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January 26, 2005

Earl L. Deskins, KFP 1A-KST

KINGSTON FOSSIL PLANT (KIF) - ANNUAL STABILITY INSPECTION OF WASTE DISPOSAL AREA DIKES

Attached is a report from Sherman G. Garrett concerning the inspection of KIF's waste disposal area dikes.

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

If you have questions, please contact Ron Purkey at (423) 751-4820 or Lynn Petty at (423) 751-6704.

Dennis Lundy, Manager
Engineering Design Services
LP 2G-C

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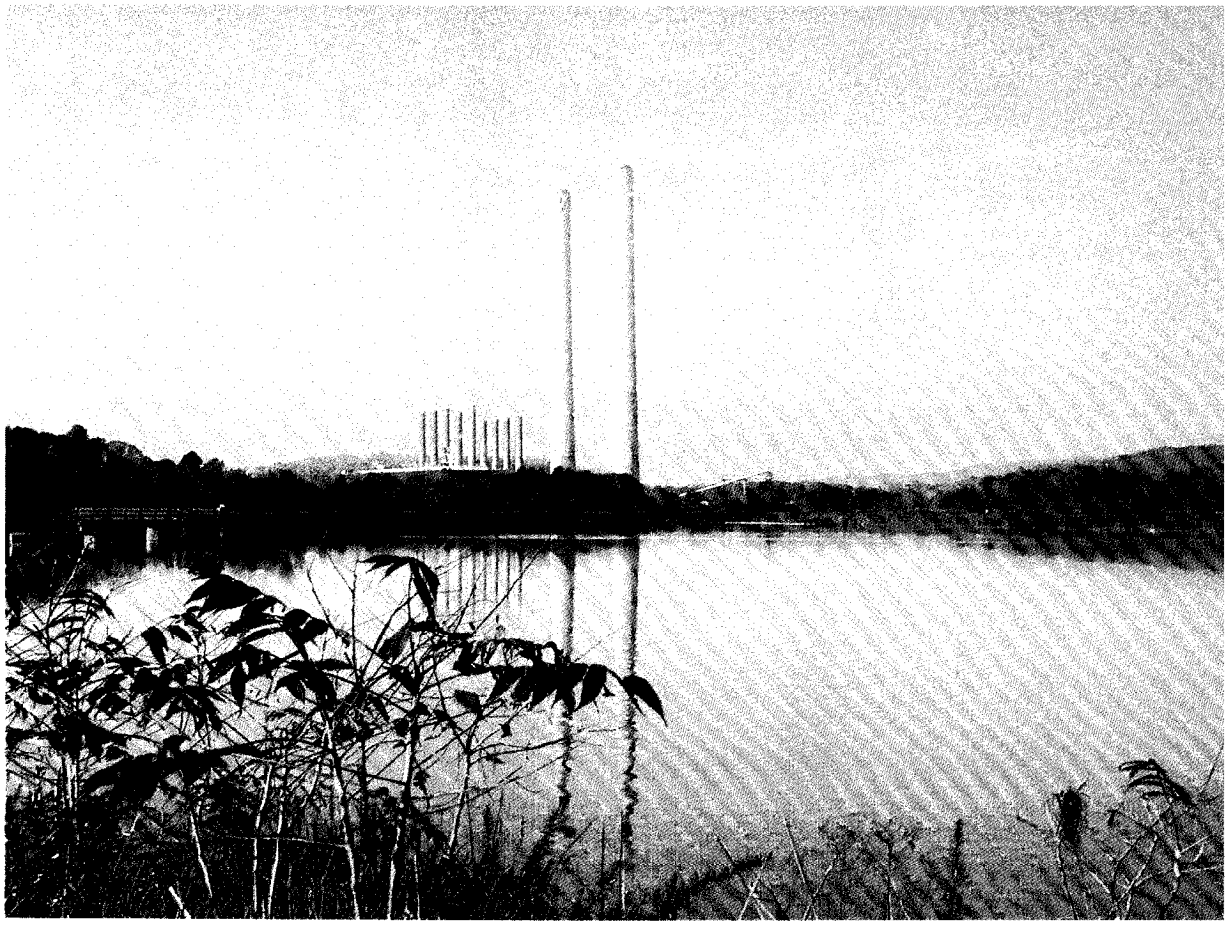
EDMS, WT CA-K

TENNESSEE VALLEY AUTHORITY

KINGSTON FOSSIL PLANT

ANNUAL ASH POND DIKE STABILITY INSPECTION



Prepared by: Sherman G. Garrett
Date: December 13, 2004

KINGSTON FOSSIL PLANT
ANNUAL ASH POND DIKE STABILITY INSPECTION
2005

The waste disposal areas at Kingston Fossil Plant were inspected for dike structural stability on October 27, 2004. The inspection was performed by Sherman G. Garrett, TVA Engineering Design Services. The previous inspection had been performed on December 2, 2003.

