B65 000515 255

May 15, 2000

R. J. Galyon, LP 5E-C

JOHN SEVIER FOSSIL PLANT - ANNUAL INSPECTION OF WASTE DISPOSAL AREAS

The subject inspection was completed by representatives of Fossil Engineering Services on March 30, 2000. The observations from this inspection are in the attached report. The report includes a list of recommendations and we concur with those. The plant Program Administrator (Environmental) will be provided an electronic copy of this report in order to prepare a final report for certification by the plant manager and submission to the state as appropriate.

If you have any questions or need additional information, please contact me at Chattanooga extension 6846, or Missy Hedgecoth at Chattanooga extension 6426.

Victor W. Davis
Manager, Yard Systems
LP 2T-C

VWD:MAH:SRF
Attachment
cc (Attachment):
D. E. Gaston, Jr., JSF 1A-RGT
T. E. Miller, JSF 1A-RGT
J. L. Ward, JSF 1A-RGT
EDMS, EB 5G-C

c:dikeins1.doc

JOHN SEVIER FOSSIL PLANT (JSF)
NPDES PERMIT NO. TN0005436
ANNUAL ASH POND DIKE INSPECTION
2000

INTRODUCTION

The annual inspection of the waste disposal areas at John Sevier Fossil Plant (JSF) was conducted on March 30, 2000 by Chuck Bohac and Melissa Hedgecoth of TVA Fuel Supply and Engineering Services. Larry White of the plant staff was also present. The previous annual inspection was conducted on April 5, 1999.

The results of the inspection are presented below according to location.

ORIGINAL DISPOSAL AREA

This area is shown on drawings 10H291-2 and 10H291-4.

All fly ash that is not marketed commercially is dry stacked in the interior basin in the east portion of this area. JSF presently markets more than fifty percent of its annual fly ash production. Since its conversion for use only for dry stacking of fly ash, sluice water is no longer impounded in this area.

The exterior dike slopes have a good vegetative cover and generally appear to be stable. However, an engineering study conducted in the spring of this year indicates that there are several areas along the dike that are so steep that the computed factor of safety for slope stability is less than 1.0. A project is scheduled to begin this year to flatten the slopes so that the factor of safety will exceed 1.3.

The exterior slopes and toe areas of the dikes were inspected from the access trail which extends completely around the exterior toe of slope of the east, north, and west dikes. Minor surface sloughing with some erosion was observed in a couple of areas of the exterior slope of the north dike and should be monitored. Some trees are encroaching above the toe of the dike. Recommendations for tree removal are contained in the Appendix.

The outlet areas of the four small abandoned and plugged pipes, located below the toe of the exterior dike slope near the northeast corner of this area, were inspected and no seepage was noted in the areas around the two most upriver pipes. A seepage interception and collection system has been constructed for the two most down river pipes (Clay Pipe 2 and Clay Pipe 3). These systems appear to be functioning effectively. The ground surface areas at these pipes have dried up. There is a slight seepage face on the river bank about 50 feet downstream of Clay Pipe 3. The effluent from these systems is pumped to the Coal Yard Drainage Basin. The volume of effluent pumped is monitored on a weekly basis. The volume for Clay Pipe 2 averages about 10 gpm and Clay Pipe 3 averages about 2 gpm.

An additional seep was noted around an abandoned concrete pipe surfacing at the toe of the dike below JSDS-5 as shown on drawing 10H291-4. Two minor seeps were noted below the toe of the north dike near section B-6 as shown on drawing 10H291-2.

None of the seeps appear to jeopardize the stability of the dike.

Except for the active stacking area of about 20 acres the dry fly ash stack has been covered with earth and seeded and is developing a good vegetative cover. The slopes of the area permitted for the dry stack appear to be stable and in good condition.

A sedimentation basin was constructed as shown on 10H291-4 for storm water runoff from the fly ash stack. This basin is located in the southeast corner of the area just west and north of the chemical treatment ponds. The basin discharges through a standard spillway with skimmer into the channel which flows into the stilling pool in the extreme west end of the area. At the time of this inspection, the water level in the basin was well below the spillway overflow. The holes at the very bottom of the outlet structure were partially plugged and need to be cleaned out.

The existing stilling pond as shown in drawing 10H291-2 which is located on the west end (down river) end of the disposal area has two partially blocked inlets. The two most westerly 36 inch concrete pipes need to be cleaned.

ASH DISPOSAL AREA 2

This area is shown in drawing 10W293-1.

This area contains the active ash pond for all sluiced ash discharges. All bottom ash is sluiced into this area. Fly ash is sluiced during start-up and on an intermittent basis when problems are encountered with the dry fly ash collection system.

The exterior and interior dike slopes of the active ash pond appear to be in good condition with no signs of instability. They have an excellent vegetative cover, however, the exterior slope of the north dike has a heavy growth of undesirable trees and patch growths are present over some other areas of these slopes. Trees should be removed according to the guidelines presented in the Appendix. A small seep was observed near the toe of the north dike, just west of the access road to the top of the dike.

The floating skimmer in the divider dike flow-through spillway appears to be in good condition and operating effectively. There was no floating ash in the stilling pool area. The two standard spillways with skimmers in the stilling pool area appear to be in good condition and operating properly. The riprapped outfall and discharge channel below the outlet of these spillways is in good condition with no signs of erosion.

A bottom ash collection facility has been constructed in the east end of this area by Appalachian Products, Inc. This facility has the capability to retrieve and market the total volume of bottom ash produced. The bottom ash is trucked off site where it is presently used in the production of cinder block. This operation should extend the life of this pond indefinitely.

ASH DISPOSAL AREA J

This area is shown in drawing 10W286-5.

This area has been prepared and accepted for closure, and is being maintained by plant personnel in accordance with plans submitted to the State of Tennessee. There has been no change in the dikes since the last inspection. They appeared to be stable and in good condition. The dike slopes and the interior surfaces have a good vegetative cover with no signs of erosion. No seepage was noted in this area during the course of this inspection. However, tree growth is excessive on the river side dike extending upriver the from the old bridge location, around the east end of the area, and terminating at the entry road from the plant access highway. Trees should be removed as described in the Appendix.

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. See 18 U.S.C Section 1001 and 33 U.S.C. Section 1319. (Penalties under these statutes may include fines up to $10,000 and maximum imprisonment of between six months and five years.)

_____

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AGENT

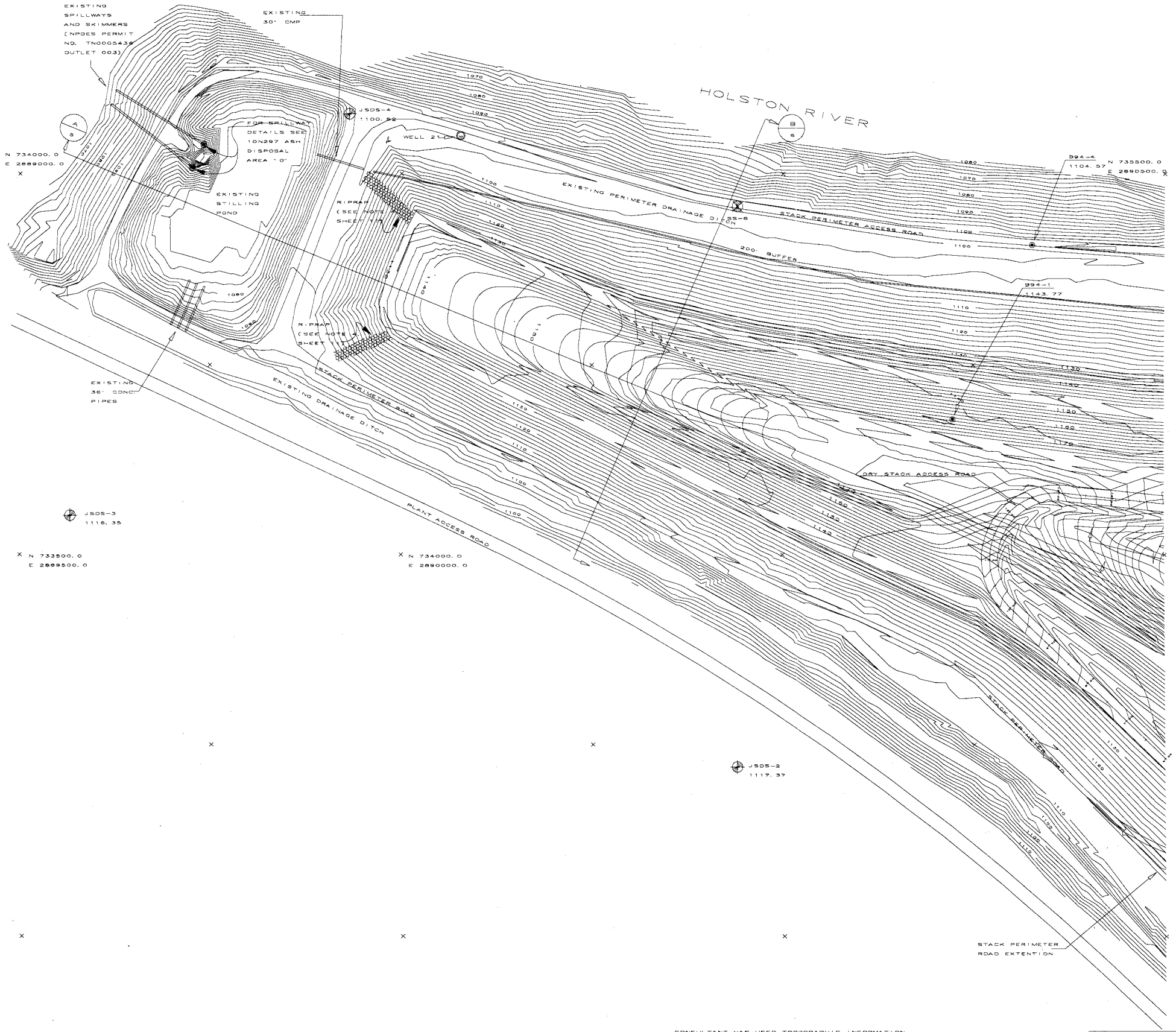
JOHN SEVIER FOSSIL PLANT
TREE REMOVAL RECOMMENDATIONS

There are basically four reasons why trees cause problems to the integrity of by-product disposal sites.

1. Infiltration - When trees are present in areas with final cover, protruding through the final cover allows infiltration into the stacking area.
2. Wicking - The tree root system can wick groundwater or water from within the ash pond and can result in raising the phreatic surface in the dikes, which in turn can decrease dike stability.
3. Piping - After trees are cut and there root system dies and decays, the remaining cavities allow an opportunity for water to pipe through the dike.
4. Structural Stability - As trees die and / or fall over due to wind and weather, the root system can pull a large chunk of soil out with it, causing dike instability and erosion problems.

Following are some general recommendations for tree removal:

1. Remove all trees located on the inside (pond side) of the dike per instructions below.
2. Clear everything on the exterior dikes down to the toe of fill. If the tree growth has gotten so out of hand that it is not practical to clear down to the toe of fill, at least clear everything from the top of the dike down to the first berm.
3. Do not remove trees which are located on original ground, unless they are located on the edge of a bank and are falling over and pulling the ground out with the roots and cutting back into the dike.
4. If trees are big and near the toe of the slope and are not causing erosion, they do not have to be removed.
5. Bush-hog all small trees and shrubs.
6. Trees which are too large to bush-hog can be cut, rather than pulled by the roots, as long as their location on the dike slope is such that the dike is so thick that there will be no problem of piping when the root system dies and decays. (Assume the tree root system extends out as far as the tree limbs). After large trees are cut, spray root killer directly on the stump to prevent further growth.
7. *All* trees that are located in areas with final cover must be taken out by the roots and the hole must be filled with compacted clay per the solid waste disposal permit. (At this time, no trees were found in areas with final cover.)
8. At this time, do not remove any trees in the dry stacking area along the river bank. The trees will be removed when the dike slope is flattened, during the slope stability project.
9. Cut trees can generally be burned on the plant site after obtaining a local burning permit.



BENCHMARK DESCRIPTIONS

JSDS-1 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED BETWEEN RR TRACKS AND ACCESS ROAD TO STEAM PLANT. N 734, 220. 69; E 2, 891, 555. 02

JSDS-2 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED BETWEEN RR TRACKS AND ACCESS ROAD TO STEAM PLANT. N 734, 159. 48; E 2, 890, 718. 37

JSDS-3 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT SOUTH END OF MAIN POND, 200' SOUTH OF TOP OF DIKE, AT TOE OF SLOPE. N 733, 617. 68; N 2, 889, 514. 65

JSDS-4 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT NE CORNER OF STILLING POND AND AT EDGE OF ACCESS ROAD THAT RUNS PARALLEL TO RIVER. N 734, 309. 20; E 2, 889, 334. 03

JSDS-5 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT EDGE OF ACCESS ROAD THAT RUNS PARALLEL TO RIVER. N 735, 644. 65; E 2, 890, 894. 40

JSDS-6 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT EDGE OF ACCESS ROAD RUNNING PARALLEL TO RIVER. N 736, 440. 20; E 2, 891, 674. 10

JSDS-7 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT NW END OF BATH TUB AREA AT EDGE OF ACCESS ROAD THAT RUNS PARALLEL WITH RIVER. N 736, 965. 40; E 2, 892, 164. 22

JSDS-8 – 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT NORTH END OF BATH TUB AREA AT EDGE OF ACCESS ROAD ALONG RIVER. N 737, 123. 02; E 2, 892, 491. 23

N

LEGEND

1100 EXISTING CONTOUR
1100 PROPOSED CONTOUR
MONITORING WELL
DRAINAGE PIPE
STANDPIPE
SECTION LABEL
SECTION LABEL / SHEET WHERE SECTION IS SHOWN
BORING LOCATION (ADDED IN 9-15-94 REVISION)
BORING LOCATION (ADDED IN 3-23-97 REV.)

GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.

CONSULTANT HAS USED TOPOGRAPHIC INFORMATION PROVIDED BY TENNESSEE VALLEY AUTHORITY. (AERIAL PHOTO DATES 10-9-90 AND 12-90. UPDATED WITH SURVEY DATA COLLECTED 02-04-92.)

REV	DATE	DESCRIPTION	DRAWN	CHKD	SUPV	REVWD	APPRD	ISSD	PROJECT ENGR	AS CONST
2		ADD NOTE REFERENCE FOR RIPRAP AND FOR SPILLWAY DETAILS.								
1	3-23-97	REV. TO SHOW LOCATION OF BORINGS.	CEB	GSL	CEB	GCB	MWB	MDJ	MDH	5123
0		INITIAL ISSUE LAW ENG. AND TRIBBLE & RICHARDSON, INC. PROJ. NO. 2922-014, SH. 2 OF 11.								

SCALE: 1" = 100' EXCEPT AS NOTED

LAW ENGINEERING AND TRIBBLE & RICHARDSON INC.

DRY FLY ASH STACK

PROPOSED CONTOURS

(WEST)

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
BNC	BNC	MSD	MSD	K. M. BURNETT	R. G. JOHNSON	W. D. HALL

JOHN SEVIER FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R12	DATE	SIZE	CODE	DRAWING NO.	REV
		A1	C	10H291-2	R 2

LAW ENGINEERING
GEOTECHNICAL ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

Tribble & Richardson Inc.

LAW ENG. AND TRIBBLE & RICHARDSON, INC.	9/15/94
TASK COMPLETED BY:	REV. NO.

PLOT FACTORS: 1
N_TVA
FILENAME: r5291-2.dwg

C. A. D. DRAWING
DO NOT ALTER MANUALLY

41 | C | 10H291-4

HOLSTON RIVER

BATHTUB AREA

DRY STACK ACCESS ROAD

STACK PERIMETER ACCESS ROAD

EXISTING PERIMETER DRAINAGE DITCH

200' BUFFER

STACK PERIMETER ROAD EXTENTION

EXISTING DRAINAGE DITCH

PROPOSED SEDIMENT BASIN (SEE POND LAYOUT SHEET)

PROPOSED OUTFALL STRUCTURE

CHEMICAL CLEANING POND

CHEMICAL CLEANING POND

COAL STORAGE YARD

FLY ASH STORAGE SILOS

PLANT ACCESS ROAD

RIPRAP (SEE NOTE 4 SHEET 1)

J505-1 1122.38

J505-2 1112.40

J505-3 1114.17

J505-4 1115.09

J505-5 1114.37

J505-6 1116.10

J505-7 1068.78

894-2 1140.32

894-3 1116.10

894-4 1104.57

FX-85-16 4" CLAY PIPE

EXISTING 4" CLAY PIPE

EXISTING 2" CLAY PIPE

N 735500.0 E 2890500.0

N 736000.0 E 2891000.0

N 736462.35 E 2,691,533.33

N 736500.0 E 2891500.0 EL 1065.37

N 736,683.87 E 2,691,709.79

N 737000.0 E 2892000.0

N 737,076.71 E 2,692,127.22

N 737,119.42 E 2,692,215.45

N 737500.0 E 2892500.0

N 737000.0 E 2893000.0

RIPRAP SEE NOTE 4 SHEET 1

BENCHMARK DESCRIPTIONS

J505-1 — 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED BETWEEN RR TRACKS AND ACCESS ROAD TO STEAM PLANT. N 734,220.69, E 2,691,999.92

J505-2 — 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT EDGE OF ACCESS ROAD THAT RUNS PARALLEL TO RIVER. N 735,644.85, E 2,690,894.40

J505-4 — 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT EDGE OF ACCESS ROAD RUNNING PARALLEL TO RIVER. N 736,440.20, E 2,691,674.10

J505-7 — 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT NW END OF BATH TUB AREA AT EDGE OF ACCESS ROAD THAT RUNS PARALLEL WITH RIVER. N 736,983.40, E 2,692,184.22

J505-8 — 4" X 4" CONCRETE PAD WITH BRASS TABLET LOCATED AT NORTH END OF BATH TUB AREA AT EDGE OF ACCESS ROAD ALONG RIVER. N 737,125.02, E 2,892,491.23

CONSULTANT HAS USED TOPOGRAPHIC INFORMATION PROVIDED BY TENNESSEE VALLEY AUTHORITY. (AERIAL PHOTO DATES 10-9-90 AND 12-90. UPDATED WITH SURVEY DATA COLLECTED 02-04-92.)

LEGEND

- 1100 — EXISTING CONTOUR
- 1100 — PROPOSED CONTOUR
- MW — MONITORING WELL
- DRAINAGE PIPE
- SP — STANDPIPE
- SECTION LABEL (E / 7) — SECTION LABEL; SHEET WHERE SECTION IS SHOWN
- BORING LOCATION (ADDED IN 9-15-94 REVISION)
- BORING LOCATION (ADDED IN 3-25-97 REV.)

GRAPHIC SCALE

100 0 80 100 200 400

(IN FEET)

1 inch = 100 ft.

NO	BY	DATE	CHKD	SUPV	APVD	APPD	ISSD	PROJECT NO	AS CONST
0	INITIAL ISSUE LAW ENG. AND TRIBBLE & RICHARDSON, INC.	BNC	WSD	JLG	KWB	REV	WDH	2892-01A	SHEET 4 OF 11
1		CLM	WSD	JLG	KWB	REV	WDH	6135	
2	ADD LOCATION OF EXIST. PIPES.	CEB	DSL	CEB	KWB	REV	WDH	6135	
3	REV. TO SHOW LOCATION OF BORINGS & CHANGE WEST TO EAST IN TITLE BLOCK	CEB	DSL	CEB	KWB	REV	WDH	6135	

SCALE: 1" = 100 — EXCEPT AS NOTED

LAW ENGINEERING AND TRIBBLE & RICHARDSON, INC.

DRY FLY ASH STACK

PROPOSED CONTOURS

(EAST)

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
BNC	BNC	WSD	WSD	K. W. BURNETT	R. G. JOHNSON	W. D. HALL

JOHN SEVIER FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R12 | DATE | 41 | C | 10H291-4 | R 2

LAW ENGINEERING
GEOTECHNICAL ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

Tribble & Richardson Inc.

LAW ENG. AND TRIBBLE & RICHARDSON, INC. (T&R) | TASK COMPLETED BY: | REV NO:

PLOT FACTOR: 1 | C.A.D. DRAWING
TVA | DO NOT ALTER MANUALLY
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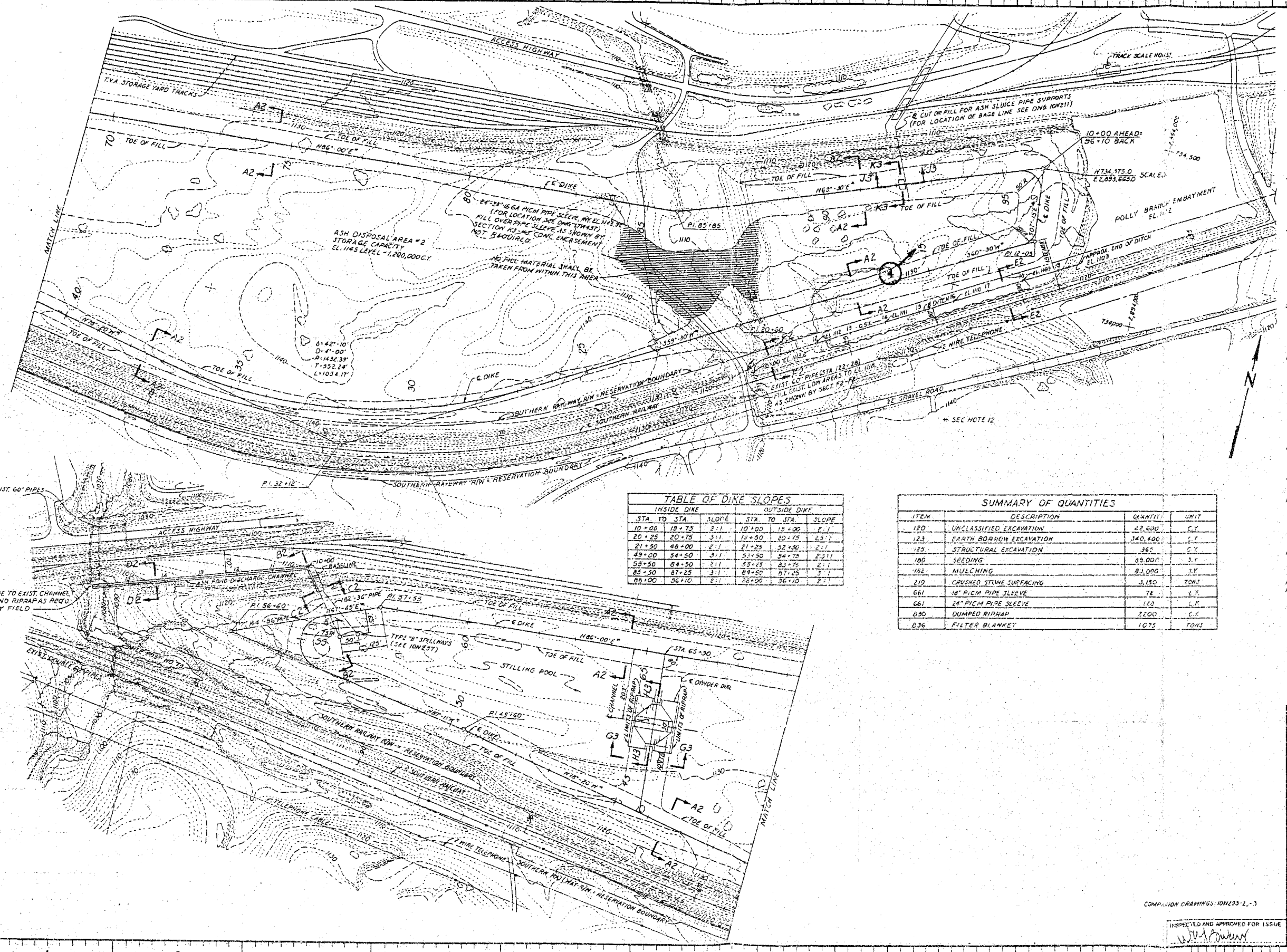

TABLE OF DIKE SLOPES

INSIDE DIKE			OUTSIDE DIKE		
STA. TO STA.		SLOPE	STA. TO STA.		SLOPE
10+00	19+75	2:1	10+00	15+00	F.1
20+25	20+75	3:1	15+50	20+75	2.5:1
21+50	48+00	2:1	21+25	52+50	2:1
49+00	54+50	3:1	53+50	54+75	2.5:1
55+50	84+50	2:1	55+25	83+75	2:1
85+50	87+25	3:1	84+50	87+25	3:1
88+00	96+10	2:1	88+00	96+10	F.1

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
120	UNCLASSIFIED EXCAVATION	42,600	C.Y.
123	EARTH BORROW EXCAVATION	140,400	C.Y.
125	STRUCTURAL EXCAVATION	362	C.Y.
180	SEEDING	89,000	S.Y.
182	MULCHING	89,000	S.Y.
210	CRUSHED STONE SURFACING	3,150	TONS
661	18" PICM PIPE SLEEVE	76	L.F.
661	24" PICM PIPE SLEEVE	140	L.F.
830	DUMPED RIPRAP	2200	C.Y.
836	FILTER BLANKET	1075	TONS

NOTES:

1. ALL CONSTRUCTION, EXCEPT ROLLED EARTHFILL, SHALL BE IN ACCORDANCE WITH T-1 SPEC.
2. THE RESULTS OF THE SOIL INVESTIGATION FOR THE CONSTRUCTION OF THE ASH DISPOSAL AREA DIKES ARE REPORTED IN A MEMO FROM GENE FARMER TO G.L. BUCHANAN DATED DECEMBER 10, 1976, JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION, EN. DES. SOIL SCHEDULE NO G.
3. ALL ROLLED EARTHFILL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPEC. G-9, ROLLED EARTHFILL FOR DAMS AND POWER PLANTS. ROLLED EARTHFILL SHALL CONSIST OF SOIL PLACED IN LAYERS NOT EXCEEDING 6" AFTER COMPACTION AND SHALL BE UNIFORMLY COMPACTED TO AT LEAST 95% OF STD. MAX. ___ DENSITY AS DETERMINED BY ASTM D-698 PROCEDURES (STANDARD PROCTOR), MOISTURE CONTENT OF EARTHFILL SHALL BE WITHIN 3% OF OPTIMUM MOISTURE CONTENT.
4. FROM STA. 19+50 TO STA. 21+50 AND FROM STA. 84+00 TO STA. 88+00 (APPROXIMATELY BETWEEN EL. 1125 CONTOURS), A NARROW INSPECTION TRENCH SHALL BE EXCAVATED TO A DEPTH OF 10'. IN ANY AREA WHERE GRAVEL STRATUM IS EXPOSED, A CUTOFF TRENCH IS TO BE EXCAVATED THROUGH THE PERVIOUS STRATUM AND BACKFILLED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECT. A2 - A2. WHERE A CUTOFF TRENCH IS NOT REQUIRED, THE INSPECTION TRENCH IS TO BE IMMEDIATELY BACKFILLED, AFTER INSPECTION, WITH THE EXCAVATED MATERIALS AND THOROUGHLY COMPACTED.
5. BORROW MATERIAL SHALL BE EXCAVATED TO A DEPTH OF 10' BENEATH THE EXISTING GROUND SURFACE OR 2' MINIMUM BENEATH GRAVEL STRATUM WHERE ENCOUNTERED, EXCEPT AT LOCATIONS WHERE INSPECTION TRENCH IS REQUIRED. WHERE GRAVEL STRATUM IS EXPOSED, THE EXCAVATED SLOPE SHALL BE BLANKETED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECTION A2 - A2.
6. WHERE A CUTOFF TRENCH IS REQUIRED ADJACENT TO BLANKETED EXCAVATION SLOPE, THE CUTOFF TRENCH SHALL BE EXTENDED ACROSS THE WIDTH OF THE DIKE TO TIE INTO THE BLANKETED EXCAVATION SLOPE.
7. EARTHFILL FOR DIKE CONSTRUCTION SHALL CONSIST OF MATERIAL EXCAVATED FROM INSIDE ASH DISPOSAL AREA NO. 2. PERVIOUS GRANULAR SOILS COMPARABLE TO BORROW SOIL CLASS VII AS DEFINED BY THE MEMO PER NOTE 2, SHALL NOT BE USED AS EARTHFILL FOR DIKE CONSTRUCTION. CUT SLOPES FOR BORROW MATERIAL ADJACENT TO THE DIKE SHALL BE 3:1 OR FLATTER, AND THE TOP OF CUT SHALL BE A MINIMUM OF 25' FROM THE TOE OF DIKE SLOPE.
8. THE MINIMUM FACTOR OF SAFETY FOR ALL LOADING CONDITIONS INVESTIGATED BY STABILITY ANALYSIS FOR THE ASH DISPOSAL DIKES IS 1.21. THIS FACTOR OF SAFETY IS FOR THE SUDDEN DRAWDOWN CONDITION.
9. CRUSHED STONE OR GRAVEL SURFACING, 4" THICK, SHALL BE APPLIED FOR THE FULL WIDTH OF THE TOP OF DIKE IN ACCORDANCE WITH SECTION 210.
10. ALL CUT AND FILL SLOPES AND OTHER DISTURBED AREAS SHALL BE SEEDED WITH TYPE 6, MIXTURE E, IN ACCORDANCE WITH SECTION 180, DEPENDING ON THE TIME OF CONSTRUCTION IT MAY BE NECESSARY TO PROVIDE A TEMPORARY COVER ON THE DIKE SLOPES. ALL GRADED AREAS SHALL BE FERTILIZED AND MULCHED IN ACCORDANCE WITH SECTIONS 150 AND 182 RESPECTIVELY.
11. RIPRAP SHALL BE PLACED AS SHOWN ON THE DRAWINGS WITH A MINIMUM OF 50% BY WEIGHT, CONSISTING OF STONES OF AT LEAST 150 LB. EACH. RIPRAP SHALL CONFORM TO SECTION 830.
12. FILTER SHALL CONFORM TO SECTION 836.
13. ALL CENTERLINE BEARINGS ARE APPROXIMATE SCALED BEARINGS.

COMPANION DRAWINGS: 10W293-2, -3

NO.	ECN NO.	DATE	DSGN	DFTR	CHKD	SUPV	INSP	CONST	APPD
2		10-20-80							
1		4-20-79							

REV NOTES: TABLE OF DIKE SLOPES & EXCAV. QUANTITIES, MINOR REVISIONS, P.I. 3-21

DSGN - A.A. POWELL
DFTG - A.A. MCCARTER
CHKD - A.A. POWELL
SUPV - J.L. GEIGER

INSP -
CONSTRUCTION -
ENGINEER - W.W. Bennett

SCALE: 1" = 100' EXCEPT AS NOTED

MAIN PLANT

ASH DISPOSAL AREA NO. 2
PLAN

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED	RECOMMENDED	APPROVED
Robt. G. Bowman	[illegible]	[illegible]

KNOXVILLE 8-19-77 | 41 | C | 10W293-1 R2

RECORD DRAWING SUBMITTED Frank Van Meter 12 R2

INSPECTED AND APPROVED FOR ISSUE W.W. Bennett

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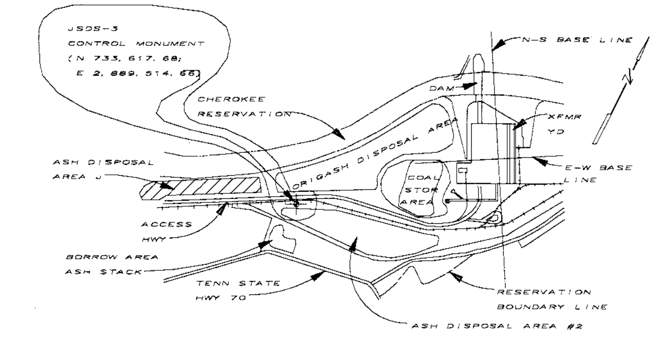
SIZE [illegible]



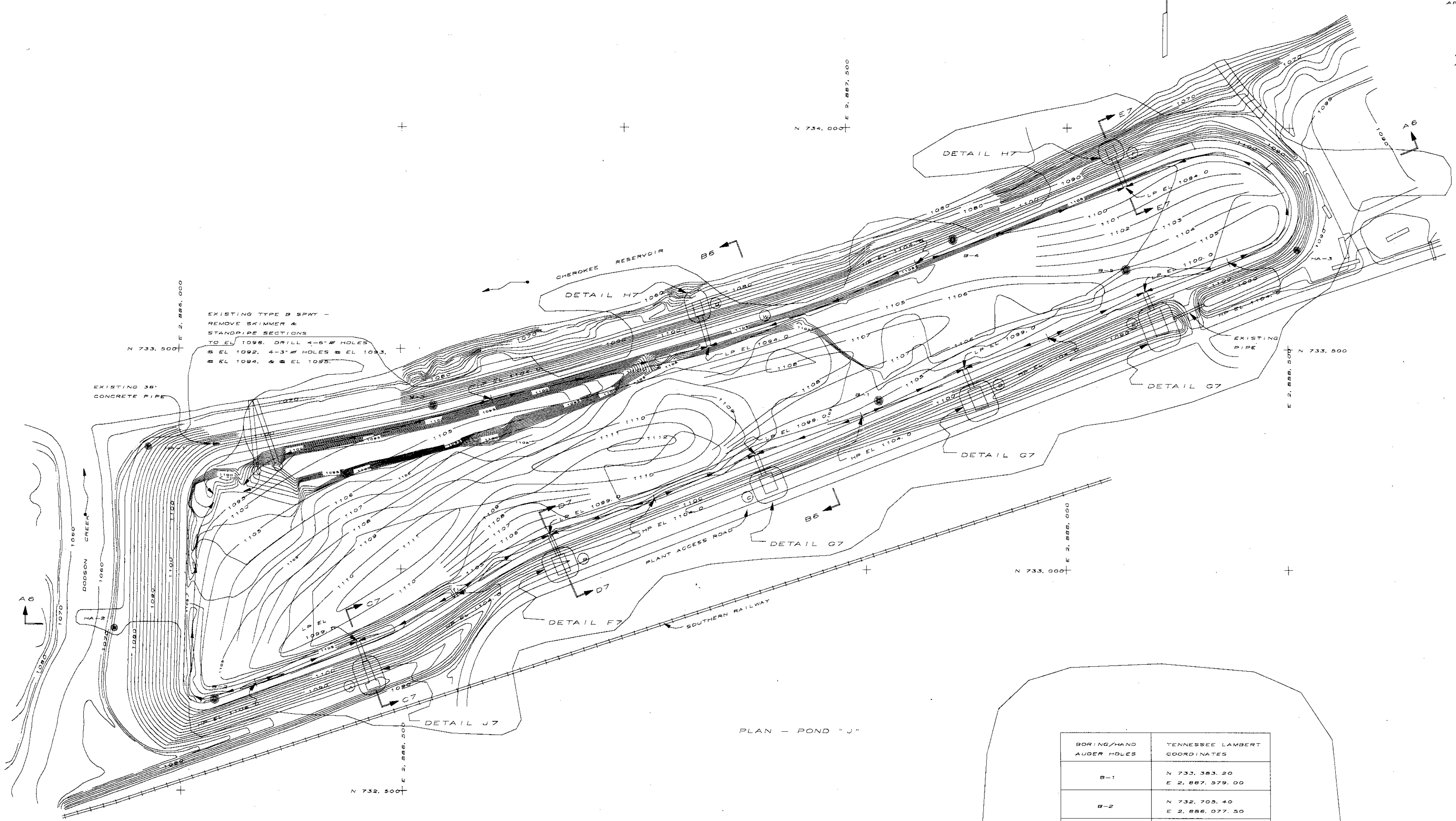
KEY PLAN

NOTES:

1. ALL WORK FOR CLOSURE OF FLY ASH DISPOSAL AREA "J" SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE "CLOSURE/POST CLOSURE PLAN, POND "J" ASH DISPOSAL FACILITY, TENNESSEE VALLEY AUTHORITY, JOHN SEVIER FOSSIL PLANT", PREPARED FOR THE TENNESSEE VALLEY AUTHORITY BY TRIBBLE & RICHARDSON, INC. AND LAW ENGINEERING, INC. THIS DOCUMENT SHALL BE REFERRED TO AS THE "CLOSURE PLAN".
2. THE EXISTING ASH SHALL BE GRADED TO BRING THE ASH SURFACE TO WITHIN 2 FEET OF THE FINISHED GRADE AS SHOWN ON THE PLAN. THE ASH FILL SHALL BE PLACED & SPREAD IN HORIZONTAL LAYERS OF 8 TO 12 INCHES WITH A MAXIMUM 12 INCH LOOSE THICKNESS AND SHALL BE TRACKED WITH A DOZER OR SUITABLE HAULING EQUIPMENT. THE ASH FILL SHALL BE ROLLED A MINIMUM OF 4 PASSES, IMMEDIATELY AFTER SPREADING, BY SMOOTH SURFACE STEEL WHEEL VIBRATORY ROLLERS (6 TO 10 TONS) FOR COMPACTION.
3. THE 12" MINIMUM THICKNESS COMPACTED CLAY SOIL LAYER SHALL BE CONSTRUCTED IN ACCORDANCE WITH AND MEET THE REQUIREMENTS OF SECTION III. B OF THE CLOSURE PLAN.
4. THE 12" MINIMUM THICKNESS VEGETATIVE SUPPORT LAYER SHALL MEET THE REQUIREMENTS OF SECTION III. B. 4. e. OF THE CLOSURE PLAN.
5. FERTILIZING, SEEDING, AND MULCHING SHALL BE IN ACCORDANCE WITH SECTION III. B. 4. e. AND APPENDIX B OF THE CLOSURE PLAN. PERMANENT SEEDING SHALL BE TYPE 8. TEMPORARY SUMMER SEEDING SHALL BE TYPE 10.
6. RIPRAP SHALL BE 12" THICK AND IN ACCORDANCE WITH SECTION 575 OF THE T-1 SPECIFICATION. A MINIMUM OF 50% BY WEIGHT OF THE STONES SHALL BE 100 LB. EACH. FIELD SHALL EXCAVATE AS NECESSARY TO INSURE THAT TOP OF RIPRAP SURFACE DOES NOT PROTRUDE ABOVE SURROUNDING DITCH ELEVATION. SEE DRAWING 10W286-7 FOR DRAINAGE DITCH DETAILS.

