Final Report

Dike D Buttress Construction and Slope Inclinometers
Kingston Fossil Plant
Harriman, Roane County, Tennessee

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Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

June 23, 2009

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June 23, 2009 rpt_002_171468117

Mr. Barry Snider, PE
CCP Engineering Manager
LP 2G-C
1101 Market Street
Chattanooga, Tennessee 37402

Re: Final Report
Dike D Buttress Construction and
Slope Inclinometers
Kingston Fossil Plant
Harriman, Roane County, Tennessee

Dear Mr. Snider:

Please find enclosed three copies of our project report for Dike D Buttress Construction at the Tennessee Valley Authority (TVA) Kingston Fossil Plant (KIF), accomplished under ESR/TAO Request 650. Although ESR/TAO Request 650 also encompasses Ash Pond Stability, that topic will be documented in a future deliverable and is not discussed herein. Also included in this report is documentation of slope inclinometer installation and monitoring, which was accomplished under ESR/TAO Request 648.

This report documents our engineering and construction observation efforts for emergency monitoring and stabilization of KIF Dike D and an adjoining segment of Dike C. Work tasks included formalizing a periodic monitoring and reporting plan for Dikes C and D, consideration of the feasibility of using bottom ash in the buttress, development of design sketches and construction notes for the buttress (including an adjoining "wraparound" area of Dike C and grouting of two pipes that penetrate Dike D), installation and monitoring of eight piezometers, resident construction observation during buttress construction, laboratory testing of materials (samples taken during piezometer installation, slope inclinometer installation, and buttress construction), and preparation of this final report. Work tasks under ESR/TAO Request 648 included installation and monitoring of four slope inclinometers.

Stantec is pleased to provide this information. Please contact us if you have any questions.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Jeffrey S. Dingrando, PE, PG
Geotechnical Engineer

James W. Andrew, PE
Senior Project Engineer

/rdr

Enclosures: 1

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Final Report

Dike D Buttress Construction and Slope Inclinometers Kingston Fossil Plant Harriman, Roane County, Tennessee

1. Introduction

1.1. Overview

During the early morning hours of December 22, 2008, a failure occurred at the northern portion of the ash dredge cell at the Kingston Fossil (KIF) Plant in Harriman, Roane County, Tennessee. The failure resulted in a release of significant amounts of coal ash slurry into the adjacent Emory and Clinch Rivers.

The failed dredge cell is located on the northeastern side of the KIF property, just north of the main ash pond (Figure 1). Dike D trends northeast-southwest and separated the dredge cell from the ash pond. Although Dike D did not fail (i.e., the ash pond was not breached), a significant portion of the embankment was eroded during the failure of the dredge cell. The movement of material out of the dredge cell removed large portions of the dike cross section on the dredge cell side of the crest. Post failure, the dredge cell side of this portion of Dike D exhibited near vertical scarps roughly 8 to 15 feet in height and tension cracks parallel and perpendicular to the dike alignment at various locations along the crest. Additionally, the dredge cell failure damaged the northern end of the remaining portion of Dike C (which surrounds the other sides of the ash pond) near its intersection with Dike D.

On the same day as the failure, the Tennessee Valley Authority (TVA) contacted Stantec Consulting Services Inc. (Stantec) requesting assistance with emergency response efforts and assessment of the remaining ash storage facilities at the KIF plant. Initial assessments by Stantec, in conjunction with TVA and others, concluded that the remaining portions of Dike D and the northwest corner of Dike C should be monitored and temporarily stabilized to reduce the short term risk of failure as a result of the above referenced damage. The failure of these dikes in this area could have resulted in an additional release of ash into the adjacent rivers, complete or partial loss of pool in the ash pond, and major disruptions to power production and plant operation.

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt
JSD
Photo dated 01/14/2009

Figure 1. Kingston Fossil Plant Dredge Cell Failure (photo from TVA)

1.2. Scope of Work

On January 8, 2009, TVA issued ESR/TAO Requests 648 and 650, which were used to develop our scope of work. Due to the emergency nature of the project, work related to these ESRs actually began on December 23, 2008. Stantec provided the following services related to Dike D Buttress Construction and Slope Inclinometer Monitoring:

- Formalize a periodic monitoring and reporting plan, to be executed by others, to perform visual observations of distressed portions of Dikes C and D. Review documentation from the periodic monitoring. On January 19, 2009, TVA approved a change to allow Stantec to perform this monitoring while personnel were already on-site to perform construction observations.

- Consider the feasibility of using bottom ash as a component of the buttress.

