

US EPA ARCHIVE DOCUMENT



Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1401

Anda A. Ray
Senior Vice President
Office of Environment and Research

March 25, 2009

Mr. Richard Kinch
U.S. Environmental Protection Agency
Two Potomac Yard
2733 South Crystal Drive
5th Floor: N-5783
Arlington, Virginia 22202-2733

Dear Mr. Kinch:

Enclosed is the Tennessee Valley Authority's (TVA) response to your requests for information about coal-combustion by-product management impoundments and our signed authorized certification. Your requests were received at TVA's plant sites on March 12 and March 13. Enclosed is the consolidated response from TVA for all of our fossil plants. We have also included in our response two plants (Watts Bar Fossil Plant, inactive and Cumberland Fossil Plant) for which we did not receive a request for information.

Sincerely,

A handwritten signature in black ink that reads "Anda A. Ray".


Anda A. Ray

Enclosures: 2007-2008 Annual Inspection Reports of Waste Disposal Areas for all
TVA fossil plants.
TVA Responses to EPA Information Request.
Ash Storage Summary.
Certification Form.

EPA believes that the information requested is essential to an evaluation of the threat of releases of pollutants or contaminants from these units. The provisions of Section 104 of CERCLA authorize EPA to pursue penalties for failure to comply with or respond adequately to an information request under Section 104(e). In addition, providing false, fictitious or fraudulent statements or representations may subject you to criminal penalties under 18 U.S.C. 1001.

Your response must include the following certification signed and dated by an authorized representative of Tennessee Valley Authority.

I certify that the information contained in this response to EPA's request for information and the accompanying documents is true, accurate, and complete. As to the identified portions of this response for which I cannot personally verify their accuracy, I certify under penalty of law that this response and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature: 

Name: John C. Kammeyer

Title: VP, Engineering

This request has been reviewed and approved by the Office of Management and Budget pursuant to the Paperwork Reduction Act, 44 U.S.C., 3501-3520.

Please send your reply to:

Mr. Richard Kinch
US Environmental Protection Agency (5306P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

If you are using overnight or hand delivery mail, please use the following address:

Mr. Richard Kinch
US Environmental Protection Agency
Two Potomac Yard
2733 S. Crystal Dr.
5th Floor; N-5783
Arlington, VA 22202 2733

Tennessee Valley Authority Response to Environmental Protection Agency Request for Information

1. **Relative to the National Inventory of Dams criteria for High, Significant, Low, or Less-than-Low, please provide the potential hazard rating for each management unit and indicate who established the rating, what the basis of the rating is, and what federal or state agency regulates the unit(s). If unit(s) does not have a rating, please note that fact.**

The dam safety hazard potential rating for each management unit is identified on the attached table. The current hazard potential ratings were assigned by TVA using the National Inventory of Dams criteria as a guideline. Hazard classifications have not been assigned to dry disposal management units. The list is updated by TVA every 2 years. No other agencies, federal or state, regulate these facilities from a dam safety perspective.

Currently, TVA has secured the services of a third party consultant to review the conditions at our coal combustion storage facilities and provide opinions relative to hazard potential. These opinions will be based on the National Inventory of Dams criteria, as well as dam safety regulations of the states in which each unit is located.

2. **What year was each management unit commissioned and expanded?**

The year each management unit was commissioned and expanded is identified in the attached table.

3. **What materials are temporarily or permanently contained in the unit? Use the following categories to respond to the question: (1) fly ash; (2) bottom ash; (3) boiler slag; (4) flue gas emission control residuals; (5) other. If the management unit contains more than one type of material, please identify all that apply. Also, if you identify "other", please specify, the other types of materials that are temporarily or permanently contained in the unit(s)**

The coal-combustion byproduct materials contained in each unit are identified in the attached table. Impoundments at units are also routinely used to combine and treat a variety of runoff and low volume water wastes prior to discharge.

- 4. Was the management unit(s) designed by a Professional Engineer? Is or was the construction of the waste management unit(s) under the supervision of a Professional Engineer? Is inspection and monitoring of the safety of the waste management unit(s) under the supervision of a Professional Engineer?**

Permitted solid waste landfill design documents were prepared under the supervision of a registered professional engineer, with design documents stamped by the responsible engineer. In general, for non-permitted management units, the design and construction, along with the inspection and monitoring of all management units, were performed under the supervision of professional engineers.