LEGEND:

- 1080 — EXISTING CONTOURS
- 1105 / 1109 — PROPOSED CONTOURS
- MONITORING WELL
- BORING LOCATION
- HAND AUGER BORING LOCATION



PLAN - POND "J"

BORING/HAND AUGER HOLES	TENNESSEE LAMBERT COORDINATES
B-1	N 733, 383. 20 E 2, 887, 579. 00
B-2	N 732, 705. 40 E 2, 886, 077. 50
B-3	N 733, 370. 90 E 2, 886, 573. 00
B-4	N 733, 747. 80 E 2, 887, 744. 70
B-5	N 733, 680. 50 E 2, 888, 134. 60
HA-1	N 733, 277. 00 E 2, 885, 931. 00
HA-2	N 732, 865. 60 E 2, 885, 852. 60
HA-3	N 733, 726. 00 E 2, 888, 518. 90

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID
R 1		BKE	MGH	JLG	JLG	KWB	RGJ	WDH	5124
REV. NOTE 2, PROP. CONTOURS, & DRAINAGE. ADD NOTE 6 & HAND AUGER BORING SYMBOL.									
R 0	11-18-92	RDP	MGH	JLG	JLG	KWB	RGJ		
INITIAL ISSUE									

SCALE: 1" = 100' EXCEPT AS NOTED

MAIN PLANT

FLY ASH DISPOSAL AREA "J"
CLOSURE PLAN
SHEET 5

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
R. D. POWELL	M. G. HRANEK	J. L. GLOVER	J. L. GLOVER	K. W. BURNETT	R. G. JOHNSON	

JOHN SEVIER FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R12 | DATE 11-18-92 | 41 | C | 10W286-5 | R 1

PLOT FACTOR:1200
W-SIZE
FILENAME: JSPONDJ. DWG

C. A. D. DRAWING
DO NOT ALTER MANUALLY

TASK COMPLETED BY: | REV NO.

41 C 10W286-5

TVA USE ONLY

OTHER AREAS INSPECTED / ACTIONS SINCE LAST INSPECTION / RECOMMENDATIONS / PHOTOGRAPHS

CHEMICAL TREATMENT PONDS

The iron and copper chemical treatment ponds are located just south of the original disposal area. Effluent from plant chemical cleaning processes is discharged into these ponds and treated before it is pumped into Ash Disposal Area 2.

Both ponds were excavated below grade and have only interior slopes. All interior slopes of these ponds are covered with riprap and are in good condition.

There are a few small trees that need removal on the interior of the dikes.

COAL YARD DRAINAGE BASIN

The coal yard drainage basin is located immediately north of the coal yard area and west of the utility building. This basin was excavated below grade and there are no exterior dikes. The interior slopes of the pond appeared to be stable and in good condition. This pond is discharged when required by pumping to Ash Disposal Area 2.

ACTIONS SINCE LAST INSPECTION

- Plant personnel have continued to monitor all exterior dike slopes and toe areas for surface sloughs, seepage areas, wet soft spots, animal burrowing, etc.
- Plant personnel have continued to maintain the dry fly ash stack and it's earth cover in the Original Disposal Area as needed.
- The surface slide on the northwest corner of the Original Disposal Area has been repaired and vegetated.
- Plant personnel have continued to maintain Ash Disposal Area J in accordance with the closure plans submitted to the State of Tennessee.

RECOMMENDATIONS

- Plant personnel should continue to monitor the exterior dike slopes and toe areas of all the disposal areas for surface sloughs, new seepage areas or changes in existing seepage areas, etc. Fossil Engineering should be notified immediately of any significant changes.

- Plant personnel should periodically remove small trees and brush from all dike slopes. Recommendations are attached.

- Remove trees according to the recommendations in the Appendix.

Frank D. Stansberry, Head Civil Engineer (Highway and Railroad), 101 FB-K

J. L. Glover, Civil Engineer (Highway and Railroad), 100 FB-K

October 2, 1973

JOHN SEVIER STEAM PLANT - ANNUAL ASH DISPOSAL AREA INSPECTION

On September 5, 1973, Larry Wall of Power Production, David Calloway, and I inspected the ash disposal areas at John Sevier Steam Plant. Findings were discussed with J. T. Thompson, Plant Superintendent, and B. B. Street, Assistant Plant Superintendent. J. W. Watson, Power Plant Operations Supervisor, and John Romans, Yard Supervisor, accompanied us on the inspection of the dikes.

Last year's annual inspection of these dikes was made on September 7, 1972.

On the attached print of drawing 10M410, the different areas are designated.

Change in Dikes Since Last Inspection

Since last year's annual inspection, a break occurred in the north or river dike of pond E near the divider dike between ponds E and F. A memorandum from R. J. Bowman to Civil Design Branch Files dated June 8, 1973, reports on the conditions of the failure and the temporary measures taken to prevent the loss of ash. A copy of this memorandum is attached.

At the time of this year's inspection, a temporary dike (earth and ash placed without compaction) was in place inside the break in the pond E dike (see pictures 1 and 2). Design drawings have been issued for the permanent repair of the dike, and CSB has started construction of the permanent repair.

Although the slopes of the remaining dikes for the abandoned ash areas (A, B, C, D, E, and F) are very steep, the dikes appear to be in good shape. Design drawings have been issued for positive drainage of ponds A, B, C, D, E, and F to relieve the pressure on the dikes, and CSB has started construction of the drainage ditch in ponds A, B, and C (see pictures 5 and 6). The water level has been lowered approximately 6 feet in pond F and approximately 20 feet in ponds D and E. Ponds A, B, and C had previously been abandoned. The removal of water from inside these ponds has increased the stability of these dikes.

Frank D. Stansberry
October 2, 1973

JOHN SEVIER STEAM PLANT - ANNUAL ASH DISPOSAL AREA INSPECTION

The dikes for newly activated ash ponds H and I were constructed of earth by plant personnel. Compaction was by hauling equipment. No design drawings were issued for these dikes. Although the slopes are steeper than the 3:1 slope recommended in previous inspection reports, the dikes for ponds H and I appear to be in good shape.

Pond G has not been used. The existing dikes for pond G were constructed by plant personnel without design drawings. A portion of the pond G river dike near the divider dike between ponds G and F is low. The existing spillway in pond G is too high, and the spillway pipe is in bad shape. DED will issue drawings for raising and flattening the slopes of the existing dikes and for the installation of a new standard spillway. CSB will do all pond G construction.

Except for the dike slopes of ponds H and I, plant personnel has cleared the dike slopes of trees and brush (see picture 4). The dike slopes of ponds H and I are being cleared (see Recommendations, No. 2).

Except for an area on the outside slopes of the dikes for ponds C and E where trees and brush have been cleared, the outside slopes of the dikes have a good vegetative cover (see Recommendations, No. 1).

Change in Pond Operation Since Last Inspection

Since last year's inspection, sluicing into ponds D, E, and F has been stopped. Sluicing into ponds A, B, and C had been stopped prior to last year's inspection. Further disposal of ash in ponds A, B, C, D, E, and F will be by dry hauling according to plans issued by DED.

All ash sluicing has been rerouted to flow through pond H and then pond I. The sluice water is skimmed in both H and I ponds. Water is discharged from pond I into a channel south of pond F. This discharge flows around the west end of pond G to Cherokee Reservoir.

Condition of Spillways, Skimmers, and Outlets

The standard spillways and skimmers for ponds H and I appear to be in good shape. There are no signs of erosion at the outlets. There are no signs of loss of ash from these ponds.

The channel from pond I to Cherokee Reservoir is in good shape. There is a good vegetative cover on the slopes and no signs of erosion in the channel.

Frank D. Stansberry
October 2, 1973

JOHN SEVIER STEAM PLANT - ANNUAL ASH DISPOSAL AREA INSPECTION

In order to keep the water level in the abandoned ponds to a minimum, the standard spillway in pond F has been lowered as much as is practical (see picture 3). The only water into these areas is rainfall. At the time of this year's inspection, the water level was below the spillway crest, and there was no discharge through this spillway. This spillway and skimmer appear to be in good shape.

About three years ago the spillway from pond C was abandoned and plugged by plant personnel. Ditching and flattening the inside slope of pond C by CSB have apparently created an opening into the spillway pipe, and a small amount of water is being discharged through the spillway pipe (see Recommendations, No. 3).

Action on the Recommendations of Last Inspection

1. The standard skimmer was installed in ponds H and I before ash was sluiced into these areas.

2. The tops of the dikes for pond H have been sloped to the inside and surfaced. A sparse growth of vegetation has been established on the outside slope of the dike between pond H and the coal storage area (see Recommendations, No. 4).

3. The existing spillway in pond G has not been removed or plugged. Pond G is not in use. EED will issue drawings for this work. A standard spillway will be constructed by CSB before this pond is activated.

4. The low portion of pond G dike has not been raised. Pond G is not in use. EED will issue drawings for this work, and CSB will raise this portion of the dike before this pond is activated.

5. A slope to the inside on the tops of all dikes has been maintained.

Recommendations

1. Plant personnel should seed and fertilize the outside dike slopes of ponds C and E where the removal of trees and brush has left bare areas. This seeding should be done this fall in accordance with note 4 on drawing 10W410.

2. Plant personnel should continue with the removal of all trees and brush from the dike slopes.

Frank D. Stansberry
October 2, 1973

JOHN SEVIER STEAM PLANT - ANNUAL ASH DISPOSAL AREA INSPECTION

3. Plant personnel should locate and stop the leakage into the abandoned spillway pipe of pond C.

4. The outside slope of the dike between pond H and the coal storage area should be reseeded and fertilized in accordance with note 4 on drawing 10W410. Plant personnel should check to see if CSB is going to do any work on these slopes, and if not, plant personnel should proceed with this seeding this fall.

J. L. Glover
J. L. Glover

JLG:BLH
Attachments

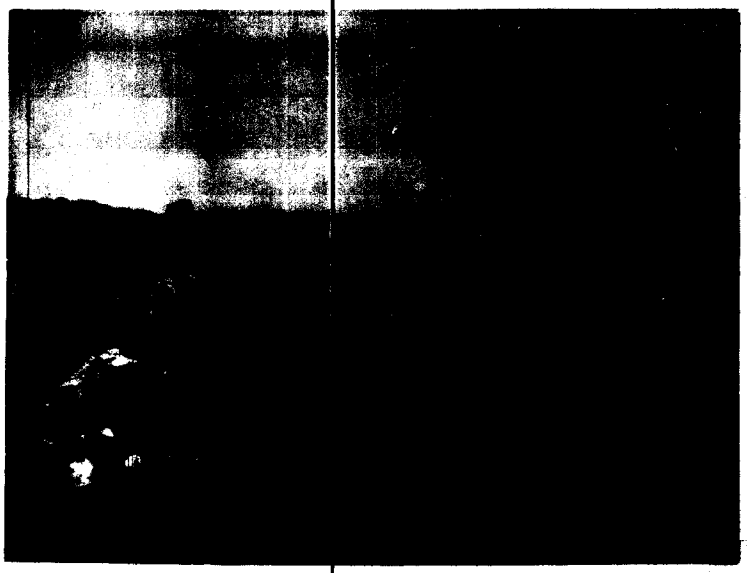
Concur: Original Signed By
F. D. Stansberry
Frank D. Stansberry

W. W. Engle

10/4/73--FDS:BLH
CC: W. W. Engle, 401 UB-K (Attachments)

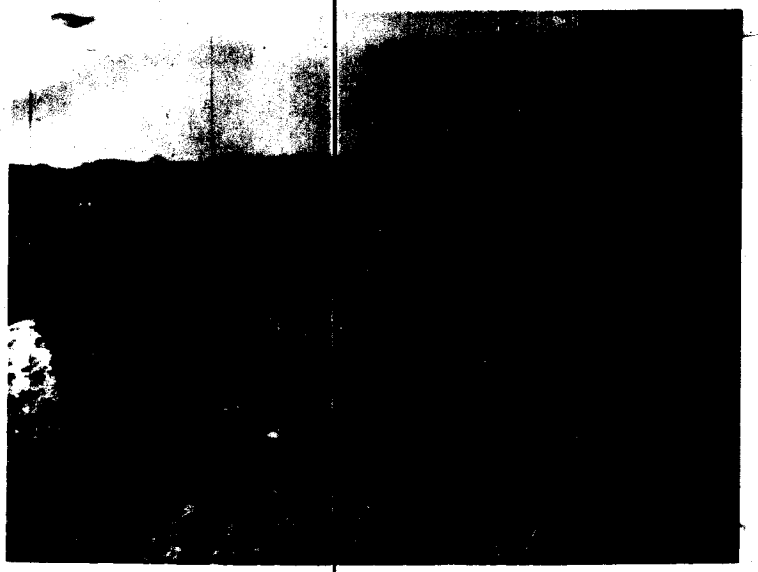
10/4/73--WWE:NCH
CC (Attachments):
R. C. Domer, 104 UB-K
Roy H. Dunham, 505 UB-K
B. S. Montgomery, 401 AB-K

JOHN SEVIER STEAM PLANT 1973



POND E
Temporary dike across break in dike - looking east.

(1)



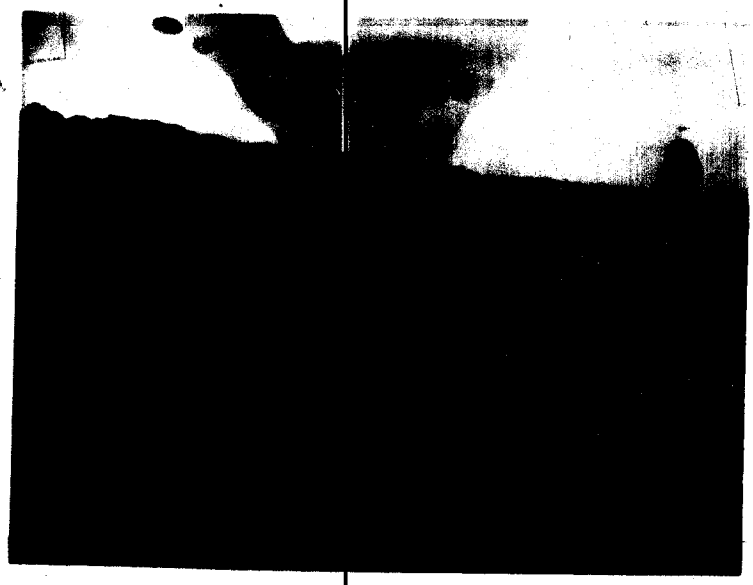
POND E
Temporary dike across break in dike - looking west.

(2)

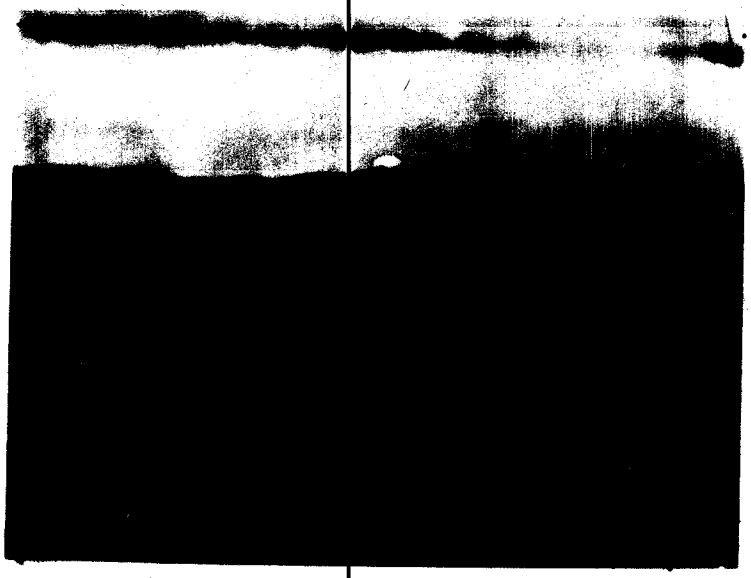
POND F
Spillway lowered as much as is practical.

(3)

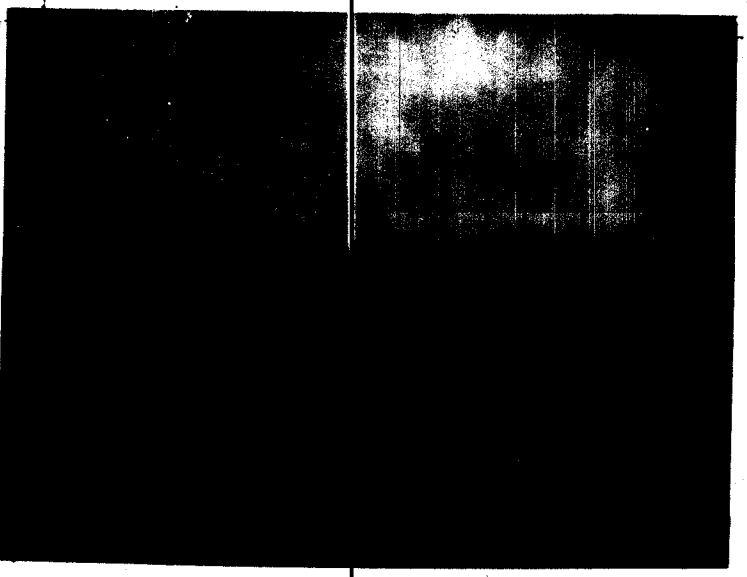
JOHN SEVIER STEAM PLANT 1973



(4) PONDS C & E
Outside slope of dikes.
Trees and brush removed
from slope.



(5) POND A
CSB reshaping inside
of pond.



(6) POND A
CSB reshaping inside
of pond.

SECTION A-A
Scale: 1"=10'

SECTION C-C
Scale: 1"=10'

B-B & B1-B1
B-B as shown
B1-B1 similar
Scale 1"=20'

Establish Vegetation in this Area

CHEROKEE RESERVOIR
Dike failure of May 26, 1973

Spillway

Future Dike

Channel Change

Spillway

Future Dike

Coal Storage

Spillway

Access Highway

Ditch

Ash sluice pipe

Condensing Water Outlet

POWERHOUSE

Auxiliary Dike

Spillway Manhole Invert El. 1083.70

Spillway Manhole Invert El. 1076.15

Channel at el. 1092.5 wasn dike is at 1088

Pipes to be plugged

Paved gutter 4' wide 62' long

Paved gutter 4' wide 110' long

End of Dike

End of Ash Sluice Pipe

Future Channel

Pl. 293+98.45
N 734,030.57
E 2,888,961.80

APPROXIMATE QUANTITIES

Dike Embankment	65,000 C.Y.
Riprap	3300 C.Y.
Filter	1650 C.Y.
Surfacing (4" crushed stone)	520 C.Y.

D-D
Scale 1" = 20'

DETAIL OF BAFFLE

DETAIL "A"

TYPICAL SECTION OF SPILLWAY - 2 REQUIRED
Scale: 1"=10'

NOTES:
1. DIKE to be constructed with unclassified excavation.
2. RIPRAP to consist of durable stone; 50% to weigh at least 100 lbs.
3. SURFACING: Crushed stone 4" thick to be applied for the full width of the dike in accordance with section 210 of the T-1 specs.
4. GRASSING and fertilizer: sect. 180, T-1 specs. except if seeded in fall use 15 lbs. Ky. 31, 5 lbs. Alsike clover and 15 lbs. perennial rye per acre. If seeded in spring use 30 lbs. sericia per acre. Apply light mulch as per. sect. 181A.

① Photograph taken at this point in this direction.

Scale: 1" = 200' Except as noted

MAIN PLANT

ASH DISPOSAL AREA

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF DESIGN

SUBMITTED	RECOMMENDED	APPROVED
W. N. Culbertson	A. A. Mayer	R. A. Morrow
KNOXVILLE	4-30-53	41 C 4 10N410 83

For Continued Location of Dike
Proj. 903-2, Paper 16 (Rev. 2)

Civil Design Branch Files

R. J. Bowman, Principal Civil Engineer (Highway and Railroad), 103 FB-K

June 8, 1973

JOHN SEVIER STEAM PLANT - INSPECTION OF ASH DISPOSAL POND DIKES

On Saturday, May 26, 1973, O. H. Raine and I inspected the break in the ash disposal pond dike at John Sevier Steam Plant. We were joined that afternoon by C. C. Schonhoff and C. J. Turner of DPP. On May 29 and 30, 1973, Jerry Glover and I inspected all of the ash disposal ponds and dikes at John Sevier Steam Plant. Meigs Brewer of DPP was with us for part of the inspection. On the attached print of drawing 10N410 the different areas are designated.

At the time the break in the dike occurred, sometime between midnight and 6:00 a.m. on May 26, the ash was being sluiced to area D. The ash then flowed through area D, area E, and into area F. From area F, the ash flowed through a standard skimmer and spillway into the river.

The break occurred in the north or river dike of pond E near the divider dike between pond E and pond F. The break was approximately 200 to 300 feet long. The dike appeared to have slid out as a wedge with a bottom elevation of approximately 1085±, approximately at the top of the initial construction dike. There was a V-shaped eroded gap approximately 25 feet wide near the west end of the break that had a bottom elevation of approximately 1080±. Ash water was still running through this gap on the afternoon of May 26.

The toe of the dike adjacent to the break was very soft and wet. The entire dike was saturated. Cherokee Reservoir elevation was approximately 1074±. Much of the dike that slid into the reservoir was still intact, and trees were still standing on the dike. It was estimated that approximately 125,000 cubic yards of ash had washed out of E pond. The break was discovered by plant personnel at 10:00 a.m., and the ash sluice was shut off at that time.

The following temporary corrective measures were taken. The ash sluice was rerouted to flow through H pond, I pond, and into the creek that goes to the river west of the ash disposal area. The top of the dikes adjacent to the break was pushed into the break to plug the gap. A pump was installed behind the gap to pump water into F pond and prevent water pressure against the temporary plug. The divider dike between E and F ponds was breached, and the water level in F pond was lowered to provide a route for water from E pond to follow if the pump could not handle the flow.

RJB, Please note Owners note

RECEIVED JUN 11 1973 CIVIL DESIGN BRANCH HWY & RR SECTION

Note	Handle		Note
		Lacy	
✓		Stansberry	✓
✓		Bowman	✓
		Fox	
		Herald	
		Logan	
✓		Nelson	✓
	✓	Hachmann	

Civil Design Branch Files
June 8, 1973

JOHN SEVIER STEAM PLANT - INSPECTION OF ASH DISPOSAL POND DIKES

Factors which contributed to the failure of the dike were as follows:

1. The outside slopes of the dikes are too steep as has been reported numerous times in the annual ash disposal pond inspection reports (1967-1972). The outside slope is 1.5:1±, and the design drawings show slopes of 3:1 and 2:1 with berms. Recommendations had been made to establish a theoretical 3:1 slope point, leave a ten-foot berm, and all future raising was to be on a 3:1 slope (1967-1971). Dikes continued to be raised with a 1.5:1 slope, however.

2. A large percent of ash was used as material to raise the dikes. DED had recommended that ash not be used in dike building at John Sevier since the ash there is not suitable for this purpose because a significant portion is not stable when wet and it erodes easily.

3. The dikes were raised with no control of compaction. The material is dumped and bladed into place. The middle of the dike is compacted to some extent by the hauling equipment.

4. The toe of the dike was completely saturated due to high reservoir level, approximately elevation 1074±, over an extended period of time. There was no evidence of riprap along the toe of the dike as shown on the design drawing. The riprap may have been covered by material that had been bladed down the steep slope during dike raising.

5. The level of water in the pond may have been at a higher elevation. A new flow through pipe had been installed through the divider dike between E and F ponds at a high elevation, and some of E pond dikes had been raised. I assume the plant was attempting to raise the water level.

The entire dike system at John Sevier has the same inadequacies. It is recommended that DED develop a positive drainage system to relieve the pressure on the dikes before similar breaks occur in other ponds.

The dike construction at ponds G, H, and I was contrary to the working agreement between DPP and DED in that no requests for studies or design drawings were made to DED. If we are to be responsible for the adequacy of the design, we should have the opportunity to develop design criteria prior to the commencement of construction.

Civil Design Branch Files
June 8, 1973

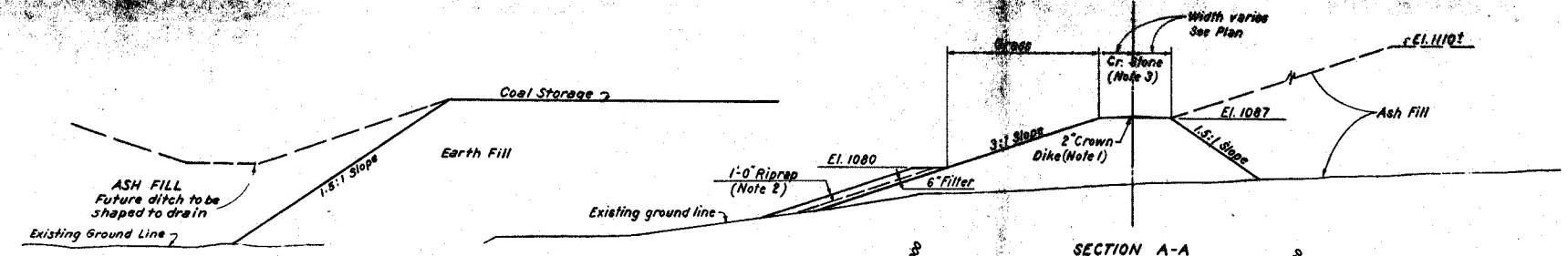
JOHN SEVIER STEAM PLANT - INSPECTION OF ASH DISPOSAL POND DIKES

The attached photographs show some of the conditions mentioned in the report.

R. J. Bowman

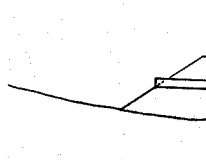
RJB FDB
RJB:MCH
Attachments
CC (Attachments):
R. G. Domer, 401 UB-K
O. H. Raine, 412 WAL-K
F. D. Stansberry, 101 FB-K

RGD
RGD:SD--6/8/73
CC (Attachments):
Roy H. Dunham, 505 UB-K - We are working on development of positive drainage system at present time.--RGD
F. P. Lacy, 508 UB-K

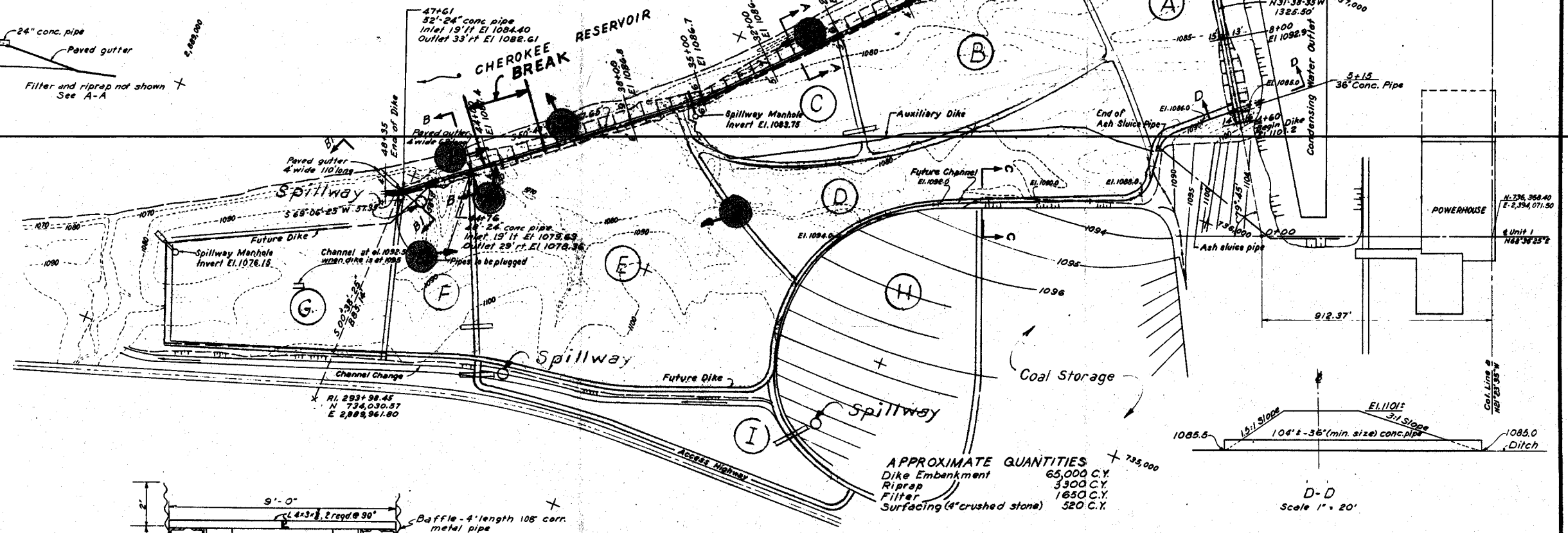


SECTION A-A
Scale: 1"=10'

SECTION C-C
Scale: 1"=10'



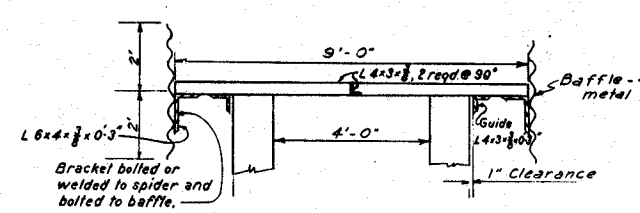
B-B & B1-B1
B-B as shown
B1-B1 similar
Scale 1"=20'



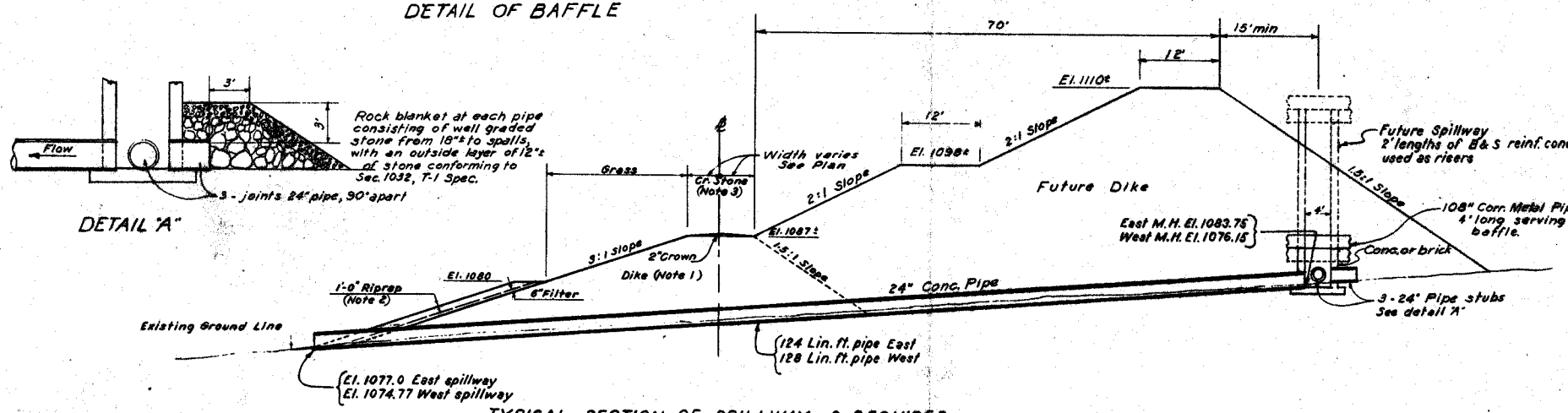
D-D
Scale 1" = 20'

APPROXIMATE QUANTITIES

Dike Embankment	65,000 C.Y.
Riprap	3300 C.Y.
Filter	1650 C.Y.
Surfacing (4" crushed stone)	320 C.Y.



DETAIL OF BAFFLE



DETAIL "A"

TYPICAL SECTION OF SPILLWAY - 2 REQUIRED

Scale: 1"=10'

NOTES:
1. DIKE to be constructed with unclassified excavation.

2. RIPRAP to consist of durable stone; 50% to weigh at least 100 lbs.

3. SURFACING: Crushed stone 4" thick to be applied for the full width of the dike in accordance with section 210 of the T-1 specs.

4. GRASSING and fertilizer: sect. 180, T-1 specs. except if seeded in fall use 15 lbs. Ky. 31, 5 lbs. Alsike clover and 15 lbs. perennial rye per acre. If seeded in spring use 30 lbs. sericia per acre. Apply light mulch as per. Sect. 181A.

Photograph taken at this point in this direction.