- Develop design sketches and related construction notes for TVA approval and inclusion in HED's construction work plan. Due to the emergency nature of the project, this involved multiple iterations of the design, to account for the evolving nature of the site and as-built features. The major components of the buttress include: a drainage ditch along the toe of the buttress, the Dike D buttress, a "wrap-around" area of slope protection along Dike C, and temporary grouting of two drainage pipes that penetrate Dike D.

- Install and monitor four slope inclinometers within the remaining portions of Dikes C and D near the buttress footprint, to monitor the short-term stability of the embankments before, during, and immediately after buttress construction. Prepare and submit a report to TVA, to include installation details and monitoring results. Note that this is the only major task covered by ESR/TAO Request 648.

- Install and monitor eight piezometers (shown conceptually in the original version of the design sketches) within the buttress footprint, to address concerns about instability in the underlying ash deposits that could result if added loads from buttress construction cause excess pore pressure buildup. Provide office support to analyze piezometric readings and consider short-term stability of Dike D during construction.

- Provide full-time resident construction observation services throughout buttress construction and pipe grouting. Services include observing the Contractor’s activities and documenting compliance with the approved work plan drawings/notes, documentation through daily field reports and photographs, piezometer observation and data analysis, fill material sampling (bottom ash and soil cover), and office support to address any issues or questions that may arise.

- Perform laboratory testing of materials sampled during slope inclinometer and piezometer installations, as well as testing of fill materials sampled during buttress construction.

- Produce as-built drawings of the completed buttress, based on survey information and topographic mapping provided by TVA. As-built drawings will not account for ongoing or future tie-in of Dike 2 (rock dike).

- Prepare and submit deliverables to TVA, to include: as-built drawings, daily field reports, piezometer boring logs and installation details, summary of piezometer readings, and laboratory testing results.

As stated above, TVA authorized temporary grouting of two existing drain pipes that penetrate Dike D within the buttress area. Stantec developed temporary grouting plans with the understanding that TVA plans to excavate and remove both pipes as part of their long-term closure plan.

It is noted that emergency buttress design and pipe grouting sketches do not represent an engineered design meeting current criteria for dam or levee safety. The Dike D Buttress and temporary pipe grouting are intended to improve the interim stability of portions of Dikes C and D, prior to long-term site modifications. Additional engineering analyses are needed to evaluate the long-term performance of this emergency repair.

1.3. Report Outline

A timeline of events relative to Dike D Buttress Construction and Slope Inclinometers is presented in Section 2. Information regarding monitoring and reporting for Dikes C and D is presented in Section 3. Design activities and consideration of using bottom ash for buttress construction are discussed in Section 4. Slope inclinometer installation and monitoring is covered in Section 5. Piezometer installation and monitoring is covered in Section 6. Construction observation services during buttress construction and pipe grouting is described in Section 7. Laboratory results are presented in Section 8. As-built documents are described in Section 9.

Drawings, data, and other supporting information are documented in the appendices of this report. Dikes C and D monitoring and reporting records are presented in Appendix A. Background data related to use of bottom ash in Dike D Buttress construction are included in Appendix B. Design sketches and construction notes for the buttress and pipe grouting are presented in Appendix C. Slope inclinometer installation details, boring logs, and data are presented in Appendix D. Piezometer installation details, boring logs, and data are presented in Appendix E. Daily field reports for Stantec's construction observation efforts are compiled in Appendix F. Laboratory testing data sheets are provided in Appendix G. As-built drawings and related survey information are provided in Appendix H.

2. Timeline of Events

Given the emergency nature of many of the activities described herein, it is useful to present a timeline to help clarify the sequence of events. Key dates and events relevant to the scopes of work outlined in Section 1.2 are described below.

- December 22, 2008: Failure of KIF Dredge Cell

- December 22, 2008: Stantec is contacted by TVA (By Products Management Group) and mobilizes to assist with initial emergency response efforts. Early efforts included initial assessment of the dredge cell failure and remaining KIF ash containment facilities.

- December 22, 2008 through January 5, 2009: Initial assessments and discussions with TVA and others concluded that risk reduction measures should

be implemented for the northeast end of Dike D and northwest end of the remaining portion of Dike C. Conceptual designs were developed for the Dike D Buttress and Dike C "Wraparound" Armoring. See Figure 2 for the area of interest.

- December 27-29, 2008: Four (4) slope inclinometers were installed within the remaining portions of Dikes C and D near the buttress footprint.

- December 30, 2008: Initial (i.e., baseline) slope inclinometer readings are taken. From December 30, 2008 to January 21, 2009, slope inclinometer readings are taken every 2 days. Per approval from TVA, daily readings are taken from January 22, 2009 through January 26, 2009. Also per approval from TVA, readings are taken roughly once per week from January 30, 2009 through February 20, 2009.

