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SECTION 32 PROGRAM: STREAMBANK EROSION CONTROL
EVALUATION AND DEMONSTRATI.. (U) ARMY ENGINEER WATERWAYS
EXPERIMENT STATION VICKSBURG MS S T RAYNORD FEB 78

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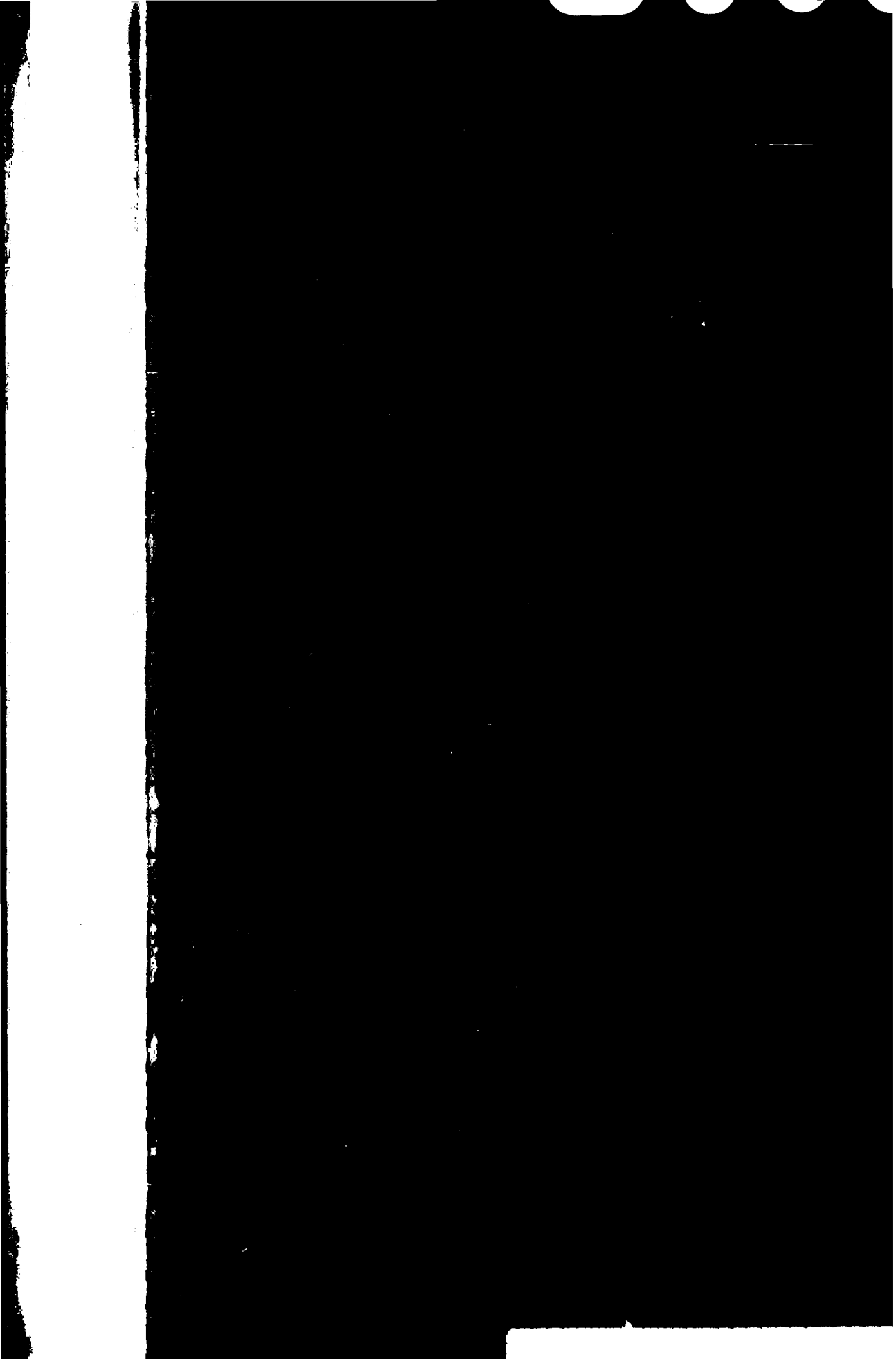
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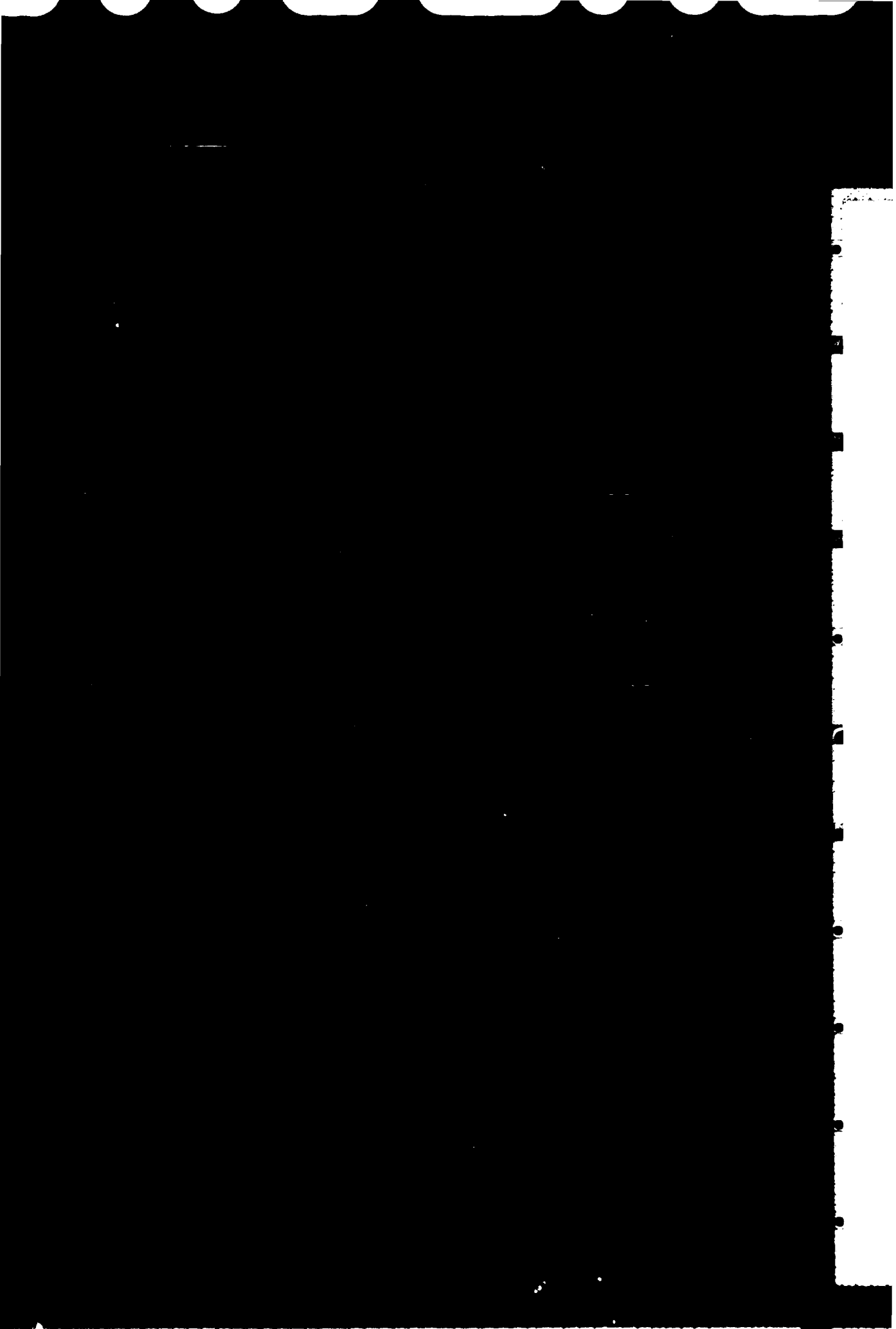
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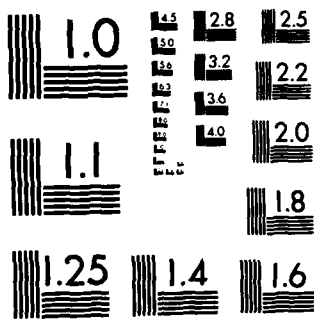
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SECTION 32 PROGRAM
STREAMBANK EROSION CONTROL
EVALUATION AND DEMONSTRATION
WORK UNIT 2 - EVALUATION OF EXISTING
BANK PROTECTION