TVA is currently revising our program to ensure that the supervision of all design, construction, and monitoring elements for all management units will be performed by professional engineers properly licensed in the states where the project is located and that have specific experience in dam design and operation.

- 5. When did the company last assess or evaluate the safety (i.e., structural integrity) of the management unit(s)? Briefly describe the credentials of those conducting the structural integrity assessments/evaluations. Identify actions taken or planned by facility personnel as a result of these assessments or evaluations. If corrective actions were taken, briefly describe the credentials of those performing the corrective actions, whether they were company employees or contractors. If the company plans an assessment or evaluation in the future, when is it expected to occur?**

Dates of the most recent facility inspection performed by the company or its consultant are listed in the attached table. These inspections were limited to surface observations. No intrusive sampling or testing, or engineering analyses were involved. Enclosed are the 2007-2008 inspection reports which were performed by TVA staff. All 2009 inspection reports are currently under review. These 2009 inspections were performed by TVA staff (who are experienced, degreed Civil Engineers, under the supervision of a registered professional engineer), with the exception of Cumberland, Shawnee, and Watts Bar (inactive) Fossil Plants, which were performed by Stantec.

The most recent reviews at the Cumberland and Shawnee Fossil Plants were performed by Stantec. Stan Harris, PE, led those reviews. Mr. Harris has over 25 years experience in dam design, construction, and monitoring. In addition, Mr. Harris has experience leading dam safety training initiatives for the United States Army Corps of Engineers.

Recommended corrective actions resulting from these evaluations are listed in the attached table. The corrective actions have been assigned to TVA staff or contractors experienced in general earth work construction and operation/construction of coal combustion disposal facilities.

TVA has retained the services of a third party consultant, Stantec, to assess each coal combustion byproducts storage facility at the eleven (11) active and one (1) inactive fossil plant. The assessments include field reconnaissance and records review for each facility. Reports will include recommendations and a priority list for additional geotechnical and engineering evaluations, if necessary. The study is on-going with results expected by the end of April 2009.

As a part of this study, TVA has initiated geotechnical explorations of the gypsum stack at our Paradise Fossil Plant, the ash pond at our Johnsonville Fossil Plant, the gypsum stack and ash dredge cell at our Widows Creek Fossil Plant, the ash disposal facility at our John Sevier Fossil Plant, and the gypsum stack and ash stack at our Cumberland Fossil Plant.

- 6. When did a State or Federal regulatory official inspect or evaluate the safety (structural integrity) of the management unit(s)? If you are aware of a planned state or federal inspection or evaluation in the future, when is it expected to occur? Please identify the Federal or State regulatory agency or department which conducted or is planning the inspection or evaluation. Please provide a copy of the most recent official inspection report or evaluation.**

TVA facilities are subject to regulation by state agencies responsible for permitting solid waste disposal and discharging of process or storm water flows. These state agencies do perform field reviews; however TVA facilities are not subject to regulation by state agencies relative to dam safety permitting and have not been subject to review or inspections by any federal regulatory agency. Copies of the most recent issued inspection report are enclosed for the 2007-2008 time period.

- 7. Have assessments or evaluations, or inspections conducted by Federal regulatory officials conducted within the past year uncovered a safety issue(s) with the management unit(s), and, if so, describe the actions that have been or are being taken to deal with the issue or issues. Please provide any documentation that you have for these actions.**

TVA facilities are subject to regulation by state agencies responsible for permitting solid waste disposal and discharging of process or storm water flows. These state agencies do perform field reviews however; TVA facilities are not subject to regulation by state or federal regulatory agencies relative to dam safety permitting and have not been subject to review or inspections. Copies of the most recent issued inspection report are enclosed for the 2007-2008 time period.

Primarily maintenance issues were identified

during the most recent inspections. A summary of items identified are provided in the attached table. TVA is currently preparing work orders to address these items. The work will be performed by TVA staff or contractors experienced in earth work and the operation of coal combustion product disposal facilities.

