Summary of Approach and Conclusion:

Approach:

In November of 2003 a blowout occurred in the Dredge Cells at Kingston Fossil Plant. Dredging operations were immediately suspended. With the approval of TDEC an interim dredge cell operation was commenced on the ash pond side of the dredge cells. The purpose of this interim operation was to allow TVA time to analyze the cause of the blowout and develop a solution to allow resumption of the original operation.

Many alternatives were considered and rejected during the early phase of our study period. These included vibratory beam slurry wall, liner installation, dewatering wells, rock armoring, and dry fly ash conversion. Effectiveness, constructability, economics, and practical experience led TVA to focus its efforts on trench drains as the preferred fix.

Since elevated dredge cells are an important tool in maximizing the onsite ash storage capacity at several of our plants, TVA formed a project team consisting of both TVA personnel and two separate consultants (Parsons E&C; GeoSyntec) to analyze and determine the detailed design of the trench drain and to insure the functionality of the drainage system. Mactec was also employed for additional site investigation.

The team took the following approach to the problem:

1. Reviewed all existing data including previous drillings and laboratory testing.
2. Performed additional site investigation (Mactec - January 2005) to get site specific data.
3. Performed seepage modeling. (Laplace Equation/Flow Net Analysis) TVA tasked Parsons E&C to perform TIMES finite element modeling. To confirm the output TVA tasked GeoSyntec to perform SEEP/W finite element modeling. The following conditions were modeled.

Case	Parsons (TIMES model)	GeoSyntec (SEEP/W)
Case 1. Existing Condition January 2005 – Purpose was to calibrate the models making sure that the permabilities used in the analyses matched those measured	X	X
Case 2. Conditions at the time of the November 2003 blowout. Purpose was to confirm the model capable of "predicting" the failure that actually occurred.	X	X
Case 3. Analyses conducted to a simulated dredge cell height of EL 900*. Modeled alternative locations of trench drains and buttress drains to arrive at the most efficient solution.	X	X

* EL 900 for conservatism and for speculative modeling purposes only. We are only proposing to return to the permitted dredge cell elevation of 841/842 at this tome. However, in the future a vertical expansion may be pursued.

The above modeling efforts resulted in a proposed "fix" consisting of 6 ft deep trench drains at the 795 bench, a 5 ft deep trenches at the 781 and 775 benches; and a buttress toe drain and a riprap channel to stop seepage uplift. (See Figure1).

As a part of this process a test excavation was performed to confirm the trench drains could in fact be constructed to the depth designed without extensive construction techniques required. This test confirmed that the drains could be constructed as proposed.

As further insurance against piping, TVA is proposing the installation of a Geonet membrane to elevation 775 in the vicinity of the failure. It should also be noted that the 5 ft trench drain in the bench at elevation 795 overlaps the exiting interior drain near that elevation. This redundancy was not modeled (conservative); only the shallower (new) drain was modeled.

Conclusion:

The extensive analysis performed by TVA and its contractors confirmed the cause of the failure was piping and excessive seepage. The proposed fix will lower the phreatic surface away from the face of the side slope, significantly reducing the future potential for piping. The calculated uplift factor of safety in the toe ditch is 4.005 for the postulated 900 FT elevation (Parsons E&C).

To insure that the proposed fix is successful TVA will install piezometers on the north, south and western faces of the dredge cells. To monitor performance of the drainage system, the phreatic surface measured in these piezometers will be compared with that predicted in the models.

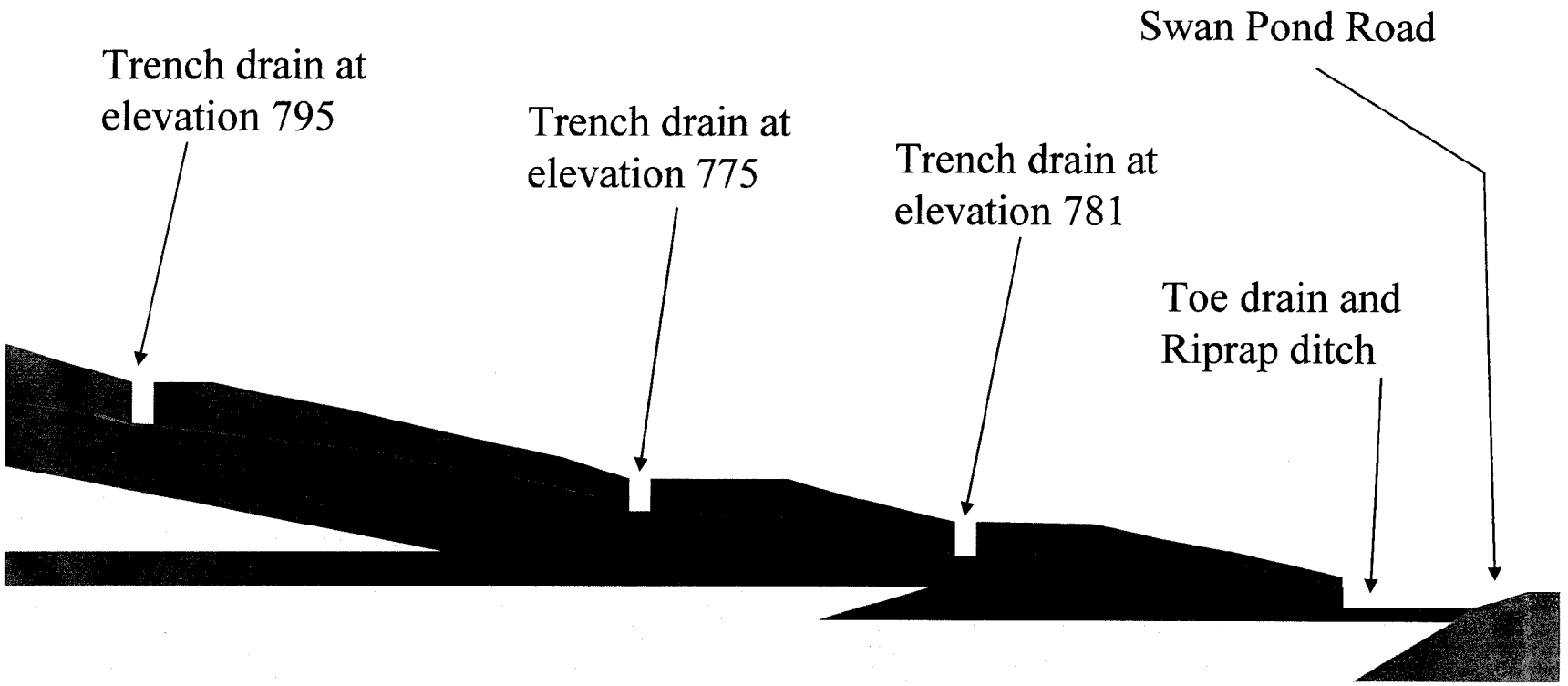

Figure 1 – Generalized Section Along Swan Pond Road

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