



**Memorandum from the Office of the Inspector General**

September 3, 2014

Robert M. Deacy, Sr., LP 5D-C

**FINAL REPORT – EVALUATION REVIEW 2014-15218 – REVIEW OF THE KINGSTON RECOVERY PROJECT**

This review was initiated as part of our ongoing commitment to provide oversight of the Kingston Recovery Project. The objective of our review was to determine if the Tennessee Valley Authority (TVA) is meeting its commitments for the Kingston Recovery Project.

Our review found TVA has met, or is in the process of meeting, its commitments for the Kingston Recovery Project. Community leaders and regulatory personnel interviewed were satisfied with TVA's actions to meet its commitments. Tom Kilgore, former President and Chief Executive Officer of TVA, testified before the U.S. Congress several times stating TVA's commitment to clean up the spill, protect the public health and safety, restore the area, and to look for opportunities and work closely with the leaders and residents of Roane County to make the area better than it was before the spill.

In order to address these commitments, TVA has taken a number of steps. Specifically, TVA has cleaned up the ash spill and restored the area, protected public health and safety, kept the public and stakeholders informed and involved in the process, and helped with the economic development of Roane County. Some community leaders believe TVA has worked to make the area better than it was before the spill.

**BACKGROUND**

On Monday, December 22, 2008, between 12 midnight and 1 a.m., a portion of the dike for an ash containment area at Kingston Fossil Plant failed. Approximately 5.4 million cubic yards of fly ash and bottom ash were released onto land and into adjacent waterways, including the Emory River that flows into the Clinch River near the plant. The approximate 1 billion gallons of coal combustion waste slurry covered about 300 acres of which 8 were privately owned lands, not owned or managed by the TVA. The impacts of the coal ash spill destroyed and/or damaged (1) the railroad adjacent to the plant; (2) real and personal property; and (3) community infrastructure, including roads and utilities. TVA took immediate and ongoing actions to address the needs of those affected, clean up the spill, and protect human health and the environment.

TVA's Office of the Inspector General committed to providing oversight where warranted and completed several reviews pertaining to the initial emergency response, root cause analysis, environmental monitoring, and impoundment stability.<sup>1</sup>

### **OBJECTIVE, SCOPE, AND METHODOLOGY**

This review was initiated as part of our ongoing commitment to provide oversight of the Kingston Recovery Project. The objective of our review was to determine if TVA is meeting its commitments for the Kingston Recovery Project. The scope of this review includes the actions taken to address the Kingston ash spill.

In order to achieve our objective, we (1) identified significant Kingston Recovery Project commitments; (2) interviewed key TVA personnel, personnel at key regulatory agencies, and Roane County community leaders; (3) reviewed TVA and regulatory agency documentation; and (4) performed walkthroughs and site observations of work completed/in progress.

This review was performed in accordance with the Council of the Inspectors General for Integrity and Efficiency's *Quality Standards for Inspection and Evaluation*.

### **FINDINGS**

Our review found TVA has met, or is in the process of meeting, its commitments for the Kingston Recovery Project. Community leaders and regulatory personnel interviewed were satisfied with TVA's actions to meet its Kingston Recovery Project commitments. Tom Kilgore, former President and Chief Executive Officer of TVA, testified before the U.S. Congress several times stating TVA's commitment to clean up the spill, protect the public health and safety, restore the area, and to look for opportunities and work closely with the leaders and residents of Roane County to make the area better than it was before the spill. Specifically, we identified four major commitments made by TVA related to the Kingston ash recovery:

- Cleaning up the spill and improving the area in coordination with the people of Roane County.
- Protecting the health and safety of the public and recovery personnel.
- Keeping the public and stakeholders informed and involved in formulation of the response activities.
- Helping with the economic development of Roane County and making it better than it was before the spill.

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<sup>1</sup> Inspection 2008-12283-01 – Kingston Fossil Plant Ash Slide Interim Report;  
Inspection 2008-12283-02 – Review of the Kingston Fossil Plant Ash Spill Root Cause Study and Observations About Ash Management;  
Inspection 2008-12283-07 – Review of the Environmental Sampling and Monitoring Plans for the Kingston Ash Spill; Inspection 2009-12910-01 – Peer Review of Stability Analysis of Dike C at Kingston Fossil Plant; Inspection 2010-13034 – Review of TVA's Kingston Ash Spill Clean-Up and Recovery Efforts; and Inspection 2011-14109 – Review of Non-Time-Critical Kingston Ash Recovery Project Activities.

In order to address these commitments, TVA has taken a number of steps. Specifically, TVA has cleaned up the ash spill and restored the area. TVA is in the process of completing the cap and cover of the dredge cell, which is scheduled for completion in November 2014. We found TVA protected public health and safety and is continuing environmental monitoring. TVA has made thousands of pages of documentation available to the public. TVA has also helped with the economic development of Roane County as a way to make it better than it was before the spill.