FIELD INSPECTION OF BANK PROTECTION MEASURES
ON THE UPPER YAZOO RIVER

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SECTION 32 PROGRAM
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WORK UNIT 2 - EVALUATION OF EXISTING BANK PROTECTION

FIELD INSPECTION OF BANK PROTECTION MEASURES
ON THE UPPER YAZOO RIVER

1. A field inspection was conducted by the U. S. Army Engineer Waterways Experiment Station (WES) personnel on 1-3 June 1977 to observe bank protection measures on the tributaries of the Upper Yazoo River. The following were in attendance:

Jim Hines
Dr. Vic Zitta
Steve Maynard

Vicksburg District
Mississippi State University
Waterways Experiment Station

2. A general location map is shown in Figure 1. Figures 2 and 3 are location maps of the protection methods observed on Big Sand Creek and Figure 4 shows locations of sites inspected on Tillatoba Creek.

3. The first site observed was the Big Sand Creek near Greenwood, Mississippi, where the Vicksburg District, Soil Conservation Service, and others have undertaken various bank protection projects. About 52 percent of the Big Sand drainage basin is controlled by 40 Soil Conservation Service detention basins that were built in the early 1960's. Drop inlet spillway structures (Photo 1) assist in regulating flow for flood control purposes.

4. The first protection method observed on Big Sand Creek was a system of board fencing parallel to the streambank on the outside bank of a channel bend with concrete jacks upstream and downstream of the fencing (Photos 2 and 3). Fencing and jacks have been used in several locations on the Big Sand Creek and have worked well for the 10 years they have been in place. The next area observed on the Big Sand was where kudzu had been planted to stabilize the bank (Photo 4). The kudzu was not doing an adequate job of stabilizing the bank and had taken over the overbank vegetation.

5. In the upper reaches of the Big Sand Creek, an outcropping of a clay-sand mixture forms a natural grade control structure (Photo 5). If the Big Sand were to cut through this natural control, additional degradation and subsequent bank erosion would most likely occur upstream of the outcropping.

6. At the lower end of the drainage basin near Greenwood, the channel has been straightened and levees have been built to confine



the flow. A series of low-head sheet pile (Photo 6) and concrete drop structures (Photo 7) were built to control the grade and act as sediment basins. The channel upstream and downstream of the concrete structure is completely filled with sediment.

7. Next, riprap revetment was observed at the junction of the Greenwood diversion canal and the Tallahatchie River (Photo 8). The riprap was being placed on a 1V-on-2H slope on a black plastic filter cloth. Toe protection for the revetment was being extended well out into the river.

8. The inspection continued to Tillatoba Creek near Charleston, Mississippi, where the Vicksburg District has a very active bank protection program under way. Many of the Section 32 demonstration sites are located on Tillatoba Creek. The first area observed was a mattress of tires connected together with steel bands around the periphery and anchored with cables attached to guy wire anchors (Photos 9 and 10). Willow shoots were planted in the tires and about 50 percent were growing.

9. Another Section 32 demonstration site was observed consisting of sand-cement bag protection (Photo 11). These bags were placed on a steep slope (1V on 1.5H) and some evidence of toe launching was observed. The next protection method observed on Tillatoba Creek was a site under construction using a double row of wire fencing parallel to the stream (Photos 12 and 13). The space between the double fence will be filled with old tires. Farther upstream a double-row wire fence will be constructed and filled with hay bales.