The results of the annual stability inspection are listed below according to location within the ash disposal area.

Active Ash Disposal Area

Plant operations continues to manage this area the same as during the last inspection. Bottom ash is sluiced into a channel southwest of the disposal area where it settles out and is regularly removed by drag line to be used for dike construction. Fly ash is sluiced into a channel northwest of the bottom ash channel. Both channels flow northeast into the active ash pond where the fly ash settles out and accumulates. Prior to November 2003 the fly ash was periodically dredged into one of two raised dredge cells (Cell No. 2 and Cell No. 3) located in the western portion of the disposal area. The dikes of these cells were raised as needed using fly ash and bottom ash to provide more capacity for dredged fly ash.

After November 2003, dredging operations to this area ceased due to a leak in the toe of the dike slope for dredge cells 2 & 3. The leak has not been stopped, but corrective action to prevent runoff into the river was undertaken by providing slope stabilization and adding a collector sump and pump to redirect the runoff (photo 1) into a bench drainage ditch running between dredge cell 2 and the road along Dike C.

A project is planned for the summer of 2005 to permanently correct the seepage condition and allow dredging to resume. In the future, operations may be resumed in these cells with lifts up to elevation 840.0.

The sluice water flows into the stilling pool through one of two plant constructed spillways. From the stilling pool the water discharges into the plant intake channel via six standard spillways (photo 2). At the time of the inspection, five of the six spillways were operating. The western spillway was raised above the level of the other five and was not discharging. In 2003, new discharge diffusers were constructed (photo 3). Cenospheres were present in both the stilling pool and the active ash pond.

All exterior dike slopes around this area were in sound condition with excellent vegetative cover. On the eastern side of the dikes extending to the area of Swan Pond Road, the vegetation along both the upper and lower portions of the slope was in good condition, but the central portion had some small trees present and needed mowing (photos 4 & 5). No sloughs or seepages were detected. The divider dike between the active pond and the stilling pool had some areas of rill erosion and gullies, but otherwise was in good condition. The dike roads were in good condition generally with a good ash or crushed stone surface. There were a couple of areas along the lower dike road (Dike C) at the northeast side of the dredge cells where deep ruts or ditches across the road made vehicle passage difficult.

Dredge Cells

Dredge cells 2 & 3 are inactive at the current time with the present elevation at 811.0 (photo 6). In the future, this may be increased to elev. 840.0. Cells 2 and 3 have been combined by no longer raising the dike separating the two cells. The dike for Cell No. 1 is currently at elevation 811. All three cells are inactive at this time, although eventually, the cells may be raised to elev. 840.

The dike slopes around this area were all stable with some rill erosion in places. The upper slopes need to be seeded and mulched to prevent further erosion (photos 7 & 8). Dike slopes with sparse vegetation should continue to be reseeded and mulched until a good vegetative cover is apparent. Operations personnel continue to do a commendable job of mowing the slopes.

An intermediate dredge cell has been constructed with a current elevation of 787.0 with current operations raising the elevation to 795.0 (photos 9 & 10).

Chemical Treatment Ponds

The chemical treatment ponds are located southwest of the active ash pond. Both ponds were excavated and have no exterior slopes. The internal dike slopes are covered with riprap. These slopes were in good condition.

Engineered Wetlands

The engineered wetlands along the southwest dike of the active ash pond receive seepage that collects in the anoxic limestone drain at the toe of the slope. The wetlands appeared to be saturated, but functioning properly (photo 11).

Coal Yard Drainage Basin

The coal yard drainage basin is located at the southwest corner of the coal pile. This basin was excavated below grade; therefore, there are no exterior dikes.