- 8. What is the surface area (acres) and total storage capacity of each of the management units? What is the volume of materials currently stored in each of the management unit(s)? Please provide the date that the volume measurement(s) was taken. Please provide the maximum height of the management unit(s). The basis for determining maximum height is explained later in this Enclosure.**

The surface area, total storage capacity, volume of materials currently stored, and date of last volume measurement for each management unit are provided in the attached table. Data based on 2006 long-range plans of the projected remaining capacities ending at Fiscal Year 2008.

- 9. Please provide a brief history of known spills or unpermitted releases from the unit within the last ten years, whether or not these were reported to State or federal regulatory agencies. For purposes of this question, please include only releases to surface water or to the land (do not include releases to groundwater).**

A history of known spills or unpermitted releases from each unit within the last ten (10) years, if applicable, is listed in the attached table. All spills and unpermitted releases were reported to the appropriate state or federal agencies as required by regulation or law.

- 10. Please identify all current legal owner(s) and operator(s) at the facility.**

The United States is the owner of TVA facilities, and TVA is the operator of each facility listed in the attached table.

PLANT	FACILITY	HAZARD POTENTIAL CLASSIFICATION See footnote #1	Hazard Rating Performed By	YR MGT UNIT COMMISSIONED See footnote #2	YR MGT UNIT EXPANDED	MATERIALS CONTAINED IN UNIT	LAST TVA ASSESSMENT	NEXT SCHEDULED TVA ANNUAL INSPECTION	ACTIONS TAKEN OR PLANNED RESULTING FROM LAST ANNUAL INSPECTION	ISSUES REPORTED BY STATE OR FEDERAL ASSESSMENTS AND ACTIONS TAKEN See footnote #3	SURFACE AREA (ACRES)	TOTAL STORAGE CAPACITY (Cubic Yards)	CURRENT VOLUME OF MATERIAL (Cubic Yards)	REMAINING CAPACITY (Cubic Yards)	DATE VOLUME TAKEN	CURRENT HEIGHT (FT)	FUTURE MAX. HEIGHT (FT)	KNOWN SPILLS OR UNPERMITTED RELEASES (SURFACE WATER/LAND) See footnote #4	CURRENT LEGAL OWNER(S) & OPERATOR(S) AT FACILITY
Allen Fossil Plant	EAST ASH DISPOSAL	LOW	TVA	1967	1978	FLY ASH	Nov-08	2009	Maintenance concerns such as rutting, erosion, vegetation, etc., were noted; a seep was noted north of the plant - TVA has an independent consultant evaluating the seep.	NR	70	1,775,000	1,029,000	746,000	2006	20	20	NR	Owner - United States, Operator - TVA
	EAST ASH STILLING POND	Not Rated		1978	Not Expanded	Fly ash, bottom ash					23	290,000	INCLUDED IN EAST ASH DISPOSAL AREA	INCLUDED IN EAST ASH DISPOSAL AREA	2006	20	20		
Bull Run Fossil Plant	DRY FLY ASH DISPOSAL AREA	Not Rated		1982 - Phase 1	1990 - Phase II	FLY ASH	Nov-08	2009	(1) Work order written to regrade top of Bottom Ash Stack, (2) work order for regrading and placement of rip rap below drainage pipe erosion on east side of Bottom Ash Stack, (3) work orders written for numerous animal paths and burrows noted around Bottom Ash Stack and Active Fly Ash Pond Area 2, (4) work order for repair of erosion areas along the bank of Bull Run Creek on south side of Active Fly Ash Pond Area 2, (5) removal of fallen trees on west side of Area 2 Stilling Pond and north side of Gypsum Disposal Area 2A, (6) work order written to repair eroded area on south slope of Gypsum Disposal Area 2A.	NR	17 (Phase II)	4,800,000.00	3,903,000	897,000	2006	60	84	NR	Owner - United States, Operator - TVA
	FLY ASH POND AND STILLING BASIN AREA 2	LOW	TVA	1967	1976 - divider dike constructed to form Stilling Pond 1981 - dike constructed to form Pond 2A	Fly ash, bottom ash					49	2,700,000	2,332,600	367,400	2006	20	20		