10. Timber pile groins that had been in place many years were observed in a bend upstream of the highway bridge (Photo 14). These groins had trapped debris and appeared effective in halting the erosion of the outside bank of the bend. Riprap hard points were observed at two locations on Tillatoba Creek (Photos 15 and 16). Kudzu was well established between the riprap hard points at one location.

11. The last protection type observed on the trip was riprap toe protection (Photos 17 and 18). This type of protection consists of a large section of rock placed at the toe of the slope extending up the bank as high as one half of the total bank height. The bank is usually graded to a 1V-on-2H slope before rock placement and the upper bank is vegetated after the rock is in place. The Vicksburg District has constructed several Section 32 demonstration sites using this scheme and all are performing satisfactorily.

12. A total evaluation of the demonstration sites will be made during FY 81 by the Vicksburg District after they have collected enough data from several years flow.

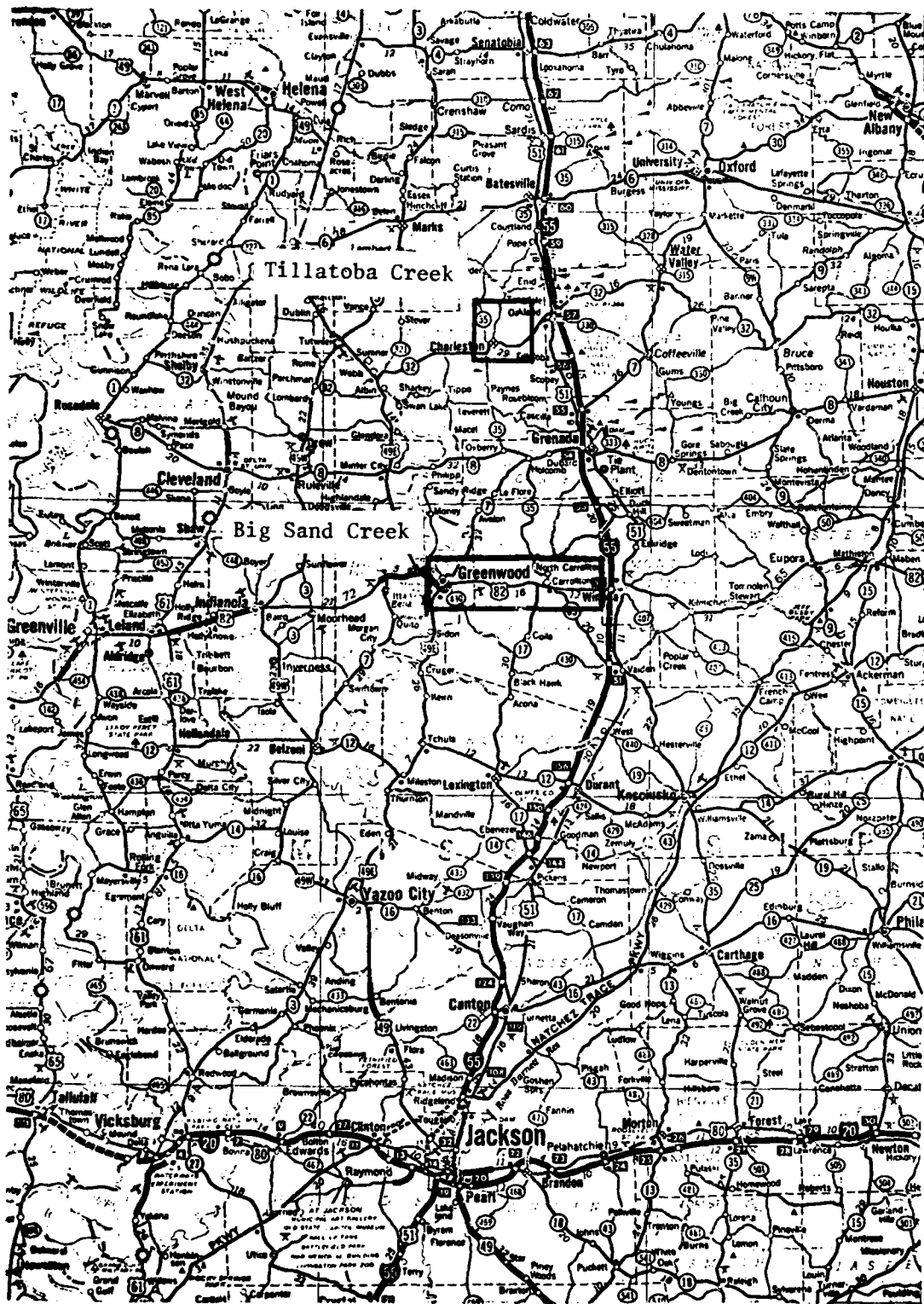


Figure 1. General location map for Greenwood and Charleston inspection sites

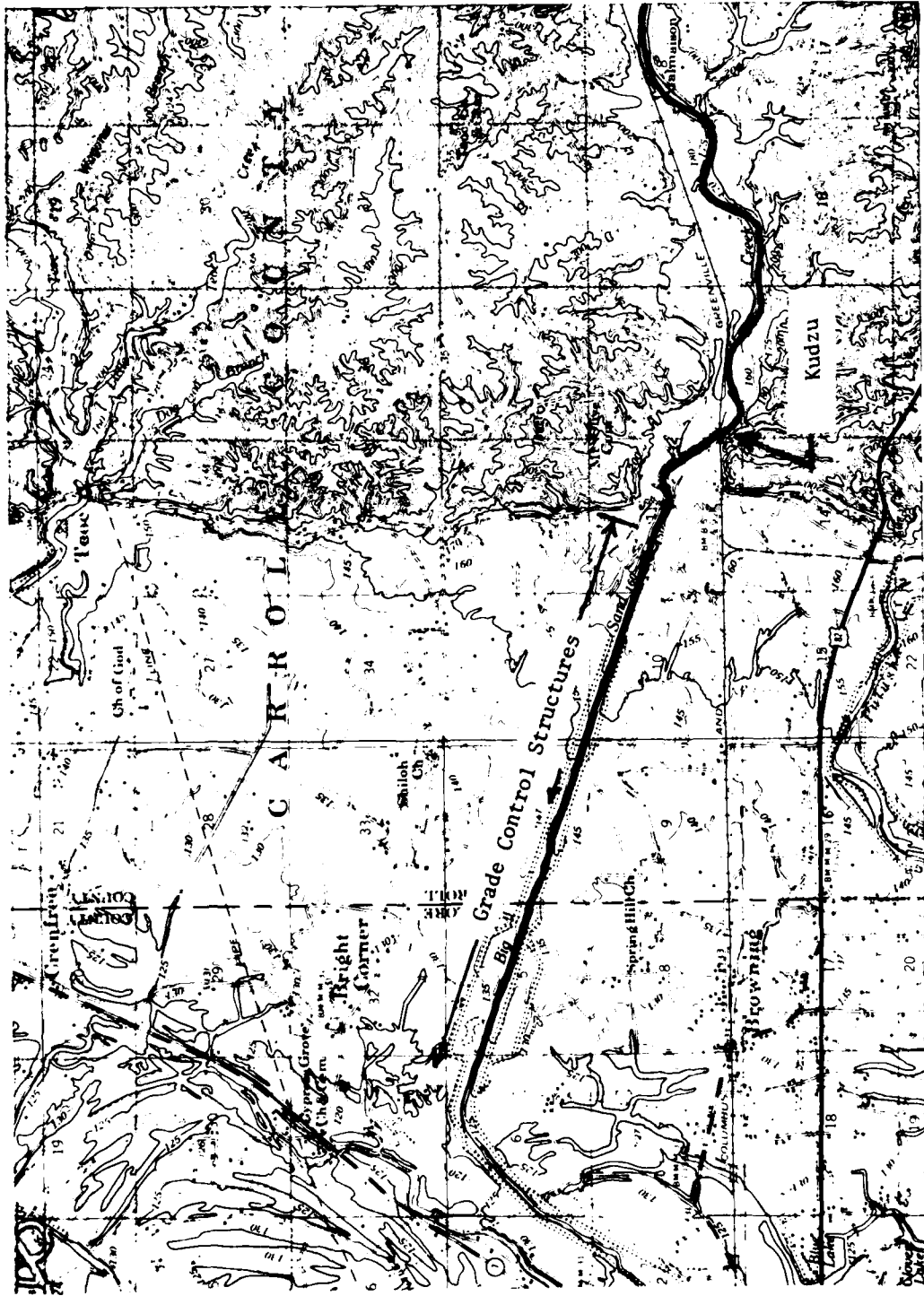


Figure 2. Location of protection methods, Big Sand Creek, Lower Reach. Scale: 1 inch = 1 mile

