

Tennessee Valley Authority  
Regulatory Submittal for Kingston Fossil Plant

Documents submitted:  
Relic Area Piezometer Installation Work Plan

Date Submitted:  
12/10/2009

Submitted to whom  
Leo Francendese

Concurrence

Received      Not Applicable

TVA

Mike Scott  
Steve McCracken  
Kathryn Nash *KAN*  
Dennis Yankee *DY*  
Michelle Cagley *mcagley*

Received      Not Applicable      Jacobs

John Moebes  
Julie Pfeffer  
Jack Howard  
Shannon McKamey

Approvals

TVA

Michael T. Scott

Date 12/10/09

EPA

Leo Frick

Date 12/11/09

*consulted w/ TDEC*

cc:

- Anda Ray, TVA
- Barbara Scott, TDEC
- Leo Francendese, EPA
- Mike Scott, TVA
- Dennis Yankee, TVA
- Kathryn Nash, TVA
- Cynthia Anderson, TVA
- Steve McCracken, TVA
- EDM
- Julie Pfeffer, Jacobs
- David Stephenson, TVA
- Michelle Cagley, TVA
- Greg Signer, TVA
- KIF Incident Document Control
- Katie Kline, TVA
- Gretchen Wahl, Jacobs
- Dannena Bowman, EPA
- Jeff Gary, Jacobs
- Robert Pullen, Jacobs

# **Dredge Cell Relic Area Piezometer Installation Work Plan**

## **1.0 Purpose**

The objective of this work plan is to outline all construction activities associated with the piezometer installation for the Dredge Cell Relic Area and Test Embankment at the Kingston Ash Pond Facility at the Tennessee Valley Authority (TVA) Kingston Fossil Plant in Harriman, TN. Included in this work plan is the understanding of project requirements, project scope and the project schedule.

## **2.0 Design**

In order to perform an ash storage and potential dewatering activity within the Dredge Cell Relic Area, groundwater will need to be monitored. In an effort to monitor the probability of changing water levels, it will be necessary to install piezometers in this location. A total of sixteen multi-level vibrating wire piezometers will be installed in six different locations of the Relic area to accomplish this (refer to Attachment A for proposed locations). The piezometer installation outlined in this work plan was developed with the input and joint efforts of Jacobs, Stantec and MACTEC. Stantec's letter of recommendation for these activities is also included in this work plan as Attachment B.

## **3.0 Construction**

The following bullets outline the scope of activities to be performed by MACTEC for installation of the piezometers. Installed piezometer details are shown in Attachment C.

- Drill (6) 8-inch borings using 4.25 ID augers.
- Perform standard penetration testing (SPT) of the soil overburden in accordance with ASTM D1586 and retain all samples. SPT sampling will occur at 5-ft intervals below the ground surface (BGS) until a depth of 5-feet above the base of ash. SPT sampling will then occur continuously until the target elevation is achieved.
- Elevations noted in the Stantec recommendation letter are for guideline purposes only. Actual tip elevations shall be determined by Stantec following completion of the boring. MACTEC shall call Stantec with a completed boring log so that lithology breaks can be communicated and Stantec will determine tip elevations.
- Procure piezometers with cables and necessary readout equipment. Instrument types will be identical to those placed within the Test Embankment. Piezometer and housing types and part numbers are as follows:
  - o WWP Piezo 50 PSI Disk Filter w/ Thermistor (Part No. 52611020)
  - o Multi-level housing VW Piezo 1-1/4-in PVC (Part No. 52611100)

- Install the wire piezometers into each boring hole and set at the desired depth in a sand pack with a bentonite seal. Signal wires from the piezometers shall be placed in a weather resistant storage container.
- Provide a detailed data report to Jacobs that provides documentation of location and the configuration of each installation. In addition, MACTEC will provide calibration sheets for all installed instruments.
- Perform equipment test prior to installation to ensure all piezometers are working properly. Results of equipment test shall be submitted to Jacobs.

All construction activities by MACTEC will be coordinated with Stantec. A Stantec representative will be on-site during installation activities for assistance if necessary.