	BOTTOM ASH DISPOSAL AREA 1	Not Rated		1967	1980 - Dike constructed to form stacking area within former pond	BOTTOM ASH (flows to Fly Ash Pond)					32	876,500	627,000	250,000	2006	52	65		
	GYPSUM DISPOSAL AREA 2A	Not Rated		1981 (originally fly ash settlement pond) 2008 (Gypsum Disposal Area)	Not Expanded	FLUE GAS EMISSION CONTROL RESIDUALS (Flows to fly ash pond)					42	2,743,000	896,000	1,847,000	2006	45	165		
Curt Fossil Plant	DISPOSAL AREA 5	LOW	TVA	1983	1990 - converted to dry ash operation	FLY ASH, potentially ammoniated.	Mar-08	2009	Disposal Area 5 - reported annual maintenance items include: cover and vegetate stack slopes semi-annually, repair erosion as needed, regrade perimeter ditch as needed. Ash Pond 4 - joint sealant applied to RCP spillway riser joints annually, semi-annual mowing of dike slopes, reportedly applied tree killer substance to sparse trees on west side of pond last year (trees not yet removed though), weekly monitoring of seepage areas.	NR	75	8,800,000	6,765,000	2,035,000	2006	120	135	NR	Owner - United States, Operator - TVA
	ASH POND 4	LOW	TVA	1972	1984	Bottom ash, fly ash (historical)					45	2,200,000	1,159,000	1,041,000	2006	40	40		
	DISPOSAL AREA 5 BASIN	Not Rated		1983	N/A	Fly Ash					12	600,000	150,000	450,000	2006	17	17		
Derland Fossil Plant	DRY ASH STACK	Not Rated		1969	Dry Ash stacking began in mid- 1990s over old pond	FLY ASH/BOTTOM ASH	Feb-09	2009	Maintenance activities needed include repairs for erosion, monitoring seepage, tree removal, clearing and cleaning inner slopes and perimeter ditches, repair of animal burrows, establishing vegetation in exposed areas, and recommendations for construction of the current gypsum dikes.	NR	110	12,600,000	4,781,000	7,819,000	2006	35	200	NR	Owner - United States, Operator - TVA
	ASH POND	LOW	TVA	1969	Dikes raised in 1979	Bottom ash, fly ash (historical)					50	2,000,000	1,305,000	695,000	2006	35	35		
	GYPSUM STORAGE AREA	LOW	TVA	1969	Gypsum area constructed over old pond in mid 1990s	FLUE GAS EMISSION CONTROL RESIDUALS					170	20,000,000	1,826,000	18,174,000	2006	60	140		
Edin Fossil Plant	FLY ASH POND E	LOW	TVA	1970	1986 - Divider Dike Constructed Forming Ponds A and E; 2006 - Pond E Expanded	FLY ASH, bottom ash. E flows to C.	2008	2009	Annual maintenance items reported by GAF include: annual seeding of new dikes for Pond E, mow along Pond E dike slopes beneath power lines along river.	NR	157	7,100,000	4,968,000	2,132,000	2006	30	35	NR	Owner - United States, Operator - TVA
	BOTTOM ASH POND A	LOW	TVA	1970	1986 - Divider Dike Constructed Forming Ponds A and E; 1994 - Divider dike raised	BOTTOM ASH; A flows to B					269	7,083,000	4,951,409	2,131,591	2006	25	25		
	STILLING POND B, C & D	Not Rated		1970	1986 - Ponds B and C formed when divider dike constructed to form Ash Ponds A and E	FLY ASH & BOTTOM ASH and other listed in E.					55	600,000	400,000	200,000	2006	10	10		
Sevier Fossil Plant	DRY ASH STACK	Not Rated		1955 (former ash ponds)	1979 - all sluicing stopped, designated for dry ash disposal	FLY ASH	Nov-07	2009	(A) to monitor the exterior dikes slopes and toe areas of all disposal areas for surface sloughs, new seepage area, changes in existing seeps, or movements; (B) continuation of mowing program and prevention of tree growth on dikes; (C) cover exposed slopes with earth, seed, fertilize and mulch as described in the operations manual; (D) removal of sediment from Coal Yard Drainage basin; (E) reclaim animal burrows.	NR	84	3,800,000	2,098,000	1,702,000	2006	101	143	NR	Owner - United States, Operator - TVA
	BOTTOM ASH POND	LOW	TVA	1979	Not Expanded	BOTTOM ASH, FLY ASH					26 (pond area only) 41 (total area)	1,200,000	1,035,293	165,000	2006	25	25		