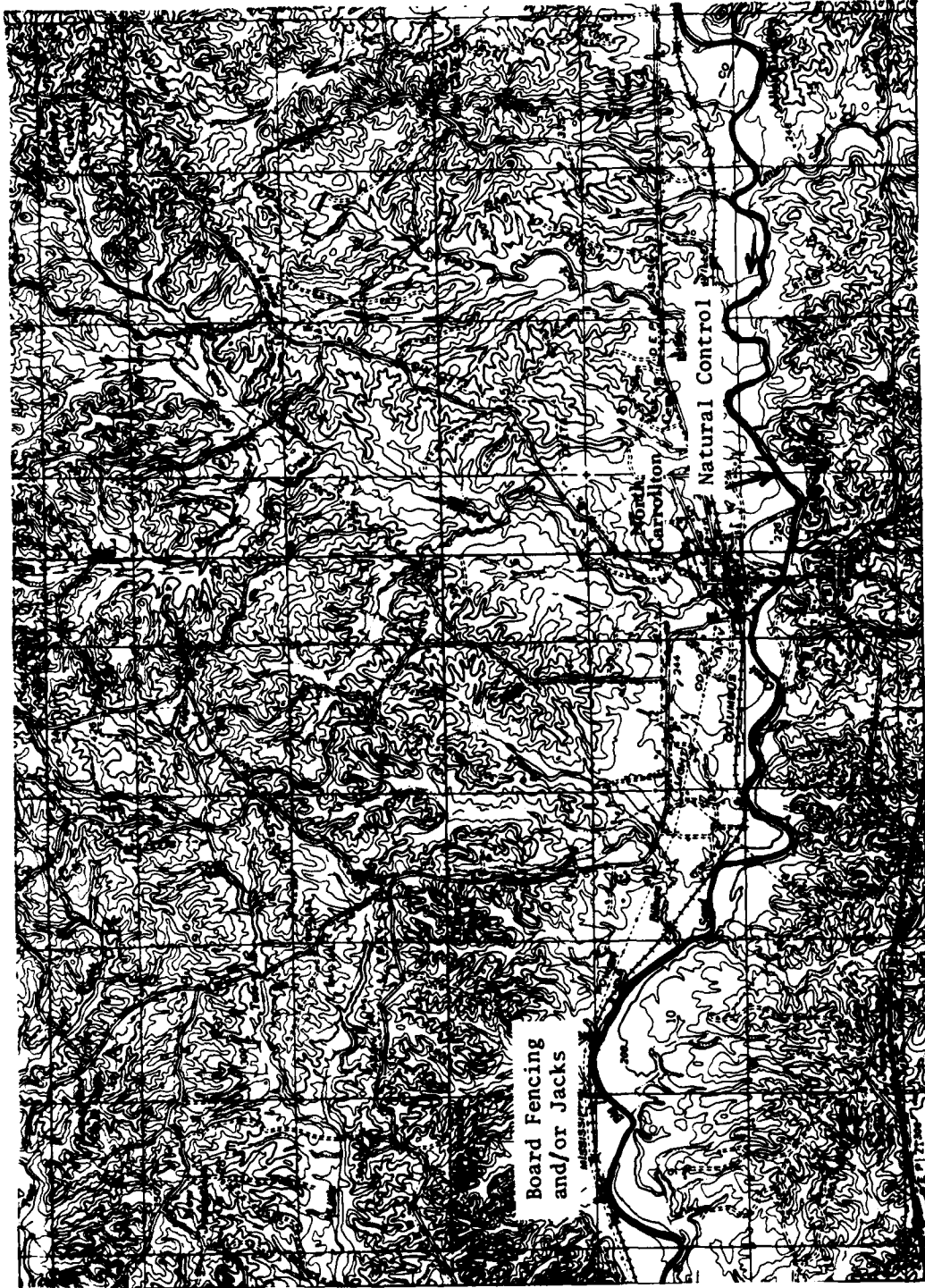


Figure 3. Location of protection methods, Big Sand Creek, Upper Reach. Scale: 1 inch = 1 mile

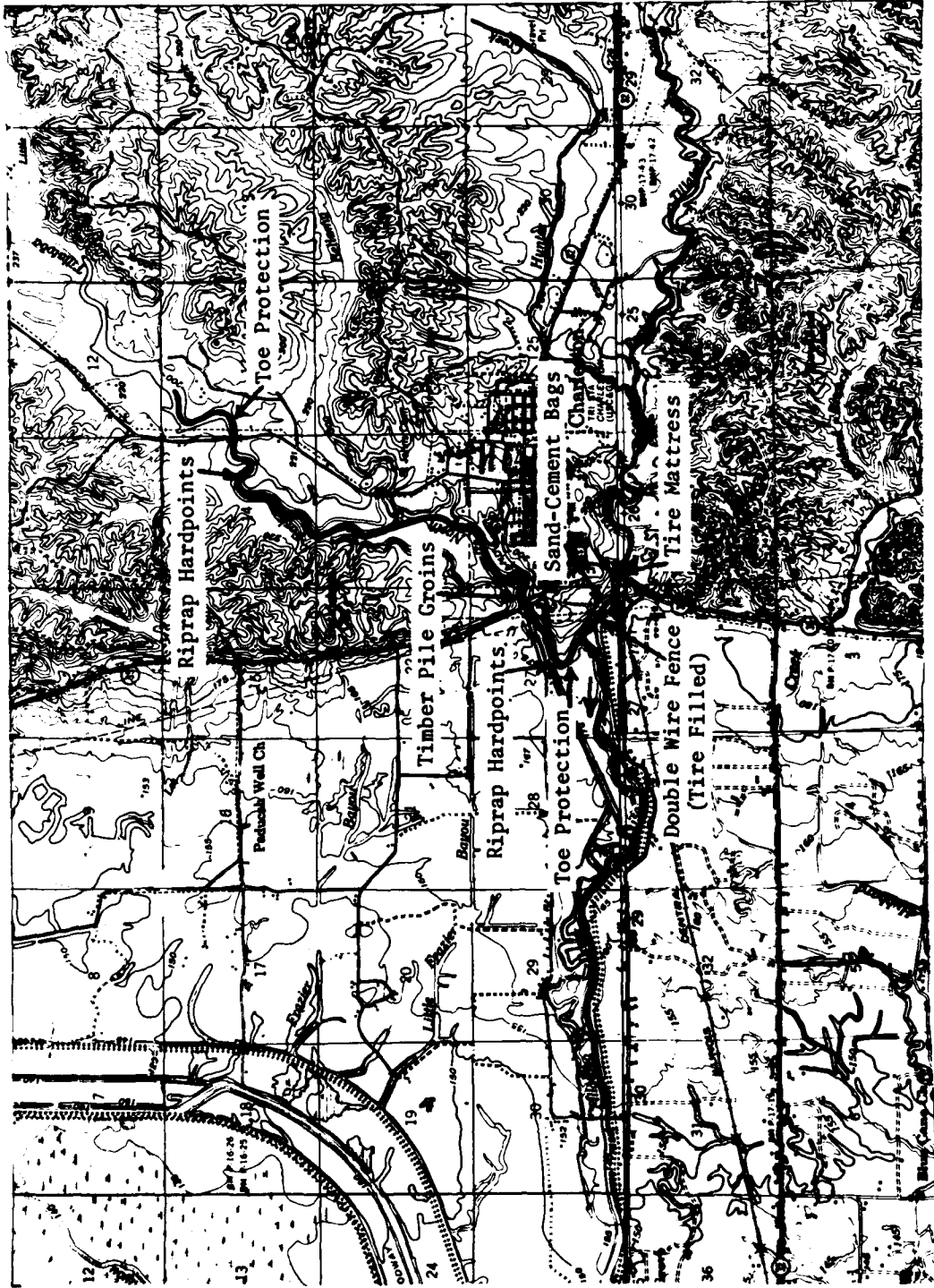


Figure 4. Location of protection methods, Tillatoba Creek basin. Scale: 1 inch = 1 mile