The interior slopes appeared to be in satisfactory condition (photos 12 & 13). Normal discharge from this basin is pumped into the fly ash discharge ditch which flows to the active ash disposal area. At the time of inspection, water in the pond was at a low level, about 6" below the first pump start switch—approximate elev. 751.0. The basin was sounded at several places along the perimeter of the platform, and the water was found to have an average depth of 15 inches with the top of sediment being approximate elev. 749.75. The grade elevation in the area of the pump platform is 745.0. This indicates the sediment in the area of the pump platform occupies approximately 4.75 feet of the basin's 6-foot storage capacity. With allowance of a 2-foot clearance below the pump intakes to prevent the pumps from pumping solids, the maximum sediment elevation should be no greater than 749.5. This indicates that the pumps are probably pumping solids. The basin should be dredged annually to maintain optimum pumping performance. The pond extensions for overflow appeared to have built up with sediment limiting the storage capacity of the pond (photo 14). Kingston drawing 10W225-1 shows the pond and its intended bottom contours.

Actions on Recommendations of Last Inspection

- Dredge cell slopes have a layer of top soil, but need to be reseeded and mulched until a good vegetative cover is present.
- Rutted areas in the road along Dike C have been repaired, although there are sections where new ruts have appeared.

Recommendations

The dikes surrounding the stilling pool and ash disposal area, including the divider dike are in good condition. No animal activity was observed in this area. The riprap on the inside slopes of the stilling pool is effective in preventing erosion of the slopes Inspection of the exterior slope of

Dike "C" (the eastern side of the ash disposal areas) did not reveal any seeps or sloughs. There are areas of small trees and high vegetation along this dike that should be removed before their size presents any problems. On the eastern slope of the stage A dike, there are areas where the outlet drains are starting to erode. Along the stage B lift, there were signs of erosion.

- Areas on the dike slopes with sparse vegetation should be reseeded, fertilized and mulched until a good vegetative cover is present. See the T-1 Specifications for guidance.
- Dredge cell outer slopes with exposed ash should receive a layer of top soil and be seeded as soon as possible.
- Earth fill should be added and riprap placed to prevent further erosion at a few french drain outlets on the eastern slope of the stage A dike.
- Remove trees by pulling them up and other growth by mowing along the eastern slopes of Dike C
- Plant maintenance should periodically mow grass and remove small trees and brush from all dike slopes.
- Dredge cell drainage ditches should be kept free of cattails. The existing cattails should be removed.
- Remove trees from the slope of the stilling pool dike. At this point, the trees are small enough to be mowed. Mowing at least twice a year is recommended to control the size of the trees. Preventing the trees from getting larger than 1" in diameter at the ground is preferred. Any trees larger than 1" in diameter at the base must be pulled from the dikes, roots and all. Repair and reseed any areas where trees are removed.
- Dredge the Coal Yard Drainage Basin to restore its design contours and protect the pumps from damage by removing approximately 3,300 cy of sediment from the original section and the south and east "wye" extensions. See Kingston drawing 10W225-1.