#### **4.0 Schedule**

Fabrication of the vibrating wire piezometers has begun. Installation of the vibrating wire piezometers will begin after this work plan is approved. All field construction activities should last approximately one to two weeks before completion.

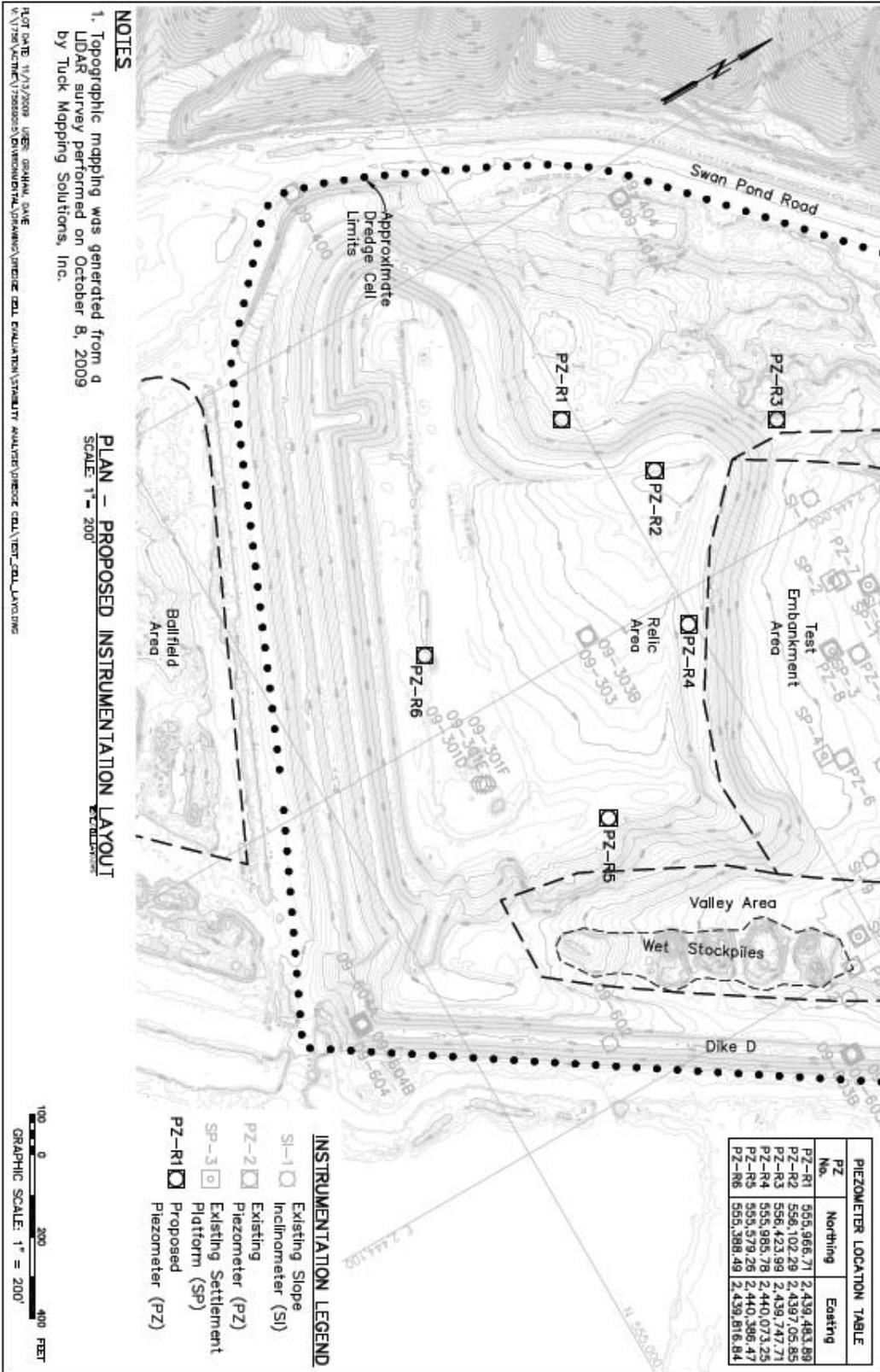
#### **5.0 Waste Management**

All waste materials including ash and drill cuttings generated during construction and installation of the Relic Area Piezometers will either be left at the Dredge Cell area or moved to the Ball Field until final disposal. Decontamination procedures for personnel and equipment leaving the Exclusion Zones, whether daily or at the end of the construction activities in this scope will be followed according to the Site Wide Health and Safety Plan.