Photo 1. Soil Conservation Service flood control structure



Photo 2. Board fencing with concrete jacks upstream and downstream



Photo 7. Concrete grade control structure
silted in both upstream and downstream



Photo 8. Riprap placement on black plastic filter material



Photo 9. Tire mattress

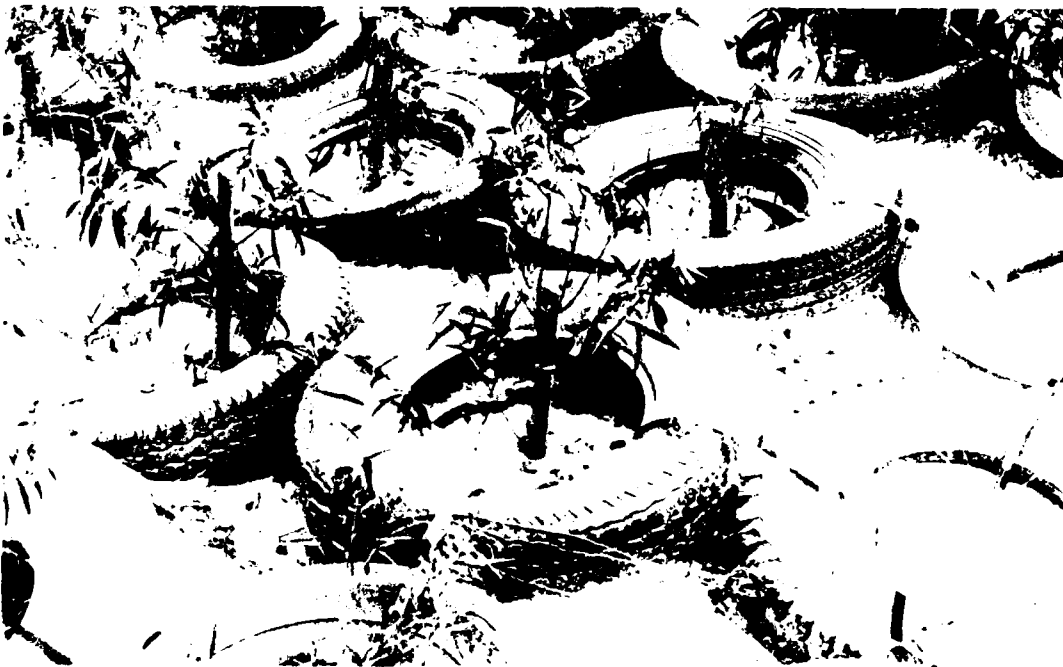


Photo 10. Tire mattress with willow shoots
planted to increase stability



Photo 11. Sand-cement



Photo 12. Double-row wire f

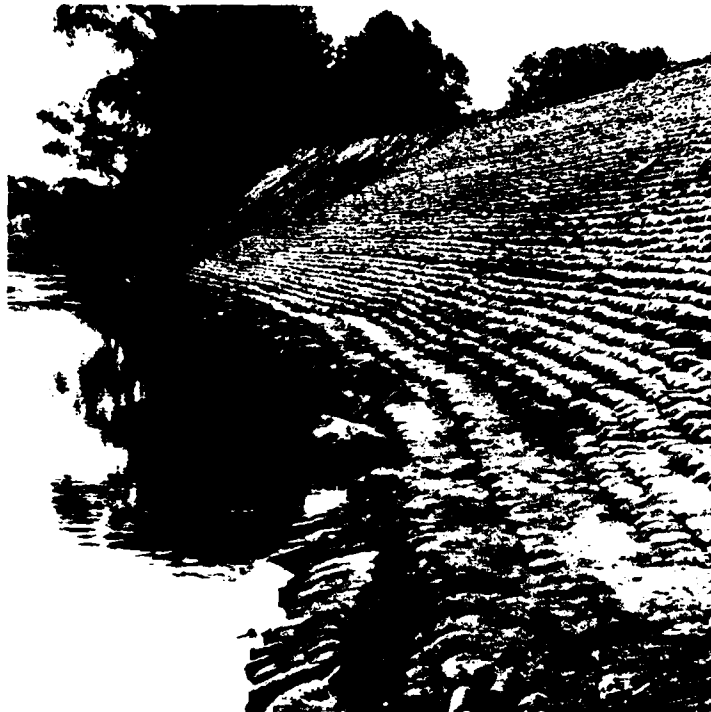


Photo 11. Sand-cement bags with toe launching



Photo 12. Double-row wire fence (to be filled with tires)