PLANT	FACILITY	HAZARD POTENTIAL CLASSIFICATION See footnote #1	Hazard Rating Performed By	YR MGT UNIT COMMISSIONED See footnote #2	YR MGT UNIT EXPANDED	MATERIALS CONTAINED IN UNIT	LAST TVA ASSESSMENT	NEXT SCHEDULED TVA ANNUAL INSPECTION	ACTIONS TAKEN OR PLANNED RESULTING FROM LAST ANNUAL INSPECTION	ISSUES REPORTED BY STATE OR FEDERAL ASSESSMENTS AND ACTIONS TAKEN See footnote #3	SURFACE AREA (ACRES)	TOTAL STORAGE CAPACITY (Cubic Yards)	CURRENT VOLUME OF MATERIAL (Cubic Yards)	REMAINING CAPACITY (Cubic Yards)	DATE VOLUME TAKEN	CURRENT HEIGHT (FT)	FUTURE MAX. HEIGHT (FT)	KNOWN SPILLS OR UNPERMITTED RELEASES (SURFACE WATER/LAND) See footnote #4	CURRENT LEGAL OWNER(S) & OPERATOR(S) AT FACILITY
Johnsonville Fossil Plant	ASH DISPOSAL AREA 2	LOW	TVA	1970	1978	FLY ASH & BOTTOM ASH	Nov-07	2009	Recommendations include maintenance activities: filling animal burrows, repairing erosion, filling in depressed areas, clearing heavy vegetation, and tree removal. Additionally, also monitoring seepage.	NR	87	4,360,000	4,164,000	199000	2006	30	30	Reported release of small quantity of ceneospheres on March 27, 2004 when discharge structure was disturbed during maintenance.	Owner - United States, Operator - TVA
Kingston Fossil Plant	MAIN ASH POND	LOW	TVA	1951	1968 - raised dike	FLY ASH & BOTTOM ASH	Oct-08	2009	Standard recommendations were to repair all erosion ditches, repair wheel ruts, remove floating ash from the pond to prevent a permit violation, remove trees from dikes and mow the dikes regularly to control the growth of vegetation. Repair broken monitoring wells along Swan Pond Road, monitor seeps and under drains.	NR	92	14,370,000	UNKNOWN	UNKNOWN	NA	50	UNKNOWN	November 7, 2003 and November 1, 2006, an ash release occurred to land from a slough in the Dredge Cell embankment. A release into the Emory River occurred on December 22, 2008 from the Dredge Cell embankment failure. No reports found of releases from the Main Ash Pond or Stilling Basin.	Owner - United States, Operator - TVA
	STILLING POND	LOW See footnote 1	TVA	1978	Not Expanded	Materials from main ash pond					29	468,000	260,000	208,000	2006	50	50		
Paradise Fossil Plant	SCRUBBER SLUDGE COMPLEX (Gypsum Stack and Scrubber Sludge Stilling Pond)	LOW	TVA	1986	Not Expanded	FLY ASH, FLUE GAS EMISSION CONTROL RESIDUALS	Oct-08	2009	With respect to dam safety, primarily minor concerns (rutting, erosion, vegetation, etc.) were identified in the report. The under drain ditch at the Gypsum Stack needs to be cleaned out to prevent flow over the road. Several seeps were noted at the Daniel Run Pond 3, but were not flowing. Recommended removal of fines from the Coal Yard Runoff Ponds and all of the Red Water Ponds.	NR	255	858,000	11,783,000	35,074,000	2006	62	270	NR	Owner - United States, Operator - TVA
	FLY ASH EXTENSION AREA POND (Peabody Ash and Stilling Pond and Jacob's Creek Fly Ash and Stilling Pond)	LOW	TVA	1971	1997	FLY ASH					203	6,348,000	2,956,000	3,392,000	2006	34	34		
	SLAG AREAS 2A & 2B	LOW	TVA	1967	1970	BOTTOM ASH. A portion of the flow is routed to the fly ash extension area pond.					27	968,000	752,000	216,000	2006	24	24		