#### **6.0 Health And Safety**

Operations performed on the property of TVA will adhere to the provisions of the TVA Site Wide Health and Safety Plan, dated April 6, 2009. Copies of the Site Wide Health and Safety Plan are available upon request. All daily construction activities may commence only after a mandatory pre-construction meeting and a JSA shall be developed for all field activities.

# Attachment A – Proposed Location of Piezometers (provided by Stantec)



## Attachment B – Stantec Dewatering Test Recommendations



**Stantec**

Stantec Consulting Services Inc.  
1409 North Forbes Road  
Lexington KY 40511-2050  
Tel: (859) 422-3000  
Fax: (859) 422-3100

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November 13, 2009

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Mr. Michael T. Scott, PE  
General Manager  
TVA Kingston Fossil Ash Recovery Operations  
1134 Swan Pond Road, KFP 1T-KST  
Harriman, Tennessee 37748

Re: Potential Impact of Large-Scale Ash Dewatering Activities on the  
Dredge Cell Relic Area and Test Embankment  
TVA Kingston Fossil Plant  
Harriman, Roane County, Tennessee

Dear Mr. Scott:

It is understood that Jacobs Engineering Group, Inc. (Jacobs) is proposing to carry out an ash dewatering test within the Dredge Cell Relic Area as described in previous correspondence. If the test demonstrates that lime stabilization is feasible, it is understood that consideration is being given to carrying out large-scale ash dewatering activities across the entire Relic Area footprint. Jacobs has requested that Stantec Consulting Services Inc. (Stantec) describe potential impacts of these activities on the Relic Area and the adjacent Test Embankment.

### **Potential Impacts of Large-Scale Ash Dewatering Activities on the Relic Area and Test Embankment**

Based on readings taken on November 3, 2009, the groundwater level within Monitoring Well 09-303 is slightly less than three feet below existing ground surface. The most significant impact of the proposed ash dewatering activities would be raising the groundwater level above its current level; which may affect the integrity of the Relic Area and possibly the adjacent Test Embankment. It is noted, however, that a single monitoring well does not provide a sufficient understanding of the existing groundwater gradients to facilitate an engineering evaluation.

It is recommended that additional instrumentation be installed and subsequent monitoring be conducted to better define groundwater conditions. An engineering evaluation of the potential impact of large-scale production of proposed dewatering methods may then be carried out.

**Recommended Instrumentation**

It is recommended that six (6) new vibrating wire, multi-level piezometers be installed within the Relic Area. The recommended piezometer locations are shown on the attached figure and the tip elevations are presented in the following table.

Piezometer	Elevation	Soil Horizon
PZ-R1	770.0	Ash
PZ-R2	785.0	Ash
	746.4	Ash
	732.4	Ash
PZ-R3	760.0	Ash
PZ-R4	789.0	Ash
	746.4	Ash
	732.4	Ash
PZ-R5	798.0	Ash
	746.4	Ash
	732.4	Ash
PZ-R6	746.4	Ash
	732.4	Ash
	725.9	Clay
	721.4	Silt
	712.4	Sandy Silt

It is understood that Jacobs will provide for others to install the piezometers. The following should be included as part of the installations:

- The instrument type should be identical to those placed within the Test Embankment.
- The installation detail should be consistent with the attached figure.

Following the installations, Stantec will obtain groundwater readings as part of ongoing site support.

TVA Kingston Fossil Ash Recovery Operations  
November 13, 2009  
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Should you have any questions please do not hesitate to contact us.

Sincerely,

STANTEC CONSULTING SERVICES INC.