Scale: 1" = 200' Except as noted

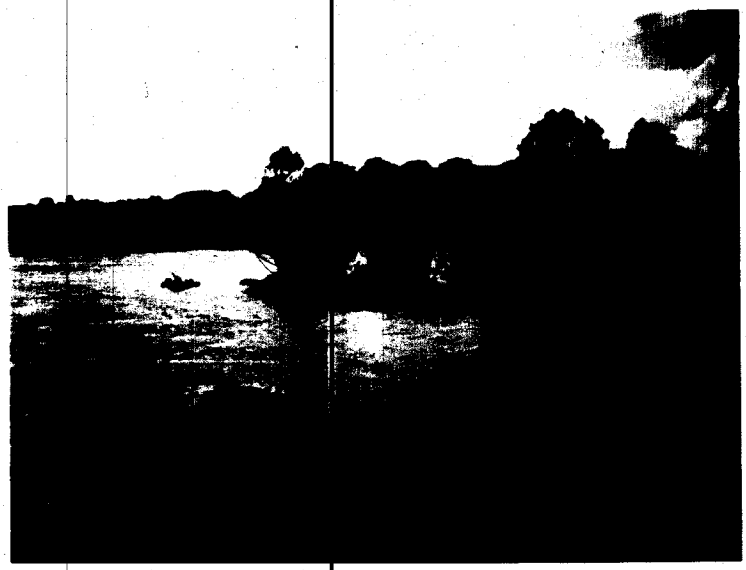
MAIN PLANT

ASH DISPOSAL AREA

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF DESIGN

SUBMITTED	RECOMMENDED	APPROVED
W. N. Culbertson	A. A. Marsden	R. A. Morrow
KNOXVILLE,	4-30-52	5/14/52

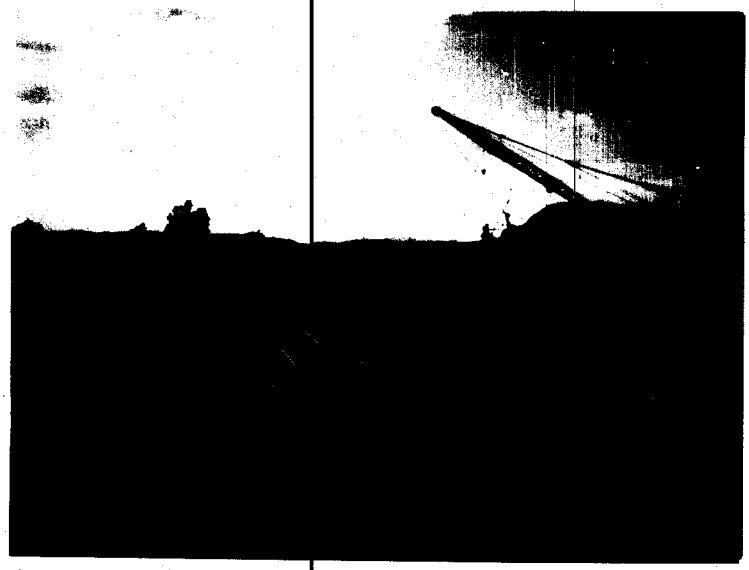
1 - Break in dike looking east, with lower gap in foreground being plugged



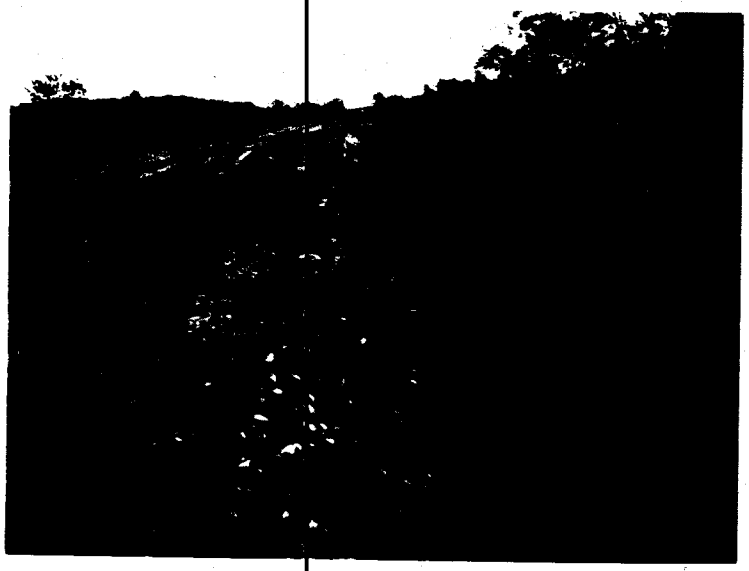
2 - Part of dike that slid into reservoir intact with trees still standing on the dike

3 - Channel eroded in ash pond showing ash that had washed out

4 - Pump being installed behind the break after it was plugged



5 - The divider dike between E and F ponds being breached



6 - Outside of slope being raised on a 1.5:1± and bladed down the slope

E. F. Thomas, Director of Power Production, 716 EB-C (2)

Roy H. Dunham, Director of Engineering Design, 505 UB-K

October 4, 1973

JOHN SEVIER STEAM PLANT - ANNUAL ASH DISPOSAL AREA INSPECTION

Attached is a report from J. L. Glover to Frank D. Stansberry dated October 2, 1973, of the joint field inspection at John Sevier Steam Plant, which includes recommendations for corrective work. I concur in these recommendations.

Original Signed By
P. L. Duncan

Roy H. Dunham

JLG:BLH
Attachment
CC (Attachment):
R. G. Domer, 104 UB-K
W. W. Engle, 401 UB-K (3)
B. S. Montgomery, 401 AB-K
Power Manager's File, 630 PRB-C

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

B65 900928 073

TO : J. E. Varner, Manager, Inspections and Small Projects, BR 4N 83A-C

FROM : J. D. Paris, Civil Engineer, Site Development, MR 3S 131D-C

DATE : SEP 28 1990

SUBJECT: JOHN SEVIER STEAM PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE) INSPECTION OF THE ASH DISPOSAL AREAS

1.0 General

1.1 This inspection of the ash disposal areas was conducted on July 19, 1990 by the following personnel.

J. D. Paris, PE&C - FHE
D. Bennett, John Sevier Fossil Plant

1.2 Results of the inspection were discussed with J. G. Cannon, Yard Operation Supervisor at the completion of the inspection.

1.3 The last annual inspection was made on May 3, 1988 (B65 880902 002).

1.4 The three different areas that are referenced in this report are designated on the attached prints of drawings 10N410, 10W286-1, and 10W293-1.

2.0 Original Disposal Area

2.1 Change in Dikes Since Last Inspection

2.1.1 On September 15, 1989, there was a 100 foot long, 20 foot deep toe slide on the lake side of the north dike at about station 18+00 (picture 11). The slide has been repaired and the dike appears stable. There is an area about 200 feet long at station 15+00± (pictures 12 and 13) that has developed tension cracks and could slide during heavy rains. No movement has ocurred during this growing season.

2.1.2 The dikes for the interior basin "bathtub" were constructed with ash removed from inside the "bathtub," covered with a thin layer of earth, fertilized and seeded. The slopes are starting to erode (picture 10) because the contractor has changed the haul road side slope. The road originally forced all runoff to the inside basin.

23K

J. E. Varner

SEP 28 1990

JOHN SEVIER STEAM PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE) INSPECTION OF THE ASH DISPOSAL AREAS

2.1.3 There has been no change in the seepage area along the north dike of the coal yard. This seepage is being discharged into the coal yard drainage basin. The two seeps along the Cherokee Reservoir bank below the toe of the dike and seepage just south of the stilling pool discharge (picture 9) have not changed.

2.1.4 The plant-constructed stilling pool dike, in the west end of this area, is in good condition and has a good crushed stone surface.

2.1.5 The north dike must have all trees removed above the toe and the stumps treated because trees overload the slopes and make them top heavy. This dike is thick enough and no standing water is on the inside of the dikes so piping will not occur when the roots rot. Due to the history of instability of the dike, the trees must be removed from the top portion of the dike.

2.2 Changes in Pond Operation Since Last Inspection

2.2.1 The dry fly ash collection system's ash and also ash from area No. 2 (picture 2) is being dry stacked in this area by a contractor.

2.2.2 All bottom ash is presently being sluiced into the east end of the interior basin. Fly ash is also sluiced into this basin on an intermittent basis when problems are encountered with the dry collection system. The sluice water flows through one standard spillway with skimmer which is located in the southwest corner of the basin, then into the south perimeter drainage ditch (formerly Polly Branch) parallel to the plant access road. The south perimeter drainage ditch flows into the stilling pool through three plant constructed 36-inch concrete pipes under the south dike of the stilling pool (picture 3, March 1986 report). The stilling pool is discharged into a channel to Cherokee Reservoir through two standard spillways with skimmers. The pipes are located under the west dike of the stilling pool.

J. E. Varner
SEP 28 1990

JOHN SEVIER STEAM PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE) INSPECTION OF THE ASH DISPOSAL AREAS

2.3 Condition of Spillways, Skimmers, and Outlets

2.3.1 The standard spillway and skimmer in the southwest corner of the interior basin appears to be in good condition and operating properly. There is only a small amount of floating ash on the surface of this basin (formerly Polly Branch). Ash was observed in the west end of the south perimeter drainage ditch (picture 8) where it flows into the stilling pool.

2.3.2 The two standard spillways and skimmers in the stilling pool appear to be in good condition and operating properly. The outlets of their discharge pipes are flowing freely and there are no signs of loss of ash in the channel to Cherokee Resevoir. There is no floating ash on the surface of the stilling pool.

2.3.3 The standard spillway in the former storm runoff sump area (formerly area F) has been abandoned, but was left in place to prevent any overflow of the perimeter dike.

2.4 Action on Recommendations of Last Inspection

2.4.1 A section of pipe was removed and clay was compacted in the end of the remaining portion of the pipe and the area covered. There is still a wet area with some seepage (section 2.5.1 of May 3, 1988 inspection).

2.4.2 The ash fill area was properly graded and covered (section 2.5.2 1988 report).

2.4.3 The floating ash was greatly reduced in the south perimeter ditch (section 2.5.3 1988 report).

2.4.4 There are several trees on the dike above the toe that must be removed (section 2.5.4 1988 report).

2.5 Recommendations

2.5.1 During placement and grading of ash fill, plant employees should maintain the north perimeter drainage ditch to prevent any ponded water from being retained against the north perimeter dike. Ash fill placed and compacted to its final grade should be covered with one foot of earth, fertilized and seeded as soon as practical in order to control erosion and dust.

2.5.2 Plant employees should periodically remove the floating ash from the surface of the west end of the south perimeter drainage ditch.

2.5.3 Plant employees should continue to periodically remove the small trees growing above the toe of the dike slopes.

2.5.4 Plant employees should continue to inspect the tension cracks noted in 2.1.1 and report any movement to Ken Burnett (X-6607-C) for technical assistance.

3.0 Ash Disposal Area 2

3.1 Change in Dikes Since Last Inspection

3.1.1 There has been no change in the dikes since the last annual inspection. The slopes of the dikes have a good vegetative cover. The tops of the dikes need additional crushed stone surfacing in some areas (see section 3.5.1). The dikes are in good condition with no visible signs of instability.

3.1.2 The original ground below the exterior fill slope of the north dike appears to be in good condition with no signs of instability and no erosion from the cut made for the Polly Branch bypass.

3.2 Change in Pond Operation Since Last Inspection

3.2.1 No bottom ash or fly ash is being sluiced into this area presently. This area has been dewatered and FHC employees are dry hauling ash from this area and placing it in the dry ash stack in the original ash disposal area (picture 2).

J. E. Varner

SEP 28 1990

JOHN SEVIER STEAM PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE) INSPECTION OF THE ASH DISPOSAL AREAS

3.3 Condition of Spillways, Skimmers, and Outlets

3.3.1 Both skimmers and most of the standpipe were removed from the spillways for the pond dewatering operation (picture 3). The riprapped outfall at the outlet of these spillways is in good condition, with no signs of erosion (picture 5). Also, the ash pond discharge channel is in good condition.

3.4 Action on Recommendations of Last Inspection

3.4.1 Some areas of the road on top of the dikes need additional crushed stone surfacing (see section 3.5.1 this report).

3.4.2 Since this ash disposal area was dewatered, the "spring" outlet has dried up. This indicates the pond water was the source of this seepage (see section 3.5.2). No action has been taken on this recommendation.

3.5 Recommendations

3.5.1 Plant personnel should continue to maintain the tops of the dikes for this area during the dry hauling operation to prevent rutting.

3.5.2 We recommend construction of an impermeable clay liner over a portion of the interior slope of the north dike at approximately station 75+00 where seepage has occurred in the past during active use of this disposal area. The liner should be located and constructed according to the plans to be provided by PE&C. This work should be done while area 2 is in a dewatered condition.

4.0 Ash Disposal Area J

4.1 Change in Dikes Since Last Inspection

4.1.1 There has been no change in the dikes since the last annual inspection. The top of the dikes are

sloped to the inside and have a good crushed stone surface. The dike slopes have a good vegetative cover with no signs of erosion. All dikes are in good condition with no visible signs of instability.

4.2 Change in Pond Operation Since Last Inspection

4.2.1 This area is presently being dry stacked.

4.3 Condition of Spillways, Skimmers, and Outlets

4.3.1 The skimmers have been removed from the spillways for this area and the standpipes were left in place (see section 4.5.1 and picture 6).

4.4 Action on Recommendation of Last Inspection

4.4.1 Since this area has been dewatered, it could not be determined if adequate repairs had been made on the spillway standpipe joints as recommended on inspection of April 23, 1987.

4.5 Recommendations

4.5.1 Plant personnel should inspect the 36" spillway pipes while the pond is dewatered. FHE will be glad to perform this inspection if requested by P PROD.

J. D. Paris

Concur:
J. H. Coulson

KWB JDP:JDB
cc: RIMS, MR 4N 35A-C
J. H. Coulson, MR 3S 125D-C

JOHN SEVIER F.P.
JULY 1990

(1) POND 2 - DIVIDER DIKE INTO STILLING POOL LOOKING SOUTH WEST.

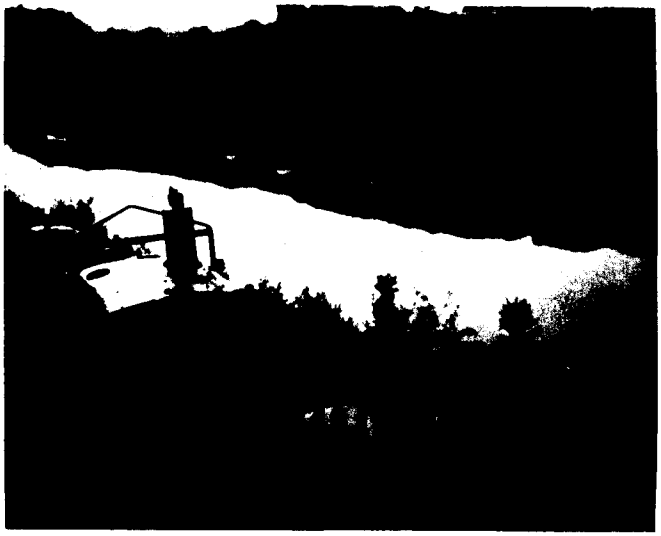
(2) POND 2 - ASH AT DISCHARGE PIPES (NOT REMOVED) LOOKING SOUTH EAST.

(3) & (4) DISCHARGE AND STILLING BASIN LOOKING EAST.

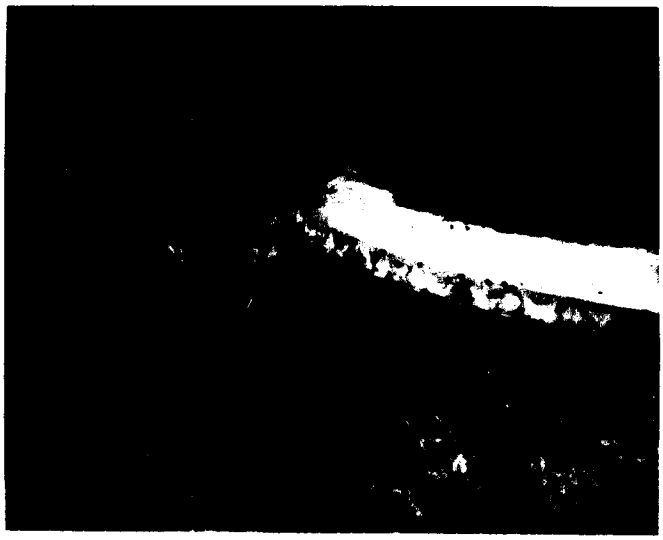
JOHN SEVIER F.P.
JULY 1990

(5) POND 2 - DISCHARGE PIPES LOOKING SOUTH.

(6) POND J - AT NORTH DIKE LOOKING WEST AT DISCHARGE STRUCTURES.



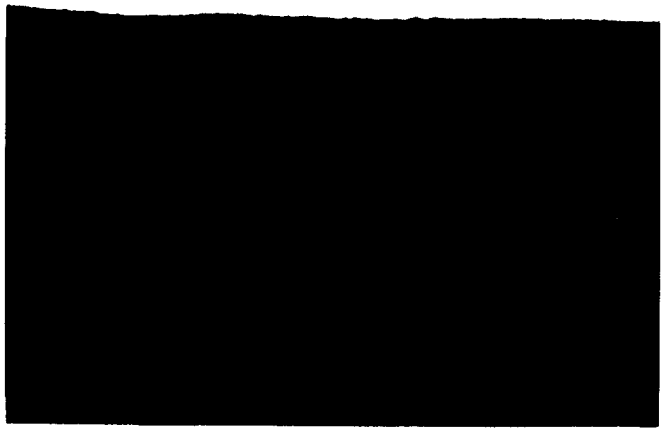
(7) POND J - AT NORTH DIKE LOOKING EAST AT DISCHARGE STRUCTURES.



(8) ORIGINAL POND DISCHARGE PIPE FROM POND J.

JOHN SEVIER F.P.
JULY 1990

(9) ORIGINAL POND - EAST BANK OF POLLY BRANCH AT DISCHARGE OUTLET LOOKING SOUTH. EXISTING SEEP FROM STILLING POOL.



(10) ORIGINAL POND - GULLIES AND REPAIRS ON STACKING AREA CAUSED BY HAULING CONTRACTOR.

(11) ORIGINAL POND - STATION 18+00± LOOKING WEST AT [redacted] SLIDE AREA ([redacted] 89) REPAIR.

(12) ORIGINAL POND - STATION 16+00 LOOKING WEST AT ACTIVE SLUFF.

JOHN SEVIER F. P.
JULY 1990

(13) ORIGINAL POND
STATION 16+00 LOOKING
EAST AT ACTIVE SLUFF.

(14) POLLY BRANCH LOOKING
SOUTH AT POND 2 ACCESS
ROAD ACROSS POLLY BRANCH.

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

KWB

B65 910226 022

TO : T. W. Williams, Plant Manager, John Sevier Fossil Plant

FROM : James H. Coulson, Manager, Civil Engineering Department, MR 3D-C

DATE : February 26, 1991

SUBJECT: JOHN SEVIER FOSSIL PLANT - ORIGINAL ASH DISPOSAL AREA - DIKE SLOPE STABILITY

On January 22, 1991, a meeting was held at John Sevier Fossil Plant to discuss the recent occurrence of slides in the exterior slopes of the perimeter dikes in the northeast portion of the original ash disposal area. The following personnel were present:

Tom Williams, Plant Manager
J. G. Cannon, Yard Operations Supervisor
K. W. Burnett, Fossil & Hydro Engineering
R. D. Powell, Fossil & Hydro Engineering

In September 1989, a slide approximately 100 feet long occurred at about original dike station 18+00 (see Attachment 1). In December 1990, two slides occurred, one on each side of and adjacent to the previous 1989 slide. All of these slides were repaired shortly after their occurrence by plant personnel (see pictures 1 and 2). Smaller dike-sluffing type of failures have occurred over the last few years along the north and east dikes (see pictures 3 and 4). These have not been repaired. Factors contributing to these slope failures are as follows:

1. Steepness of the exterior dike slopes.
2. The high percentage of ash in the fill material used to construct and raise these dikes.
3. The lack of proper fill material compaction during the original construction and raising of these dikes.
4. The high phreatic surface (maximum elevation of saturated material) in the dikes. This is contributed to by the water elevation inside the interior basin and by the flatness of the perimeter drainage ditch grade line along with very heavy rainfall prior to the slope failures.

In 1986, a stability analysis was made on the north dike in preparation for the development of the dry fly ash stacking plans. The results of this analysis indicate the north dike has a less than adequate factor of safety and cannot withstand any additional loading due to placement of the ash stack. The ash stacking plan was subsequently designed to prevent any additional loading of the perimeter dikes and must be closely adhered to.

T. W. Williams
February 26, 1991

JOHN SEVIER FOSSIL PLANT - ORIGINAL ASH DISPOSAL AREA - DIKE SLOPE STABILITY

There has been no loss of ash into Cherokee Reservoir from within the ash disposal area as a result of these recent exterior dike slope failures. However, in May 1973, a major failure occurred in the north dike which resulted in a substantial loss of ash into Cherokee Reservoir (see Attachment 2). This was a wedge type failure with lateral movement of the total dike width. It extended approximately from original dike station 41+50 to 44+25. This failure was repaired in accordance with plans developed by Engineering Design (see drawing 10N290).

RECOMMENDATIONS

In order to reduce the potential for future dike slope failures as discussed above, FHE recommends the exterior slopes of the north and east dikes be repaired. The exact limits of the proposed repairs should be determined by a review of the dike slope stability analysis and an inspection of these dikes by representatives of FHE and your staff. After the inspection, detailed plans would need to be developed for the repair. The approximate limits would extend from the 1973 repair around nearly to the dry fly ash silos at the southwest corner of the discharge channel.

Kenneth W. Burnett
for James H. Coulson

RDP:HLF
Attachments
cc (Attachments):
RIMS, MR 2F-C
H. C. Kolb, BR 4A-C
W. G. Ruffner, LP 3F-C
M. T. Scott, BR 4A-C

3514K

TVA 489H (EN DES-2-78) TENNESSEE VALLEY AUTHORITY ATTACHMENT 1

SUBJECT John Sevier - Dry Stack PROJECT 9-18-89

Exterior Dike Slough Telecopy 5-333-6403

COMPUTED BY DATE CHECKED BY DATE

6609 KW
8912 RP

Plant Grid
(West 15+58.10)
(North 12+51.52)

Location of sloughed area is 32' West of Monument JSDS#7
and extending 103' West

ATTACHMENT 1

ATTACHMENT 2

Civil Design Branch Files

R. J. Bowman, Principal Civil Engineer (Highway and Railroad), 103 FB-K

June 8, 1973

JOHN SEVIER STEAM PLANT - INSPECTION OF ASH DISPOSAL POND DIKES

On Saturday, May 26, 1973, O. H. Raine and I inspected the break in the ash disposal pond dike at John Sevier Steam Plant. We were joined that afternoon by C. C. Schonhoff and C. J. Turner of DPP. On May 29 and 30, 1973, Jerry Glover and I inspected all of the ash disposal ponds and dikes at John Sevier Steam Plant. Meigs Brewer of DPP was with us for part of the inspection. On the attached print of drawing 10N410 the different areas are designated.

At the time the break in the dike occurred, sometime between midnight and 6:00 a.m. on May 26, the ash was being sluiced to area D. The ash then flowed through area D, area E, and into area F. From area F, the ash flowed through a standard skimmer and spillway into the river.

The break occurred in the north or river dike of pond E near the divider dike between pond E and pond F. The break was approximately 200 to 300 feet long. The dike appeared to have slid out as a wedge with a bottom elevation of approximately 1085±, approximately at the top of the initial construction dike. There was a V-shaped eroded gap approximately 25 feet wide near the west end of the break that had a bottom elevation of approximately 1080±. Ash water was still running through this gap on the afternoon of May 26.

The toe of the dike adjacent to the break was very soft and wet. The entire dike was saturated. Cherokee Reservoir elevation was approximately 1074±. Much of the dike that slid into the reservoir was still intact, and trees were still standing on the dike. It was estimated that approximately 125,000 cubic yards of ash had washed out of E pond. The break was discovered by plant personnel at 10:00 a.m., and the ash sluice was shut off at that time.

The following temporary corrective measures were taken. The ash sluice was rerouted to flow through H pond, I pond, and into the creek that goes to the river west of the ash disposal area. The top of the dikes adjacent to the break was pushed into the break to plug the gap. A pump was installed behind the gap to pump water into F pond and prevent water pressure against the temporary plug. The divider dike between E and F ponds was breached, and the water level in F pond was lowered to provide a route for water from E pond to follow in case the pump could not handle the flow.

RJB, Please note Owners note.

Civil Design Branch Files
June 8, 1973

JOHN SEVIER STEAM PLANT - INSPECTION OF ASH DISPOSAL POND DIKES

Factors which contributed to the failure of the dike were as follows:

1. The outside slopes of the dikes are too steep as has been reported numerous times in the annual ash disposal pond inspection reports (1967-1972). The outside slope is 1.5:1±, and the design drawings show slopes of 3:1 and 2:1 with berms. Recommendations had been made to establish a theoretical 3:1 slope point, leave a ten-foot berm, and all future raising was to be on a 3:1 slope (1967-1971). Dikes continued to be raised with a 1.5:1 slope, however.

2. A large percent of ash was used as material to raise the dikes. DED had recommended that ash not be used in dike building at John Sevier since the ash there is not suitable for this purpose because a significant portion is not stable when wet and it erodes easily.

3. The dikes were raised with no control of compaction. The material is dumped and bladed into place. The middle of the dike is compacted to some extent by the hauling equipment.

4. The toe of the dike was completely saturated due to high reservoir level, approximately elevation 1074±, over an extended period of time. There was no evidence of riprap along the toe of the dike as shown on the design drawing. The riprap may have been covered by material that had been bladed down the steep slope during dike raising.

5. The level of water in the pond may have been at a higher elevation. A new flow through pipe had been installed through the divider dike between E and F ponds at a high elevation, and some of E pond dikes had been raised. I assume the plant was attempting to raise the water level.

The entire dike system at John Sevier has the same inadequacies. It is recommended that DED develop a positive drainage system to relieve the pressure on the dikes before similar breaks occur in other ponds.

The dike construction at ponds G, H, and I was contrary to the working agreement between DPP and DED in that no requests for studies or design drawings were made to DED. If we are to be responsible for the adequacy of the design, we should have the opportunity to develop design criteria prior to the commencement of construction.

Civil Design Branch Files
June 8, 1973

JOHN SEVIER STEAM PLANT - INSPECTION OF ASH DISPOSAL POND DIKES

The attached photographs show some of the conditions mentioned in the report.

R. J. Bowman

RJB FDS
RJB:MCH
Attachments
CC (Attachments):
R. G. Domer, 401 UB-K
O. H. Raine, 412 WAL-K
F. D. Stansberry, 101 FB-K

RGD
RGD:SD--6/8/73
CC (Attachments):
Roy H. Dunham, 505 UB-K - We are working on development of positive drainage system at present time.--RGD
F. P. Lacy, 508 UB-K

1 - Break in dike looking east, with lower gap in foreground being plugged

2 - Part of dike that slid into reservoir intact with trees still standing on the dike

3 - Channel eroded in ash pond showing ash that had washed out

4 - Pump being installed behind the break after it was plugged

5 - The divider dike between E and F ponds being breached

6 - Outside of slope being raised on a 1.5:1± and bladed down the slope

THIS TELECOPY IS:

TO: Keri Burnett/Ron Powell x-6609 or 8912

ADDRESS: COC

TELECOPY MACHINE NO. C-6403

VERIFY NO. _____

FROM: Denver Bennet

ADDRESS: J.S.F.P.

TELEPHONE NO. 523-1369

DATE: 9-18-89 TIME: 2:39 p.m.

NO. OF PAGES (INCLUDING COVER PAGE) 2

FROM TELECOPY MACHINE NO. 5-523-1335, JOHN SEVIER FOSSIL PLANT, VERIFY NO. 5-523-1337.

TVA 489H (EN DES-2-78)

SUBJECT John Sevier - Dry Stack Extension Dike Slough

COMPUTED BY [illegible] DATE 9-18-89

CHECKED BY [illegible] DATE 9-18-89

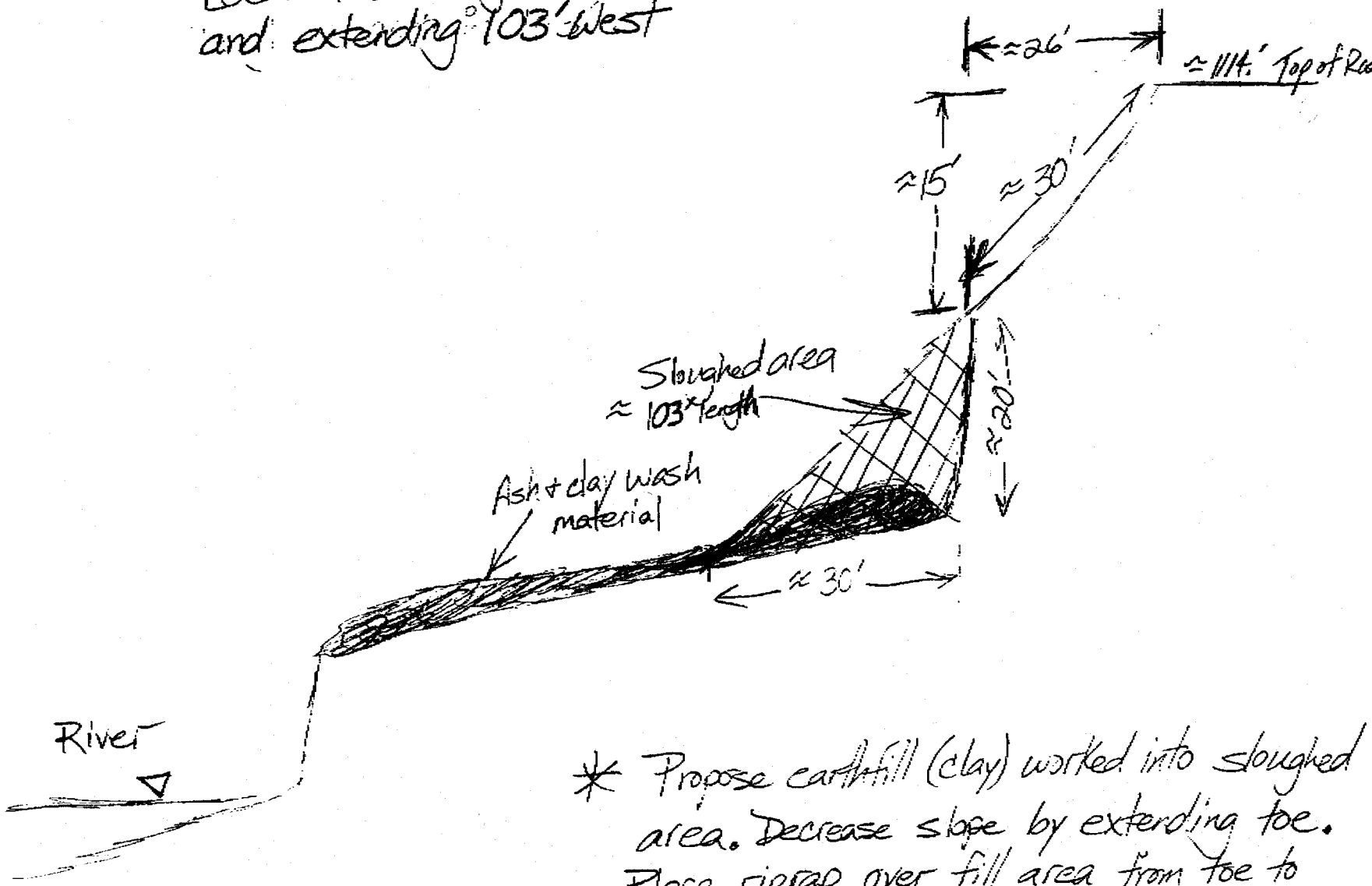
PROJECT Telecon 5-333-6403

TENNESSEE VALLEY AUTHORITY

FROM JSFP 512-1381 SHEET NO. P. 2 TOTAL P. 2

08/18/89 14:40

Location of sloughed area is 32' West of Monument JSDS#7 (Plant Grid West 15+58.10 North 12+51.52) and extending 103' West



* Propose earthfill (clay) worked into sloughed area. Decrease slope by extending toe. Place riprap over fill area from toe to near top.

B65 940314 209

March 14, 1994

George H. Pigg, John Sevier Fossil Plant

JOHN SEVIER FOSSIL PLANT (JSF) - ANNUAL INSPECTION OF ASH DISPOSAL AREAS

Attached is a report from E. J. Reed to K. W. Burnett dated March 11, 1994, concerning the inspection of the JSF ash disposal areas.

This report includes recommendations for corrective work. I concur with these recommendations.

Ralph G. Johnson
Manager, Fossil Engineering
LP 2G-C

KWB:EJR:PHF
Attachment
cc (Attachment):
R. L. Keyser, LP 5G-C
RIMS, CST 13B-C (Report only)

0257B

March 11, 1994

K. W. Burnett, Manager, Site Engineering, LP 2G-C

JOHN SEVIER FOSSIL PLANT-ANNUAL FOSSIL ENGINEERING INSPECTION OF ASH DISPOSAL AREAS

1.0 GENERAL

1.1 This inspection of the ash disposal areas was conducted on February 15, 1994 by the following personnel:

Jerry Reed, Fossil Engineering
Melissa Hedgecoth, Fossil Fuels
Dave Robinson, Fossil Fuels
Denver Bennett, John Sevier Fossil Plant

1.2 The last annual inspection was made on April 30, 1993.

1.3 The areas inspected are designated on the attached prints of drawings 10W286-1, 10W293-1 and 10N410.

2.0 ORIGINAL DISPOSAL AREA

2.1 CHANGE IN DIKES SINCE LAST INSPECTION

2.1.1 There has been no change in the earth perimeter dikes since the last inspection. The slopes of these dikes have a good vegetative cover. These dikes appear to be in good condition with no visible signs of instability.

2.1.2 The dikes for the interior basin "bathtub" in the east portion of this area were constructed by plant personnel with ash removed from inside the "bathtub," covered with a thin layer of earth, fertilized, and seeded. The slopes are starting to erode, however, the plant provides maintenance as needed and the bathtub is being filled with dry fly ash. These dikes appear to be in good condition with no visible signs of instability.

2.1.3 There has been no change in the seepage area along the north dike of the coal yard. The two seeps along the Cherokee Reservoir bank below the toe of the dike and seepage just south of the stilling pool discharge have not changed. No visible signs of instability noted.

2.1.4 The plant constructed a stilling pool dike in 1985 at the west end of this area. This dike is in good condition and has a good crushed stone surface.

2.1.5 The dikes must have all trees removed above the toe and the stumps treated because trees overload the slopes and make them top heavy. These dikes have no standing water on the inside of the dikes so piping will not occur when the roots rot.

2.1.6 Some dike-sluffing type of failures have occurred along the slopes of the east dike (see 2.5.4).

2.1.7 Some dike-sluffing type of failure has occurred at toe of dike about 50 feet west of stilling pond. A tree along the toe of dike has fallen into the Cherokee Reservoir and pulled out about 40 feet in length of original earth (see 2.5.6).

2.2 CHANGE IN POND OPERATION SINCE LAST INSPECTION

2.2.1 The dry fly ash collection system's ash is being dry stacked in this area by plant personnel (bathtub area). Also, some fly ash is being sluice into ash disposal area 2.