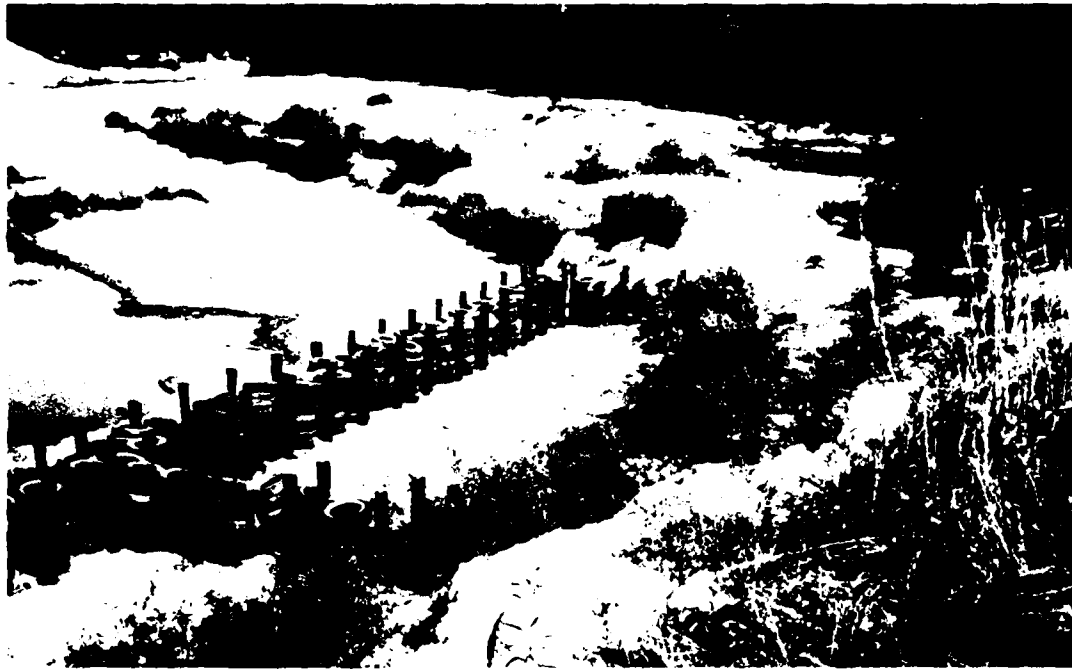


Photo 13. Double-row wire fence with tiebacks



Photo 14. Timber pile groins



Photo 15. Riprap hard points with kudzu



Photo 16. Riprap hard points



Photo 17. Riprap toe protection



Photo 18. Riprap toe protection

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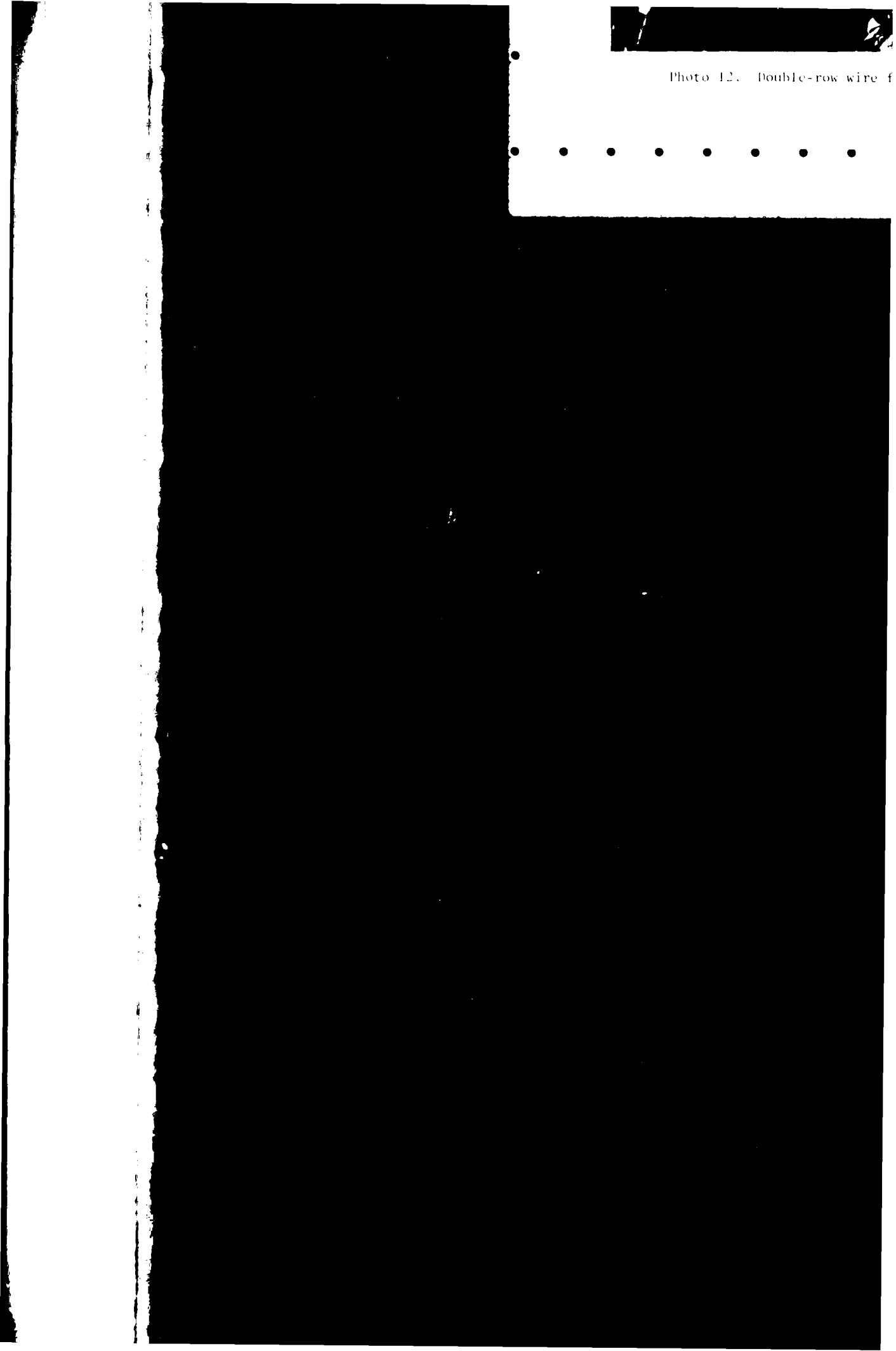
