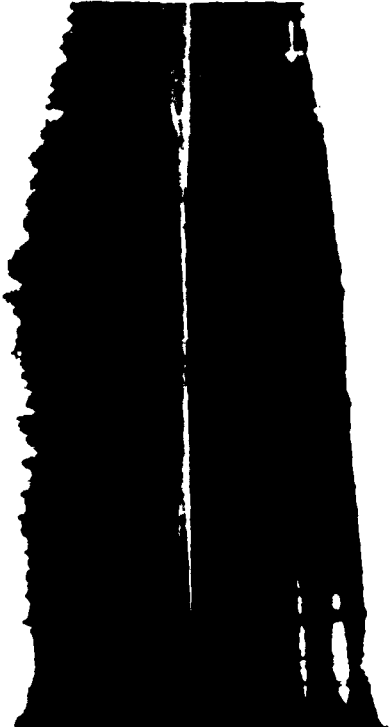
Photograph 6: Aerial view of Warrior Creek above sediment range 9-A. Pool elevation 1020.00.



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Photograph 7: Aerial view of Punkin Creek just above confluence with Warrior Creek. Note delta formation at lowered pool elevation. Pool elevation 1020.00.

Photograph 8: Aerial view of Blood Creek in vicinity of N. C. Highway 268. Note delta formation at lowered pool elevation. Pool elevation 1020.00.



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Photograph 9: Left bank Yadkin River looking upstream just above sediment range 12-A. Pool elevation 1020.55.

Photograph 10: Aerial view of Yadkin River just above sediment range 12-A. Note sediment deposition in slack water area. Pool elevation 1020.00.

Photograph 11: Aerial view of Marley's Ford where sediment samples S-1A and S-1B were taken. Boat ramp is completely silted in. Pool elevation 1020.00.



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Photograph 12: Aerial view of Yadkin River immediately downstream of sediment range 13-A. Pool elevation 1020.00.

Photograph 13: Looking downstream Yadkin River from sediment range 13-A. Pool elevation 1020.55.

Photograph 14: Looking upstream Yadkin River from sediment range 13-A. Note drop off at water's edge. Deposited sediment is being carried downstream during low pool condition. Pool elevation 1020.55.

Photograph 15: Looking upstream Yadkin River from sediment range 13-A. Pool elevation 1020.55.



13



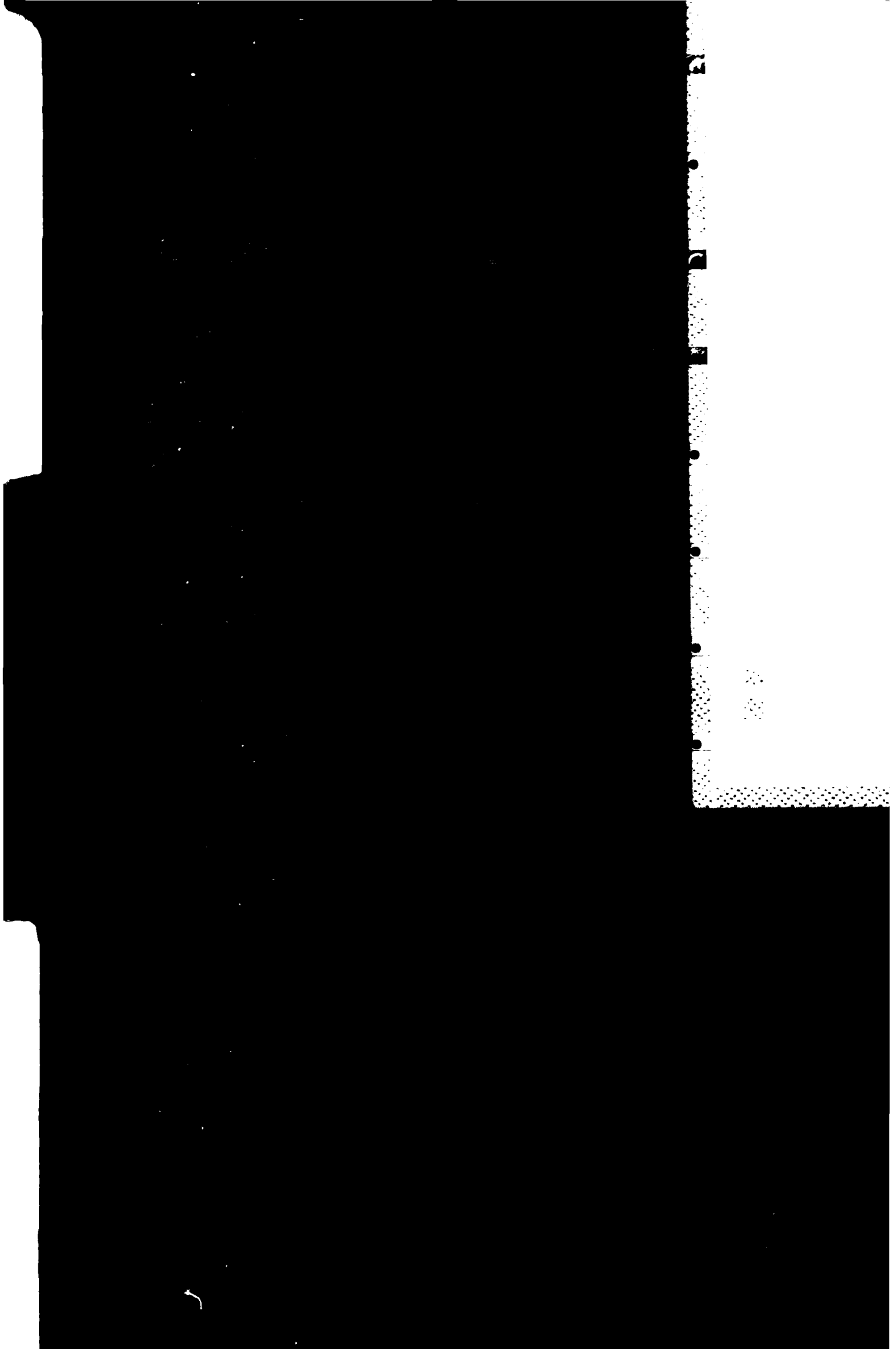
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Photograph 16: Aerial view of Yadkin River immediately upstream of sediment range 13-A. Pool elevation 1020.00.

Photograph 17: Aerial view of Yadkin River just downstream of sediment range 14-A. Pool elevation 1020.00.

Photograph 19: Confluence of Lewis Fork Tributary with Lewis Fork Creek between sediment ranges 7-A and 11-A. Pool elevation 1020.55.

Photograph 20: Aerial view of Lewis Fork Creek at sediment range 11-A. Pool elevation 1020.00.

Photograph 21: Looking upstream Lewis Fork Creek from confluence with Lewis Fork Tributary. Pool elevation 1020.55.

Photograph 22: Looking upstream Lewis Fork Creek above confluence with Lewis Fork Tributary. Sediment sample S-3 taken here. Note drop off and layering of sediment. Deposited sediment is being carried downstream during low pool condition. Pool elevation 1020.55.



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**END**

**FILMED**

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