2.2.2 There was no water being sluiced into the bathtub area at the time of this inspection. When water is discharged into the bathtub area the water flows through one standard spillway with skimmer which is located in the southwest corner of the basin, then into the south perimeter drainage ditch (formerly Polly Branch) parallel to the plant access road. The south perimeter drainage ditch flows into the stilling pool through three plant constructed 36-inch concrete pipes under the south dike of the stilling pool. The stilling pool is discharged into a channel to Cherokee Reservoir through two standard spillways with skimmers. The pipes are located under the west dike of the stilling pool.

2.3 CONDITION OF SPILLWAYS, SKIMMERS, AND OUTLETS

2.3.1 The skimmer in the southwest corner of the interior basin appears to be in good condition and operating properly. There is only a small amount of floating ash on the surface of this basin (formerly Polly Branch). Ash was observed in the west end of the south perimeter drainage ditch where it flows into the stilling pool (see 2.5.2).

2.3.2 The two standard spillways and skimmers in the stilling pool appear to be in good condition and operating properly. The south standpipes were repaired in 1991. The outlets of their discharge pipes are flowing freely and there are no signs of loss of ash in the channel to Cherokee Reservoir. There is no floating ash on the surface of the stilling pool.

2.3.3 The standard spillway in the former storm runoff sump area (formerly area F) has been abandoned, but was left in place to prevent any overflow of the perimeter dike.

2.4 ACTION ON RECOMMENDATIONS OF LAST INSPECTION

2.4.1 During placement and grading of ash fill, plant employees have maintain the north perimeter drainage ditch to prevent any ponded water from being retained against the north perimeter dike. Ash fill placed and compacted to its final grade should be covered with one foot of earth, fertilized and seeded as soon as practical in order to control erosion and dust.

2.4.2 Plant employees have not removed the floating ash from the surface of the west end of the south perimeter drainage ditch.

2.4.3 Plant employees have continue to remove the small trees and brush from the dike slopes.

2.4.4 To reduce the potential for future slope failures the exterior slopes of the east dike should be repaired by placing fill material on the slope and top of dike.

2.5 RECOMMENDATIONS

2.5.1 During placement and grading of ash fill, plant employees should continue to maintain the north perimeter drainage ditch to prevent any ponded water from being retained against the north perimeter dike. Ash fill placed and compacted to its final grade should be covered with one foot of earth, fertilized and seeded as soon as practical in order to control erosion and dust.

2.5.2 Plant employees should periodically remove the floating ash from the surface of the west end of the south perimeter drainage ditch.

2.5.3 Plant employees should continue to periodically remove the small trees and brush encroaching above the toe of the dike slopes.

2.5.4 Plant employees should continue placing fill material on the slope and top of dike to reduce the potential for future slope failures on the exterior slopes of the east dike.

2.5.5 Plant personnel should place some crushed stone on top of the north dike running parallel to Cherokee Resvoir to prevent from rutting.

2.5.6 Plant personnel should place some rip rap in this area to prevent from eroding.

3.0 ASH DISPOSAL AREA 2

3.1 CHANGE IN DIKES SINCE LAST INSPECTIONS

3.1.1 There has been no change in the dikes since the last inspection. The slopes of the dikes have a good vegetative cover with some erosion on the inside of pond. The tops of the dikes, in some areas, appear to need additional crushed stone surfacing. The dikes are in good condition with no visible signs of instability (see 3.5.2).

3.1.2 The original ground below the exterior fill slope of the north dike appears to be in good condition with no signs of instability and no erosion from the cut made for the Polly Branch bypass.

3.2 CHANGE IN POND OPERATION SINCE LAST INSPECTION

3.2.1 All bottom ash is presently being sluiced into this area. Fly ash is sluiced into this area during start-up and on an intermittent basis when problems are encountered with dry collection system. At the time of this inspection fly ash was being sluiced into this area.

3.3 CONDITION OF SPILLWAYS, SKIMMERS, AND OUTLETS

3.3.1 Both skimmers appear to be in good operational condition. The riprapped outfall at the outlet of these spillways is in good condition, with no signs of erosion. Also, the ash pond discharge channel is in good condition.

3.4 ACTION ON RECOMMENDATIONS OF LAST INSPECTION

3.4.1 Plant personnel have not maintain the tops of the dikes for this area to prevent rutting.

3.4.2 Plant personnel have not repaired the erosion problem on the inside of dike.

3.5 RECOMMENDATIONS

3.5.1 Plant personnel should continue to maintain the tops of the dikes for this area to prevent rutting.

3.5.2 Plant personnel should continue to repair the erosion problem on the inside of dike. Some areas need to be fill with earth and grassed.

4.0 ASH DISPOSAL AREA J

4.1 CHANGE IN DIKES SINCE LAST INSPECTION

4.1.1 There has been no change in the dikes since the last inspection. The top of the dikes are sloped to the inside and have a good crushed stone surface. The dike slopes have a good vegetative cover with no signs of erosion. All dikes are in good condition with no visible signs of instability.

4.2 CHANGE IN POND OPERATION SINCE LAST INSPECTION

4.2.1 This area is presently inactive.

4.2.2 Rainfall collected in pond J is pumped back to the stilling pond in the original ash pond area (see 4.5.1).

4.3 CONDITION OF SPILLWAYS, SKIMMERS, AND OUTLETS

4.3.1 The skimmers have been removed from the spillways for this area and the standpipes were left in place.

4.4 ACTION ON RECOMMENDATION OF LAST INSPECTION

4.4.1 No repairs has been made on the horizontal spillway joints. The vertical standpipes are in good condition and will be modified upon approval of the solid waste landfill closure plan.

4.5 RECOMMENDATIONS

4.5.1 Plant personnel should continue to pump water out of this area back to the stilling pond in the original ash pond area (003 outfall).

5.0 CHEMICAL TREATMENT PONDS

5.1 The chemical treatment ponds (copper and iron) are located southwest of the original disposal area. The chemical ponds are excavated below the ground line and there are no exterior dikes.

5.2 The copper and iron pond water is discharged periodically by pumping to the ash disposal area 2.

6.0 COAL YARD DRAINAGE BASIN

6.1 The coal yard drainage basin is located northwest of utility building. This basin was excavated below grade; therefore, there are no dikes.

6.2 All discharge from this basin is pumped to the ash disposal area 2.

6.3 The coal yard drainage pond needs to be clean out.

E. Jerry Reed

E. Jerry Reed
Site Engineering
MR 3D-C

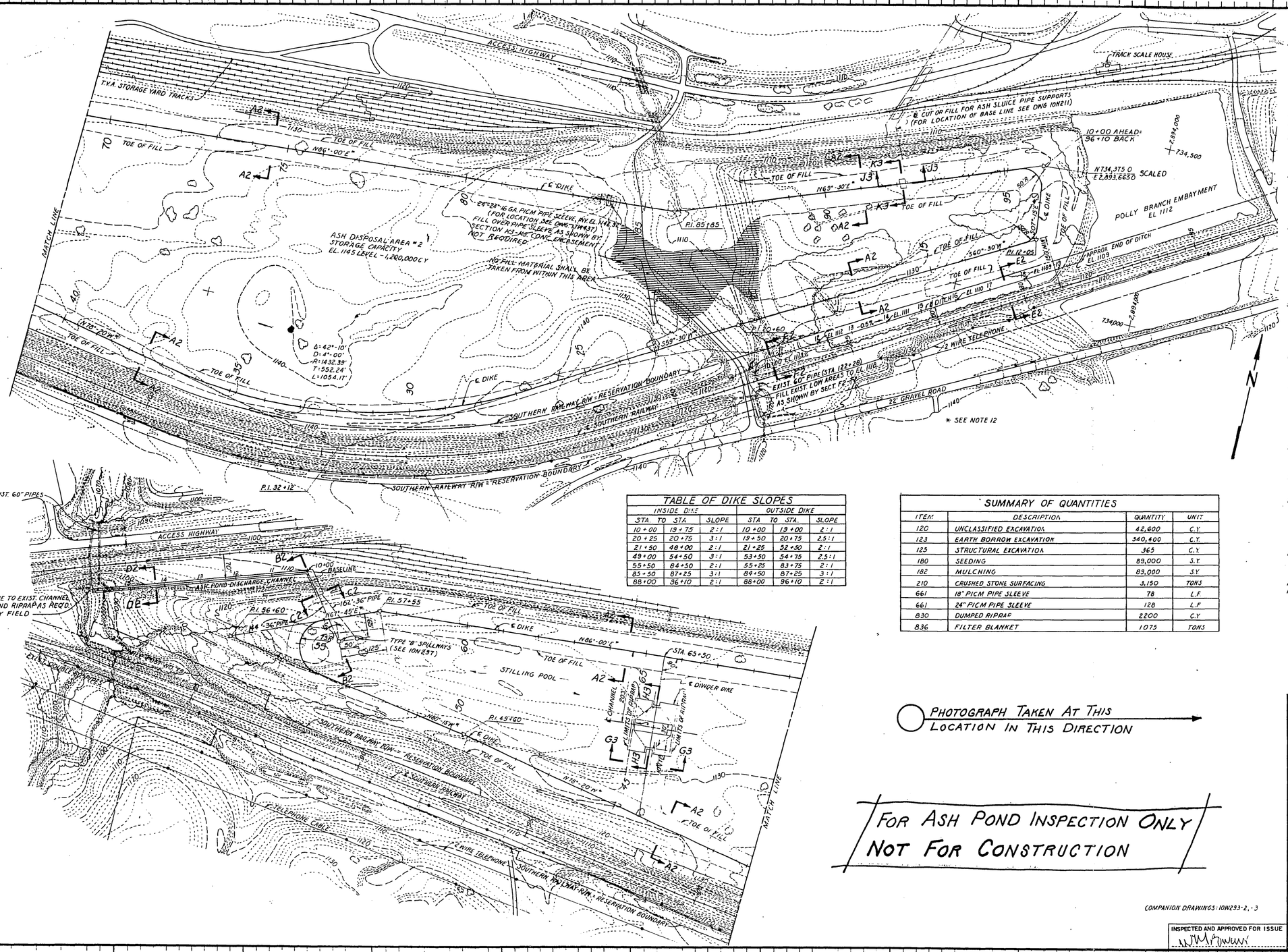


TABLE OF DIKE SLOPES

INSIDE DIKE			OUTSIDE DIKE		
STA.	TO STA.	SLOPE	STA.	TO STA.	SLOPE
10+00	19+75	2:1	10+00	19+00	2:1
20+25	20+75	3:1	19+50	20+75	2.5:1
21+50	48+00	2:1	21+25	52+50	2:1
49+00	54+50	3:1	53+50	54+75	2.5:1
55+50	84+50	2:1	55+25	83+75	2:1
85+50	87+25	3:1	84+50	87+25	3:1
88+00	96+10	2:1	88+00	96+10	2:1

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
120	UNCLASSIFIED EXCAVATION	42,600	C.Y.
123	EARTH BORROW EXCAVATION	340,400	C.Y.
125	STRUCTURAL EXCAVATION	365	C.Y.
180	SEEDING	89,000	S.Y.
182	MULCHING	89,000	S.Y.
210	CRUSHED STONE SURFACING	3,150	TONS
661	18" PICM PIPE SLEEVE	78	L.F.
661	24" PICM PIPE SLEEVE	128	L.F.
830	DUMPED RIPRAP	2200	C.Y.
836	FILTER BLANKET	1075	TONS

NOTES:

1. ALL CONSTRUCTION, EXCEPT ROLLED EARTHFILL, SHALL BE IN ACCORDANCE WITH T-I SPEC.
2. THE RESULTS OF THE SOIL INVESTIGATION FOR THE CONSTRUCTION OF THE ASH DISPOSAL AREA DIKES ARE REPORTED IN A MEMO FROM GENE FARMER TO G.L. BUCHANAN DATED DECEMBER 10, 1976, JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION, EN. OES. SOIL SCHEDULE NO. G.
3. ALL ROLLED EARTHFILL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPEC. G-9, ROLLED EARTHFILL FOR DAMS AND POWER PLANTS. ROLLED EARTHFILL SHALL CONSIST OF SOIL PLACED IN LAYERS NOT EXCEEDING 6" AFTER COMPACTION AND SHALL BE UNIFORMLY COMPACTED TO AT LEAST 95% OF STD. MAX. DRY DENSITY AS DETERMINED BY ASTM D-698 PROCEDURES (STANDARD PROCTOR). MOISTURE CONTENT OF EARTHFILL SHALL BE WITHIN 1.3% OF OPTIMUM MOISTURE CONTENT.
4. FROM STA. 19+50 TO STA. 21+50 AND FROM STA. 84+00 TO STA. 88+00 (APPROXIMATELY BETWEEN EL. 1125 CONTOURS), A NARROW INSPECTION TRENCH SHALL BE EXCAVATED TO A DEPTH OF 10'. IN ANY AREA WHERE GRAVEL STRATUM IS EXPOSED, A CUTOFF TRENCH IS TO BE EXCAVATED THROUGH THE PERVIOUS STRATUM AND BACKFILLED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECT. A2-A2. WHERE A CUTOFF TRENCH IS NOT REQUIRED, THE INSPECTION TRENCH IS TO BE IMMEDIATELY BACKFILLED, AFTER INSPECTION, WITH THE EXCAVATED MATERIALS AND THOROUGHLY COMPACTED.
5. BORROW MATERIAL SHALL BE EXCAVATED TO A DEPTH OF 10' BENEATH THE EXISTING GROUND SURFACE OR 2' MINIMUM BENEATH GRAVEL STRATUM WHERE ENCOUNTERED, EXCEPT AT LOCATIONS WHERE INSPECTION TRENCH IS REQUIRED. WHERE GRAVEL STRATUM IS EXPOSED, THE EXCAVATED SLOPE SHALL BE BLANKETED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECTION A2-A2.
6. WHERE A CUTOFF TRENCH IS REQUIRED ADJACENT TO BLANKETED EXCAVATION SLOPE, THE CUTOFF TRENCH SHALL BE EXTENDED ACROSS THE WIDTH OF THE DIKE TO TIE INTO THE BLANKETED EXCAVATION SLOPE.
7. EARTHFILL FOR DIKE CONSTRUCTION SHALL CONSIST OF MATERIAL EXCAVATED FROM INSIDE ASH DISPOSAL AREA NO. 2. PERVIOUS GRANULAR SOILS COMPARABLE TO BORROW SOIL CLASS VII, AS DEFINED BY THE MEMO PER NOTE 2, SHALL NOT BE USED AS EARTHFILL FOR DIKE CONSTRUCTION. CUT SLOPES FOR BORROW MATERIAL ADJACENT TO THE DIKE SHALL BE 3:1 OR FLATTER, AND THE TOP OF CUT SHALL BE A MINIMUM OF 25' FROM THE TOE OF DIKE SLOPE.
8. THE MINIMUM FACTOR OF SAFETY FOR ALL LOADING CONDITIONS INVESTIGATED BY STABILITY ANALYSIS FOR THE ASH DISPOSAL DIKES IS 1.21. THIS FACTOR OF SAFETY IS FOR THE SUDDEN DRAWDOWN CONDITION.
9. CRUSHED STONE OR GRAVEL SURFACING, 4" THICK, SHALL BE APPLIED FOR THE FULL WIDTH OF THE TOP OF DIKE IN ACCORDANCE WITH SECTION 210.
10. ALL CUT AND FILL SLOPES AND OTHER DISTURBED AREAS SHALL BE SEEDED WITH TYPE 6, MIXTURE E, IN ACCORDANCE WITH SECTION 180, DEPENDING ON THE TIME OF CONSTRUCTION, IT MAY BE NECESSARY TO PROVIDE A TEMPORARY COVER ON THE DIKE SLOPES. ALL GRASSED AREAS SHALL BE FERTILIZED AND MULCHED IN ACCORDANCE WITH SECTIONS 180 AND 182 RESPECTIVELY.
11. RIPRAP SHALL BE PLACED AS SHOWN ON THE DRAWINGS WITH A MINIMUM OF 50%, BY WEIGHT, CONSISTING OF STONES OF AT LEAST 150 LB. EACH. RIPRAP SHALL CONFORM TO SECTION 830.
12. FILTER SHALL CONFORM TO SECTION 836.
13. ALL CENTERLINE BEARINGS ARE APPROXIMATE SCALED BEARINGS.

PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

COMPANION DRAWINGS: 10W293-2, -3

INSPECTED AND APPROVED FOR ISSUE

3																	Job #
OPEN REVISION:																	
2	—	8-20-80	HDM	TAC	JLG	RWB	RJB	RJB	FZS								VEC
RECORD AS CONSTRUCTED: PA 331																	
1	—	4-25-79	HDM	BSH	ASH	ACH	WLB	—	RJB	JTG							WHP
REV NOTES: TABLE OF DIKE SLOPES & EXCAV. QUANTITIES; MINOR REVISIONS; PA 331																	
REV NO.	ECN NO	DATE	DSGN	DRWN	CHKD	SUPV	ENGR	INSP	SUBM	RECM	APPD						

DSGN — R.D. POWELL
DRWN — B.S. MARGRAVE
CHKD — R.D. POWELL
SUPV — [illegible]

INSP —
ENGINEER — [illegible]

SCALE: 1" = 100 EXCEPT AS NOTED

MAIN PLANT

ASH DISPOSAL AREA NO. 2
PLAN

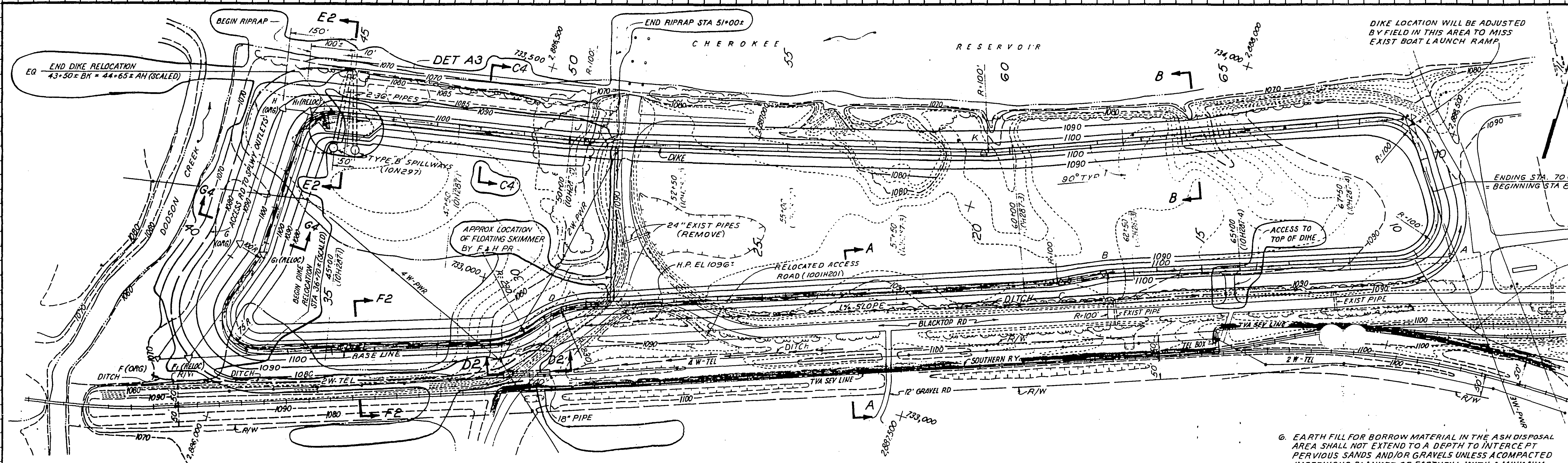
JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED	RECOMMENDED	APPROVED
Robert J. Rawson	[illegible]	[illegible]
KNOXVILLE	8-19-77	41 C 10W293-1 R3

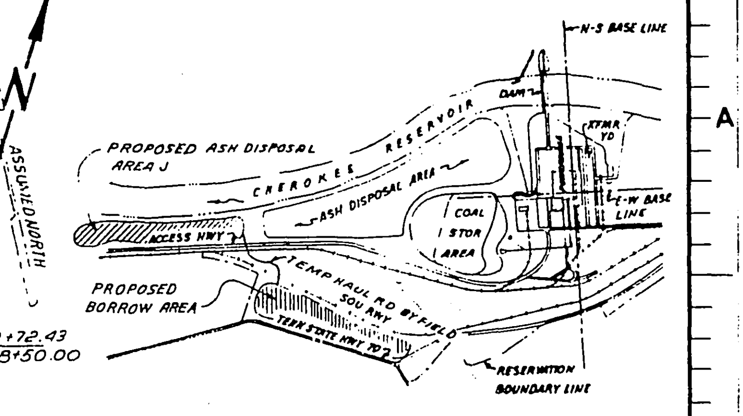
RECORD DRAWING AS OF 1-20-80
Frank VanMeter R2

PRINT H
SIZE F
BR OR PROJ WL EC CE AD CO ED MD PB BL PA
PRINTS REQD-R

E 23



PLAN



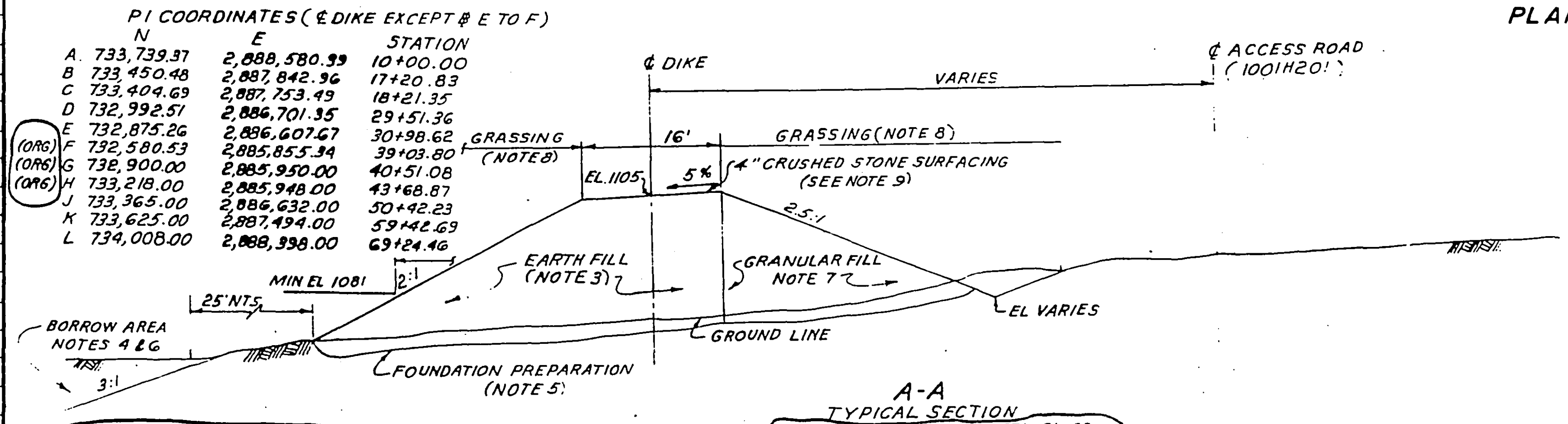
KEY PLAN
NTS

PI COORDINATES (℄ DIKE EXCEPT @ E TO F)

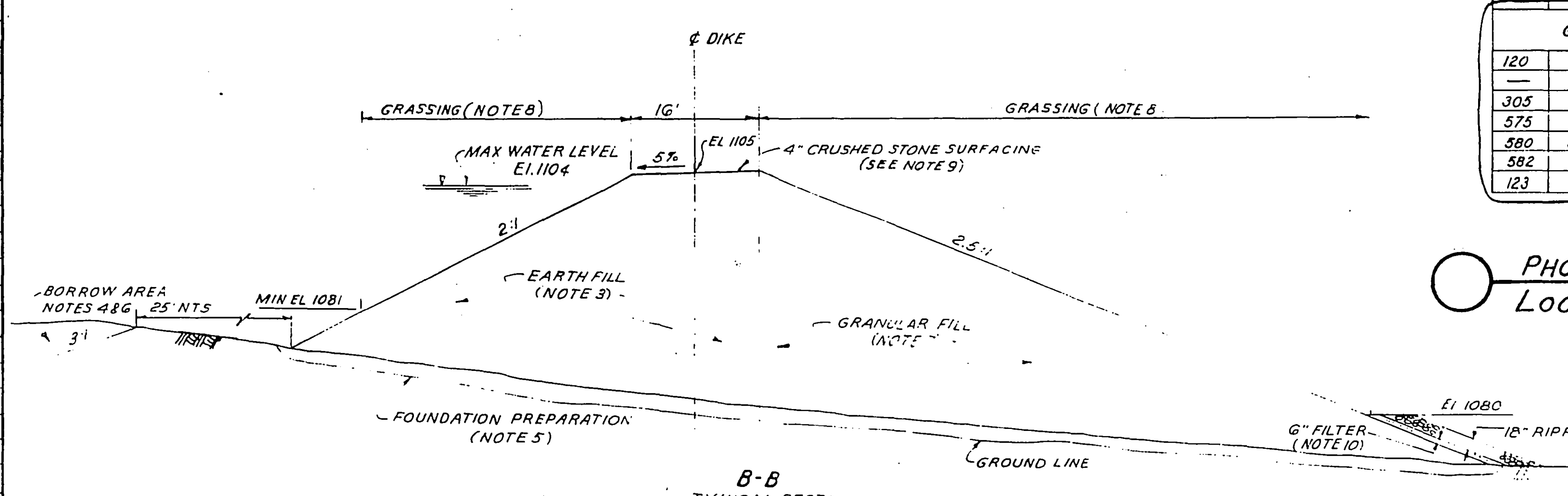
	N	E	STATION
A	733,739.37	2,888,580.39	10+00.00
B	733,450.48	2,887,842.96	17+20.83
C	733,404.69	2,887,753.49	18+21.35
D	732,992.51	2,886,701.35	29+51.36
E	732,875.26	2,886,607.67	30+98.62
(ORG) F	732,580.53	2,885,855.34	39+03.80
(ORG) G	732,900.00	2,885,950.00	40+51.08
(ORG) H	733,218.00	2,885,948.00	43+68.87
J	733,365.00	2,886,632.00	50+42.23
K	733,625.00	2,887,494.00	59+42.69
L	734,008.00	2,888,398.00	69+24.46

PI COORDINATES

	N	E	STATION
(RELOC) F1	732,606.88	2,885,922.60	38+25 ±
(RELOC) G1	732,891.91	2,886,007.05	39+75 ±
(RELOC) H1	733,230.23	2,886,004.92	43+15 ±



A-A
TYPICAL SECTION
STA. 69+00± FORWARD TO STA. 31+00±
1" = 10'



B-B
TYPICAL SECTION
STA. 50+00± TO STA. 69+00±
1" = 10'

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
101	CLEARING & GRUBBING	35	AC.
123	EARTH BORROW	471,000	CY
125	EXCAVATION FOR STRUCTURES	303	CY
305	CRUSHED STONE SURFACING	1855	TON
570	FILTER BLANKET	1500	TON
575	RIPRAP	2650	CY
580	SEEDING	72,000	SY
582	MULCHING	72,000	SY
510	STONE GUTTER	100	LF
	FOUNDATION PREPARATION	55,000	CY
463 481 491	18" PIPE CULVERT	86	LF
464	36" CONC PIPE CLASS IV "O" RING	340	LF

QUANTITIES FOR REVISION 3

ITEM	DESCRIPTION	QUANTITY	UNIT
120	UNCLASSIFIED EXCAVATION	17,000	CY
—	COMPACTED ASH FILL	21,200	CY
305	CRUSHED STONE SURFACING	1,500	TON
575	RIPRAP	44,000	TON
580	SEEDING	13,500	SY
582	MULCHING	13,500	SY
123	EARTH BORROW	1,000	CY

◯ PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION →

STORAGE CAPACITY *

ELEVATION	QUANTITY	ACCUM QUANTITY
1071 & BELOW	10,600 CY	10,600 CY
1076 TO 1071	59,200 CY	69,800 CY
1081 TO 1076	107,600 CY	177,400 CY
1086 TO 1081	127,800 CY	305,200 CY
1091 TO 1086	137,600 CY	442,800 CY
1096 TO 1091	147,400 CY	590,200 CY
1101 TO 1096	157,200 CY	747,000 CY‡

* ASSUME ASH LEVEL
‡ RELOCATION OF THE WEST DIKE REDUCED THE ASH STORAGE CAPACITY BY 27,000 CY±

NOTES
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE T-1 SPECIFICATIONS, UNLESS OTHERWISE NOTED.
2. THE SOLID CONTOURS REPRESENT FINISHED GRADE; DASHED CONTOURS INDICATE EXISTING GROUND.
3. THE RESULTS OF THE SOIL INVESTIGATION FOR THE ASH DISPOSAL AREA DIKES ARE REPORTED IN A MEMO FROM FRANK VANMETER TO G.L. BUCHANAN DATED JULY 22, 1981 (CSB 810724 301), JOHN SEVIER STEAM PLANT, ASH DISPOSAL AREA, SOIL EXPLORATION AND TESTING, EN DES SOIL SCHEDULE NO. 6.2. ALL ROLLED EARTH FILL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION G-9, ROLLED EARTH FILL FOR DAMS AND POWER PLANTS. ROLLED EARTHFILL SHALL CONSIST OF SOIL PLACED IN LAYERS NOT EXCEEDING 6" AFTER COMPACTION AND SHALL BE UNIFORMLY COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 PROCEDURES. MOISTURE CONTENT OF EARTHFILL SHALL BE WITHIN ±3% OF OPTIMUM MOISTURE CONTENT.
4. BORROW MATERIAL AS MUCH AS PRACTICAL FOR THE DIKE SHALL BE OBTAINED FROM INSIDE THE DISPOSAL AREA. CUT SLOPES ADJACENT TO EMBANKMENTS SHALL NOT BE EXCAVATED STEEPER THAN 3:1 AND TOP OF CUT SHALL BE A MINIMUM OF 25 FEET FROM TOE OF EMBANKMENT. REMAINING BORROW MATERIAL SHALL BE OBTAINED FROM DESIGNATED BORROW AREA LOCATED SE OF DIKE AND BETWEEN SOUTHERN RAILWAY AND TENNESSEE HIGHWAY 70.
5. FOUNDATION PREPARATION FOR EARTH EMBANKMENTS SHALL CONSIST OF CLEARING AND REMOVING ALL ROOTS, VEGETATION, AND ORGANIC TOPSOIL. FOUNDATION AREA SHALL BE COMPACTED BY USING SHEEP'S FOOT ROLLER FOLLOWED BY A FLAT WHEELED ROLLER UNTIL DISTURBED AREA WILL SUPPORT HEAVY EQUIPMENT WITHOUT RUTTING INTO THE GROUND SO AS TO REDUCE ITS STABILITY. PRIOR TO PLACING FILL THE FOUNDATION MUST BE SCARIFIED SO THERE WILL BE GOOD BOND BETWEEN FOUNDATION AND FILL. THE SOIL INVESTIGATION PROGRAM INDICATED THE PRESENCE OF SOFT SOILS DIRECTLY BENEATH THE TOPSOIL AT STATION 9+50± AND STATION 34+00± IN THE DIKE FOUNDATION. SUCH SOFT AND SHALLOW SOILS DETECTED DURING THE FOUNDATION PREPARATION AT THESE LOCATIONS OR ANY OTHER LOCATION IN THE DIKE AREA SHALL BE REMOVED AND REPLACED BY IMPERVIOUS EARTHFILL COMPACTED IN LAYERS.
6. EARTH FILL FOR BORROW MATERIAL IN THE ASH DISPOSAL AREA SHALL NOT EXTEND TO A DEPTH TO INTERCEPT PERVIOUS SANDS AND/OR GRAVELS UNLESS A COMPACTED IMPERVIOUS BLANKET OF EARTHFILL WITH A MINIMUM THICKNESS OF 3FT. IS PLACED OVER EXPOSED SANDS AND/OR GRAVELS. IF THIN LAYERS OR POCKETS OF SAND AND/OR GRAVEL, ENCOUNTERED WITHIN FINE-GRAINED BORROW SOILS, ARE EXPOSED ON THE EXCAVATED SLOPE, THEY SHOULD BE BLANKETED WITH COMPACTED IMPER[illegible] EARTHFILL WITH A MINIMUM WIDTH OF 3FT.
7. IN VI[illegible] [illegible]OTENTIAL FOR BORROW SHORTAGE, SAND AND G[illegible] MATERIALS, IF ENCOUNTERED DURING BORROW EXCAVATION OR DIKE FOUNDATION PREPARATION, SHALL NOT BE WASTED. IF SHORTAGE OF FINE-GRAINED BORROW SOIL OCCURS, SANDS AND GRAVELS MAY BE USED BENEATH THE OUTER SLOPE OF THE DIKE. GRANULAR FILL WITH LESS THAN 20% FINES SHALL BE COMPACTED TO AN AVERAGE RELATIVE DENSITY OF 85% OR GREATER WITH A MINIMUM RELATIVE DENSITY OF 80% AS DETERMINED BY ASTM D2049 PROCEDURES. GRANULAR MATERIAL WITH MORE THAN 20% FINES SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (METHOD D) PROCEDURES.
8. DIKE SLOPES SHALL BE SEEDED WITH TYPE 6 MIXTURE 5 SEEDED AREAS ARE TO BE FERTILIZED AND MULCHED IN CONFORMENCE WITH SECTIONS 580 AND 582.
9. CRUSHED STONE SURFACING, 4 INCHES THICK, SHALL BE APPLIED FOR THE FULL WIDTH OF THE TOP OF THE DIKE IN ACCORDANCE WITH SECTION 305.
10. RIPRAP SHALL BE SOUND, DURABLE STONE, 18 INCHES THICK, WITH A MINIMUN OF 50% BY WEIGHT CONSISTING OF STONES AT LEAST 100 LBS EACH. RIPRAP SHALL CONFORM TO SECTION 575. FILTER BLANKET, 6 INCHES THICK, SHALL CONFORM TO SECTION 570.
11. THE ASH DISPOSAL AREA SHALL BE CLEARED IN ACCORDANCE WITH SECTION 101. NO GRUBBING IS REQUIRED EXCEPT FOR AREAS OF DIKE FOUNDATIONS.
12. STONE GUTTER SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 510.
13. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 PLAIN FINISH AND SHALL HAVE A MINIMUM LAP DISTANCE OF 8 INCHES.
14. FAMILY OF COMPACTION CURVES DEVELOPED FOR BORROW AREAS A AND B BY SME AS PER EN DES SOIL SCHEDULE NO. 6.2 (CSB 810724 301) SHALL BE USED TO CONTROL THE EARTHFILL COMPACTION. IN-PLACE DENSITY TESTS USING THE SAND CONE (ASTM D1556) OR RUBBER BALLOON (ASTM D2167) TEST METHODS SHALL BE MADE AT A RATE OF AT LEAST 1 TEST FOR EACH 2000 CUBIC YAR[illegible] OF EART[illegible]FILL PLACED (IN-PLACE VOLUME), OR A MINIMUM OF [illegible] DAY[illegible]
15. COM[illegible]TED A[illegible] ILL SHALL BE CONSTRUCTED THE SAME WAY THE EARTHFILL IS CONSTRUCTED. THE FAMILY-OF-COMPACT CURVES DEVELOPED FOR THE ASH FILL BY SME PER EN DES SOIL SCHEDULE NO. 6.4 (SME 84 1127 002) SHALL BE USED TO CONTROL THE COMPACTED ASH FILL. COMPACTION OF ASH FILL SHALL BE DONE WITH SMOOTH SURFACE STEEL WHEEL VIBRATORY ROLLERS.