Shawnee Fossil Plant	CONSOLIDATED WASTE DRY STACK			1984	Horizontal expansion design prepared in 2000	FLY ASH/BOTTOM ASH. Drains to ash pond	Feb-09	2009	Maintenance activities needed include repairs for erosion, monitoring seepage, tree removal, clearing and cleaning inner slopes, repair of animal burrows, establishing vegetation in exposed areas, monitoring animal paths, repairing leaking raw water line, removing sediment build-up, and recommendations for regrading intake channel dredge cell.	NR	200	33,194,000	22,811,000	10,382,000	2006	100	270	NR	Owner - United States, Operator - TVA
	ASH POND	LOW	TVA	1952	Area 2 was constructed in 1971 and the dikes were raised in 1979	FLY ASH/BOTTOM ASH					180	5,000,000	4,712,000	287,000	2006	25	25		
Widows Creek Fossil Plant	ASH POND (Complex consists of Bottom Ash Stack, Iron Pond, Cooper Pond, Old Scrubber Sludge Pond (Dredge Cell), Asbestos Waste Disposal Area, Pump Pond, Upper and Lower Stilling Ponds)	LOW	TVA	1950	During 2005, a dredge cell was constructed over the old scrubber sludge pond area. During 2007 dredging ceased.	FLUE GAS EMISSION CONTROL RESIDUALS, FLY ASH & BOTTOM ASH	Oct-08	2009	Review with the Constructor the Gypsum Stack operations manual and drawings to ensure the operations continue in accordance with the current stacking plan, monitor the wet area along the southern lower perimeter dike, rework a portion of the west slope next to the Stilling Pond, install sub drains on the west slope adjacent to the Gypsum Stilling Pond, uncover the slope drains on the 650/655 bench and grade per design drawings. In regards to the Wet Gypsum Stacking Stilling Pond, the planned actions are to consider and alternate skimmer design on TVA drawing 10W235-19. In regards to the Pump Pond, the planned actions are to monitor the seep in the dike between the Stilling Pond and the Pump Pond. In regards to the Active Ash Pond, the planned actions are to monitor the seepage along the south Perimeter dike next to the stilling pond.	NR	310	18,890,000	1,856,000	17,034,000	2006	50	115	Reported release of small quantity of ceneospheres from the Ash Pond which occurred on December 10, 2004 due to intense precipitation. Reported release of small quantity of ceneospheres from the Ash Pond which occurred on January 30, 2008. An abandoned decant weir in Pond 2B of the Gypsum Stack failed on January 9, 2009.	Owner - United States, Operator - TVA
	GYPSUM STACK (Wet Stacking Area)	LOW	TVA	1986	Phase I vertical expansion occurred from 1986 to 1992. Phase II horizontal expansion began in 1992.	FLUE GAS EMISSION CONTROL RESIDUALS, FLY ASH & BOTTOM ASH					110	17,683,000	7,892,000	9,791,000	2006	75	150		
Watts Bar Fossil Plant (Inactive)	ASH POND and STILLING BASIN	LOW	TVA	1974	1977	Previous fly ash, bottom ash	Feb-09	2009	Complete Closure Plan - currently construction is approximately 95 percent complete.	NR	14	230,000	150000	80,000	2006	30	30	NR	Owner - United States, Operator - TVA

Notes: 1. Hazard Potential listed for those facilities previously rated by TVA, all facilities are currently under evaluation. Based on hindsight at Kingston Fossil Plant, the ranking did not adequately represent the actual risk experienced on 12/22/2008.
2. Year Management Unit Commissioned approximated from available reports, drawings, or permit documents.
3. NR - None Reported
4. Does not include NPDES permit exceedences