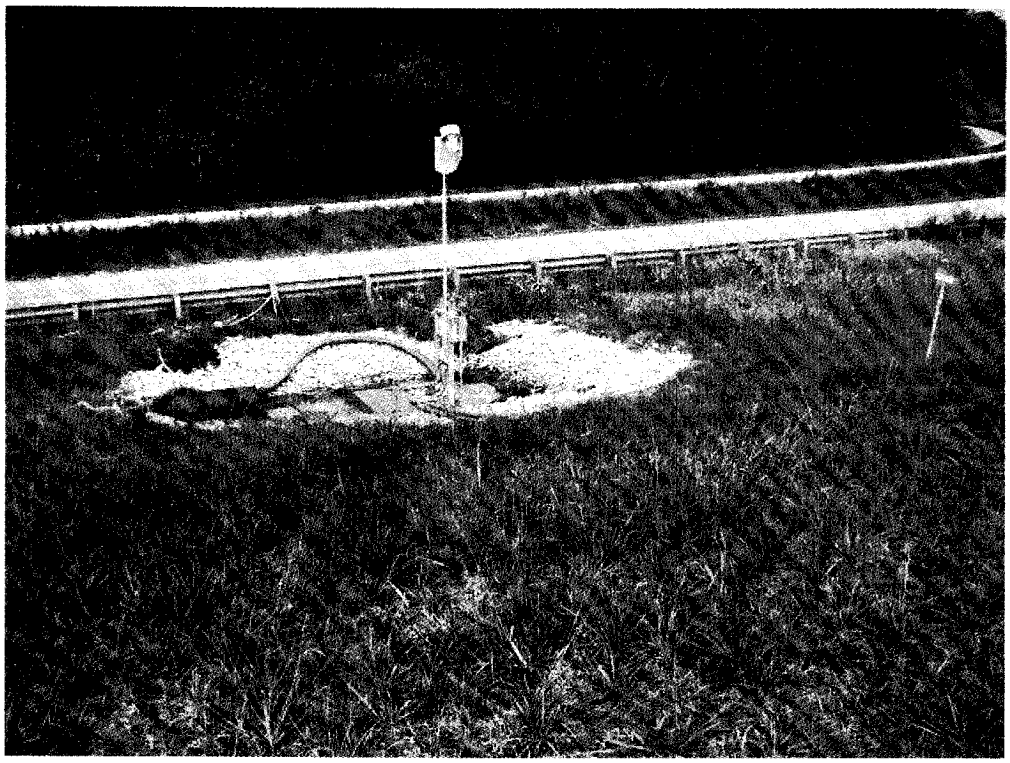


Photo 1—Looking north toward collector sump and pump for dredge cell seepage

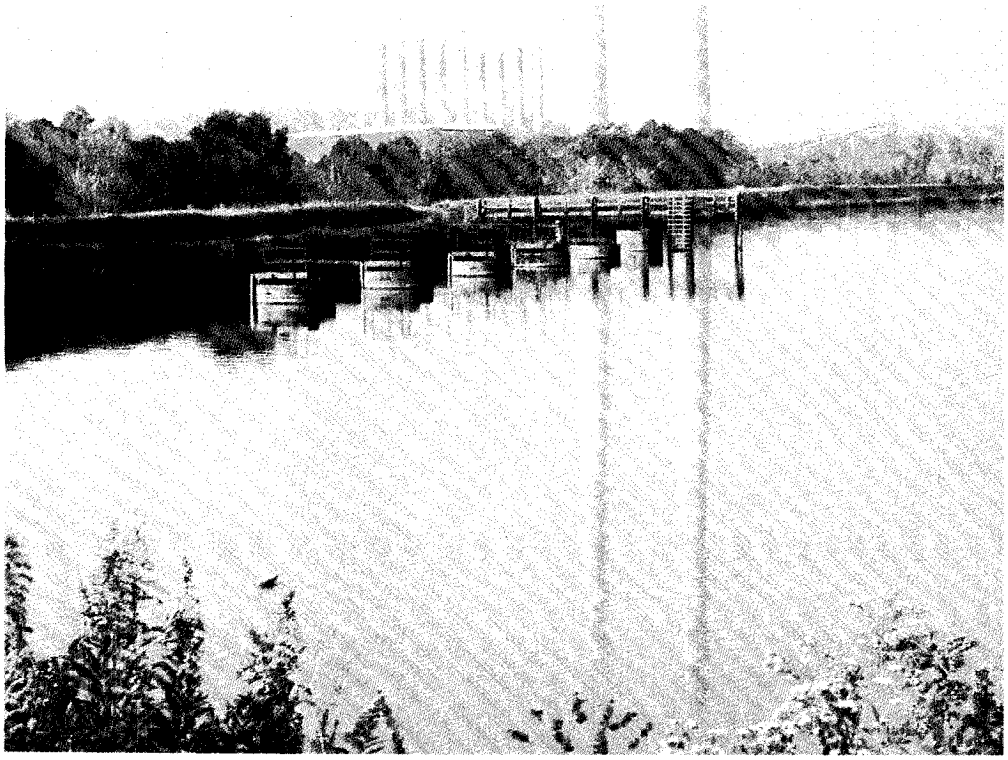


Photo 2—Looking southwest toward stilling pool spillways