FIRST ISSUE FOR W.O. 544-30-31401-J0084

COMPANION DWG: 10N297, 298
10W286-2, -3, -4

REV	DESCRIPTION
4	OPEN REVISION.
3	RELOC WEST DIKE. ADD NOTES, FLOAT SKIM, AND ACCESS RD & RAMP
2	ADDED SECTIONS & STORAGE CAPACITY - WO 544-30-31401-J[illegible]
1	ADD DET A3 & REV SUMMARY OF QUANTITIES - WO 544-30-31401-J[illegible]

DSGN R. O. MARONEY
DRWN V.R. LEE - A.H. SPEBBER
CHKD J. L. GLOVER
SUPV J. L. GLOVER
INSP J.R. Fox
ENGINEER K. W. Burnett

SCALE 1" = 100' EXCEPT AS NOTED

MAIN PLANT

FLY ASH DISPOSAL AREA "J"
SHEET 1

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED: Robert J. Bowman | RECOMMENDED: [illegible] | APPROVED: [illegible]

INSPECTED AND APPROVED FOR ISSUE [signature]

KNOXVILLE 7-28-82 | 41 | C | 10W286-1 | R4

RECORD DRAWING AS CONSTRUCTED

E23

10N410

SECTION C-C
Scale: 1"=10'

SECTION A-A
Scale: 1"=10'

B-B & B1-B1
B-B as shown
B1-B1 similar
Scale 1"=20'

DETAIL OF BAFFLE

DETAIL A

D-D
Scale 1" = 20'

TYPICAL SECTION OF SPILLWAY - 2 REQUIRED
Scale: 1"=10'

CHEROKEE RESERVOIR

EMERGENCY SLUICING AREA

COAL YD. DRAIN. BASIN

COAL STORAGE YARD

CHEMICAL TREATMENT PONDS

STILLING POOL

SPILLWAYS

SPILLWAY

DIKE

Condensing Water Outfall

POWERHOUSE

Access Highway

Channel Change

PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION

NOTES:
1. DIKE to be constructed with unclassified excavation.
2. RIPRAP to consist of durable stone; 50% to weigh at least 100 lbs.
3. SURFACING: Crushed stone 4" thick to be applied for the full width of the dike in accordance with section 210 of the T-1 specs.
4. GRASSING and fertilizer: sect. 180, T-1 specs. except if seeded in fall use 15 lbs. Ky 31, 5 lbs Alsike clover and 15 lbs. perennial rye per acre. If seeded in spring use 30 lbs. sericia per acre. Apply light mulch as per sect. 181A

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

REV NO.	DATE	ECH/FCR	DRAWN	CHKD	TECHD	APPD	SUPV	INSP	SUBMITTED
4		OPEN REVISION.							

MAIN PLANT

ORIGINAL
ASH DISPOSAL AREA

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF DESIGN

SUBMITTED	RECOMMENDED	APPROVED
J. T. Colbert Jr.	O. A. Mayer	R. A. Morrel

KNOXVILLE | 4-30-56 | 4 | C | 4 | 10N410 R4

RECORD DRAWING AS CONSTRUCTED 1-24-56

E23

R3

JOHN SEVIER FOSSIL PLANT
PLUGGING PIPES IN "BATHTUB AREA"

SEQUENCE OF CONSTRUCTION

1. Excavate (if necessary) dike material around pipe to facilitate plugging.

2. Install plug as deep into pipe as possible.

3. Fill entire length of pipe with a bentonite and/or grout slurry.

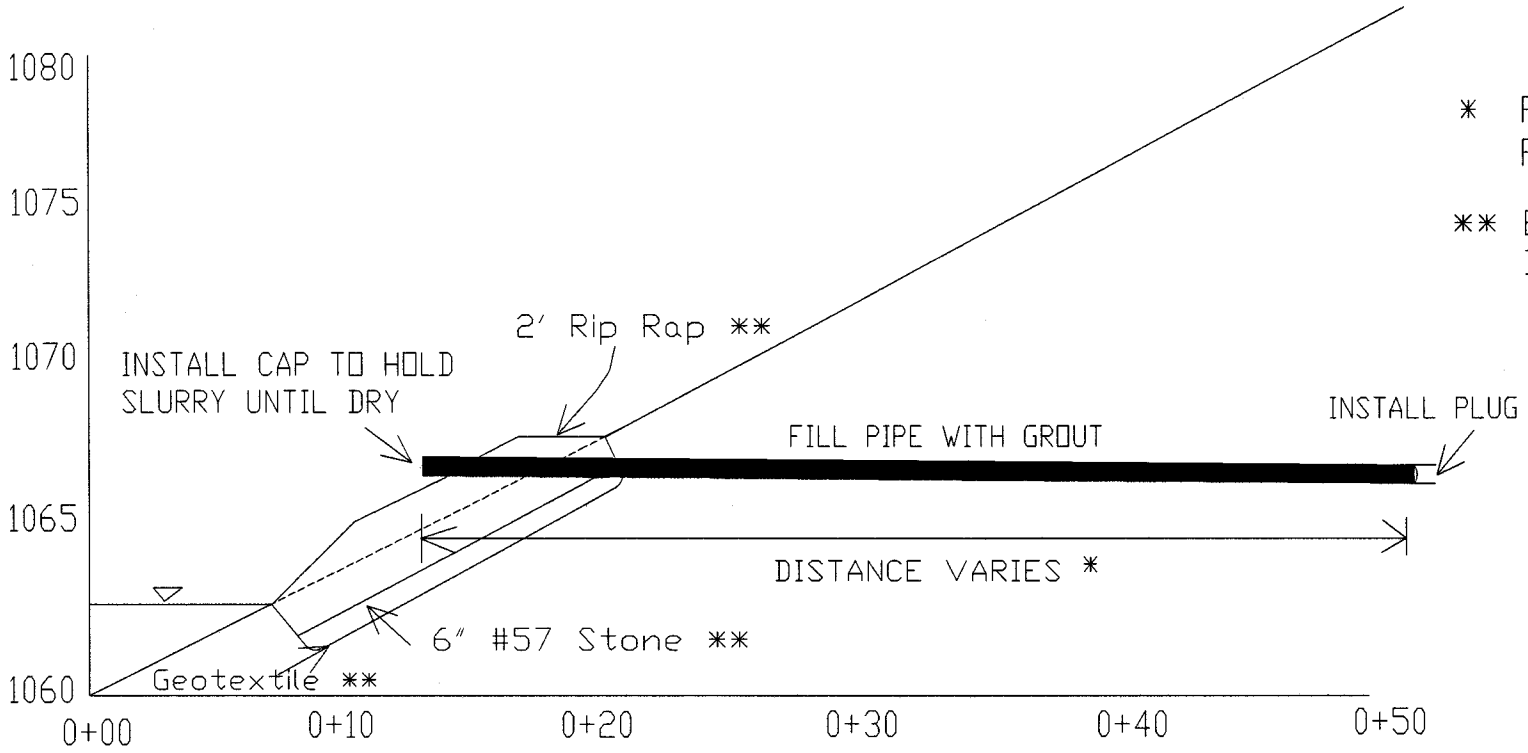
4. Place cap on end of pipe to hold slurry in place until dry.

5. Slope protection for disturbed areas shall consist of compacted earth, woven geotextile (700x Mirafi or equal), 6 inches of crushed stone (#57) filter blanket, and 2 feet of rip rap (50% of stone shall weigh at least 100 pounds).

6. Seed, fertilize, and mulch disturbed earth areas in accordance with T-1 Specifications sections 580 and 582.

TYPICAL SECTION

MP1 (8" cmp)
CP1 (2" clay pipe)
CP2 (4" clay pipe)
CP3 (4" clay pipe)



* PLUG AND GROUT PIPE AS FAR BACK AS POSSIBLE

** EROSION PROTECTION TO BE PLACED IF NEEDED

Tennessee Valley Authority
Maps & Surveys

Project: John Sevier Fossil Plant
Subsurface Investigations
Acid Remediation Project
Red Water Seep Location Survey

Survey Date: 11-16-1994
Project: RKQ60
Job: RKQ60.1

Projection: Tennessee Lambert/Plant Grid/Geodetic Positions
Horizontal Datum: NAD 27 Order: 4th Units: US Survey Feet
Vertical Datum: NGVD 29 Order: 4th Units: US Survey Feet

Printing Date: 11-29-1994

Name	Northing	Easting	Elev	Remarks
CP1	737076.71	2892127.22	1066.97	Top of 4" clay pipe
CP2	736683.87	2891709.79	1065.37	Top of 4" clay pipe
CP3	736482.35	2891533.33	1065.98	Top of 4" clay pipe
MP1	737119.42	2892215.45	1068.76	Top of 8" cmp
SEEP 1	735075.76	2890021.68	1064.92	Ground @ river bank
SEEP 2	734626.84	2889308.55	1067.04	Ground @ river bank
36" Pipe	734991.56	2889886.64	1068.36	Ground @ broken conc.

Descriptions And
Plant Grid & Geodetic
Positions

CP1 = Top of ~~4"~~ 2" clay pipe
Plant Grid (Ft): N 13+68.71 W 15+51.95
Latitude: 36°22'44.1322" N
Longitude: 82°58'08.9278" W

CP2 = Top of 4" clay pipe
Plant Grid (Ft): N 11+55.20 W 20+83.92
Latitude: 36°22'40.3771" N
Longitude: 82°58'14.1785" W

CP3 = Top of 4" clay pipe
Plant Grid (Ft): N 10+31.93 W 23+21.72
Latitude: 36°22'38.4393" N
Longitude: 82°58'16.4115" W

MP1 = Top of 8" cmp
Plant Grid (Ft): N 13+76.29 W 14+54.22
Latitude: 36°22'44.5273" N
Longitude: 82°58'07.8332" W

SEEP 1 = Point on river bank where seepage is coming out of bank.
Plant Grid (Ft): N 2+73.66 W 42+42.30
Latitude: 36°22'24.9986" N
Longitude: 82°58'35.4188" W

Descriptions And
Plant Grid & Geodetic
Positions

SEEP 2 = Point on river bank where seepage is coming out of bank.
Noticeable flow at this site.
Plant Grid (Ft): N 1+15.79 W 50+70.04
Latitude: 36°22'20.7792" N
Longitude: 82°58'44.3039" W

36" Pipe = Shot on ground at broken concrete. Could not find pipe.
Plant Grid (Ft): N 2+44.51 W 43+98.75
Latitude: 36°22'24.2076" N
Longitude: 82°58'37.1010" W


CP3
CP2
CP1
MP1
737,500
2,893,000

B65 950517 200

EJR

Master File

May 17, 1995

W. I. Edwards, John Sevier Fossil Plant

JOHN SEVIER FOSSIL PLANT - ANNUAL FOSSIL ENGINEERING INSPECTION OF ASH DISPOSAL AREAS

The ash disposal areas at John Sevier Fossil Plant were inspected April 6, 1995. Attached is a report of the findings including recommendations for corrective work.

RG Johnson

Ralph G. Johnson
Manager, Fossil Engineering
LP 2G-C

KWB:EJR:MBW
Attachments
cc: J. S. Baugh, LP 5G-C
RIMS, CST 13B-C

t:\jsfash.ejr

JOHN SEVIER FOSSIL PLANT
ANNUAL FOSSIL ENGINEERING REPORT
INSPECTION OF ASH DISPOSAL AREAS

1.0 GENERAL

1.1 This inspection of the ash disposal areas was conducted on April 6, 1995 by the following personnel:

Jerry Reed, Fossil Engineering
Mike Sutton, Fuel By-Products

1.2 The last annual inspection was made on February 15, 1994.

1.3 The areas inspected are designated on the attached prints of drawings 10W286-1, 10W293-1 and 10N410.

2.0 ORIGINAL DISPOSAL AREA

2.1 CHANGE IN DIKES SINCE LAST INSPECTION

2.1.1 The dike slopes have a good vegetative cover. These dikes generally appear to be in good condition; however, a portion (100 feet long) of the dike has eroded or experienced a shallow surface slide (picture 3) (see 2.5.4.)

2.1.2 There has been a change in the river bank since the last inspection. Four abandoned pipes (1 @ 2", 2 @ 4", & 1 @ 8") located near the northwest corner of this area and previously identified as draining (seepage) into the Holston River have been recently plugged. Seepage is now discharging along the outside of the pipes and saturating an area of the river bank. There is no apparent problem at this time. (picture 4)

2.1.3 The dikes for the interior basin "bathtub" in the east portion of this area were constructed by plant personnel with ash removed from inside the "bathtub," covered with a thin layer of earth, fertilized, and seeded. The slopes have some erosion: however, the plant provides maintenance as needed and the bathtub is being filled with dry fly ash. These dikes appear to be in good condition with no visible signs of instability. (see 2.5.1)

2.1.4 Due to the low water elevation, seepages along the Cherokee Reservoir bank below the toe of the dike were observed. No visible sign of instability was noted. (picture 1 & 2)

2.1.5 The seepage just south of the stilling pool discharge has not changed. No visible sign of instability was noted.

2.1.6 The plant constructed a stilling pool dike in 1985 at the west end of this area. This dike is in good condition and has a good crushed stone surface.

2.1.7 There are a number of small trees and brush on the dike slopes. (see 2.5.3)

2.1.8 Trees along the river bank near the toe of dike have uprooted and fallen into the Cherokee Reservoir taking large pieces of bank along. Also, some trees have been cut down by beavers. A berm (15 feet width) remains between the toe of dike and top of riverbank. There is no apparent problem with dike stability at this time. (see 2.5.5) (picture 5 & 6)

2.2 CHANGE IN POND OPERATION SINCE LAST INSPECTION

2.2.1 The dry fly ash collection system's ash is being dry stacked in this area by plant personnel (bathtub area). Also, some fly ash is being sluiced into ash disposal area 2 during unit start-up and on an intermittent basis when problems are encountered with the dry collection system.

2.3 CONDITION OF SPILLWAYS, SKIMMERS, AND OUTLETS

2.3.1 The skimmer in the southwest corner of the interior basin appears to be in good condition and operating properly. Ash was observed in the west end of the south perimeter drainage ditch where it flows into the stilling pool. (see 2.5.2) (picture 9)

2.3.2 The two standard spillways and skimmers in the stilling pool appear to be in good condition and operating properly. The outlets of their discharge pipes are flowing freely and there are no signs of loss of ash in the channel to Cherokee Reservoir. There is no floating ash on the surface of the stilling pool.

2.3.3 The standard spillway in the former storm runoff sump area (formerly area F) has been abandoned, but was left in place to prevent any overflow of the perimeter dike during unusual rainfall events.

2.4 ACTION ON RECOMMENDATIONS OF LAST INSPECTION

2.4.1 During placement and grading of ash fill, plant employees have continued to maintain the north perimeter drainage ditch to prevent any ponded water from being retained against the north perimeter dike. (see 2.5.1)

2.4.2 Plant employees have not removed the floating ash from the surface of the west end of the south perimeter drainage ditch. (see 2.5.2)

2.4.3 Plant employees have not removed the small trees and brush encroaching above the toe of the dike slopes.(see 2.5.3)

2.4.4 Plant employees have continued placing fill material on the slope and top of dike to reduce the potential for future slope failures on the exterior slopes of the east dike.

2.4.5 Plant personnel have graded and placed some crushed stone on top of the north dike running parallel to Cherokee Reservoir to prevent rutting.

2.5 RECOMMENDATIONS

2.5.1 During placement and grading of ash fill, plant employees should continue to maintain the north perimeter drainage ditch to prevent any ponded water from being retained against the north perimeter dike.

2.5.2 Plant employees should periodically remove the floating ash from the surface of the west end of the south perimeter drainage ditch where it flows into the stilling pool.

2.5.3 Plant employees should continue to periodically remove the small trees and brush encroaching above the toe of the dike slopes.

2.5.4 Repairs are needed too approximately 100 feet of dike slope along the north dike where a shallow surface slide has occurred. (picture 3) The repair shall consist of the placement and compaction of crushed stone in the slide area to bring the dike slope back to its original alignment before the slide. A layer of 18 inch thick riprap consisting of 100-pound stone shall be placed over the area from elevation 1075 to the toe of dike (see attachment 1).

2.5.5 Funding should be made available to Fossil Engineering for a reevaluation of the dike stability due to this continued river bank erosion.

3.0 ASH DISPOSAL AREA 2

3.1 CHANGE IN DIKES SINCE LAST INSPECTIONS

3.1.1 There has been no change in the dikes since the last inspection. The slopes of the dikes have a good vegetative cover with some erosion on the inside of pond. The tops of the dikes, in some areas, appear to need additional crushed stone surfacing. The dikes are in good condition with no visible signs of instability. (see 3.5.1)

3.1.2 The original ground below the exterior fill slope of the north dike appears to be in good condition with no signs of instability and no erosion from the cut made for the Polly Branch bypass.

3.2 CHANGE IN POND OPERATION SINCE LAST INSPECTION

3.2.1 All bottom ash is presently being sluiced into this area. Fly ash is sluiced into this area during start-up and on an intermittent basis when problems are encountered with the dry collection system. At the time of this inspection bottom ash was being sluiced into this area. (picture 8)

3.3 CONDITION OF SPILLWAYS, SKIMMERS, AND OUTLETS

3.3.1 Both skimmers appear to be in good operational condition. The riprapped outfall at the outlet of these spillways is in good condition, with no signs of erosion. Also, the ash pond discharge channel is in good condition. (picture 7)

3.4 ACTION ON RECOMMENDATIONS OF LAST INSPECTION

3.4.1 Plant personnel have maintained the tops of the dikes for this area to prevent rutting.

3.4.2 Plant personnel have repaired the erosion problem on the inside of dike.

3.5 RECOMMENDATIONS

3.5.1 Plant personnel should add crushed stone in some areas on top of dike.

4.0 ASH DISPOSAL AREA J

4.1 CHANGE IN DIKES SINCE LAST INSPECTION

4.1.1 There has been no change in the dikes since the last inspection. The tops of the dikes are sloping to the inside and have a good crushed stone surface. The dike slopes have a good vegetative cover with no signs of erosion. All dikes are in good condition with no visible signs of instability.

4.1.2 There is standing water that is trapped and cannot flow in the runoff ditch located in southeast corner of dike at the access road to top of dike. (see 4.5.2) (picture 10)

4.2 CHANGE IN POND OPERATION SINCE LAST INSPECTION

4.2.1 This area is presently inactive and scheduled for closure in spring/summer 1995.

4.2.2 Rainfall collected in pond J is pumped back to the stilling pond in the original ash pond area (see 4.5.1).

4.3 CONDITION OF SPILLWAYS, SKIMMERS, AND OUTLETS

4.3.1 The skimmers have been removed from the spillways for this area and the standpipes were left in place.

4.4 ACTION ON RECOMMENDATION OF LAST INSPECTION

4.4.1 No repairs has been made on the horizontal spillway joints. The vertical standpipes are in good condition and will be modified upon approval of the solid waste landfill closure plan.

4.4.2 Plant personnel have continue to pump water out of this area back to the stilling pond in the original ash pond area . (see 4.5.1)

4.5 RECOMMENDATIONS

4.5.1 Plant personnel should continue to pump rainfall runoff from Pond "J" back to the stilling pond in the original ash pond area (003 outfall) until such time closure is complete.

4.5.2 Closure of this area is scheduled for spring/summer 1995. During the closure work, areas of standing water will be graded to drain.

5.0 CHEMICAL TREATMENT PONDS

5.1 The chemical treatment ponds (copper and iron) are located southwest of the original disposal area. The chemical ponds are excavated below the ground line and there are no exterior dikes.

5.2 The copper and iron pond water is discharged periodically by pumping to the ash disposal area 2.

6.0 COAL YARD DRAINAGE BASIN

6.1 The coal yard drainage basin is located northwest of utility building. This basin was excavated below grade; therefore, there are no dikes.

6.2 All discharge from this basin is pumped to the ash disposal area 2.

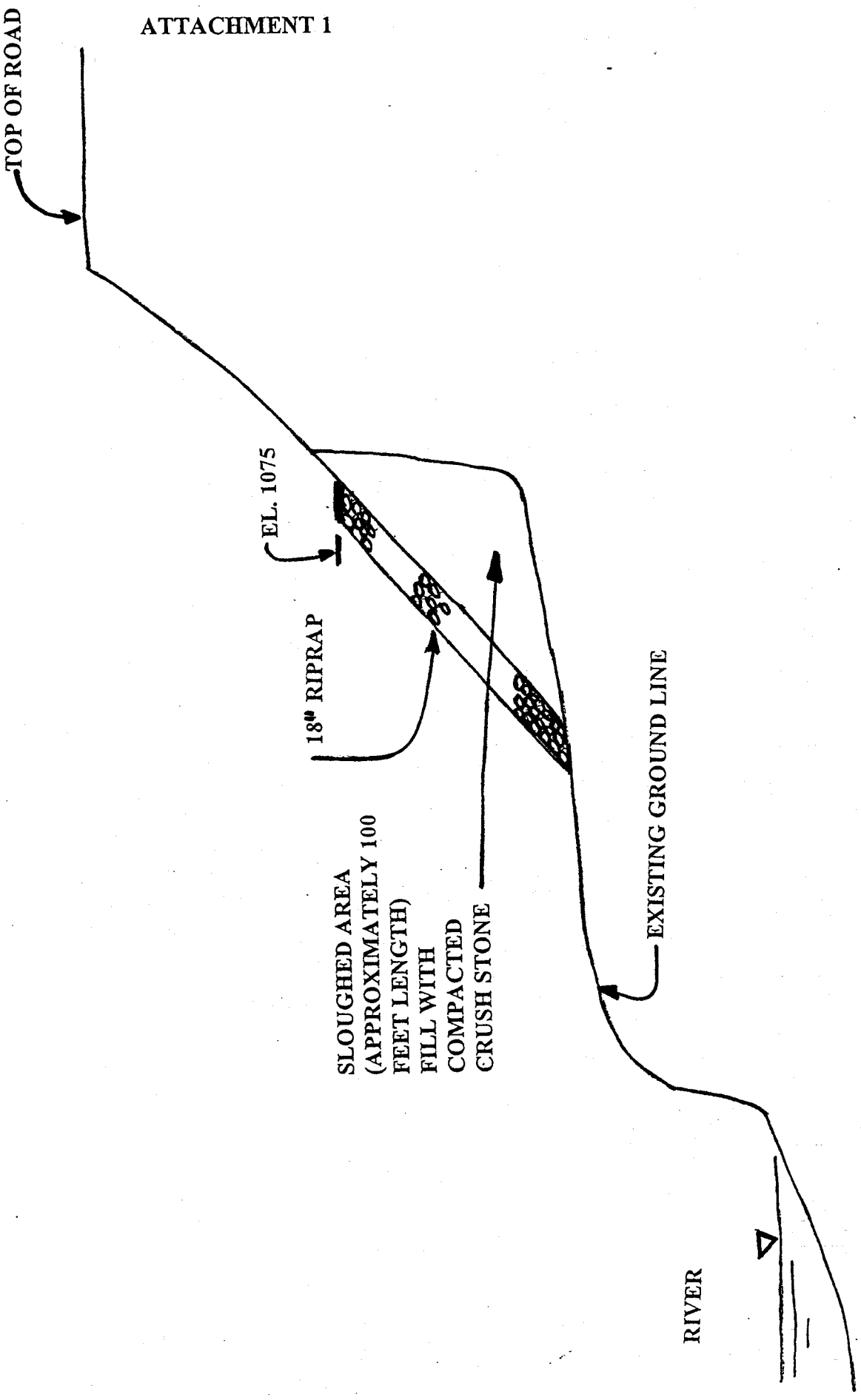
6.3 The coal yard drainage ditch needs to be cleaned out.

E. Jerry Reed

E. Jerry Reed
Site & Environmental Engineering
LP 2G-C

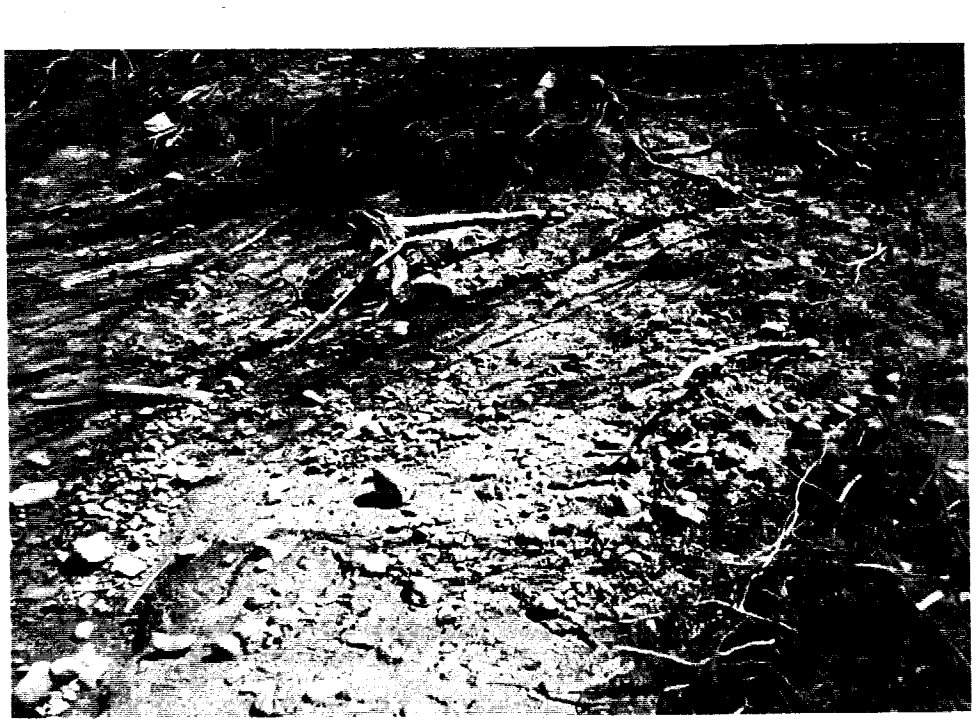
JOHN SEVIER - DRY STACK EXTERIOR DIKE SLOUGH

ATTACHMENT 1



JOHN SEVIER FOSSIL PLANT

PICTURE 1 - VISIBLE SEEPS ALONG CHEROKEE RESERVOIR



PICTURE 2 - VISIBLE SEEPS ALONG CHEROKEE RESERVOIR

PICTURE 3 - DIKE-
SLUFFING (100 FEET)

PICTURE 4 - 8" CMP
PIPE (ONE OF FOUR
THAT WAS PLUGGED)

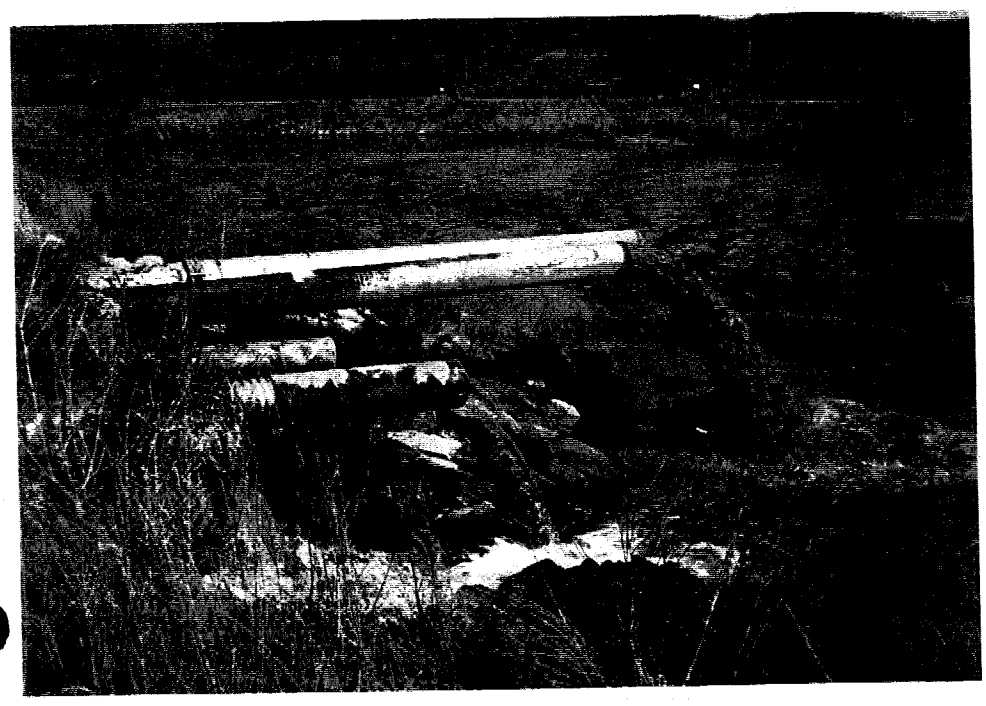
JOHN SEVIER FOSSIL PLANT

PICTURE 5 - TREES ALONG THE TOE OF DIKE THAT HAVE UPROOTED

PICTURE 6 - TREES ALONG THE TOE OF DIKE UPROOTED AND FALLEN INTO CHEROKEE RESERVOIR

JOHN SEVIER FOSSIL PLANT

PICTURE 7 - SPILLWAYS IN GOOD CONDITION



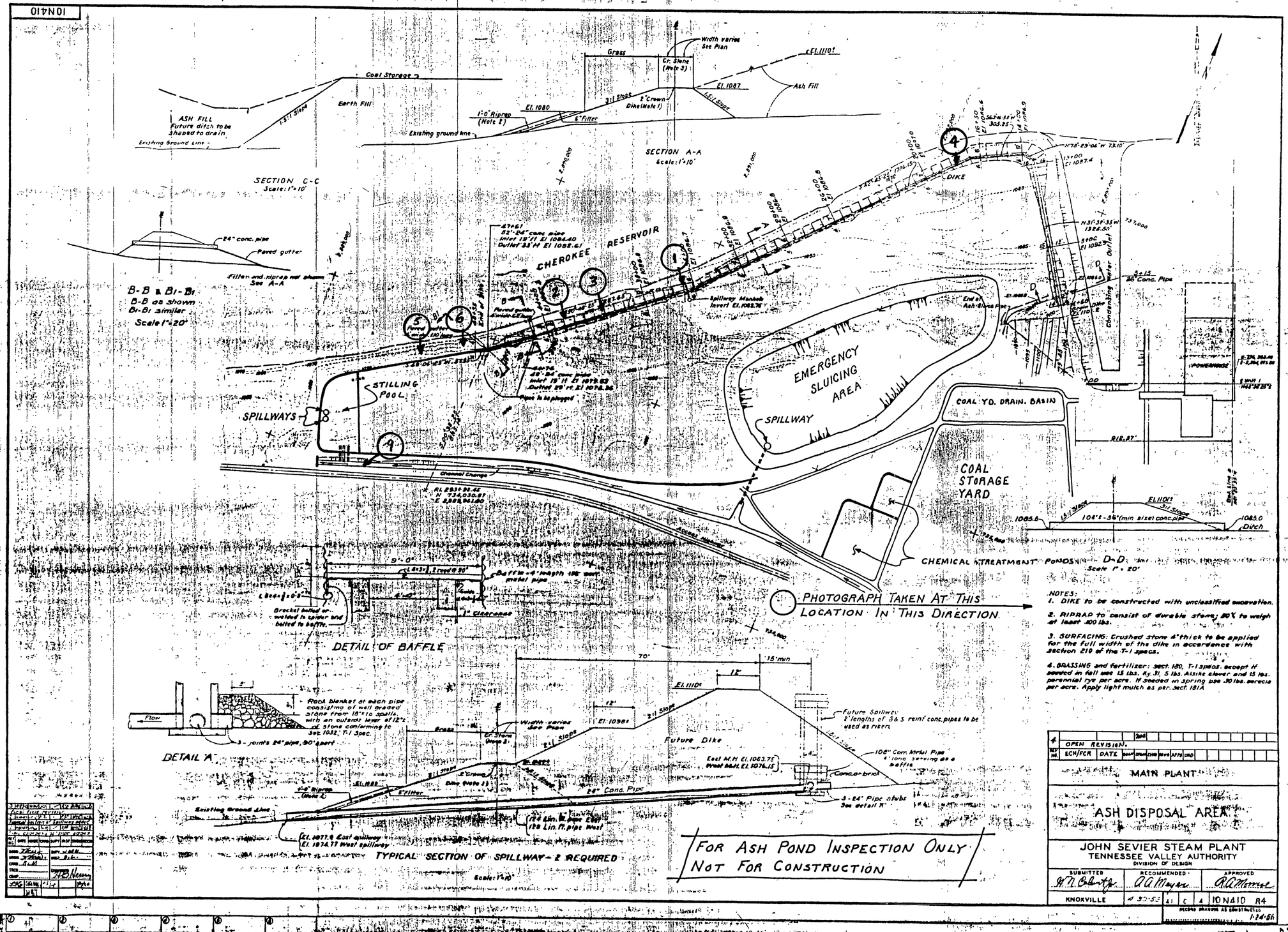
PICTURE 8 - BOTTOM ASH BEING SLUICED IN AREA 2