- January 8, 2009: Construction of Dike D Buttress begins. Stantec provides full time resident observation on days that the Contractor (TVA Heavy Equipment Division (HED)) is working on the buttress.

- January 14, 2009: Stantec formalizes the Dikes C and D Monitoring and Reporting Plan, via letter to MACTEC, who was performing monitoring directly for TVA. Monitoring frequency was once every 2 hours, around the clock.

- January 14-15, 2009: Eight (8) piezometers are installed within the buttress footprint. Piezometer readings are taken each day that construction observation is performed, through January 31, 2009. Per approval from TVA, readings are taken roughly once per week from February 6, 2009 through February 20, 2009.

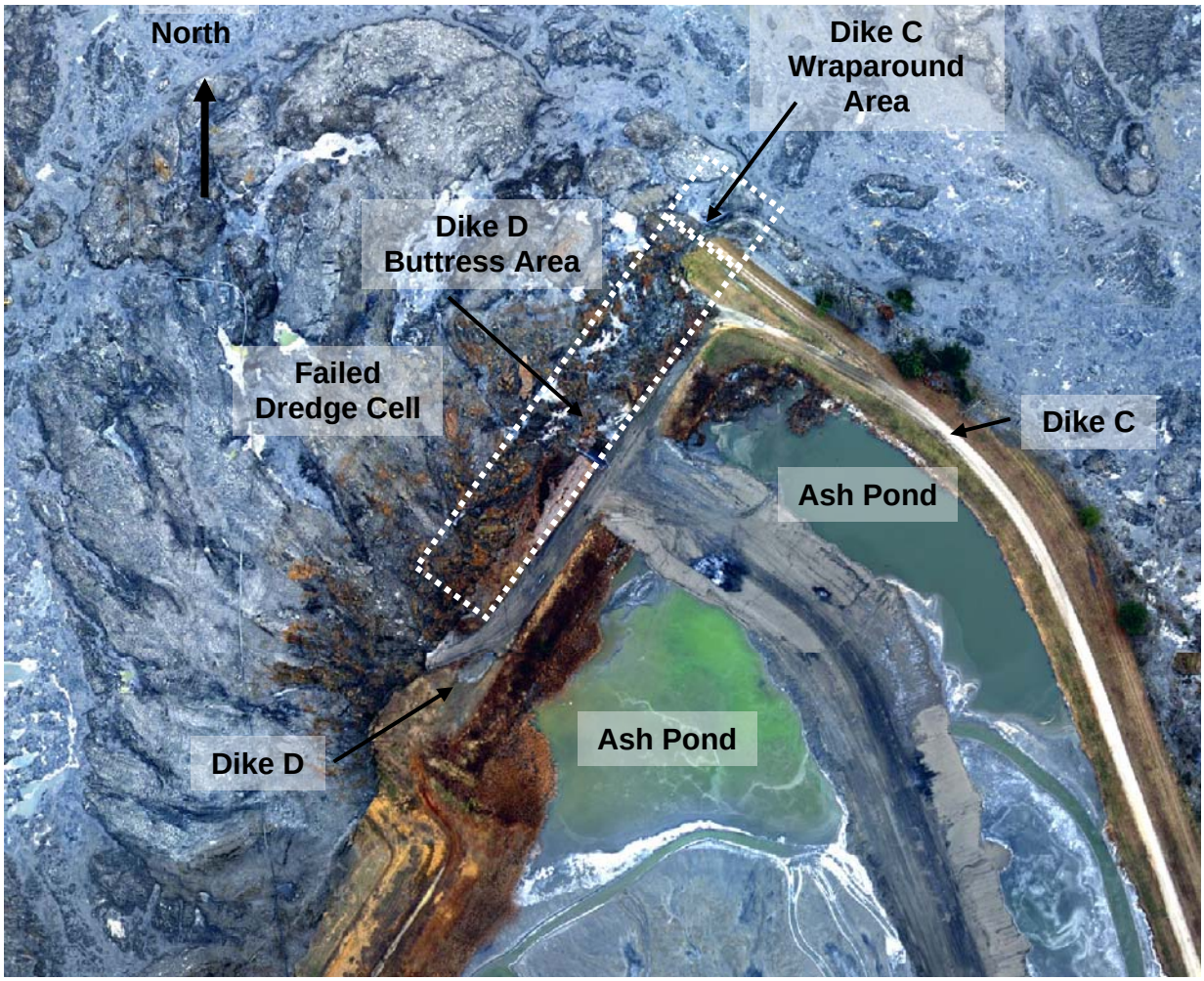
- January 19, 2009: Per approval from TVA, Dikes C and D Reporting and Monitoring responsibility was transferred to Stantec. Monitoring frequency was reduced to 3 times per day, when Stantec personnel were already onsite to provide construction observation services for Dike D Buttress. Final readings taken by MACTEC were performed on January 21, 2009.