Raymond Hache, PE  
Principal and Geotechnical Engineer

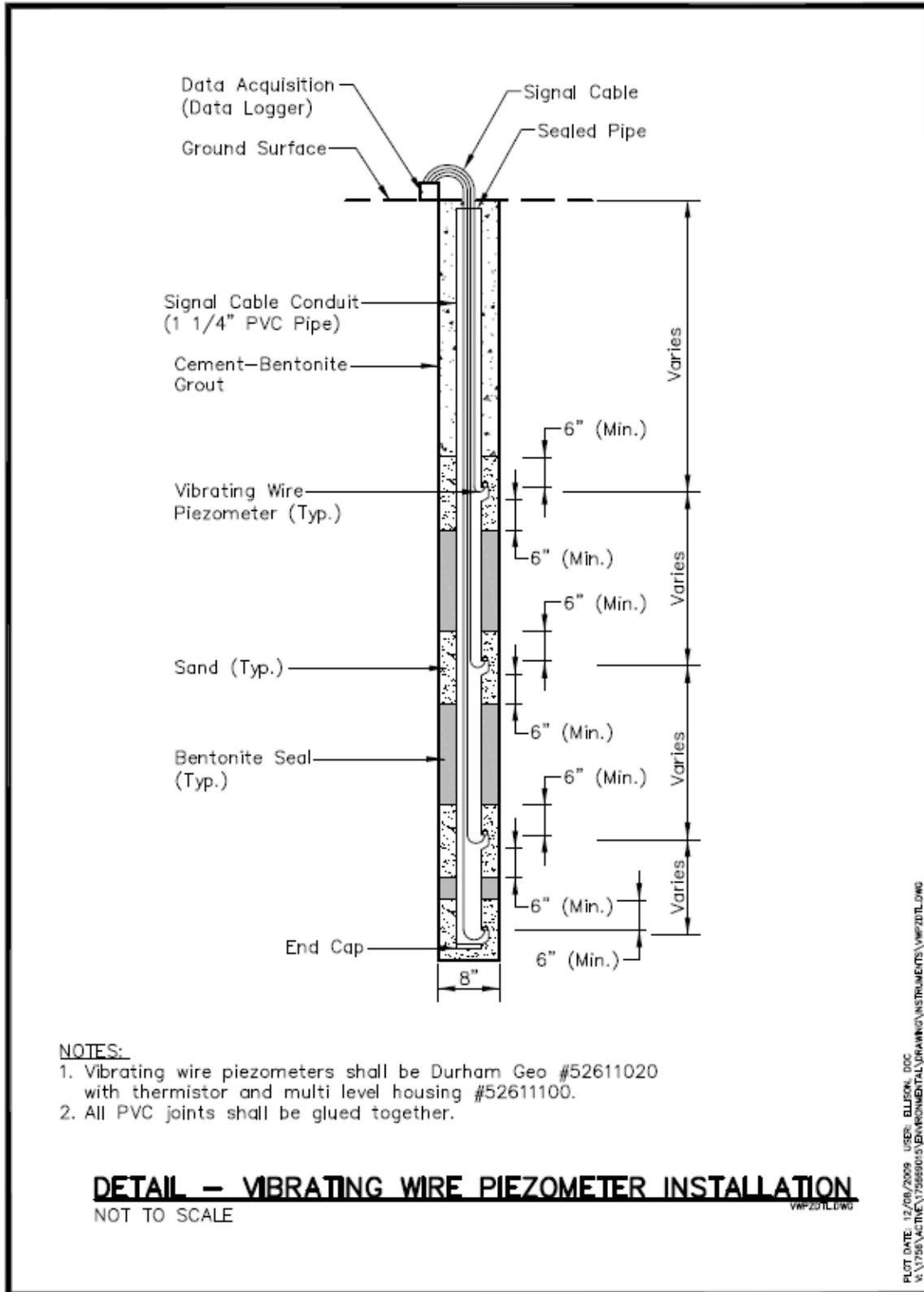


Michael J. Steele, PE  
Associate

/rws

cc: Stephen H. McCracken, PE  
Barry S. Snider, PE  
Jack Howard, PE  
James W. Andrew, PE

## Attachment C – Vibrating Wire Piezometer Installation Details



**NOTES:**

1. Vibrating wire piezometers shall be Durham Geo #52611020 with thermistor and multi level housing #52611100.
2. All PVC joints shall be glued together.

PLOT DATE: 12/08/2009 USER: BLJESON.DOC  
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