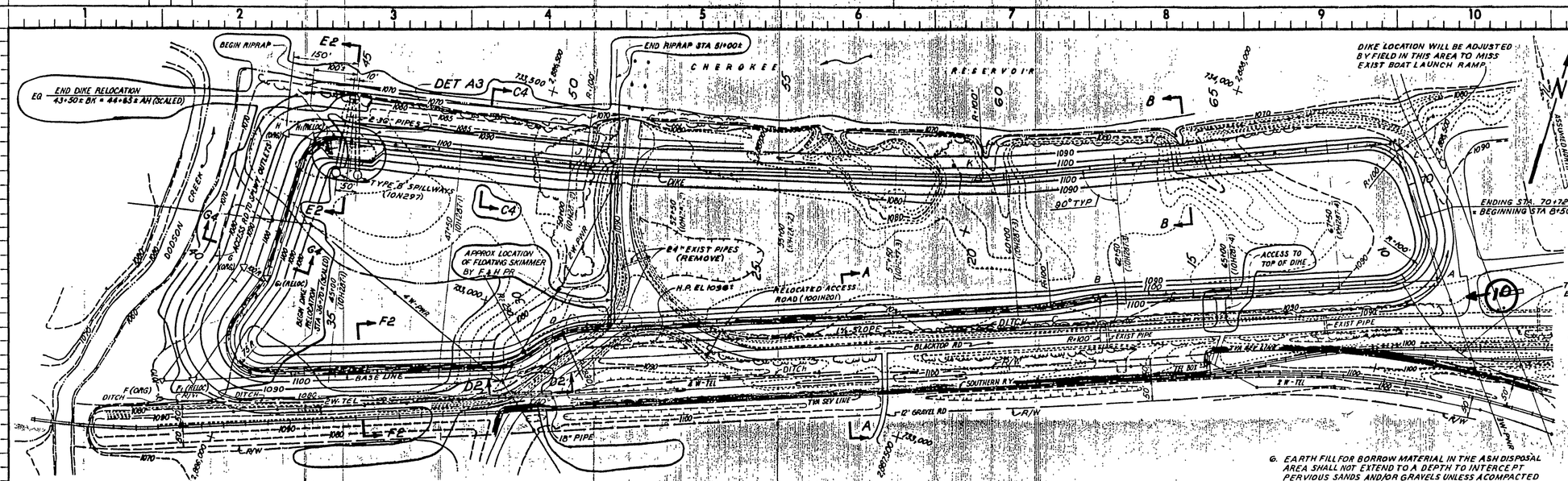
JOHN SEVIER FOSSIL PLANT

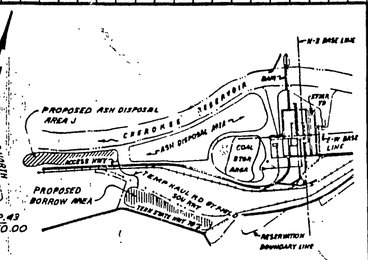
PICTURE 9 - ASH IN WEST END OF SOUTH PERIMETER DRAINAGE DITCH

PICTURE 10 - AREA J-PIPE AND DITCH NEEDS TO BE CLEAN OUT

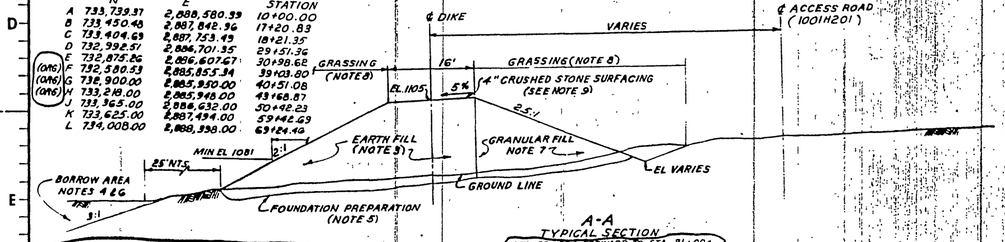
10N410


SECTION C-C
Scale: 1"=10'
ASH FILL
Future ditch to be shaped to drain.
Existing Ground Line
1.5:1 Slope
Coal Storage
Earth Fill
24" conc. pipe
Paved gutter
Filter and riprap not shown See A-A
B-B & B1-B1
B-B as shown
B1-B1 similar
Scale 1"=20'
SECTION A-A
Scale: 1"=10'
Grass
Width varies See Plan
Cr. Stone (Note 3)
El. 1110±
El. 1087
Ash Fill
3:1 Slope
2' Crown
Dike (Note 1)
1.5:1 Slope
1'-0" Riprap (Note 2)
El. 1080
6" Filter
Existing ground line
CHEROKEE RESERVOIR
DIKE
Spillway Monitor Invert El. 1088.76
End of Ash-Sluice Pipe
EMERGENCY SLUICING AREA
SPILLWAYS
STILLING POOL
SPILLWAY
COAL YD. DRAIN. BASIN
COAL STORAGE YARD
Condensing Water Outlet
36" Conc. Pipe
POWERHOUSE
CHEMICAL TREATMENT PONDS
D-D
Scale 1" = 20'
104'±-36"(min. size) conc. pipe
1085.5
1085.0
Ditch
Channel Change
Access Road
DETAIL OF BAFFLE
Baffle of 4" depth 18# wall metal pipe
Bracket bolted or welded to casing and bolted to baffle.
1" Clearance
DETAIL A
Rock blanket at each pipe consisting of well graded stone from 18"± to spalls, with an outside layer of 12"± of stone conforming to Sec. 1032, T-1 Spec.
3 - joints 24" pipe, 90° apart
Flow
Width varies See Plan
Cr. Stone (Note 3)
2:1 Slope
Future Dike
Future Spillway 8' lengths of 54" S reinf. conc. pipes to be used as risers
Concrete
106" Corr. Metal Pipe 4' long serving as a baffle
3 - 24" Pipe stubs See detail A
24" Conc. Pipe
TYPICAL SECTION OF SPILLWAY - 2 REQUIRED
Scale: 1"=10'
PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION
FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION
NOTES:
1. DIKE to be constructed with unclassified excavation.
2. RIPRAP to consist of durable stone, 80% to weigh at least 100 lbs.
3. SURFACING: Crushed stone 4" thick to be applied for the full width of the dike in accordance with Section 210 of the T-1 specs.
4. GRASSING and fertilizer: sect. 180, T-1 specs. except if seeded in fall use 15 lbs. Ky 31, 5 lbs. Alsike clover and 15 lbs. perennial rye per acre. If seeded in spring use 30 lbs. sericia per acre. Apply light mulch as per. sect. 181A
OPEN REVISION
ECH/FCR
DATE
MAIN PLANT
ASH DISPOSAL AREA
JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF DESIGN
SUBMITTED
RECOMMENDED
APPROVED
KNOXVILLE
10N410 R4
RECORD DRAWING AS CONSTRUCTED
1-14-56



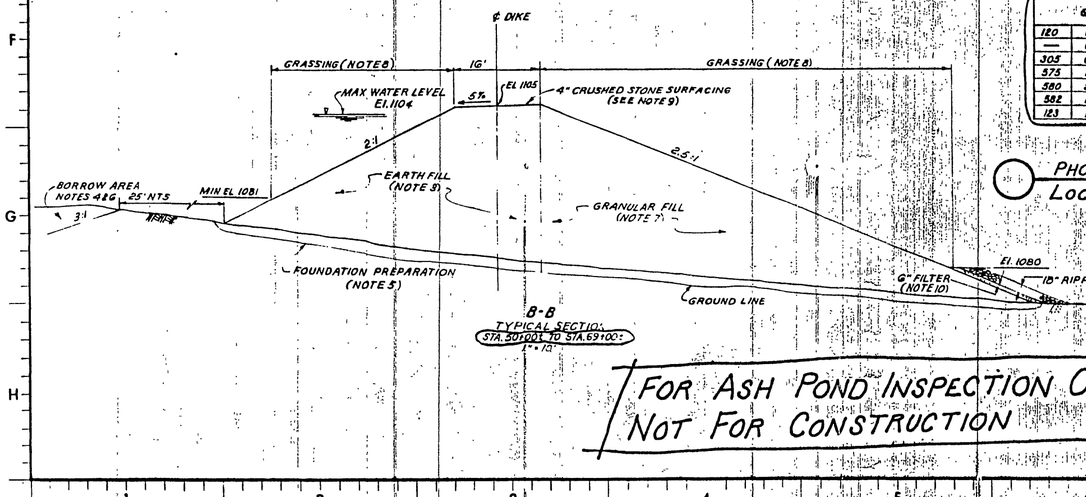


P.I. COORDINATES (℄ DIKE EXCEPT # E TO F)			
	N	E	STATION
A	733,739.37	2,888,580.99	10+00.00
B	733,450.48	2,887,842.96	17+20.83
C	733,404.69	2,887,753.49	18+21.35
D	732,992.57	2,886,701.35	29+51.36
E	732,875.26	2,886,607.67	30+98.62
(ORIG) F	732,580.53	2,885,855.34	39+03.80
(ORIG) G	732,900.00	2,885,950.00	40+51.08
(ORIG) W	733,218.00	2,885,948.00	43+68.87
J	733,365.00	2,886,032.00	50+42.23
K	733,625.00	2,887,494.00	59+46.69
L	734,008.00	2,888,398.00	69+24.46



A-A
TYPICAL SECTION
STA. 69+00± FORWARD TO STA. 31+00±
1" = 10'

P.I. COORDINATES	N	E	STATION
(RELOC) F1	732,606.88	2,885,922.60	38+25 ±
(RELOC) G1	732,891.91	2,886,007.05	39+75 ±
(RELOC) H1	733,230.23	2,886,004.92	43+15 ±



B-B
TYPICAL SECTION
STA. 30+00± TO STA. 69+00±
1" = 10'

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
101	CLEARING & GRUBBING	35	AC.
123	EARTH BORROW *	471,000	CY
125	EXCAVATION FOR STRUCTURES	1,300	CY
305	CRUSHED STONE SURFACING	1855	TON
570	FILTER BLANKET	1500	TON
575	RIPRAP "	2850	CY
580	SEEDING	72,000	SY
582	MULCHING	72,000	SY
510	STONE GUTTER	100	LF
	FOUNDATION PREPARATION	55,000	CY
423 451 491	18" PIPE CULVERT	BG	LF
464	36" CONC PIPE CLASS III "O" RING	340	LF

QUANTITIES FOR REVISION 3			
120	UNCLASSIFIED EXCAVATION	17,000	CY
—	COMPACTED ASH FILL	21,200	CY
305	CRUSHED STONE SURFACING	1,500	TON
575	RIPRAP	44,000	TON
580	SEEDING	13,600	SY
582	MULCHING	13,300	SY
123	EARTH BORROW	1,000	CY

PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION

STORAGE CAPACITY *

ELEVATION	QUANTITY	ACCUM QUANTITY
1071 & BELOW	10,600 CY	10,600 CY
1076 TO 1071	59,200 CY	69,800 CY
1081 TO 1076	107,600 CY	177,400 CY
1086 TO 1081	127,800 CY	305,200 CY
1091 TO 1086	137,600 CY	442,800 CY
1096 TO 1091	147,400 CY	590,200 CY
1101 TO 1096	157,200 CY	747,000 CY*

* ASSUME ASH LEVEL
* RELOCATION OF THE WEST DIKE REDUCED THE ASH STORAGE CAPACITY BY 27,000 CY±.

NOTES:
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE T-I SPECIFICATIONS, UNLESS OTHERWISE NOTED.
2. THE SOLID CONTOURS REPRESENT FINISHED GRADE; DASHED CONTOURS INDICATE EXISTING GROUND.
3. THE RESULTS OF THE SOIL INVESTIGATION FOR THE ASH DISPOSAL AREA DIKES ARE REPORTED IN A MEMO FROM FRANK VANMETER TO G.L. BUCHANAN DATED JULY 22, 1981 (CSB 810724 301), JOHN SEVIER STEAM PLANT, ASH DISPOSAL AREA, SOIL EXPLORATION AND TESTING, EN DES SOIL SCHEDULE NO. 6.2.
4. ALL ROLLED EARTH FILL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION G-9, ROLLED EARTH FILL FOR DAMS AND POWER PLANTS. ROLLED EARTHFILL SHALL CONSIST OF SOIL PLACED IN LAYERS NOT EXCEEDING 6" AFTER COMPACTION AND SHALL BE UNIFORMLY COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 PROCEDURES. MOISTURE CONTENT OF EARTHFILL SHALL BE WITHIN ±3% OF OPTIMUM MOISTURE CONTENT.
5. BORROW MATERIAL AS MUCH AS PRACTICAL FOR THE DIKE SHALL BE OBTAINED FROM INSIDE THE DISPOSAL AREA. CUT SLOPES ADJACENT TO EMBANKMENTS SHALL NOT BE EXCAVATED STEEPER THAN 3:1 AND TOP OF CUT SHALL BE A MINIMUM OF 25 FEET FROM TOE OF EMBANKMENT. REMAINING BORROW MATERIAL SHALL BE OBTAINED FROM DESIGNATED BORROW AREA LOCATED S.E. OF DIKE AND BETWEEN SOUTHERN RAILWAY AND TENNESSEE HIGHWAY 70.
6. FOUNDATION PREPARATION FOR EARTH EMBANKMENTS SHALL CONSIST OF CLEARING AND REMOVING ALL ROOTS, VEGETATION, AND ORGANIC TOPSOIL. FOUNDATION AREA SHALL BE COMPACTED BY USING SHEEP'S FOOT ROLLER FOLLOWED BY A FLAT WHEELED ROLLER UNTIL DISTURBED AREA WILL SUPPORT HEAVY EQUIPMENT WITHOUT RUTTING INTO THE GROUND SO AS TO REDUCE ITS STABILITY. PRIOR TO PLACING FILL THE FOUNDATION MUST BE SCARIFIED SO THERE WILL BE GOOD BOND BETWEEN FOUNDATION AND FILL. THE SOIL INVESTIGATION PROGRAM INDICATED THE PRESENCE OF SOFT SOILS DIRECTLY BENEATH THE TOPSOIL AT STATION 94+50± AND STATION 34+00± IN THE DIKE FOUNDATION. SUCH SOFT AND SHALLOW SOILS DETECTED DURING THE FOUNDATION PREPARATION AT THESE LOCATIONS OR ANY OTHER LOCATION IN THE DIKE AREA SHALL BE REMOVED AND REPLACED BY IMPERVIOUS EARTH FILL COMPACTED IN LAYERS.
7. EARTH FILL FOR BORROW MATERIAL IN THE ASH DISPOSAL AREA SHALL NOT EXTEND TO A DEPTH TO INTERCEPT PERVIOUS SANDS AND/OR GRAVELS UNLESS A COMPACTED IMPERVIOUS BLANKET OF EARTHFILL WITH A MINIMUM THICKNESS OF 3FT. IS PLACED OVER EXPOSED SANDS AND/OR GRAVEL, ENCOUNTERED WITHIN FINE-GRAINED BORROW SOILS, ARE EXPOSED ON THE EXCAVATED SLOPE, THEY SHOULD BE BLANKETED WITH COMPACTED IMPERVIOUS EARTHFILL WITH A MINIMUM WIDTH OF 3FT.
7. IN VIEW OF A POTENTIAL FOR BORROW SHORTAGE, SAND AND GRAVEL MATERIALS, IF ENCOUNTERED DURING BORROW EXCAVATION OR DIKE FOUNDATION PREPARATION, SHALL NOT BE WASTED. IF SHORTAGE OF FINE-GRAINED BORROW SOIL OCCURS, SANDS AND GRAVELS MAY BE USED BENEATH THE OUTER SLOPE OF THE DIKE. GRANULAR FILL WITH LESS THAN 20% FINES SHALL BE COMPACTED TO AN AVERAGE RELATIVE DENSITY OF 85% OR GREATER WITH A MINIMUM RELATIVE DENSITY OF 80% AS DETERMINED BY ASTM D2049 PROCEDURES. GRANULAR MATERIAL WITH MORE THAN 20% FINES SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (METHOD D) PROCEDURES.
8. DIKE SLOPES SHALL BE SEEDED WITH TYPE G MIXTURE 5 SEEDED AREAS ARE TO BE FERTILIZED AND MULCHED IN CONFORMANCE WITH SECTIONS 580 AND 582.
9. CRUSHED STONE SURFACING, 4 INCHES THICK, SHALL BE APPLIED FOR THE FULL WIDTH OF THE TOP OF THE DIKE IN ACCORDANCE WITH SECTION 305.
10. RIPRAP SHALL BE SOUND, DURABLE STONE, 18 INCHES THICK, WITH A MINIMUM OF 50% BY WEIGHT CONSISTING OF STONES AT LEAST 100 LBS. EACH. RIPRAP SHALL CONFORM TO SECTION 575. FILTER BLANKET, 6 INCHES THICK, SHALL CONFORM TO SECTION 570.
11. THE ASH DISPOSAL AREA SHALL BE CLEARED IN ACCORDANCE WITH SECTION 101. NO GRUBBING IS REQUIRED EXCEPT FOR AREAS OF DIKE FOUNDATIONS.
12. (STONE) GUTTER SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION (510).
13. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 PLAIN FINISH AND SHALL HAVE A MINIMUM LAP DISTANCE OF 8 INCHES.
14. FAMILY OF COMPACTION CURVES DEVELOPED FOR BORROW AREAS A AND B BY SME AS PER EN DES SOIL SCHEDULE NO. 6.2 (CSB 810724 301) SHALL BE USED TO CONTROL THE EARTHFILL COMPACTION. IN-PLACE DENSITY TESTS USING THE SAND CONE (ASTM D1556) OR RUBBER BALLOON (ASTM D2167) TEST METHODS SHALL BE MADE AT A RATE OF AT LEAST 1 TEST FOR EACH 2000 CUBIC YARDS OF EARTHFILL PLACED (IN-PLACE VOLUME), OR A MINIMUM OF 1 PER DAY.
15. COMPACTED ASH FILL SHALL BE CONSTRUCTED THE SAME WAY THE EARTHFILL IS CONSTRUCTED. THE FAMILY-OF-COMPACT CURVES DEVELOPED FOR THE ASH FILL BY SME PER EN DES SOIL SCHEDULE NO. 6.4 (SME 841127 002) SHALL BE USED TO CONTROL THE COMPACTED ASH FILL. COMPACTION OF ASH FILL SHALL BE DONE WITH SMOOTH SURFACE STEEL WHEEL VIBRATORY ROLLERS.

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

NO	REVISION	DATE	DSGN	DRWN	CHKD	SUPV	CHGN	INSP	SUBM	RECM	APPD	DWG
4	OPEN REVISION.											
3	NO ☎ EC 536 | 42 | 24 | 15 | 06 | RC | WAP | KWM | ZDL | BAT											3
2	RELOC WEST DIKE, ADD NOTES, FLOAT SKIM, AND ACCESS RD & RAMP											2
1	ADDED SECTIONS & STORAGE CAPACITY - WO 544-30-31401-JC											1
	ADD DET A3 & REV SUMMARY OF QUANTITIES - WO 544-30-31401-JC											

PA NO	DATE	DSGN	DRWN	CHKD	SUPV	CHGN	INSP	SUBM	RECM	APPD	DWG

DSGN R.D. MARONEY
DRWN J.R. LEE; A.A. EABALL
CHKD J.L. GLOVE
SUPV J.L. GLOVER

INSP V.R. Fox
ENGINEER K.W. Burnett

SCALE 1" = 100' EXCEPT AS NOTED

MAIN PLANT

FLY ASH DISPOSAL AREA "J"
SHEET 1

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED	RECOMMENDED	APPROVED
Robert J. Burrow		

KNOXVILLE 7-28-82 | 41 | C | 10W286-1 | R4

RECORD DRAWING AS CONSTRUCTED

FIRST ISSUE FOR W.O. 544-30-31401-J0084

COMPANION DWG. 10N297, 298
10W286-2, -3, -4

INSPECTED AND APPROVED FOR ISSUE

PRINT H
SIZE V

BR OR PROJ | ME | EE | CE | AD | CO | ED | MO | SW | BL | PSP
PRINTS REQD - R

E23

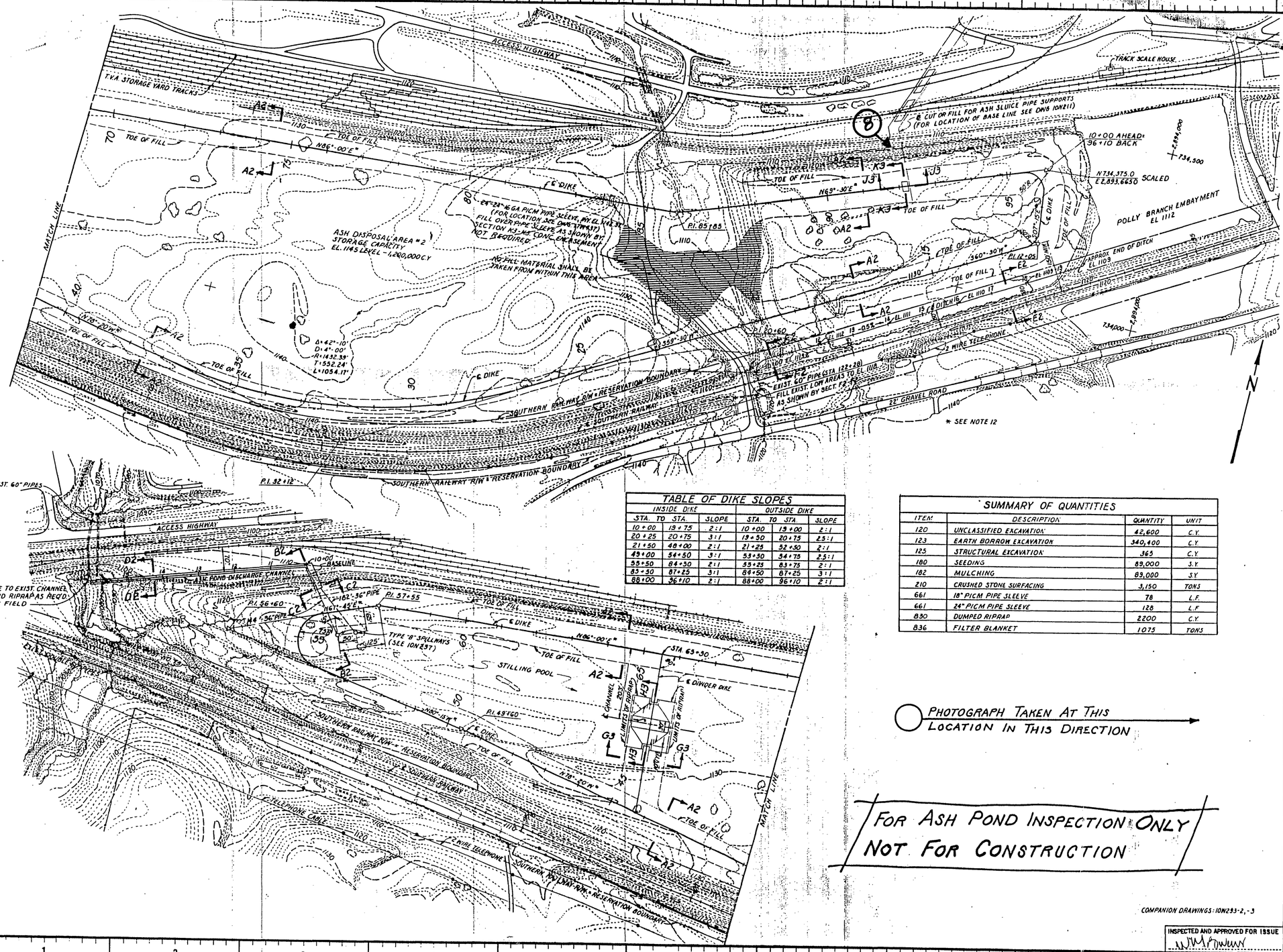


TABLE OF DIKE SLOPES

INSIDE DIKE			OUTSIDE DIKE		
STA. TO STA.		SLOPE	STA. TO STA.		SLOPE
10+00	19+75	2:1	10+00	19+00	2:1
20+25	20+75	3:1	19+50	20+75	2.5:1
21+50	48+00	2:1	21+25	52+50	2:1
49+00	54+50	3:1	53+50	54+75	2.5:1
55+50	84+50	2:1	55+25	83+75	2:1
85+50	87+25	3:1	84+50	87+25	3:1
88+00	96+10	2:1	88+00	96+10	2:1

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
120	UNCLASSIFIED EXCAVATION	42,600	C.Y.
123	EARTH BORROW EXCAVATION	340,400	C.Y.
125	STRUCTURAL EXCAVATION	365	C.Y.
180	SEEDING	89,000	S.Y.
182	MULCHING	89,000	S.Y.
210	CRUSHED STONE SURFACING	3,150	TONS
661	18" PICM PIPE SLEEVE	78	L.F.
661	24" PICM PIPE SLEEVE	128	L.F.
830	DUMPED RIPRAP	2200	C.Y.
836	FILTER BLANKET	1075	TONS

NOTES:

1. ALL CONSTRUCTION, EXCEPT ROLLED EARTHFILL, SHALL BE IN ACCORDANCE WITH T-1 SPEC.
2. THE RESULTS OF THE SOIL INVESTIGATION FOR THE CONSTRUCTION OF THE ASH DISPOSAL AREA DIKES ARE REPORTED IN A MEMO FROM GENE FARMER TO G.L. BUCHANAN DATED DECEMBER 10, 1976, JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION, EN. DES. SOIL SCHEDULE NO. G.
3. ALL ROLLED EARTHFILL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPEC. G-9, ROLLED EARTHFILL FOR DAMS AND POWER PLANTS. ROLLED EARTHFILL SHALL CONSIST OF SOIL PLACED IN LAYERS NOT EXCEEDING 6" AFTER COMPACTION AND SHALL BE UNIFORMLY COMPACTED TO AT LEAST 95% OF STD. MAX. DRY DENSITY AS DETERMINED BY ASTM D-698 PROCEDURES (STANDARD PROCTOR). MOISTURE CONTENT OF EARTHFILL SHALL BE WITHIN ±3% OF OPTIMUM MOISTURE CONTENT.
4. FROM STA 19+50 TO STA. 21+50 AND FROM STA. 84+00 TO STA. 88+00 (APPROXIMATELY BETWEEN EL. 1125 CONTOURS), A NARROW INSPECTION TRENCH SHALL BE EXCAVATED TO A DEPTH OF 10' IN ANY AREA WHERE GRAVEL STRATUM IS EXPOSED, A CUTOFF TRENCH IS TO BE EXCAVATED THROUGH THE PERVIOUS STRATUM AND BACKFILLED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECT. A2-A2. WHERE A CUTOFF TRENCH IS NOT REQUIRED, THE INSPECTION TRENCH IS TO BE IMMEDIATELY BACKFILLED, AFTER INSPECTION, WITH THE EXCAVATED MATERIALS AND THOROUGHLY COMPACTED.
5. BORROW MATERIAL SHALL BE EXCAVATED TO A DEPTH OF 10' BENEATH THE EXISTING GROUND SURFACE OR 2' MINIMUM BENEATH GRAVEL STRATUM WHERE ENCOUNTERED, EXCEPT AT LOCATIONS WHERE INSPECTION TRENCH IS REQUIRED. WHERE GRAVEL STRATUM IS EXPOSED, THE EXCAVATED SLOPE SHALL BE BLANKETED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECTION A2-A2.
6. WHERE A CUTOFF TRENCH IS REQUIRED ADJACENT TO BLANKETED EXCAVATION SLOPE, THE CUTOFF TRENCH SHALL BE EXTENDED ACROSS THE WIDTH OF THE DIKE TO TIE INTO THE BLANKETED EXCAVATION SLOPE.
7. EARTHFILL FOR DIKE CONSTRUCTION SHALL CONSIST OF MATERIAL EXCAVATED FROM INSIDE ASH DISPOSAL AREA NO. 2. PERVIOUS GRANULAR SOILS COMPARABLE TO BORROW SOIL CLASS VII, AS DEFINED BY THE MEMO PER NOTE 2, SHALL NOT BE USED AS EARTHFILL FOR DIKE CONSTRUCTION. CUT SLOPES FOR BORROW MATERIAL ADJACENT TO THE DIKE SHALL BE 3:1 OR FLATTER, AND THE TOP OF CUT SHALL BE A MINIMUM OF 25' FROM THE TOE OF DIKE SLOPE.
8. THE MINIMUM FACTOR OF SAFETY FOR ALL LOADING CONDITIONS INVESTIGATED BY STABILITY ANALYSIS FOR THE ASH DISPOSAL DIKES IS 1.21. THIS FACTOR OF SAFETY IS FOR THE SUDDEN DRAWDOWN CONDITION.
9. CRUSHED STONE OR GRAVEL SURFACING, 4" THICK, SHALL BE APPLIED FOR THE FULL WIDTH OF THE TOP OF DIKE IN ACCORDANCE WITH SECTION 210.
10. ALL CUT AND FILL SLOPES AND OTHER DISTURBED AREAS SHALL BE SEEDED WITH TYPE 6, MIXTURE E, IN ACCORDANCE WITH SECTION 180, DEPENDING ON THE TIME OF CONSTRUCTION, IT MAY BE NECESSARY TO PROVIDE A TEMPORARY COVER ON THE DIKE SLOPES. ALL GRASSED AREAS SHALL BE FERTILIZED AND MULCHED IN ACCORDANCE WITH SECTIONS 180 AND 182 RESPECTIVELY.
11. RIPRAP SHALL BE PLACED AS SHOWN ON THE DRAWINGS WITH A MINIMUM OF 50%, BY WEIGHT, CONSISTING OF STONES OF AT LEAST 150 LB. EACH. RIPRAP SHALL CONFORM TO SECTION 830.
12. FILTER SHALL CONFORM TO SECTION 836.
13. ALL CENTERLINE BEARINGS ARE APPROXIMATE SCALED BEARINGS.

PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

COMPANION DRAWINGS: 10N293-2, -3

REV NO	ECN NO	DATE	DRWN	DFTD	CHKD	SUPV	ENGR	R&P	SURV	RECOM	APPD
3											
2	OPEN REVISION.	8-20-80	HC	TAC	LA	LAG	RWB	RJB	RJB	FBS	WC
1	RECORD AS CONSTRUCTED.	4-3-81									WC
REV NOTES: TABLE OF DIKE SLOPES & EXCAV. QUANTITIES, MINOR REVISIONS, PA 3312											

DSGN L.A. ROMELL
DRWN R.D. MASTERS
CHKD R.D. COWELL
SUPV W. L. WEAVER
INSP
ENGINEER R.W. Bennett

SCALE: 1" = 100 EXCEPT AS NOTED

MAIN PLANT

ASH DISPOSAL AREA NO. 2
PLAN

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED	RECOMMENDED	APPROVED
Robert J. Romell		

INSPECTED AND APPROVED FOR ISSUE

KNOXVILLE | 8-19-77 | 41 | C | 10W293-1 R3

RECORD DRAWING AS OF 1-20-80 R2
Frank VanMeter

PRINT
SIZE

B65 970416 251

April 16, 1997

W. I. Edwards, John Sevier Fossil Plant

JOHN SEVIER FOSSIL PLANT (JSF) - ANNUAL INSPECTION OF WASTE DISPOSAL AREAS

Attached is a report from R. D. Powell dated April 15, 1997, concerning the joint inspection of the JSF waste disposal areas.

This report includes recommendations for corrective work. I concur with these recommendations.

RG Johnson

Ralph G. Johnson
Manager, Fossil Engineering
LP 2G-C

KWB:RDP:SRH
Attachments
cc (Attachments):
J. S. Baugh, LP 5H-C
W. D. Hall, LP 1H-C
RIMS, WR 4Q-C (w/o attachment)

j:\fossil\site\jsfinspection.doc

TENNESSEE VALLEY AUTHORITY
JOHN SEVIER FOSSIL PLANT

ANNUAL INSPECTION OF
WASTE DISPOSAL AREAS

Prepared by: Ronald D. Powell
Date: April 15, 1997

JOHN SEVIER FOSSIL PLANT (JSF)
NPDES PERMIT NO. TN0005436
ANNUAL ASH POND DIKE INSPECTION
1997

INTRODUCTION

The annual inspection of the ash pond dikes at JSF was conducted on March 18, 1997. The inspection was conducted by Jim Huber of TVA's Fossil Fuels and Ron Powell of TVA's Fossil Engineering. The previous annual inspection was conducted on March 14, 1996.

The results of the inspection are presented below according to location.

ORIGINAL DISPOSAL AREA

All fly ash that is not marketed commercially is being dry stacked in the interior basin in the east portion of this area. JSF presently markets more than fifty percent of its annual fly ash production. Since its conversion for use only for dry stacking fly ash, sluice water is no longer impounded in this area.

The dike slopes in this area have a good vegetative cover and generally appear to be stable and in good condition. Two areas with minor surface sloughs just below the top of the exterior slope of the north dike were noted. One in the northeast corner of the dike and the other approximately 100 feet east of monitoring well 4A. An access trail has been constructed along the toe of the exterior dike slope which extends completely around the east, north, and west dikes. As noted in previous inspection reports, some trees along the Holston River bank below the toe of dike and access trail have uprooted and fallen into the Cherokee Reservoir. None appeared to have fallen recently. An adequate berm (minimum 15 feet wide) remains between the toe of dike and top of riverbank.

The four abandoned pipes located near the northeast corner of this area along the Holston River were plugged to eliminate seepage in accordance with a plan negotiated with the Johnson City Field Office. During the course of this inspection, no seepage was noted in the areas around Pipe No.1 and Pipe No.2. Seepage was observed in the areas above Pipe No.3 and Pipe No.4. A few other minor seeps were noted below the toe of the north dike west of the plugged pipes. None of the seeps appear to jeopardize the stability of the dike. A wet area was also noted along Polly Branch south of the discharge pipes formerly identified as Outfall 003. There is no flow from this area to Polly Branch.

JOHN SEVIER FOSSIL PLANT (JSF)
NPDES PERMIT NO. TN0005436
ANNUAL ASH POND DIKE INSPECTION
1997

ASH DISPOSAL AREA 2

This area contains the active ash pond for sluiced ash discharges. All bottom ash is sluiced into this area; fly ash is sluiced during start-up and on an intermittent basis when problems are encountered with the dry collection system. The exterior dikes in this area appeared to be stable and did not exhibit any notable change from the previous inspection. The dike slopes have a good vegetative cover with no signs of erosion.

The previous inspection report noted two small seeps near the toe of the north dike just west of the dike access road. Ground wetness at the time the north dike was observed during this inspection prevented an evaluation of this condition.

ASH DISPOSAL AREA J

This area has been prepared for closure in accordance with plans submitted to the State of Tennessee. There has been no change in the dikes since the last inspection. They appeared to be stable and in good condition. The dike slopes have a good vegetative cover with no signs of erosion. No seepage was noted in this area during the course of this inspection.

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. See 18 U.S.C Section 1001 and 33 U.S.C. Section 1319. (Penalties under these statutes may include fines up to $10,000 and maximum imprisonment of between six months and five years.)

_____
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AGENT

10N410

SECTION C-C
Scale: 1"=10'

SECTION A-A
Scale: 1"=10'

B-B & B1-B1
B-B as shown
B1-B1 similar.
Scale 1"=20'

CHEROKEE RESERVOIR

EMERGENCY SLUICING AREA

COAL YD. DRAIN. BASIN

SPILLWAY

COAL STORAGE YARD

STILLING POOL

SPILLWAYS

CHEMICAL TREATMENT PONDS

D-D
Scale 1" = 20'

PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION

DETAIL OF BAFFLE

DETAIL A

TYPICAL SECTION OF SPILLWAY - 2 REQUIRED

Future Dike

NOTES:
1. DIKE to be constructed with unclassified excavation.
2. RIPRAP to consist of durable stone, 80% to weigh at least 200 lbs.
3. SURFACING Crushed stone 6" thick to be applied for the full width of the dike in accordance with Section 819 of the T.V.A. specs.
4. SEEDING and fertilizer, spec 1001, T.V.A. annual formula of fertilizer as #611 and 1.5 lbs. of 5 lbs. Alsike clover seed to the permanent type per acre. If dropped on spring add 20 lbs. annual rye per acre. Apply light mulch, as per spec 1814.