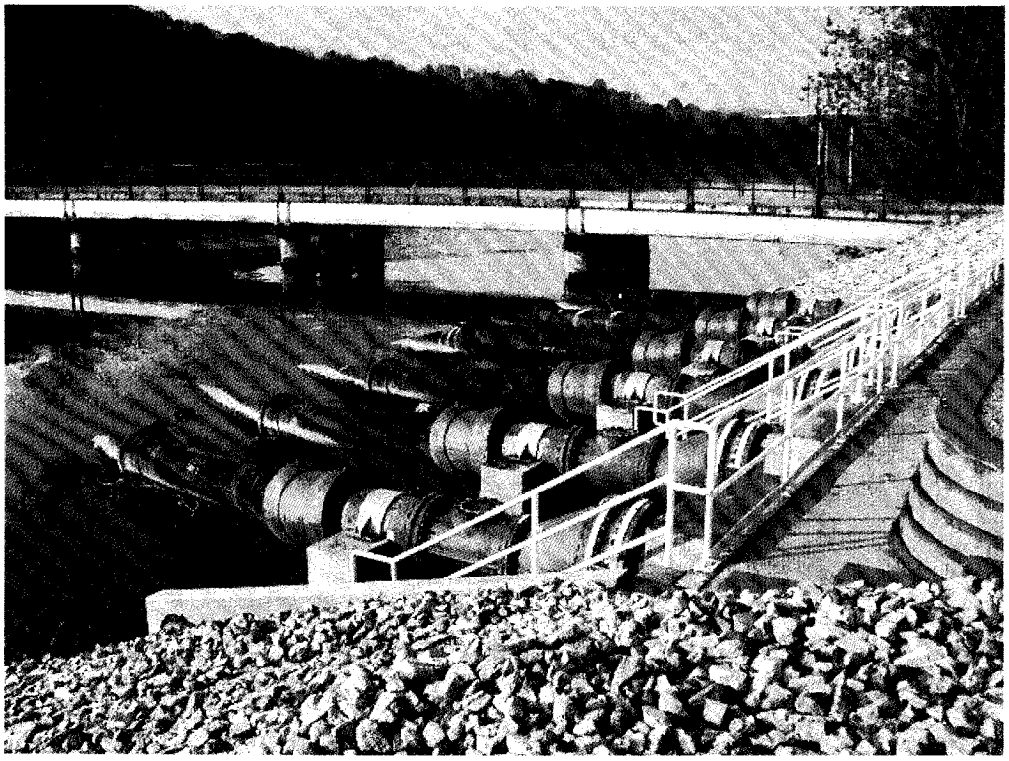


Photo 3—Looking southwest at stilling pool spillway discharge diffuser piping

Photo 4—Looking east along stilling pool outer dike slope with trees and vegetation