- February 5, 2009: Surface protection for slope inclinometer B-4 is damaged due to impact from a Contractor's piece of equipment. B-4 is temporarily out of service.

- February 20, 2009: Other than pipe grouting, Dike D Buttress construction ends.

- February 24-26, 2009: Stantec installs final surface protection for Dike D Buttress piezometers. Surface protection for slope inclinometer B-4 is replaced, and installation is renamed B-4A for future data collection.

- March 11-13, 2009: Pipe grouting is performed. Stantec provides full time resident observation on days that the Contractor (HED) is working.



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Dike D Photos.ppt	
JSD	
Photo dated 12/23/2008	

Figure 2. Dike D Buttress and Dike C Wraparound Area (photo from TVA)

3. Dikes C and D Visual Monitoring

As a result of the dredge cell failure, the adjacent segments of Dikes C and D sustained many visible tension and compression cracks, which was one factor in TVA's decision to provide for emergency monitoring and stabilization of this area. TVA surveyors mapped these cracks on December 22-23, 2008, and provided a sketch of the cracks and the survey data to Stantec, as shown in Appendix A.

TVA directly contracted MACTEC (another geotechnical consultant) to monitor the surface expressions of certain cracks on a routine basis. Based on data provided by MACTEC (see Appendix A), they began monitoring on December 25, 2008, and monitored 13 different "monitoring stations" roughly every 2 hours. The data reported consisted of a measurement that appeared to be a width of a crack, or the width between two monuments on either side of a crack. As described in Section 2, MACTEC crack monitoring ceased on January 21, 2009. Not every station was monitored continuously during this time period. Due to the rapidly developing site conditions, cracks were often covered up and others were exposed by earthwork activities.

Per direction from TVA, Stantec was tasked with formalizing the monitoring and reporting plan for MACTEC to implement. The letter outlining the plan is included in Appendix A. The plan included qualifications for personnel, frequency of monitoring, areas to be monitored, issues of concern, visual observations to be performed, documentation requirements, and emergency contact information.

Based on Stantec's review of the available data, it became apparent that little to no movement was being noted in the crack measurements. Given this fact, plus the fact that Stantec personnel were already onsite for buttress construction observation, TVA approved a change to the monitoring program to allow Stantec to perform the readings, thus realizing some efficiency in onsite activities. While the scope of monitoring was unchanged, the frequency was reduced to three times per day (start, middle, and end of shift), only on days when Stantec personnel were onsite for buttress construction observation. See Appendix F for daily field reports of Stantec's construction observation efforts, which include documentation of visual observations at Dikes C and D.

Stantec visual observations began on January 20, 2009, and buttress construction (other than pipe grouting) ended on February 20, 2009. During this time period, Stantec did not observe any issues of concern related to Dikes C and D visual monitoring.

4. Dike D Buttress and Pipe Grouting Design

Given the emergency nature of activities immediately after the dredge cell failure, the design process for the Dike D Buttress can be described as fluid and collaborative. Early discussions between Stantec, TVA engineers, HED, and others led to conceptual sketches that served as construction plans at the beginning of construction. The design continued to evolve as construction proceeded, based on new site information (e.g., survey data), availability of materials, and a better understanding of the site conditions. TVA asked Stantec to evaluate the potential use of bottom ash from the nearby Bull Run Fossil (BRF) Plant for buttress fill. Stantec reviewed available laboratory data (sieve results, see Appendix B) and took no exception to the use of this material. TVA was responsible for all logistics related to delivery of bottom ash from BRF to KIF.

Stantec provided several versions of construction sketches (plan and cross section views) and construction notes (compaction criteria, lift thickness, constraints on placement rate, etc.) to TVA for their approval and inclusion in HED's work plan. To avoid confusion; only the final versions of such sketches and notes are included herein (see Appendix C). Much of the design/layout of the buttress is referenced to a local project baseline that was provided to Stantec by TVA and Worley Parsons (another consultant working for TVA). The baseline generally follows the alignment of the crest of Dike D, and provided a logical frame of reference for layout of the buttress.

In general, the buttress system consisted of the following major components:

- A working pad of rip rap and/or shot rock (generally 4 feet thick) to bridge over the soft ash deposits that remained after the dredge cell failure. In some areas, a "keyway" or trench was excavated in the ash and backfilled with rip rap or shot rock. In other areas, the stone was placed over the ash and walked in with heavy equipment until a stable pad was created.