#### **TVA Has Cleaned Up the Ash Spill and Restored the Area**

We found TVA has cleaned up the ash spill and restored the area. During his testimony to Congress, Mr. Kilgore stated TVA was committed to a first-rate job of remediation of the problems caused by the spill. In order to accomplish this, TVA worked with the Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) to manage the clean-up of the Kingston Ash Spill in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). On January 12, 2009, TDEC issued TVA a Commissioner's Order under which TDEC oversaw TVA's clean-up activities, with technical review and input of EPA. As response activities progressed beyond the initial response phase, TVA, EPA and TDEC collectively determined that, given EPA's specialized expertise, remaining site clean up should be conducted under direct and primary EPA oversight. On May 11, 2009, TVA and EPA entered into an Administrative Order and Agreement on Consent under Sections 104(a), 106(a) and 107 of the CERCLA of 1980 pursuant to which TVA performed the removal action described in the agreement. This removal action involved the removal, processing, and disposal of a major portion of the ash material that was released into the Emory River from the Kingston Fossil Plant. Under the agreement, TVA worked with the EPA and TDEC with the common goal of cleaning up the ash spill according to the nation's highest standards for effectiveness, transparency, and public involvement.

The major recovery work was divided into time-critical and non-time-critical activities. In May 2010, TVA completed time-critical ash removal, which focused on removing the ash from the Emory River's main channel and the waters directly east of the site's ash-storage area. Ash was dredged from the Emory River channel, sluiced to ditches where it was treated with polymer, dewatered, and temporarily stored at Kingston. A majority of the ash was sent to a disposal site in Perry County, Alabama, which was completed in December 2010.

In order to transition from the time-critical ash removal to the non-time-critical ash removal, TVA prepared a non-time-critical CERCLA Engineering/Evaluation/Cost Analysis, which presented three alternatives to meet the CERCLA requirements. After making the plan available for public comment, the alternative chosen called for all non-time-critical ash to remain onsite and included constructing a new dike. Work included (1) removing ash from the embayment, drying the ash, and transporting the ash to on-site disposal areas; (2) restoring the embayment ecosystem to pre-spill conditions; (3) creating a stabilization zone that surrounds the former dredge cell and ash pond; (4) stacking ash in phases in the dredge cell, lateral expansion area, and ash pond; and (5) capping the cell with a soil cover, which will be seeded and mulched. As of August 2014, TVA has stated it is approximately 80 percent complete with capping the containment cell, which is scheduled to be completed by November 2014. Additionally, Mr. Kilgore made a

commitment to convert to dry ash handling and cease wet ash storage at Kingston. Dry ash conversion at Kingston was completed in 2011.

Regulatory personnel interviewed were satisfied with TVA's actions to meet its commitments under the Administrative Order. An EPA employee gave an example of TVA going above and beyond the requirements of the Administrative Order to do work not required in the Lakeshore and Berkshire areas. Additionally, discussion with a TDEC employee indicated a memo was written to TDEC General Counsel stating TVA had met its commitments and the Commissioner's Order could be closed.

Figures 1 and 2 are photographs of the cap and cover work in progress.



Figure 1



Figure 2

Figure 3 is an aerial photograph of the North Embayment taken on May 29, 2014, where clean-up has been completed.



Figure 3

### **TVA Protected Public Health and Safety**

TVA appropriately protected public health and safety during the clean-up. Specifically, TVA provided independent health screenings, conducted an ecological risk assessment, and tested water and air quality. We also found TVA plans to continue long-term environmental monitoring.

During the clean-up, TVA contracted with Oak Ridge Associated Universities (ORAU) to provide independent health screening for residents living near the ash spill. ORAU results concluded there were no adverse health effects to participants of the medical evaluations and no expected long-term effects on physical health from current levels of exposure. Additionally, TVA conducted a Baseline Ecological Risk Assessment,<sup>2</sup> which concluded ecological risks from exposure to ash or ash-related constituent of ecological concern were, at most, moderate in the Emory River and low or negligible elsewhere in the river system. None of the assessment endpoints were estimated to be a high potential risk in any of the river reaches.

Also, TVA worked with the EPA and TDEC to monitor water quality. The extensive tests repeatedly concluded drinking water was within safe standards. Monitoring air quality was also a key element of protecting public health. TVA established multiple fixed-site, air-monitoring stations as well as conducted mobile real time monitoring to assess the air

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<sup>2</sup> The Baseline Ecological Risk Assessment was developed in support of the Kingston Ash Recovery Project, Non-Time-Critical Removal Action, River System Engineering Evaluation/Cost Analysis, which evaluated alternatives for restoration of the river system impacted by the Kingston ash spill.

quality within the adjacent community. Air monitoring results for the recovery project has met the national ambient air quality standards.