Photo 5—Looking northwest along Dike C roadway

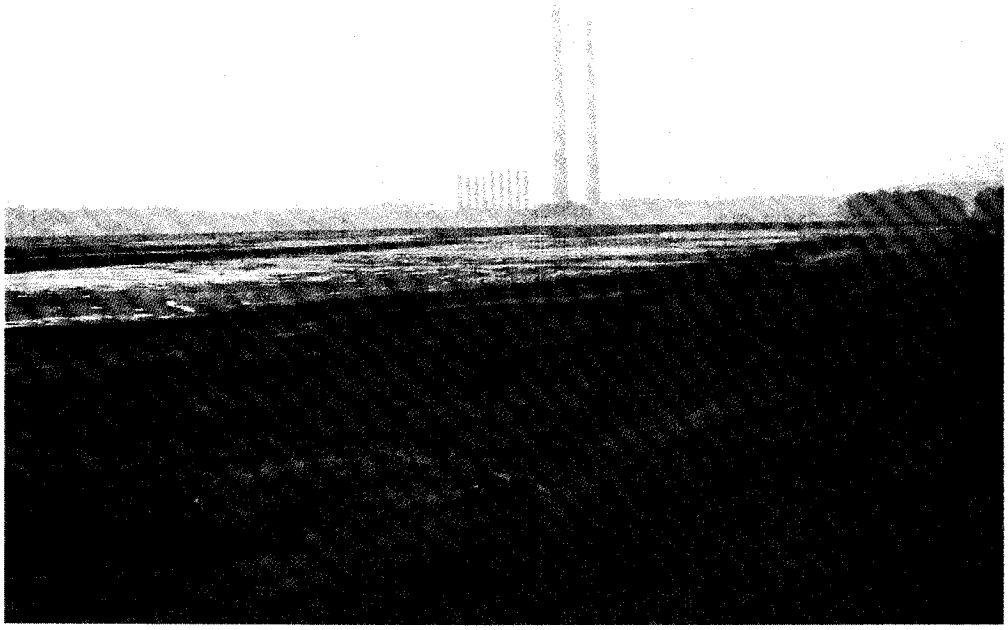


Photo 6—Looking south-southwest across top of dredge cells

Photo 7—Looking northwest along top of dredge cell no. 1 showing bare areas

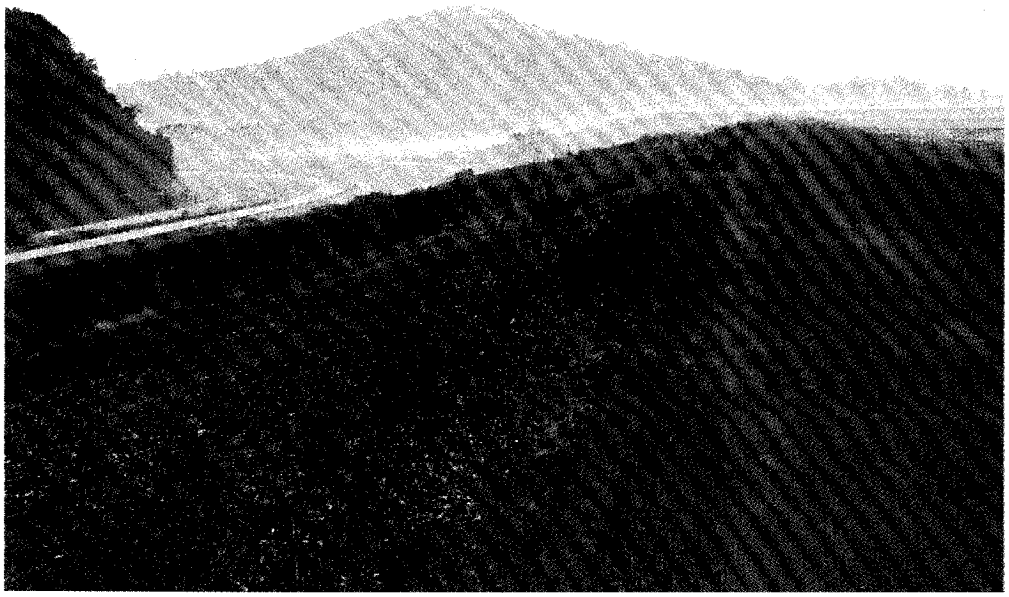


Photo 8—Looking northeast along top of dredge cells 2 and 3 showing bare areas

Photo 9—Looking northeast at intermediate dredge cell

Photo 10—Looking east at intermediate dredge cell and active ash disposal area

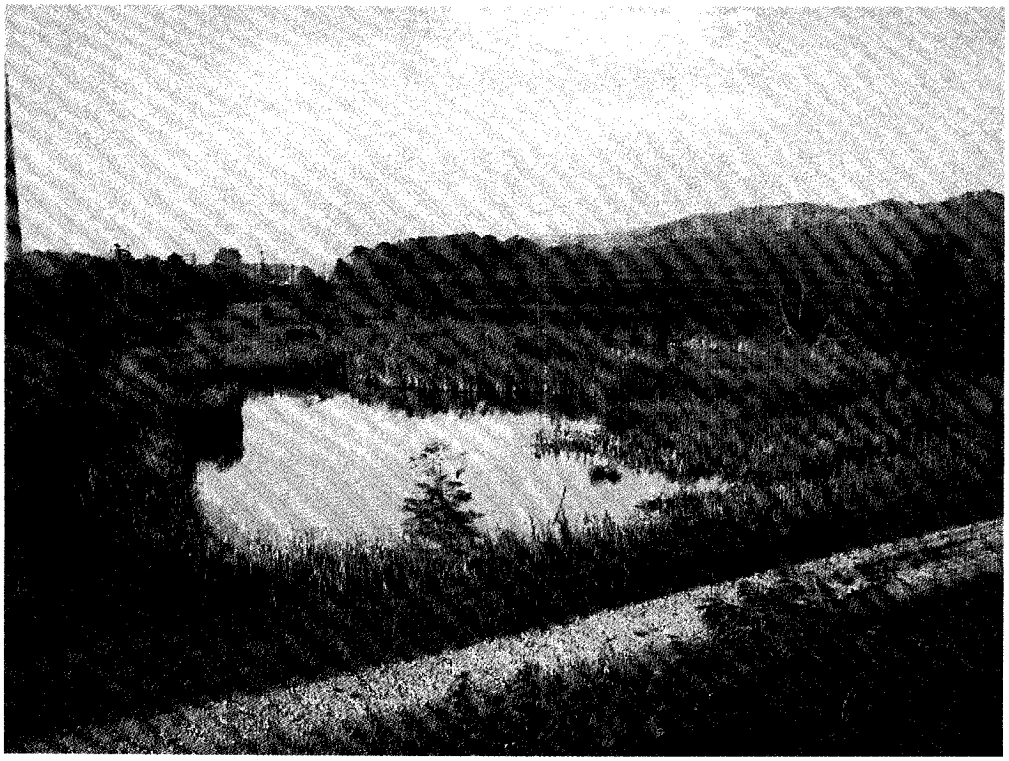


Photo 11—Looking southwest at engineered wetlands