- A toe ditch excavated into the soft ash deposits and lined with filter fabric and up to 4 feet of rip rap or shot rock. The toe ditch drained from the southwest to the northeast and directed runoff into the estuary that roughly parallels the outboard side of Dike C.

- A 1-foot thick layer of No. 57 stone and layer of filter fabric over the working pad, to act as a choking layer between the coarser rip rap and the finer bottom ash fill.

- Removal of loose material on the steep scarps where Dike D had been partially eroded during the dredge cell failure.

- Bottom ash fill (from the Bull Run Fossil Plant), which made up the majority of the buttress fill above the working pad. The bottom ash was graded on a 3H:1V slope starting near the inside edge of the toe ditch (in most cases there was a 9 to 13-foot setback between the toe ditch and toe of the bottom ash slope). After the fill elevation reached approximately 1-foot short of the original Dike C crest elevation, the fill slope was flattened to 2 percent, with positive drainage towards the toe ditch.

- Soil cover (from onsite clay borrow source), minimum of 1-foot thick, over the bottom ash.

Eight piezometers were also planned as part of the buttress construction, in order to monitor pore pressures during fill placement. See Section 6 and Appendix E for more information.

It should be noted that TVA elected to also install a 6-inch thick layer of crushed stone (1-2 inch nominal diameter) over the crest of Dike D after soil cover placement was complete. Stantec was not involved with the decision to add this component.

The Dike C wraparound area consisted of a more limited buttress (see sketches in Appendix C) and was more focused on armoring of the slope. The limited buttress was due in part to limited working area, and also to concerns about the stability of the lower slope between Dike C and the estuary. In general, the wraparound system consisted of the following major components:

- Excavation of the truncated/exposed end of Dike C, to create a more gentle slope (approximately 3H:1V) that is more conducive to proper compaction of the overlying buttress fill.

- Transition from the buttress geometry presented above to a smaller rip rap buttress and rip rap slope armoring (see below).

- On the outboard face of Dike C, a minimum 2-foot thick layer of rip rap was planned from the toe of the slope at the estuary up to an intermediate bench at approximate elevation 750 feet.

- On top of the intermediate bench, a wedge of rip rap with 3H:1V final grade was placed against the steeper (roughly 2H:1V) outboard face of Dike C.

- Minor additional grading (cut and fill) with bottom ash and/or clayey soil as needed to promote positive drainage and smooth transition near the junction of Dikes C and D.

As mentioned previously, two pipes penetrated Dike D along the length of the buttress. It is our understanding that the pipes were not actively used at the time of dredge cell failure, but had been used previously to convey surface water from the dredge cell to the ash pond. After considering various options to abandon or remove the pipes, TVA directed Stantec to develop construction documents (see Appendix C) to temporarily grout the two pipes in place, with grout being pumped in from the uphill (dredge cell) ends of the pipes. TVA planned to return in the future, as part of the closure plan, to remove both pipes and replace with an engineered backfill. Due to the sequence of construction, grouting from the uphill end required a rather large excavation through the recently placed buttress material, followed by backfilling to replace the buttress material and regrading of the surface. In general, the pipe grouting efforts consisted of the following major components:

- Excavate soil and ash to expose both ends of each pipe.

- Clean the pipe interior by jetting or other method, to remove loose sediment and/or debris.

- Install a sacrificial bulkhead at the downhill (ash pond) end of each pipe

- Insert tremie pipe(s) from the uphill end into the pipe, terminating at the downhill end (near the bulkhead). Pump cement-bentonite grout into the pipe, until the pipe is full (based on grout return at the uphill end).

- After the grout is set, backfill excavations and restore surfaces to match adjacent grades.

Several construction photos of the buttress, wraparound, and pipe grouting activities are included in Section 7.

5. Slope Inclinometers

5.1. Installation

As requested by TVA, a total of four slope inclinometers (referenced as B-1 through B-4) were installed along portions of Dikes C and D at the Kingston Fossil Plant between December 26, 2008 and December 30, 2008. The inclinometers allowed Stantec to monitor horizontal movement of the dikes and/or foundation soils prior to, during, and after construction of the buttress. The borings were performed using a two-wheel drive truck-mounted drill rig to drill an 8-inch diameter boring using a 3.25-inch (ID) hollow stem auger following a carbide-tipped tooth bit. The borings were advanced through the overburden and into rock a short distance, in order to provide a socket for the inclinometer casing. Field testing/sampling of encountered soil-like overburden materials consisted of Standard Penetration Tests (SPTs) at selected intervals to provide an indication of in-situ strength characteristics and to collect samples for subsequent characterization testing purposes. Each boring was checked for the presence of subsurface water.