TVA has a 30-year, EPA-approved environmental monitoring plan for the river system with a 5-year review cycle. According to a TVA presentation dated May 2014, more than 16,000 samples and 400,000 analyses have been taken. Recent data shows (1) ash concentrations are not adversely impacting organisms, (2) metal concentrations are decreasing at and downstream of the spill site, and (3) fish and aquatic insect communities have fully recovered from any ash-related impacts.

### **TVA Has Kept the Public and Stakeholders Informed**

We found TVA kept the public and stakeholders informed and involved in formulation of the response activities and has improved its communication practices. Immediately following the spill, TVA was criticized for its communication practices. However, TVA improved its communication efforts and made process improvements to facilitate the delivery of timely and accurate information. We found that TVA's communication efforts were effective in resolving communication issues, and community leaders were satisfied with TVA's handling of communication with the public. Some of the ways TVA kept the public and stakeholders informed include:

- The Roane County Community Advisory Group was formed to support and facilitate public awareness of and meaningful participation in the TVA clean-up. TVA and EPA representatives kept the Advisory Group members informed of the status of the recovery.
- TVA held public meetings to brief the public on activities at the site and allow members of the community to interact with the Kingston Ash Recovery Project management and personnel.
- TVA opened a Community Outreach Center where community members could file claims, ask questions, share concerns, and report problems.

In addition, TVA committed to making information pertaining to the clean-up and the ruptured pond available to the public. In order to meet this commitment, TVA dedicated a Web page to provide information to the public, such as fact sheets, reports, and other documents from various sources including TVA, EPA, TDEC, Stantec Consulting,<sup>3</sup> and ORAU. The Web page contains links to thousands of pages of documentation related to the spill and clean-up. For example, the Web page contains information regarding materials contained in the ash, as well as air/water monitoring results.

### **TVA Has Helped With the Economic Development of Roane County**

We found TVA has helped with the economic development of Roane County as a way to make it better than it was before the spill. We also found some community leaders believe TVA has worked to make the area better than it was before the spill. TVA (1) purchased 181 real properties for approximately \$48.8 million and settled claims with the owners of the properties for approximately \$29.3 million, (2) settled 232 personal property claims for

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<sup>3</sup> TVA hired Stantec Consulting to assess the condition of its ash ponds and help restructure ash management at TVA. Stantec provides professional consulting services in planning, engineering, architecture, landscape architecture, surveying, environmental sciences, project management, and project economics for infrastructure and facilities projects.

approximately \$523 thousand, and (3) reached a mediated global resolution involving more than 850 plaintiffs with claims arising from the spill for a total of approximately \$27.8 million. TVA also utilized the goods and services of local vendors during the recovery project. For example, TVA worked with Alliance Haulers, a consortium of local truckers, to ensure local participation in the clean up. TVA rebuilt and made enhancements to the roads, utilities, and rail system affected in the ash spill. TVA also provided a \$43 million grant to the Roane County Economic Development Foundation (RCEDF) to help offset the potentially negative impact of the spill and site-recovery operations. Some of the projects in the RCEDF include: (1) building a new Roane County school as well as making improvements to several existing schools, (2) doubling the City of Kingston's capacity to treat sewer, and (3) infrastructure and public recreation projects in cities within Roane County. One million dollars of the RCEDF grant remains, which has been earmarked as funding for public relations to counteract the negative effects of the ash spill. In addition to cleaning up the area, TVA opened Lakeshore Park on May 30, 2014, which includes key features such as (1) paved walking trails, (2) courtesy docks and fishing piers, (3) a boat ramp, and (4) a pedestrian bridge.

Community leaders interviewed believe TVA has made Roane County better than it was before the spill. A community leader noted the river looked cleaner than before and gave examples of TVA doing more than it had committed such as donating surplus equipment. Additionally, TVA has issued two 30-year licenses to Roane County. One is for 5 acres to build and maintain an Emergency Services Center, and the second license is for 5.3 acres for a volunteer fire department. Community leaders also believed most people in the community would agree TVA has met or will meet its commitments to the community.

Figure 4 is a picture of Dyllis Springs Elementary School completed in 2012 as part of the RCEDF.



Figure 4

Figures 5 and 6 are aerial pictures of Lakeshore Park taken on May 29, 2014.



Figure 5



Figure 6



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This memorandum does not include any recommendations and is to be used for informational purposes only. Accordingly, no response is necessary.

Information in this memorandum may be subject to public disclosure. Please advise us of any sensitive information that you recommend be withheld.

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If you have any questions or wish to discuss our observations, please contact John A. Jacosalem, Auditor, Evaluations, at (423) 785-4821 or Gregory R. Stinson, Director, Evaluations, at (865) 633-7367. We appreciate the courtesy and cooperation received from your staff during the evaluation.

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