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

OPEN ADDITION

LCH/FCR	DATE

MAIN PLANT

ORIGINAL
ASH DISPOSAL AREA

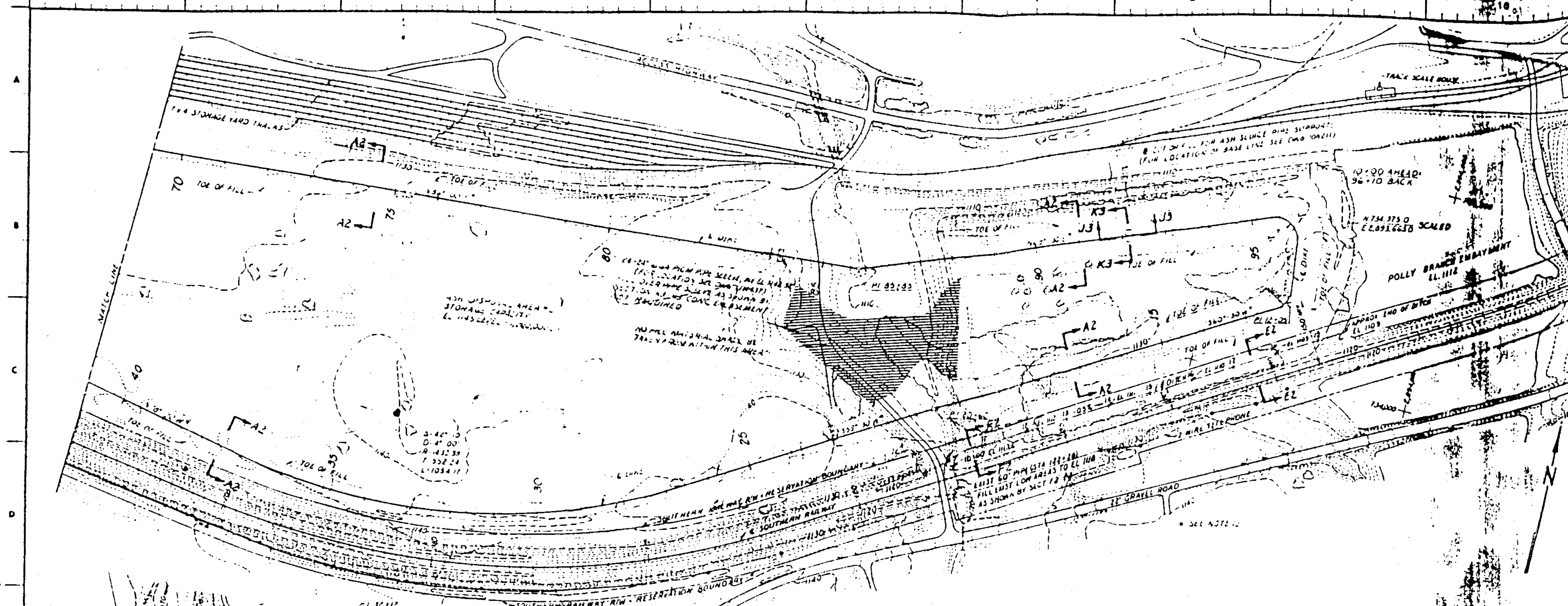
JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF DESIGN

SUBMITTED	RECOMMENDED	APPROVED

KNOXVILLE | 30-53 | 41 | C | 4 | 10N410 R4

E23

PAGE 3005



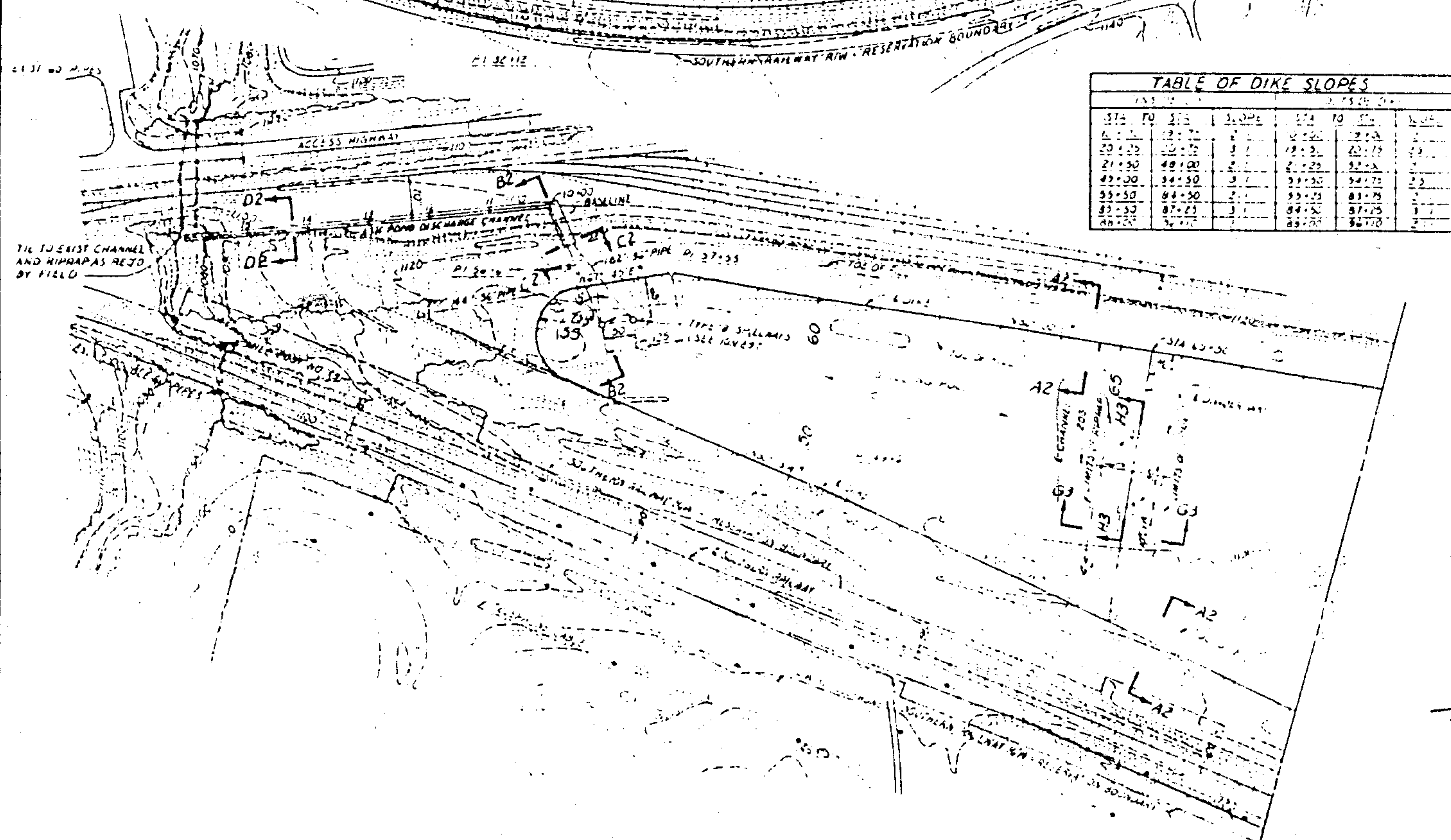


TABLE OF DIKE SLOPES

INSIDE OF DIKE			OUTSIDE OF DIKE		
STA	TO STA	SLOPE	STA	TO STA	SLOPE
[illegible]	19+75	2:1	0+00	19+00	2:1
20+25	20+75	3:1	19+50	20+75	2.5:1
21+50	49+00	2:1	21+25	32+00	2:1
49+00	54+50	3:1	33+50	54+75	2.5:1
55+50	84+50	2:1	55+25	83+75	2:1
85+50	87+25	3:1	84+50	87+75	3:1
88+00	96+10	2:1	89+00	96+10	2:1

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
120	UNCLASSIFIED EXCAVATION	12,000	C.Y.
121	EARTH BORROW EXCAVATION	340,100	C.Y.
123	STRUCTURAL EXCAVATION	345	C.Y.
180	SEEDING	83,000	S.Y.
182	MULCHING	83,000	S.Y.
210	CRUSHED STONE SURFACING	3,190	TONS
661	18" PIC M PIPE SLEEVE	78	L.F.
66	24" PIC M PIPE SLEEVE	128	L.F.
833	DUMPED RIPRAP	1100	C.Y.
836	FILTER BLANKET	1073	TONS

PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

NOTES

1. ALL CONSTRUCTION, EXCEPT ROLLED EARTHFILL, SHALL BE IN ACCORDANCE WITH T-1 SPEC.
2. THE RESULTS OF THE SOIL INVESTIGATION FOR THE CONSTRUCTION OF THE ASH DISPOSAL AREA DIKES ARE REPORTED IN A MEMO FROM GENE FARMER TO G.L. BUCHANAN, DATED DECEMBER 10, 1970, JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION, EN DES SOIL SCHEDULE 3.7.
3. ALL ROLLED EARTHFILL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPEC G-9, ROLLED EARTHFILL FOR DAMS AND POWER PLANTS. ROLLED EARTHFILL SHALL CONSIST OF SOIL PLACED IN LAYERS NOT EXCEEDING 6" AFTER COMPACTION AND SHALL BE UNIFORMLY COMPACTED TO AT LEAST 95% OF STD AASHO DRY DENSITY AS DETERMINED BY ASTM D 698 PROCEDURES (STANDARD PROCTOR). MOISTURE CONTENT OF EARTHFILL SHALL BE WITHIN ±3% OF OPTIMUM MOISTURE CONTENT.
4. FROM STA 19+50 TO STA 21+50 AND FROM STA 84+00 TO STA 88+00 (APPROXIMATELY BETWEEN EL 1125 CONTOURS), A MAXIMUM INSPECTION TRENCH SHALL BE EXCAVATED TO A DEPTH OF 10' IN ANY AREA WHERE GRAVEL STRATUM IS EXPOSED, A CUTOFF TRENCH IS TO BE EXCAVATED THROUGH THE PERVIOUS STRATUM AND BACKFILLED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECT. A2-A2. WHERE A CUTOFF TRENCH IS NOT REQUIRED, THE INSPECTION TRENCH IS TO BE IMMEDIATELY BACKFILLED, AFTER INSPECTION, WITH THE EXCAVATED MATERIALS AND THOROUGHLY COMPACTED.
5. BORROW MATERIAL SHALL BE EXCAVATED TO A DEPTH OF 10' BENEATH THE EXISTING GROUND SURFACE OR 2' MINIMUM BENEATH GRAVEL STRATUM WHERE ENCOUNTERED, EXCEPT AT LOCATIONS WHERE INSPECTION TRENCH IS REQUIRED WHERE GRAVEL STRATUM IS EXPOSED, THE EXCAVATED SLOPE SHALL BE BLANKETED WITH COMPACTED IMPERVIOUS EARTHFILL MATERIAL AS SHOWN BY SECTION A2-A2.
6. WHERE A CUTOFF TRENCH IS REQUIRED ADJACENT TO BLANKETED EXCAVATION SLOPE, THE CUTOFF TRENCH SHALL BE EXTENDED ACROSS THE WIDTH OF THE DIKE TO TIE INTO THE BLANKETED EXCAVATION SLOPE.
7. EARTHFILL FOR DIKE CONSTRUCTION SHALL CONSIST OF MATERIAL EXCAVATED FROM INSIDE ASH DISPOSAL AREA NO 2. PERVIOUS GRANULAR SOILS COMPARABLE TO BORROW SOIL CLASS VI, AS DEFINED BY THE MEMO PER NOTE 2, SHALL NOT BE USED AS EARTHFILL FOR DIKE CONSTRUCTION. CUT SLOPES FOR BORROW MATERIAL ADJACENT TO THE DIKE SHALL BE 3:1 OR FLATTER, AND THE TOP OF CUT SHALL BE A MINIMUM OF 25' FROM THE TOE OF DIKE SLOPE.
8. THE MINIMUM FACTOR OF SAFETY FOR ALL LOADING CONDITIONS INVESTIGATED BY STABILITY ANALYSIS FOR THE ASH DISPOSAL DIKES IS 1.21. THIS FACTOR OF SAFETY IS FOR THE SUDDEN DRAWDOWN CONDITION.
9. CRUSHED STONE OR GRAVEL SURFACING, 4" THICK, SHALL BE APPLIED FOR THE FULL WIDTH OF THE TOP OF DIKE IN ACCORDANCE WITH SECTION 210.
10. ALL CUT AND FILL SLOPES AND OTHER DISTURBED AREAS SHALL BE SEEDED WITH TYPE 6, MIXTURE E, IN ACCORDANCE WITH SECTION 180 DEPENDING ON THE TIME OF CONSTRUCTION. IT MAY BE NECESSARY TO PROVIDE A TEMPORARY COVER ON THE DIKE SLOPES. ALL GRASSED AREAS SHALL BE FERTILIZED AND MULCHED IN ACCORDANCE WITH SECTIONS 180 AND 182 RESPECTIVELY.
11. RIPRAP SHALL BE PLACED AS SHOWN ON THE DRAWINGS WITH A MINIMUM OF 50%, BY WEIGHT, CONSISTING OF STONES OF AT LEAST 150 LB EACH. RIPRAP SHALL CONFORM TO SECTION 833.
12. FILTER SHALL CONFORM TO SECTION 836.
13. ALL CENTERLINE BEARINGS ARE APPROXIMATE SCALED BEARINGS.

OPEN REVISION
RECORD AS CONSTRUCTED
REV NOTES, TABLE OF DIKE SLOPES & SUMM. QUANTITIES, MINOR REVISIONS

SCALE 1" = 100' EXCEPT AS NOTED

MAIN PLANT

ASH DISPOSAL AREA NO. 2
PLAN

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED | RECOMMENDED | APPROVED

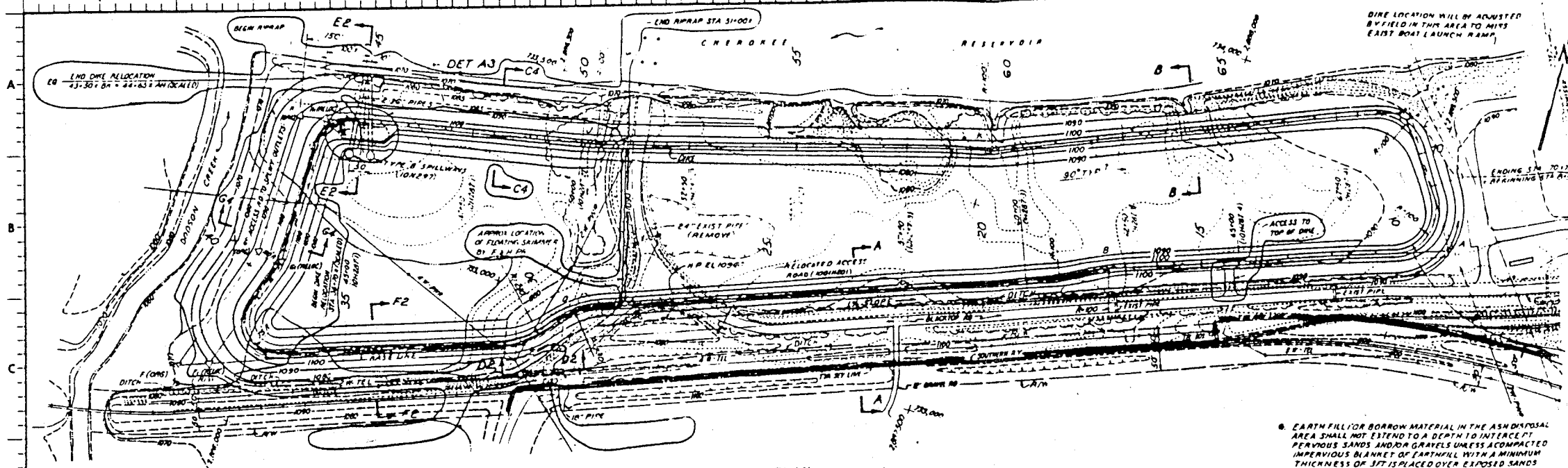
KNOXVILLE | 41 | C | 10W293-1 R3

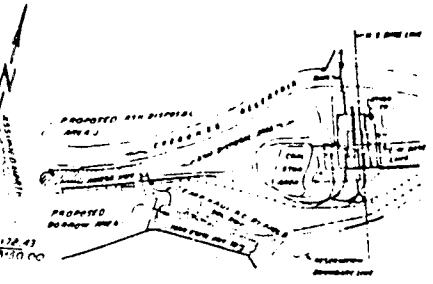
COMPANION DRAWINGS: 10W293-2, -3

10W293-1 | 41 | C

PAGE 4 OF 5

10W286-1





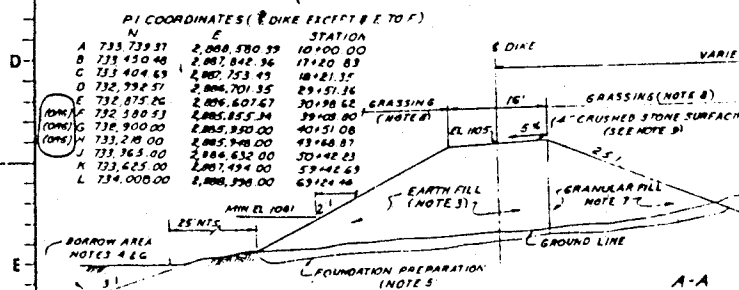
TEMPORARY HAUL ROAD FROM BORROW AREA BY FIELD

NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE T-I SPECIFICATIONS, UNLESS OTHERWISE NOTED.
2. THE SOLID CONTOURS REPRESENT FINISHED GRADE; DASHED CONTOURS INDICATE EXISTING GROUND.
3. THE RESULTS OF THE SOIL INVESTIGATION FOR THE ASH DISPOSAL AREA DIKES ARE REPORTED IN A MEMO FROM FRANK VANMETER TO G.L. BUCHANAN DATED JULY 28, 1961 (CSB 10-324 30J). JOHN SEVIER STEAM PLANT, ASH DISPOSAL AREA, SOIL EXPLORATION AND TESTING, EN DES SOIL SCHEDULE NO. 6.2
   ALL ROLLED EARTH FILL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION G-9, ROLLED EARTHFILL FOR DAMS AND POWER PLANTS. ROLLED EARTHFILL SHALL CONSIST OF SOIL PLACED IN LAYERS NOT EXCEEDING 6" AFTER COMPACTION AND SHALL BE UNIFORMLY COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 PROCEDURES. MOISTURE CONTENT OF EARTHFILL SHALL BE WITHIN 3% OF OPTIMUM MOISTURE CONTENT.
4. BORROW MATERIAL SHALL BE OBTAINED FROM INSIDE THE DISPOSAL AREA. CUT SLOPES ADJACENT TO EMBANKMENTS SHALL NOT BE EXCAVATED STEEPER THAN 3:1 AND TOP OF CUT SHALL BE A MINIMUM OF 25'FEET FROM TOE OF EMBANKMENT. REMAINING BORROW MATERIAL SHALL BE OBTAINED FROM DESIGNATED BORROW AREA LOCATED S.E. OF DIKE AND BETWEEN SOUTHERN RAILWAY AND TENNESSEE HIGHWAY 70.
5. FOUNDATION PREPARATION FOR EARTH EMBANKMENTS SHALL CONSIST OF CLEARING AND REMOVING ALL ROOTS, VEGETATION, AND ORGANIC TOPSOIL. FOUNDATION AREA SHALL BE COMPACTED BY USING SHEEP'S FOOT ROLLER FOLLOWED BY A FLAT WHEELED ROLLER UNTIL DISTURBED AREA WILL SUPPORT HEAVY EQUIPMENT WITHOUT RUTTING INTO THE GROUND SO AS TO REDUCE ITS STABILITY PRIOR TO PLACING FILL THE FOUNDATION MUST BE SCARIFIED SO THERE WILL BE GOOD BOND BETWEEN FOUNDATION AND FILL. THE SOIL INVESTIGATION PROGRAM INDICATED THE PRESENCE OF SOFT SOILS DIRECTLY BENEATH THE TOPSOIL AT STATION 9+50± AND STATION 34+00± IN THE DIKE FOUNDATION. SUCH SOFT AND SHALLOW SOILS DETECTED DURING THE FOUNDATION PREPARATION AT THESE LOCATIONS OR ANY OTHER LOCATION IN THE DIKE AREA SHALL BE REMOVED AND REPLACED BY IMPERVIOUS EARTH FILL COMPACTED IN LAYERS.
6. EARTH FILL OR BORROW MATERIAL IN THE ASH DISPOSAL AREA SHALL NOT EXTEND TO A DEPTH TO INTERCEPT PERVIOUS SANDS AND/OR GRAVELS UNLESS ACOMPACTED IMPERVIOUS BLANKET OF EARTHFILL WITH A MINIMUM THICKNESS OF 3FT IS PLACED OVER EXPOSED SANDS AND/OR GRAVELS. IF THIN LAYERS OR POCKETS OF SAND AND/OR GRAVEL ENCOUNTERED WITHIN FINE-GRAINED BORROW SOILS ARE EXPOSED ON THE EXCAVATED SLOPE, THEY SHOULD BE BLANKETED WITH COMPACTED IMPERVIOUS EARTHFILL WITH A MINIMUM WIDTH OF 3FT.
7. IN VIEW OF A POTENTIAL FOR BORROW SHORTAGE, SAND AND GRAVEL MATERIALS IF ENCOUNTERED DURING BORROW EXCAVATION OR DIKE FOUNDATION PREPARATION, SHALL NOT BE WASTED. IF SHORTAGE OF FINE-GRAINED BORROW SOIL OCCURS, SANDS AND GRAVELS MAY BE USED BENEATH THE OUTER SLOPE OF THE DIKE. GRANULAR FILL WITH LESS THAN 20% FINES SHALL BE COMPACTED TO AN AVERAGE RELATIVE DENSITY OF 85% OR GREATER WITH A MINIMUM RELATIVE DENSITY OF 80% AS DETERMINED BY ASTM D2049 PROCEDURES. GRANULAR MATERIAL WITH MORE THAN 20% FINES SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (METHOD D) PROCEDURES.
8. DIKE SLOPES SHALL BE SEEDED WITH TYPE G MIXTURE 5. SEEDED AREAS ARE TO BE FERTILIZED AND MULCHED IN CONFORMENCE WITH SECTIONS 580 AND 582.
9. CRUSHED STONE SURFACING, 4 INCHES THICK, SHALL BE APPLIED FOR THE FULL WIDTH OF THE TOP OF THE DIKE IN ACCORDANCE WITH SECTION 305.
10. RIPRAP SHALL BE SOUND, DURABLE STONE, 18 INCHES THICK WITH A MINIMUM OF 50% BY WEIGHT CONSISTING OF STONES AT LEAST 100 LBS EACH. RIPRAP SHALL CONFORM TO SECTION 575. FILTER BLANKET, 6 INCHES THICK, SHALL CONFORM TO SECTION 570.
11. THE ASH DISPOSAL AREA SHALL BE CLEARED IN ACCORDANCE WITH SECTION 201. NO GRUBBING IS REQUIRED EXCEPT FOR AREAS OF DIKE FOUNDATIONS.
12. STONE GUTTER SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 310.
13. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 PLAIN FINISH AND SHALL HAVE A MINIMUM LAP DISTANCE OF 6 INCHES.
14. FAMILY OF COMPACTION CURVES DEVELOPED FOR BORROW AREAS A AND B BY SAME AS PER EN DES SOIL SCHEDULE NO 6.2 (CSB 10-324 30J) SHALL BE USED TO CONTROL THE EARTHFILL COMPACTION IN PLACE DENSITY TESTS USING THE SAND CONE (ASTM D1556) OR RUBBER BALLOON (ASTM D2167) TEST METHODS SHALL BE MADE AT A RATE OF AT LEAST 1 TEST FOR EACH 2000 CUBIC YARDS OF EARTHFILL PLACED (IN PLACE VOLUME), OR A MINIMUM OF 1 PER DAY.
15. COMPACTED ASH FILL SHALL BE CONSTRUCTED THE SAME WAY THE EARTHFILL IS CONSTRUCTED. THE FAMILY OF COMPACT CURVES DEVELOPED FOR THE ASH FILL BY SAME AS PER EN DES SOIL SCHEDULE NO 6.4 (SMI MEMO 617.0-2.) SHALL BE USED TO CONTROL THE COMPACTED ASH FILL COMPACTION. ASH FILL SHALL BE DONE WITH SMOOTH SURFACE STEEL WHEEL VIBRATORY ROLLERS.

P.I. COORDINATES (℄ DIKE EXCEPT ℄ E TO F)

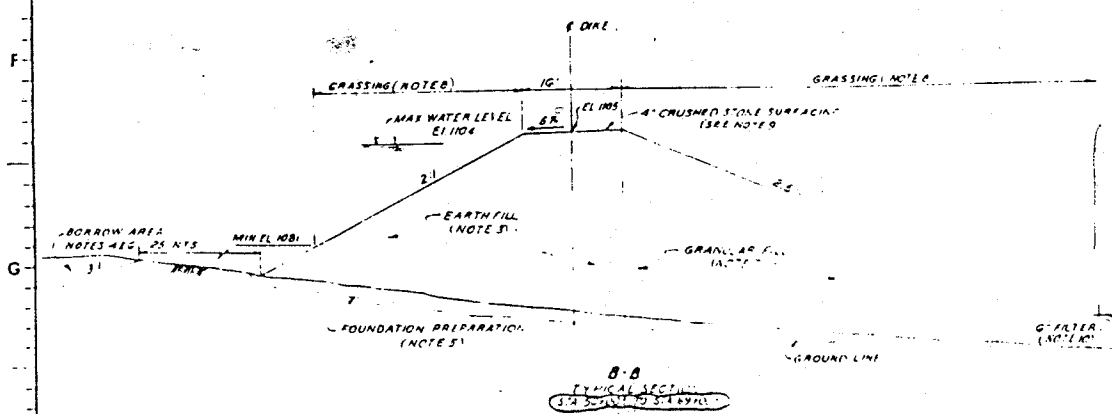
	N	E	STATION
A	735,739.37	2,868,380.39	10+00.00
B	735,450.48	2,867,842.96	17+20.83
C	733,404.69	2,867,753.49	18+81.35
D	732,799.57	2,866,701.35	29+57.36
E	732,675.86	2,866,607.67	30+98.62
F	732,580.53	2,865,855.34	39+08.80
G	736,900.00	2,865,950.00	40+51.08
H	733,249.00	2,865,948.00	43+68.81
J	733,365.00	2,864,632.00	30+42.23
K	733,625.00	2,867,494.00	59+42.69
L	734,000.00	2,868,398.00	69+26.46



A-A
TYPICAL SECTION
STA 63+00 TO STA 70+72.43
1"=10'

P.I. COORDINATES

	N	E	STATION
(RLOC) I.	732,606.08	2,865,342.66	36+25.5
(RLOC) S.	732,839.31	2,866,007.05	33+75.5
(RLOC) M.	733,230.83	2,866,004.92	43+25.5



B-B
TYPICAL SECTION
STA 30+00 TO STA 69+00

PHOTOGRAPH TAKEN AT THIS LOCATION IN THIS DIRECTION

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
101	CLEARING & GRUBBING	35	AC
123	EARTH BORROW	471,000	CY
125	EXCAVATION FOR STRUCTURES	803	CY
305	CRUSHED STONE SURFACING	1855	TON
570	FILTER BLANKET	1500	TON
575	RIPRAP	2650	CY
580	SEEDING	30,000	SY
582	MULCHING	72,000	SY
310	STONE GUTTER	100	LF
731	FOUNDATION PREPARATION	45,000	CY
761	18" PIPE CULVERT	86	LF
764	36" CONC PIPE CLASS III O RING	340	LF

QUANTITIES FOR REVISION 3

120	UNCLASSIFIED EXCAVATION	17,000	CY
—	COMPACTED ASH FILL	21,200	CY
305	CRUSHED STONE SURFACING	1,500	TON
575	RIPRAP	44,900	TON
580	SEEDING	13,500	SY
582	MULCHING	13,500	SY
121	EARTH BORROW	1,000	CY

STORAGE CAPACITY *

ELEVATION	QUANTITY	ACCUM QUANTITY
1071 & BELOW	10,600 CY	10,600 CY
1078 TO 1077	59,200 CY	69,800 CY
1081 TO 1078	107,600 CY	177,400 CY
1086 TO 1081	127,800 CY	305,200 CY
1091 TO 1086	137,400 CY	442,600 CY
1096 TO 1091	147,400 CY	590,000 CY
1101 TO 1096	157,200 CY	747,000 CY *

* ASSUME ASH LEVEL
* RELOCATION OF THE WEST DIKE REDUCED THE ASH STORAGE CAPACITY BY 27,000 CY±

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

1. 951 ISSUE FOR W.O. 444-30 3H01-10084

COMPANION DWG: 10W291-1R7
10W286-1R4

REVISION			
4	OPEN		
3	REVISE PLOT DWG ADD NOTES 14 & 15	10/24/63	WT
2	ADD SECTIONS & STORAGE CAPACITY	10/8/63	WT
1	ADD DET A3 & REVISE SUMMARY OF QUANTITIES	9/24/63	WT

R. D. MARONEY — V. P. Fee
L. L. GLOVE — A. W. Burnett
L. L. GLOVE
SCALE 1"=100 — EXCEPT AS NOTED

MAIN PLANT

FLY ASH DISPOSAL AREA "J"
SHEET 1

JOHN SEVIER STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

KNOXVILLE | 41 | C | 10W286 1 | R4

E23

PAGE 5 OF 5

TVA USE ONLY
ADDITIONAL COMMENTS / OTHER INSPECTED AREAS / ACTIONS TAKEN SINCE LAST INSPECTION / RECOMMENDATIONS / PHOTOGRAPHS

ORIGINAL DISPOSAL AREA

The dikes for the interior basin in the east portion of this area were constructed by plant personnel with ash removed from inside the basin, covered with a layer of earth, fertilized, and seeded. The plant provides maintenance for these dikes as needed and the basin is currently being filled with dry fly ash. These interior dikes appear to be in good condition with no visible signs of instability.

A sedimentation basin was recently constructed in this area for storm water runoff from the fly ash stack (Picture 2). This basin is located in the southeast corner of the area just west and north of the chemical treatment ponds. The basin discharges through a standard spillway with skimmer into the channel which flows into the stilling pool in the extreme west end of the area. Some erosion of the riprap has occurred where the storm water runoff ditch flows into the basin.

ASH DISPOSAL AREA 2

The double floating skimmer in the divider dike flow-through spillway appears to be operating very effectively (Picture 3). There was no floating ash in the stilling pool area. The two standard spillways with skimmers in the stilling pool area appear to be in good condition and operating properly. The riprapped outfall at the outlet of these spillways is in good condition with no signs of erosion. Also, the ash pond discharge channel is in good condition.

ASH DISPOSAL AREA J

Standing water was observed in the ditch at the exterior toe of the south dike of this area on both sides of the dike access ramp. This condition is caused by earth material blocking the ditch on the east side of the access ramp (Picture 4).

The inlets of some of the discharge pipes for the interior drainage ditches have been blocked by the deterioration of the hay bales and silt fence material that was placed around their inlets for erosion protection (Picture 5).

CHEMICAL TREATMENT POND

The chemical treatment ponds (copper and iron) are located just south of the original disposal area. These ponds were excavated below grade and there are no exterior dikes. The riprapped interior slopes of the ponds appeared to be stable and in good condition. No change from the previous inspection was noted. These ponds are discharged when required by pumping to Ash Disposal Area 2.

TVA USE ONLY
ADDITIONAL COMMENTS / OTHER INSPECTED AREAS / ACTIONS TAKEN SINCE LAST INSPECTION / RECOMMENDATIONS / PHOTOGRAPHS

COAL YARD DRAINAGE BASIN

The coal yard drainage basin is located immediately north of the coal yard area and northwest of the utility building. This basin was excavated below grade and there are no exterior dikes. The interior slopes of the pond appeared to be stable and in good condition. No change from the previous inspection was noted. This pond is discharged when required by pumping to Ash Disposal Area 2.

ACTIONS SINCE LAST INSPECTION

Plant personnel have continued to maintain the dike slopes of all areas as needed.

Plant personnel have continued to monitor all exterior dike slopes and toe areas for surface sloughs, seepage areas, wet soft spots, animal burrowing, etc.

Plant personnel have continued to seed and fertilize Ash Disposal Area J as needed.

Plant personnel have continued to monitor the plugged pipes below the toe of the north dike for changes in the seepage areas.

Plant employees have continued to periodically remove small trees and brush encroaching above the toe of the dike slopes.

RECOMMENDATIONS

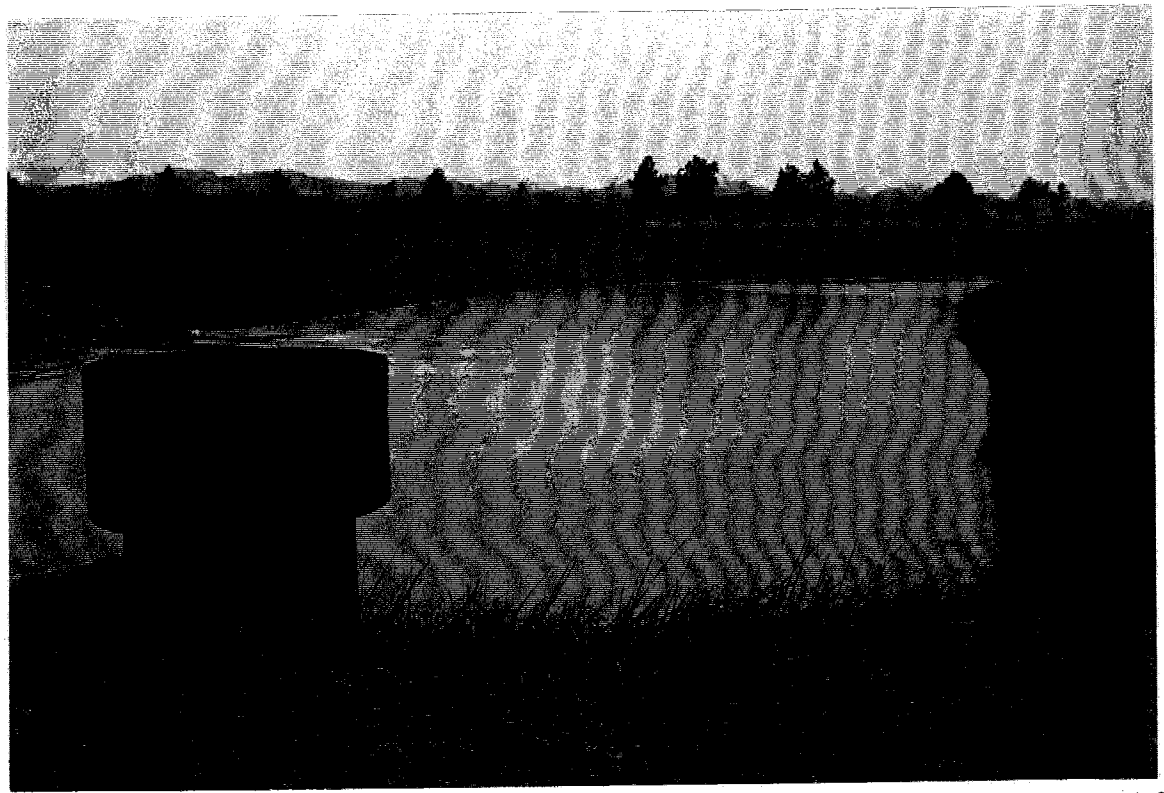
Plant personnel should continue to periodically remove small trees and brush from all dike slopes.

Plant personnel should continue to monitor the exterior dike slopes and toe areas of all the disposal areas for surface sloughs, new seepage areas or changes in existing seepage areas, etc. Fossil Engineering should be notified immediately of any changes.