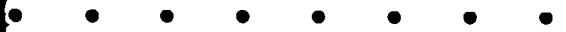
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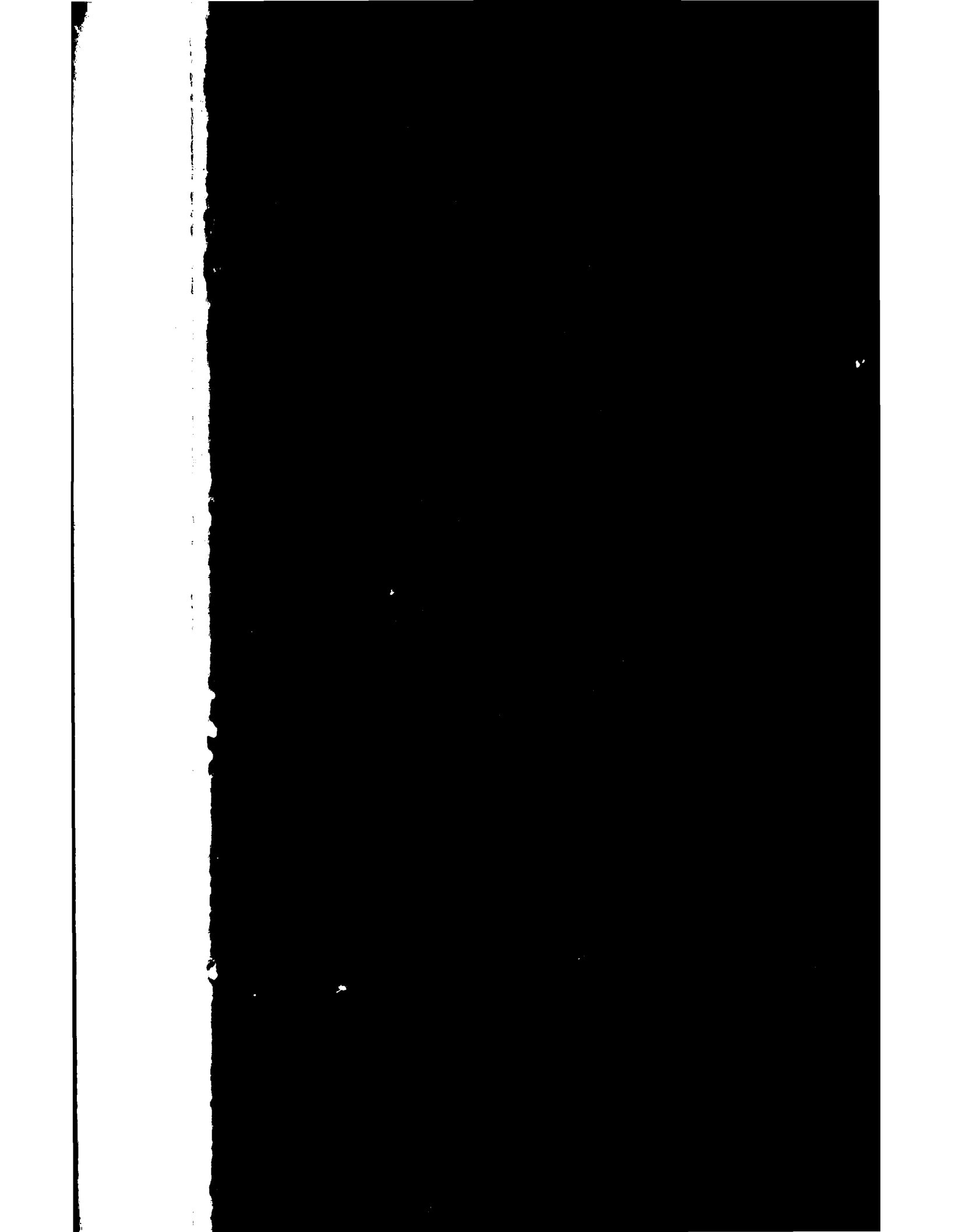
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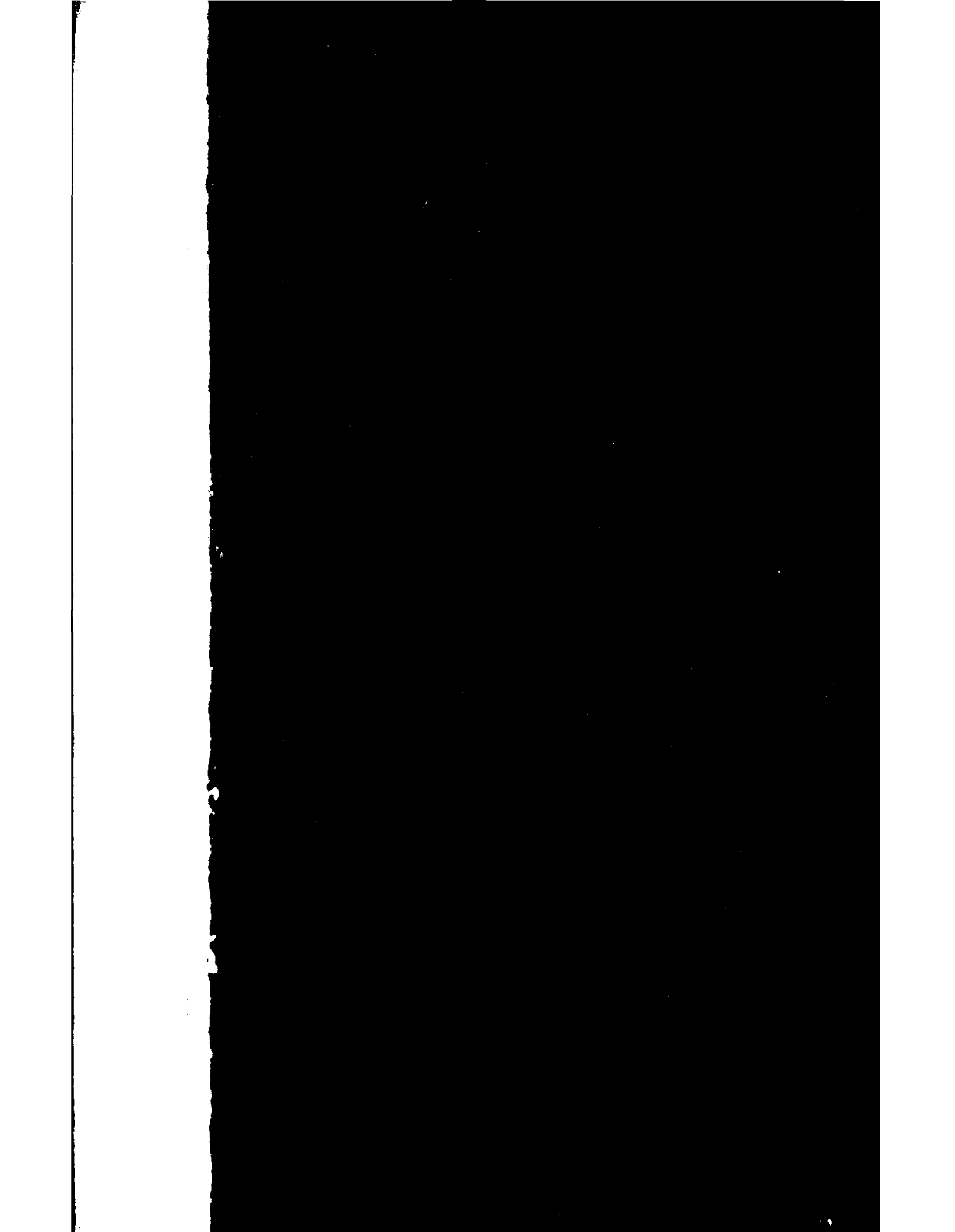
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Photo 12. Double-row wire f







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