A 2.75-inch (ID) plastic inclinometer casing was then placed through the hollow stem auger to within a few inches of the bottom of the boring. The inclinometer casing includes two perpendicular tracks (A-axis and B-axis) to accommodate the inclinometer probe. Measurements can then be reported in terms of movement in the A-direction (for this project, A0 is positive direction, A180 is negative) and B-direction (for this project, B0 is positive, B180 is negative). The orientation (bearing) of the A0 axis was noted using a magnetic compass. The annulus between the casing and the borehole wall was backfilled using No. 4 gravel. After backfilling, slope inclinometer construction was completed with a concrete surface seal and locking steel protective cover (see Figure 3).

As described in Section 2, on February 5, 2009, the surface protection for slope inclinometer B-4 was damaged due to impact from a Contractor's piece of equipment. B-4 was temporarily unavailable for data collection. On February 24, Stantec removed the damaged surface protection and installed a new flush mount manhole and concrete pad. The installation was renamed B-4A for future data collection.

Boring logs and installation details for the slope inclinometers are included in Appendix D. Inclinometer locations are shown in plan view on as-built drawings in Appendix H. Table 1 provides a summary of the inclinometer installation data.

Table 1. Slope Inclinometer Installations

Slope Inclinometer ID	Northing (U.S. Survey Feet)[1]	Easting (U.S. Survey Feet)[1]	Ground Elev. (ft)[1]	Top of Rock Elev. (ft)	Bottom of Casing Elev. (ft)	Axis A0 Bearing (deg)[2]
B-1	556,623.08	2,441,563.81	774.16	707.5	701.2	308
B-2	556,877.44	2,441,744.70	774.06	700.5	696.5	292
B-3	557,061.67	2,441,887.56	770.90	714.4	711.6	36
B-4	556,934.61	2,442,066.28	764.21	712.1	705.1	18
B-4A[3]	556,934.37	2,442,065.92	765.17	712.1	705.1	18

[1] Northing and Easting are top of concrete pad. Elevation is ground surface. Locations provided by TVA, Power Systems Operations, Surveying and Project Services. Horizontal Datum: NAD 27 (Tennessee Lambert). Vertical Datum: NGVD29.
[2] Bearing was estimated by Stantec using magnetic compass.
[3] Surface protection for B-4 was damaged. After repair, installation was renamed B-4A.

5.2. Data Collection

As described in Section 2, after the four inclinometer casings were installed, baseline readings were taken on December 30, 2008. All readings were taken using a Durham Geo Slope Indicator portable inclinometer system, which consists of a traversing probe, graduated cable, and Digitilt DataMate portable readout unit. The probe, which measures the inclination between two internal sensors, is traversed over the length of the casing, stopping to take readings at fixed intervals (typically every 2 feet). The tracks along the inside walls of the casing ensure that the probe travels along either the A or B axis. Deviations along each axis can be read directly, or one axis can be read directly and the other axis calculated during the data processing step. Deviations are calculated and presented relative to the baseline reading (i.e., baseline is assumed to represent zero displacement).

From December 30, 2008 to January 21, 2009, slope inclinometer readings were taken every 2 days. Per approval from TVA, daily readings were taken from January 22, 2009 through January 26, 2009. Also per approval from TVA, readings were taken roughly once per week from January 30, 2009 through February 20, 2009.

Due to surface protection damage, the last readings for B-4 were taken on January 30, 2009. After this installation was repaired and renamed B-4A, new baseline readings were obtained on February 25, 2009 and one additional data set was collected on March 4, 2009.

A data acquisition log, containing information about each reading date, is included in Appendix D. At this time, the installations remain in place and available for future readings, although we are not aware of any immediate needs from TVA to take additional readings.

5.3. Results

After quality control reviews of the data by Stantec field engineers, the data were processed using Durham Geo Slope Indicator's DigiPro for Windows software. This software is made specifically for processing and graphing slope inclinometer data. Final plots of each data set are included in Appendix D. Based on the final results, the following comments are offered:

- There is no evidence of progressively increasing movement or well defined sliding planes in the soils and ash. Most observed readings are small and are within the tolerance of the measurement equipment and are likely a function of systemic errors (human and electronic) in the data acquisition process.

- Shallow movements could be influenced by the proximity of tension cracks initiated during the dredge cell failure. Furthermore, the inclinometers were located in areas of high traffic (heavy equipment) and were adjacent to significant earthwork activity, which could have influenced the stability of the shallow portions of the installations.

- Final readings for B-1 suggest small resultant movement (approximately 0.11 inches) towards the ash pond, although earlier readings indicated movement towards the failed dredge cell. The change in direction appeared to coincide with placement of bottom ash for the buttress, so it is possible that placement of this material could have had a slight influence on the shallow readings.