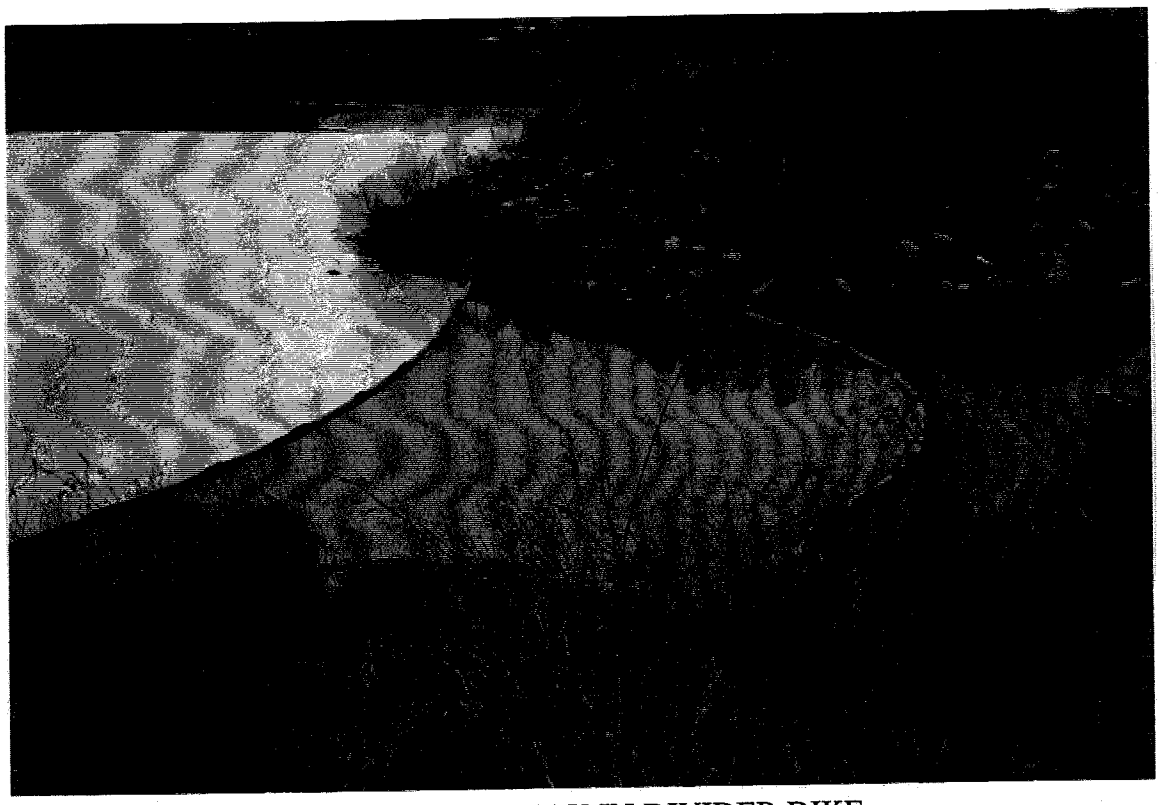
The inlets of the discharge pipes for the interior drainage ditches and the ditch below the toe of the exterior slope of the south dike of Area J east of the dike access ramp should be cleared.

Generally, the tops of all dikes are sloped to the inside and have a good crushed stone surface; however, there are isolated areas in the tops of the dikes of all the disposal areas that are in need of repair (Picture 6).

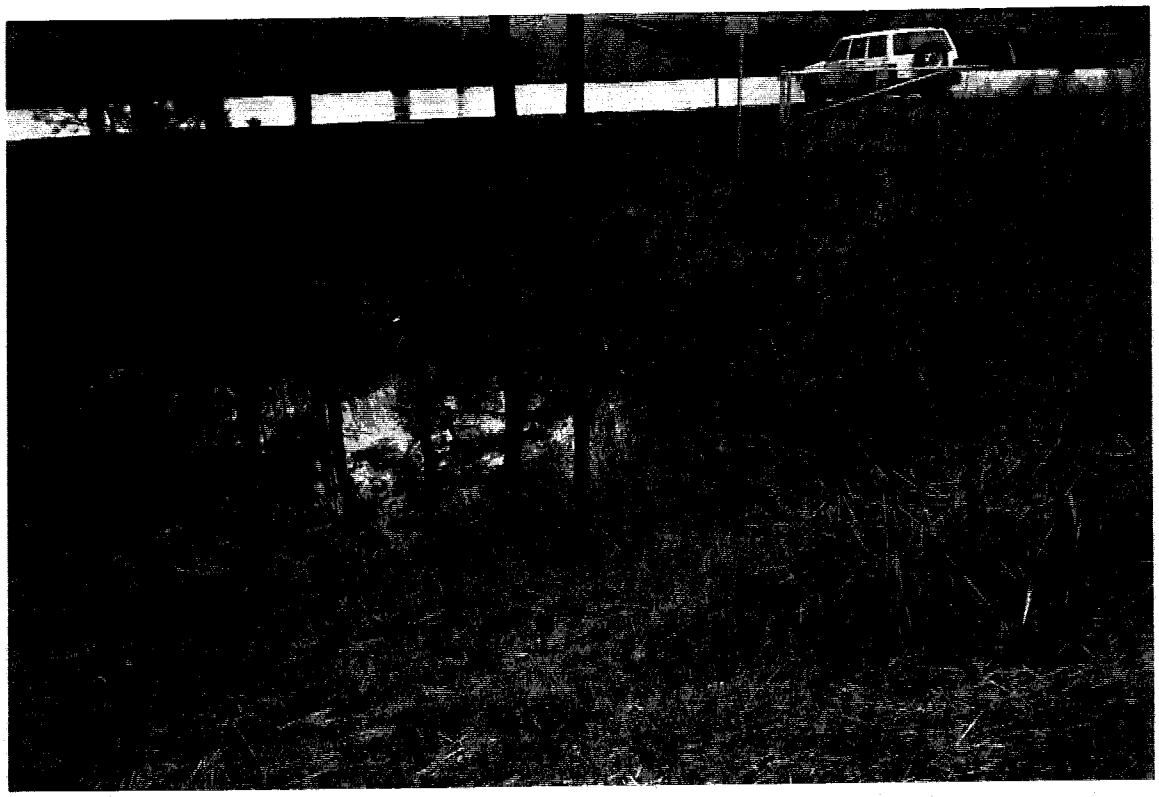
1. ORIGINAL AREA - SEEPAGE AREA ABOVE PLUGGED PIPE NO.3



2. ORIGINAL AREA - STORMWATER RUNOFF POND SOUTHEAST OF ASH STACK



3. AREA 2 - FLOW-THROUGH SPILLWAY IN DIVIDER DIKE



4. AREA J - STANDING WATER IN DITCH BELOW TOE OF SOUTH DIKE

5. AREA J - INLET OF A DISCHARGE PIPE FOR THE INTERIOR DITCHES

6. AREA 2 - RUTTED AREA IN TOP OF DIKE

March 28, 2008

Leslie W. Nale, JSF 1A-RGT

JOHN SEVIER FOSSIL PLANT (JSF) - ANNUAL STABILITY INSPECTION OF WASTE DISPOSAL AREAS

Attached is the latest dike stability inspection report for your plant. The inspection was performed by John Albright and Chris Hensley of Engineering Design Services and John Dizer of Environmental Affairs on November 29, 2007. The previous inspection was performed on October 9, 2006.

This report includes recommendations for corrective work. I concur with these recommendations.

If you have any questions, please contact Lynn Petty at 423-751-6704 or John Albright at 423-751-3981.

Barry A. Kimsey, Manager
COC Project Team
Engineering Design Services
LP 2G-C

HLP:CWH:SRF
Attachment
cc (w/attachment):
T. E. Bailey, JSF 1A-RGT
M. A. Hedgecoth, LP 5G-C
M. D. Davis, LP 5E-C
D. S. Hodges, JSF 1A-RGT
L. P. Johnson, LP 5D-C
S. R. Kramer, Dam Safety Files, LP 1F-C
K. E. Lewis, JSF 1A-RGT
G. R. MacDonald, LP 5E-C
J. E. Dizer, LP 5D-C
C.W. Hensley, LP 2G-C (2 copies)
EDMS, WT CA-K

TENNESSEE VALLEY AUTHORITY

JOHN SEVIER FOSSIL PLANT

ANNUAL STABILITY INSPECTION OF
WASTE DISPOSAL AREAS
2008

Prepared By: Christopher W. Hensley and
John G. Albright
Date: March 28, 2008

JOHN SEVIER FOSSIL PLANT
ANNUAL ASH POND DIKE STABILITY INSPECTION
2008

Introduction

The waste disposal areas of John Sevier Fossil Plant were inspected for dike structural stability on November 29, 2007. The inspection was performed by Chris Hensley and John Albright of Fossil Engineering Design Services (EDS), and John Dizer of Environmental Affairs. The previous inspection was performed on October 9, 2006.

The ash disposal areas are generally in satisfactory condition. Listed below are the results of the annual dike stability inspection according to location. Locations of the photos are shown on the drawing (API2008) at the end of this report.

Fly Ash Disposal Area

All fly ash that is not marketed commercially is dry stack in the southeast portion of this area. Except for the active stacking area of about 30 acres the dry fly ash stack has been covered with earth, seeded, and is developing a vegetative cover (Photo 1).

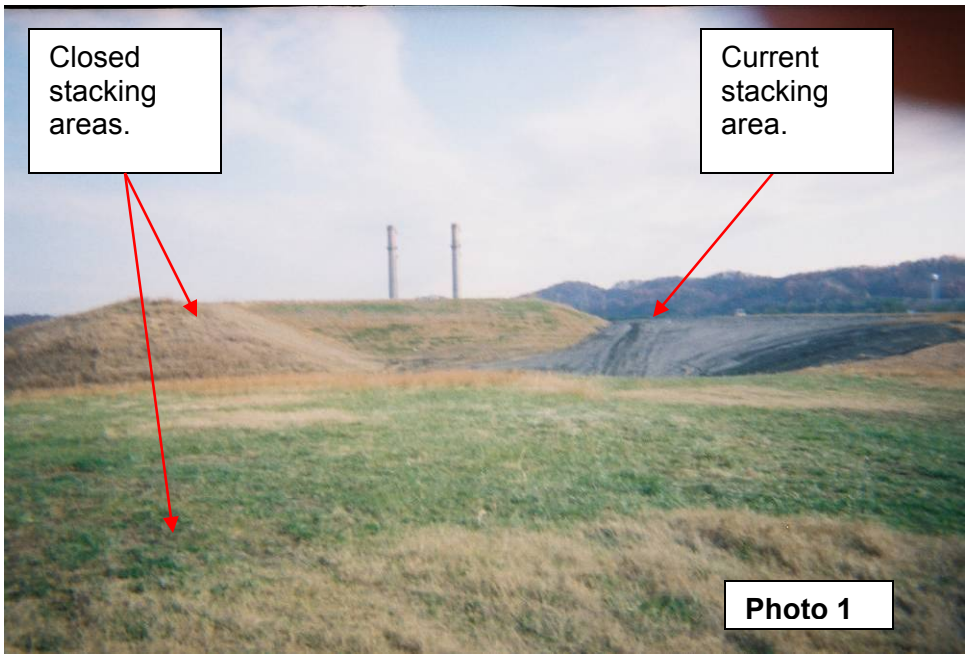


Photo 1. Looking East. Current Stacking Area.

The areas covered in the mid-90's (below El. 1130) have developed an excellent stand of grass. West of the active portion of the dry stack is a demonstration area for the ammoniated ash that the Selective Non-Catalytic Reduction (SNCR) system produces. The demonstration area collects the ash from one unit. All four units are scheduled for SNCR operation in January 2009. At the time of the inspection the ammoniated ash had no earth cover or dust control measures in place. Environmental Engineering Services – East (EESE) periodically samples the runoff into the ditch that leads to the sediment pond beside the chemical ponds (Photo 2). They have also installed monitoring wells north of the demonstration area to collect groundwater data.

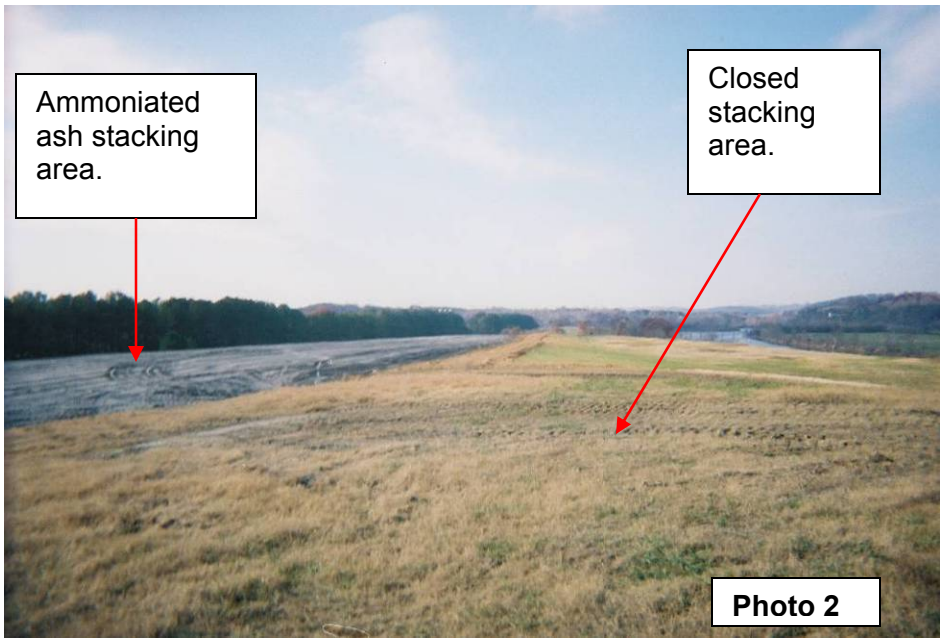


Photo 2. Looking West. Ammoniated ash stacking.

The sediment pond located in the southeast corner, beside the chemical ponds was cleaned in 2006. Since then, the plant has controlled the sediment in the pond well. At time of inspection, the south ditch was full and needed cleaning. The slopes in the sediment pond are all below grade and in good condition. The slope just above the pond was freshly graded and covered with soil, but no vegetation (Photo 3). The sediment in the pond should be removed to ensure it can operate as designed and the new slope above the pond should be seeded and mulched as soon as possible.

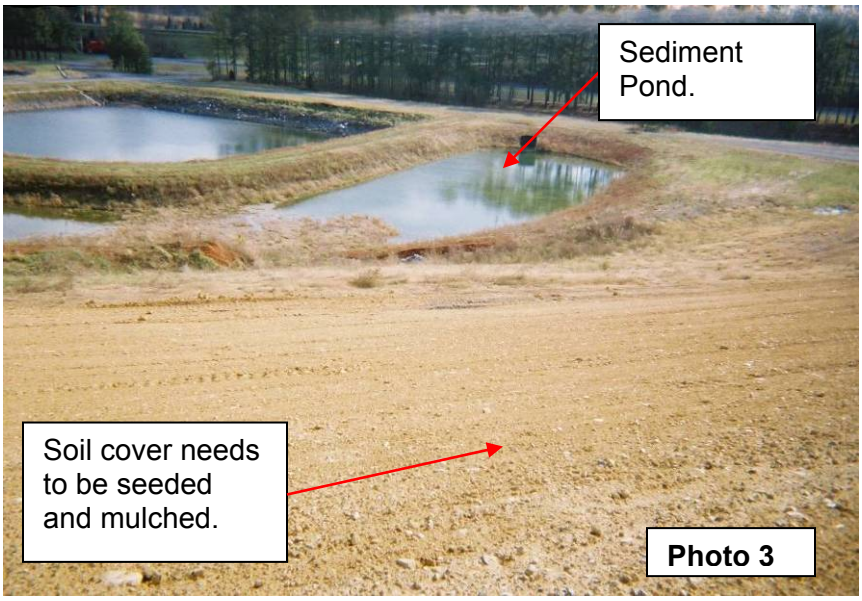


Photo 3. Looking Southeast. Sediment Pond for Dry Ash Stack.

The active stacking area is the south end of the stack, north of the sediment pond and west of the chemical ponds. This area looked to be stable with a 1 foot soil cover on the slopes. We recommend seeding and mulching the soil cover material as soon as possible to prevent erosion on the stack slopes (Photo 3).

The north side of the stack along the river has good vegetative cover and appears to be stable. However, an animal burrow was noted at coordinates N 735092.220 E 2890091.437. It should be filled in with clay, seeded and mulched. There was also an erosion ditch in the first dike lift starting at coordinate N 734948.036 E 2889943.705 and end of ditch coordinate N 734977.298 E 2889908.436. The ditch was about 4 feet wide by 12 feet long and about 2 feet deep (Photo 4). This ditch also needs to be filled in with clay, seeded, and mulched.

Photo 4. Erosion Ditch.

The seepage collection system continues to function effectively. The effluent from this system is pumped to the Coal Yard Drainage Basin and then to the Bottom Ash Pond. Note the missing pieces of concrete in the north side of the riser (Photo 5).

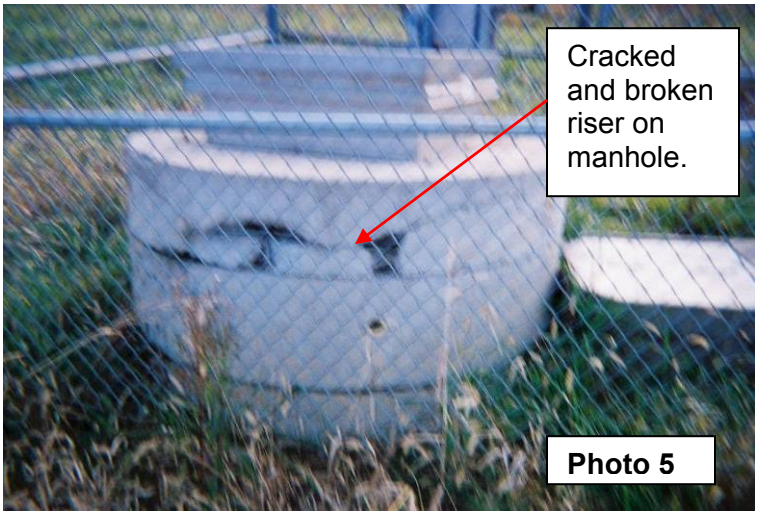


Photo 5. Northeast Seepage Collection Manhole.

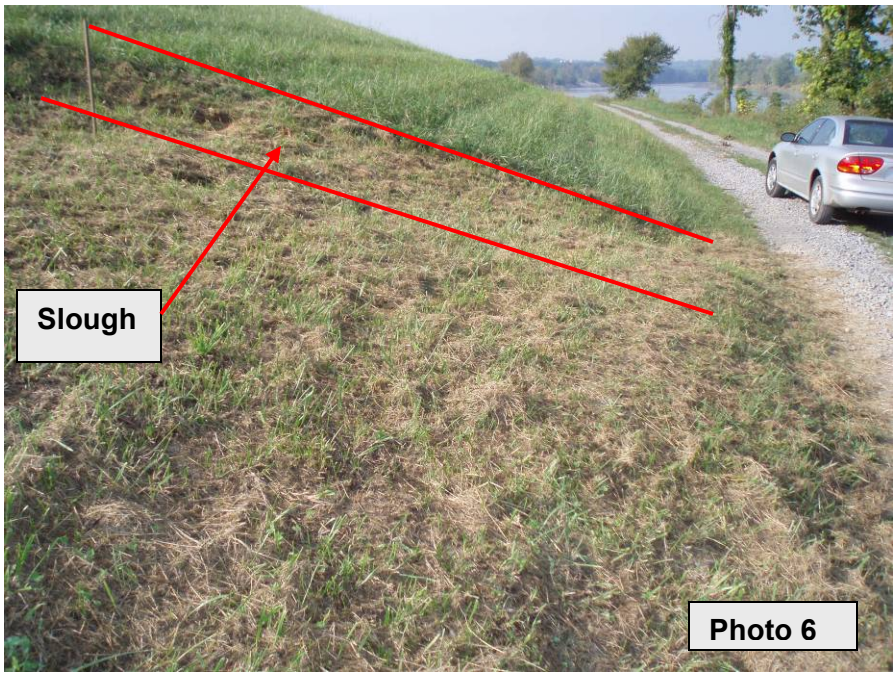


Photo 6. North Side of Dry Stack. Slough in 2007.

A slough (50' x 25') was discovered in the lower slope of the ash stack, near the river, in September 2007 and EDS was called to investigate the cause (Photo 6). EDS and Central Support and Repair (CS&R) dug in the area but were unable to determine the cause. Excavation in the area of the slough found no water or wet soul. The top three, or so, feet of material was dry (Photo 7).

Photo 7. North Side of Dry Stack. Slough in 2007.

There was a zone below that where fly ash and the soil cap were well mixed and it was dry, as well. EDS recommends this area and the slope 50 feet on each side of the slough be watched carefully for further movement. Should another slough occur, the plant should notify EDS as soon as possible so the cause may be investigated.

The plant needs to reseed, fertilize and mulch the area shown in Photo 8, on the north slope of the ash stack before erosion occurs.

Photo 8. Slough area beside Northeast Seepage Collection.

The original Stilling Pond, in the west end of this area, is now a sediment pond. The water surface normally stays well below the spillways overflow. The outlets were in good condition, showing no erosion. The standpipes and skimmers appeared to be in equally good condition. This pond discharges to the relocated section of Polly Branch and mixes with the flow from the Bottom Ash Pond.

Ash Disposal Area 2 (Bottom Ash Pond)

This area is the active ash pond for all sluiced ash discharges. All bottom ash is sluiced into this area. Fly ash is sluiced during unit start-up operations and on an intermittent basis when the dry fly ash collection system is not in service.

The exterior and interior dike slopes of the active ash pond have an excellent vegetative cover and appear to be in good condition with no signs of instability during the inspection. However, a slough inside the stilling pool was discovered after the inspection and is detailed below. A private contractor has done an excellent job removing small trees from the interior of the dike slopes and most of the exterior slope. When trees are removed the damage should be repaired and the area seeded, fertilized and mulched. The tops of the dikes are generally in good condition. Crushed stone should be added where wheel ruts have begun to form. The road should be kept in good condition for shift dike inspections.

A carbon dioxide system has been installed between the Bottom Ash Pond and the stilling pool. The system started operation in early May 2007 to lower the pH of the water discharging into Polly Branch. The plant has to perform maintenance to the pump screens on the floating pump platform due to the algae growth in the pond (Photo 9).

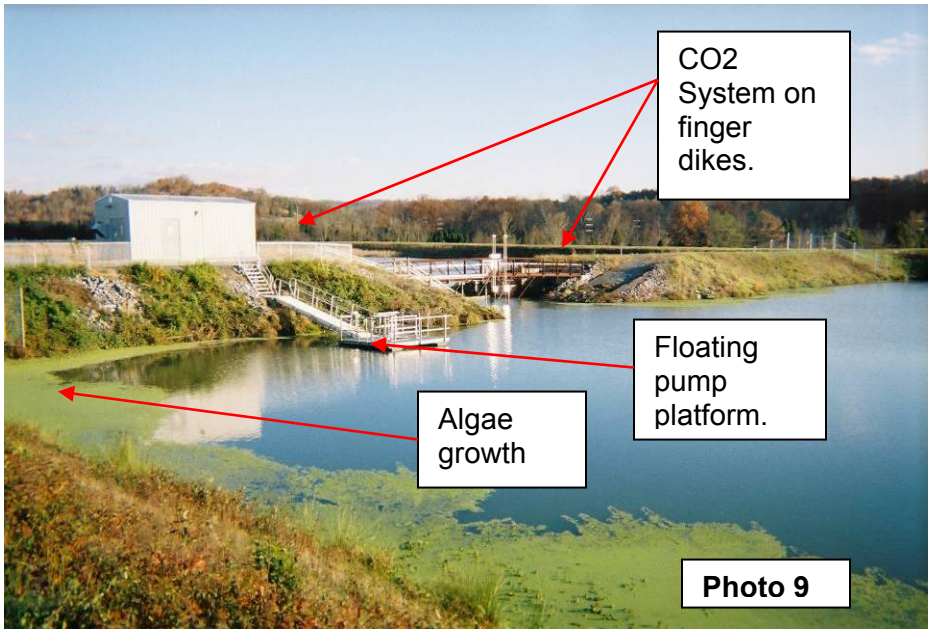


Photo 9. CO2 System in the Bottom Ash Pond.

The outfall and discharge channel below the outfall are in good condition with no signs of erosion. The headwall and discharge pipes into Polly Branch are also in very good condition, showing no visible erosion.

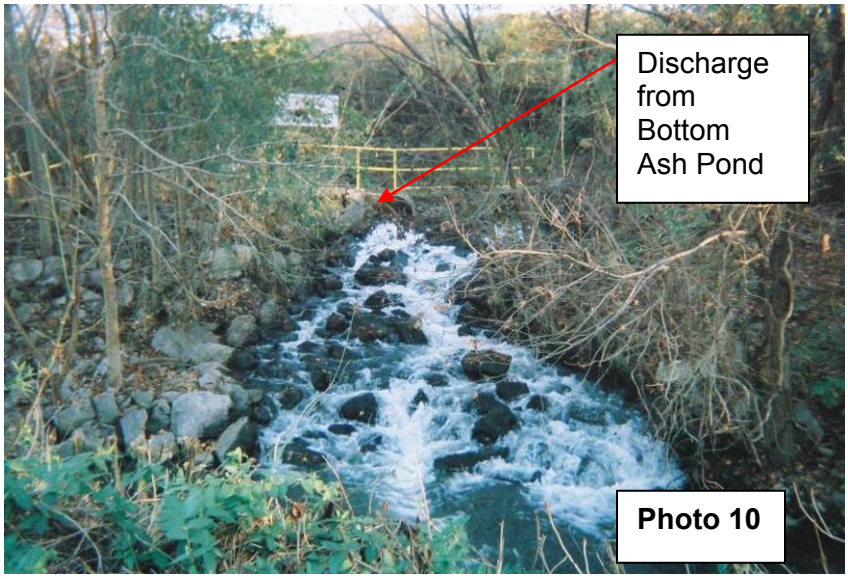


Photo 10. Bottom Ash Pond. Discharge Pipes.

Appalachian Products, Inc. operates a bottom ash collection facility in the east end of the Bottom Ash Pond. This facility has the capability to retrieve the total volume of bottom ash produced. The bottom ash is hauled off site and used to produce light weight cinder block. This operation, if continued, will extend the life of this pond for many years.

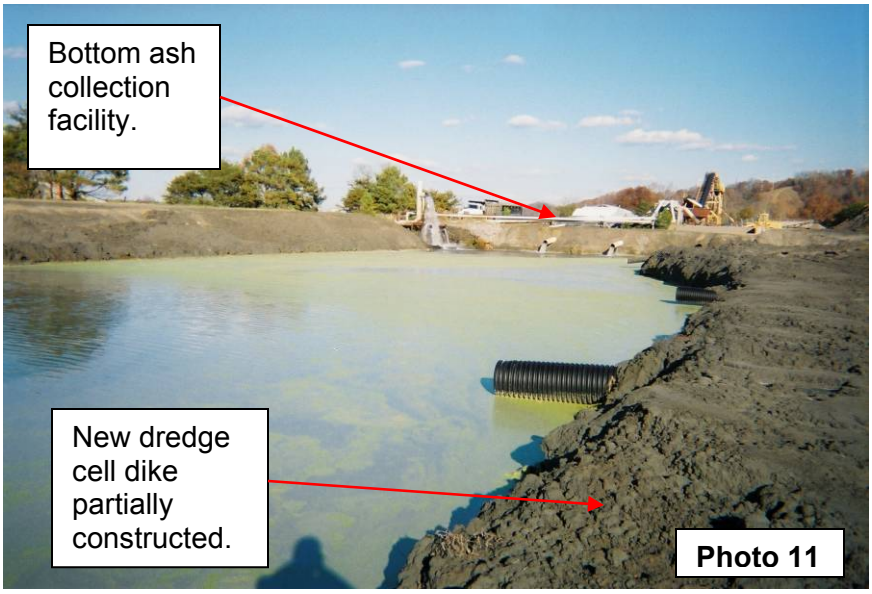


Photo 11. Bottom Ash Pond. New Dredge Cell Dike Construction.

Appalachian Products, Inc. has constructed a dredge cell in the east end of the bottom ash pond (Photo 11). The pond has had no engineering. The capacity of the discharge weirs is unknown (Photo 13 & 14). The dikes have been constructed without compaction, with excessively steep side slopes, approximately ¾H:1V, and narrow tops about the width of a trackhoe (Photo 12).

Photo 12. Bottom Ash Pond. Typical Steep Uncompacted Dikes.

EDS recommends against the use of this dredge cell in the condition found during the inspection. We do not believe it will be stable enough to withstand internal water pressure. The slopes should be flattened to 3H:1V and compacted to at least 90% of maximum density before use. Compaction testing should be done to ensure the minimum density is achieved. We are also unsure the discharge structures can pass storm water and dredge flow. Since there is no emergency spillway, this is a concern.

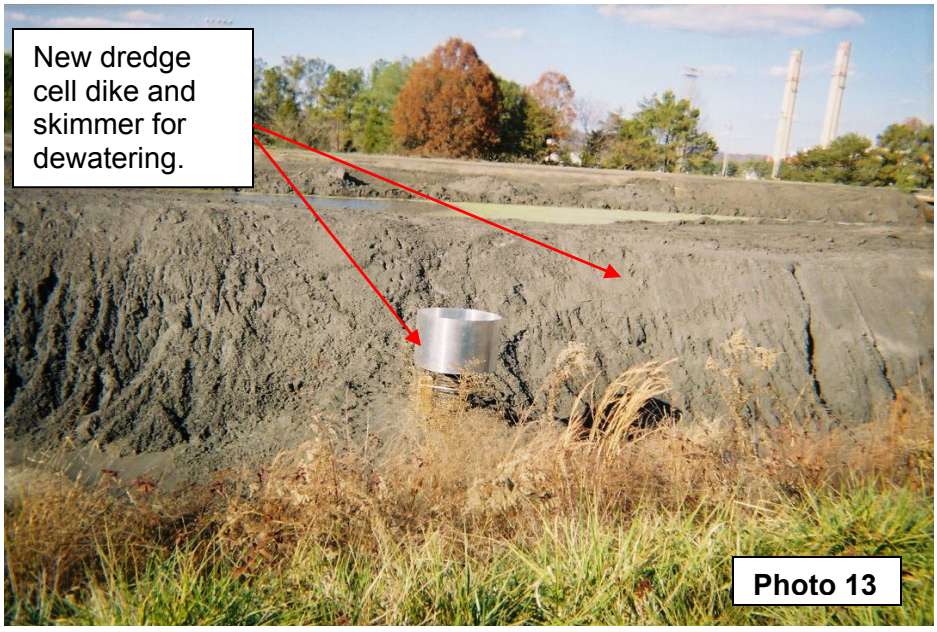


Photo 13. Bottom Ash Pond. New Dredge Cell Dike and Skimmer.

Photo 14. Bottom Ash Pond. Dredge Cell Spillway and Skimmer

Since the inspection a slough was discovered inside the stilling pool on either side of the stairs beside the discharge weirs. The slough was about 20 feet long and about 4 feet from the toe of the dike, apparently caused by wave action in the stilling pool. EDS produced a repair design to regrade 200 feet of the slope and place riprap to stabilize the slope. A copy of the design is attached as SK-1.

Ash Disposal Area J

This area has been accepted for closure and is being maintained by plant personnel in accordance with plans submitted to the State of Tennessee. There has been no change in the dikes since the last inspection. They appeared to be stable and in good condition. The outer slopes and the interior sediment pond slopes have a good vegetative cover with no signs of erosion. Only minor tree growth on the exterior slope was noted. Ash Disposal Pond J is mowed periodically.

During the inspection it was noted that several people in the community are using the dike road for a walking track. Members of the community requested TVA add small crushed stone chips to soften the road for walking so the ground is not so hard. The new stone surface would need to be 8 feet wide by the length of about 8,000 feet. This would require 130 tons of stone chips at 4 inches thick.

Chemical Treatment Ponds

The iron and copper chemical treatment ponds are located just south of the dry stack and west of the coal pile. Both ponds were excavated below grade and have only interior slopes. All interior slopes of these ponds are covered with riprap and are in good condition. Trees are growing in the interior slopes in side the ponds (Photo 15). EDS recommends cutting the trees so they will not increase in size and interfere with the slope's stability.

Photo 15. Chemical Ponds.

Coal Yard Drainage Basin

The coal yard drainage basin is located immediately north of the coal yard area and west of the utility building. This basin was excavated below grade and has only interior slopes. The interior slopes of this basin appeared to be stable and in good condition. When required, the pond is pumped to the Bottom Ash Pond. It periodically fills with coal fines that should be removed. A series of dikes have been constructed in the pond to facilitate material removal. The pond must

be kept clean because high water elevation causes water to back up into the underdrain system beneath the Coal Pile (Photo 16).

Photo 16. Coal Yard Drainage Basin.

Actions Since Last Inspection

- Ash Disposal Pond J has been maintained in accordance with the closure plans submitted to the State of Tennessee.
- The Plant has done an excellent job keeping the slopes mowed and removing small trees from the dike slopes.
- The access roads around the ash stack have been improved for all weather travel.
- The exposed ash slopes have been covered with soil.
- The stack is closer to design configuration. The Plant is commended again for the improvement in the stack's condition.

Recommendations

- Monitor the exterior dike slopes and toe areas of all the disposal areas for surface sloughs, new seepage areas, changes in existing seepage areas, or movement. Engineering Design Services should be notified immediately of any changes.
- Continue the mowing program to prevent tree growth and to allow dike inspections.
- Exposed ash slopes of the stack should be covered with earth, seeded, fertilized and mulched as described in the Operations Manual unless the area is active.
- Remove sediment from the Coal Yard Drainage Basin to prevent water from backing up into the underdrain system beneath the Coal Yard.

- Cleanout all drainage ditches around the Dry Ash Stack and the sediment pond located at the southeast corner of the stack.

- Reseed and fertilize the slopes above the sediment pond to prevent erosion.

- Fill in animal borrows with clay, seed, and mulch as needed on the Dry Ash Stack.

- Fill in, regrade, seed, and mulch the erosion ditch on the Dry Ash Stack along the river.

- Seed, fertilize, and mulch the slopes on the active Dry Stack area after soil cover has been placed.

Tree Removal

Trees growing in the dike should be pulled out by their roots with a chain and a backhoe. Then the damaged area compacted back with clay in place to repair it. All trees above the toe of the dike should be removed this way. Removing the roots removes a path for water to erode a tunnel through the dike and cause a failure. Cutting trees should be avoided because this leaves the roots in place and will leave a tunnel after the root rots. Trees larger than 3" in diameter at the base should be left in place unless they are in a place critical to dike stability (the toe of the dike and the toe of any slope at a berm). Some species of trees this large have such large root systems removing them would cause more damage than leaving them would. Mowing very small trees while mowing the dikes will not cause future problems and is the best way to control tree growth. Generally, trees growing in the dike are not an environmental problem, but are a potential threat to dike stability.

NOTES:

1. TOPOGRAPHY TRACED FROM KELSH PLOTTED FROM JULY 1974 AERIAL PHOTOGRAPHS AND FROM USGS 7.5 MINUTE QUADRANGLE (BUREM, TN 180-NW AND McCLOUD, TN 180-SW) ENLARGED. CONTOUR INTERVAL SHOWN IS 10 FEET.
2. THE TENNESSEE STATE COORDINATES AT THE INTERSECTION OF THE N-S AND E-W BASELINES ARE NORTH 736,368.40 AND EAST 2,894,071.50.
3. FOR PROPOSED FEATURES SEE 10W202-01.

DIRECTION PHOTO TAKEN

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ELECTRONICALLY RESTORED DRAWING

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	REVWD	APPD	ISSD	PROJECT ID	AS CONST
R										

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ELECTRONICALLY RESTORED DRAWING

REV. NO.	DESCRIPTION
1	
2	
3	
4	

SCALE: 1"=400' EXCEPT AS NOTED

MAIN PLANT

2008 ASH POND DIKE INSPECTION GENERAL PLAN

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
MPT	CPJ	CPJ	RDB			

JOHN SEVER FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R12	DATE	41	C	API2008	R
	05/27/81				

ELECTRONICALLY RESTORED DRAWING
THIS DRAWING HAS BEEN COMPLETELY REDRAWN AND SUPERSEDES 10W200-01 R1)

PLOT FACTOR:4800
W-TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

TASK COMPLETED BY:

REV NO.

API2008 C 41