Photo 12—Looking southwest at pump platform and coal yard drainage basin

Photo 13—Looking southeast at coal yard drainage basin toward "wye" extensions past gap

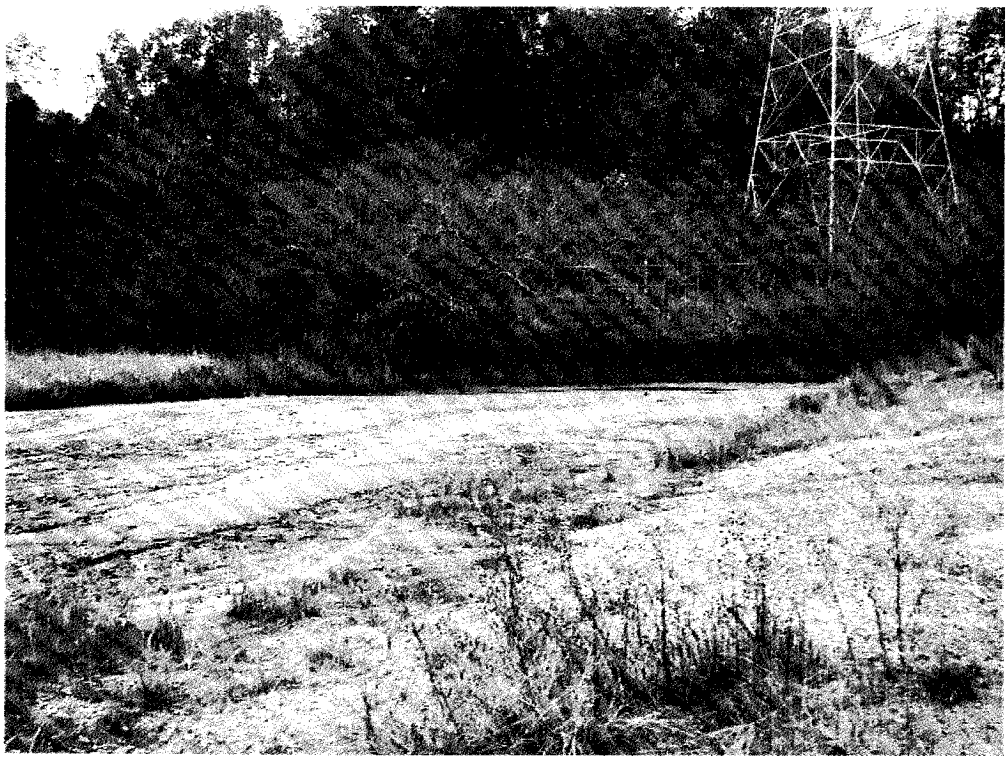
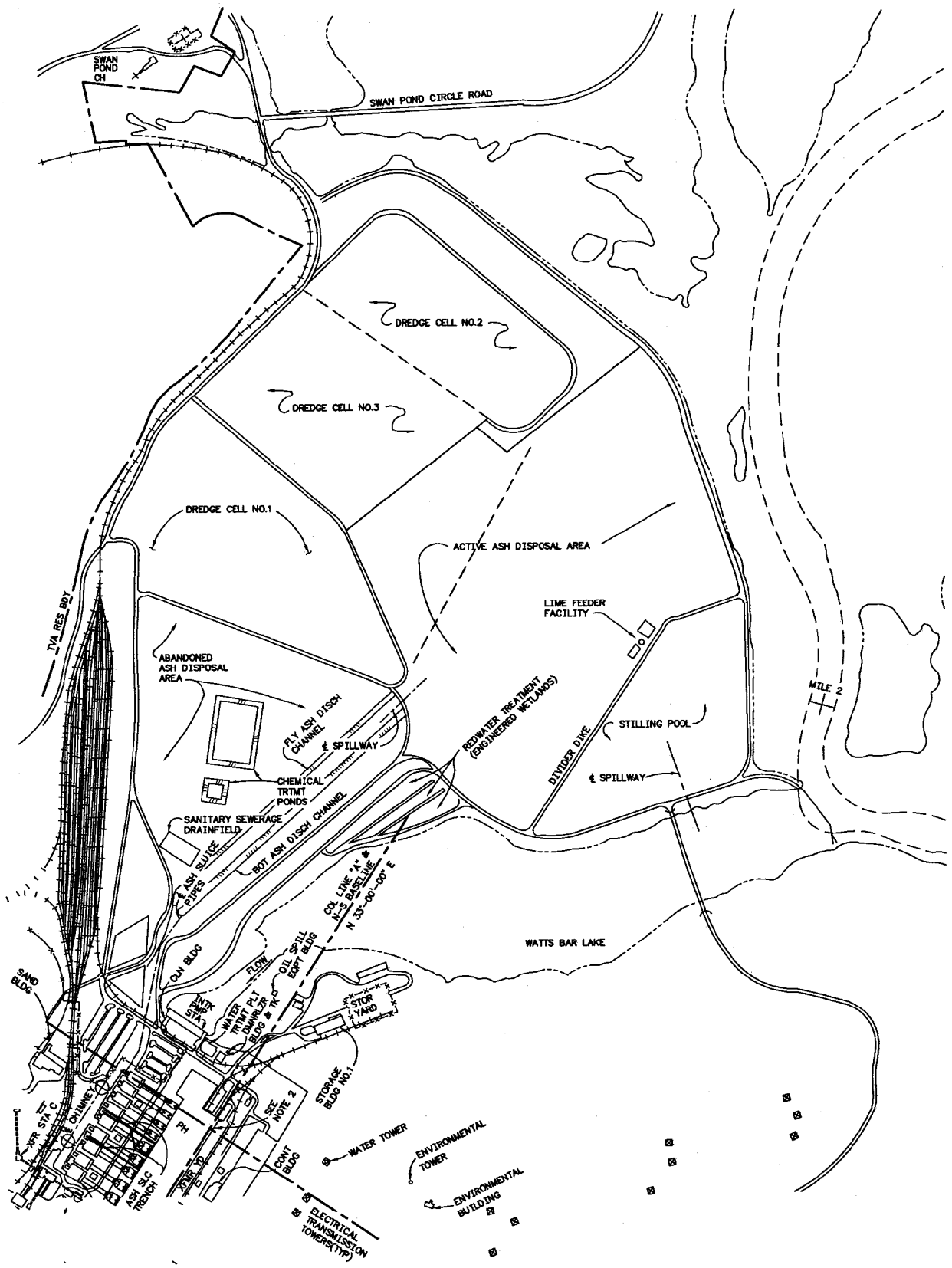
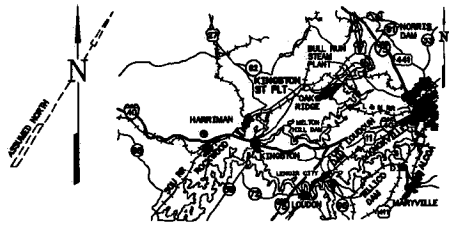


Photo 14—Looking southwest toward "wye" intersection with coal yard drainage basin





LOCALITY MAP

NOTES:

1. TOPOGRAPHY TRACED FROM MYLAR PLOTTED FROM APRIL 1974 AERIAL PHOTOGRAPHS AND FROM USGS 7.5 MINUTE QUADRANGLE CHARLEMAN, TN 123-NE AND LENOIR CITY, TN 130-SE) 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 501,804.16 AND EAST 2,426,326.63.
3. FOR PROPOSED AND TEMPORARY FEATURES SEE DWG 10E202-01.

TOPOGRAPHY TRACED BY M.P. TERSON 1/30/1981

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REV NO.	DATE	DRAWN BY	CHECKED BY	SUPERVISED BY	REVIEWED BY	APPROVED BY	ISSUED BY	PROJECT ID	AS CONST

SCALE: NONE — EXCEPT AS NOTED

YARD

ASH DISPOSAL AREA
2005 DIKE STABILITY INSPECTION

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

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R14	DATE 04/28/81	36	C	AP105	R

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