- Final readings for B-2 and B-3 suggest small resultant movement (approximately 0.16 inches and 0.13 inches, respectively) towards the failed dredge cell. These movements could be associated with relaxation and/or stress relief, with the dike rebounding towards the failed dredge cell after being pushed towards the ash pond during the failure.

- Final readings for B-4 suggest small resultant movement (approximately 0.06 inches) towards the ash pond. Given the small movements and the relatively distant position from the scarp along Dike D, the readings are interpreted as indicating no movement (i.e., readings are within the error range for the data acquisition process).

- Data for B-4A are too limited to draw conclusions. However, based on the readings in B-4, no changes in trend would be anticipated.

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Figure 3. Typical Slope Inclinometer Surface Protection

6. Piezometers

6.1. Installation

Given the soft, saturated state of the ash deposits immediately after the dredge cell failure, there was a concern about generation of excess pore pressures (due to rapid fill placement) leading to a short term failure of the ash beneath the buttress. Therefore, TVA requested that Stantec install eight piezometers within the buttress footprint after the rip rap working base was in place. The piezometers allowed Stantec to monitor pore pressures before, during, and after the majority of the buttress fill placement.

The borings were performed using a track-mounted drill rig equipped with 3¼-inch (ID) hollow-stem augers following a carbide-tipped tooth bit (see Figure 4). Field testing/sampling of encountered soil-like overburden materials consisted of standard penetration tests (SPTs) at selected intervals to provide an indication of in-situ strength characteristics and to collect samples for subsequent characterization testing purposes.

Each boring was checked for the presence of subsurface water and completed with piezometer installations. Piezometers were constructed from one-inch diameter Schedule 40 PVC Casagrande tips and riser pipe. The annular backfill consisted of a sand filter pack to some distance above the tip followed by a bentonite seal to within one-foot of the ground surface. The remaining annulus was backfilled with cement grout. As buttress fill placement proceeded, Stantec extended riser pipes upward through the fill. After buttress construction was complete, the riser pipes were protected with locking metal covers and concrete pads, similar to the slope inclinometers (see Figure 3).

Boring logs and installation details for the piezometers are included in Appendix E. Piezometer locations are shown in plan view on as-built drawings in Appendix H. Table 2 provides a summary of the piezometer installation data.

Table 2. Piezometer Installations

PZ ID	Northing (U.S. Survey Feet)[1]	Easting (U.S. Survey Feet)[1]	Top of Casing Elev. (ft)[1]	Ground Elev. (ft) at time of drilling[2]	Filter Sand Interval (Elev., ft)	Bottom of PZ Tip (Elev., ft)
PZ-1	556,650.76	2,441,468.15	770.66	765.3	745.8-738.8	740.5
PZ-2	556,636.44	2,441,500.11	776.55	766.9	756.9-750.4	751.9
PZ-3	556,822.95	2,441,588.54	772.73	766.3	746.6-739.8	741.3
PZ-4	556,814.34	2,441,602.15	776.43	766.0	756.0-749.5	751.0
PZ-5	556,958.55	2,441,690.87	772.06	763.7	744.2-738.2	738.7
PZ-6	556,942.41	2,441,708.59	776.97	763.7	753.7-747.2	748.7
PZ-7	557,106.66	2,441,791.01	769.80	760.0	744.5-738.4	739.0

Table 2. Piezometer Installations

PZ ID	Northing (U.S. Survey Feet)[1]	Easting (U.S. Survey Feet)[1]	Top of Casing Elev. (ft)[1]	Ground Elev. (ft) at time of drilling[2]	Filter Sand Interval (Elev., ft)	Bottom of PZ Tip (Elev., ft)
PZ-8	557,091.55	2,441,819.11	775.06	760.1	750.1-743.6	745.1

[1] Northing, Easting, and Elevation are top of casing. Locations provided by TVA, Power Systems Operations, Surveying and Project Services. Horizontal Datum: NAD 27 (Tennessee Lambert). Vertical Datum: NGVD29.
[2] Elevation provided by TVA. After drilling, riser pipes were extended up as buttress fill was placed. Surface protection was installed after buttress was complete.

6.2. Data Collection

As described in Section 2, after the eight piezometers were installed, readings were taken multiple times (usually 3 times) per day when bottom ash and/or soil cover was being placed. Piezometers were not installed prior to construction of the rip rap working pad and overlying No. 57 stone layer. Stantec engineers used a water level indicator (WLI) to check the water levels in each piezometer. If elevated piezometric levels were observed (particularly if correlated to an increase in fill height), Stantec had developed protocols for increased monitoring and/or changes to construction sequence (e.g., reduce rate of placement, restrict location of fill placement, stop placement, etc.).

From January 19 to January 31, 2009, piezometer readings were taken daily when buttress fill was being placed. Per approval from TVA, readings were taken roughly once per week from January 31, 2009 through February 20, 2009. Data from each reading are compiled in Appendix E. At this time, the installations remain in place and available for future readings, although we are not aware of any immediate needs from TVA to take additional readings.

6.3. Results

Final data tables for each piezometer are included in Appendix E. Based on the final results, the following comments are offered:

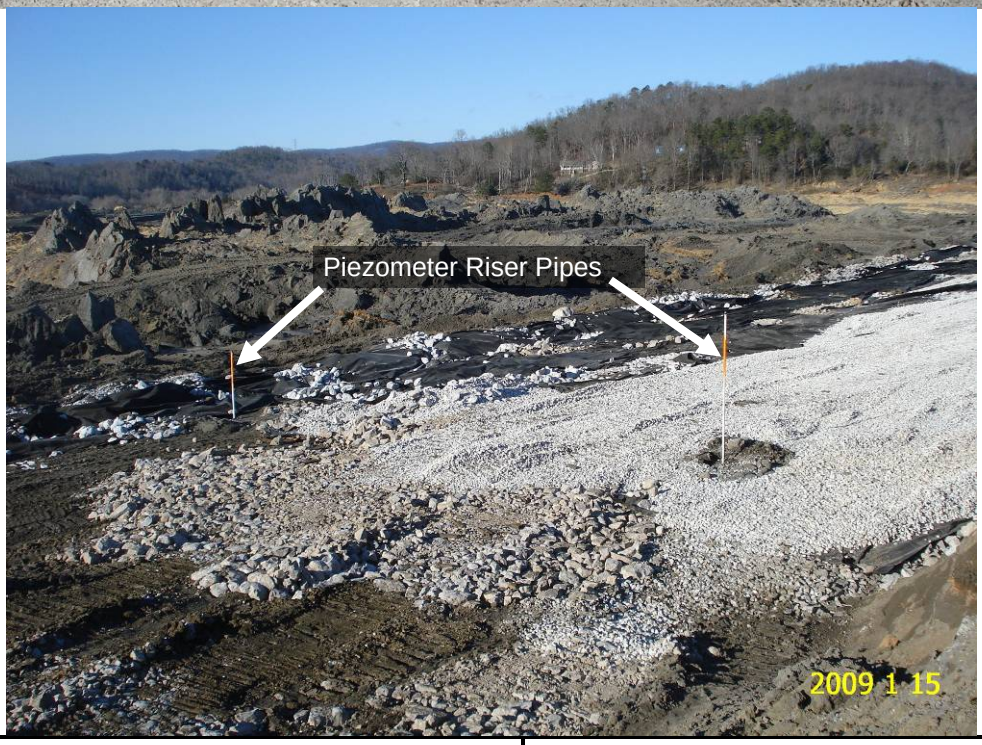
- Little to no increase in piezometric levels was observed during fill placement. This could be due to one or more factors such as: permeability of ash is high enough to dissipate pore pressures quickly (relative to the rate of placement), construction requirements controlling the rate of fill height increase were sufficient to avoid generation of excess pore pressures, and/or ongoing dewatering of the dredge cell failure mass (via ditching) was adequate to counteract any increased pore pressure due to buttress loading.

- During overnight hours between days of fill placement, piezometric levels typically decreased (assuming no precipitation). This demonstrates the ongoing dewatering of the dredge cell failure mass (via ditching).

- No changes in construction sequence or rate of placement were required. Initial constraints included limiting bottom ash lift thickness to 6 inches or less and

requiring a lift to be complete over the entire buttress footprint before beginning the next life. These requirements helped reduce the likelihood of building up fill height (and thus load induced pore pressures) too quickly.

- Piezometric levels generally dropped moving from southwest to northeast along the buttress. This is consistent with the slope of the toe ditch towards the estuary.



Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt	
JSD	
Photos dated 1/15/2009	

Figure 4. Stantec Piezometer Installation during Buttress Construction

7. Construction Observation

Stantec provided engineers and/or engineering technicians to provide full-time resident construction observation during buttress construction and pipe grouting activities. Services included observing the Contractor's activities and comparing their work against the approved work plan drawings/notes, documentation through daily field reports and photographs, piezometer observation and data analysis, fill material sampling (bottom ash and soil cover), and communicating with Stantec office engineers to address any issues or questions.

Daily field reports were prepared to document our observations of the activities. Observations that were documented typically included: Contractor personnel and equipment in use, site visitors, any unusual or unexpected observations, and summaries of the Contractor's activities and any relevant discussions with the Contractor. Daily field reports are provided in Appendix F. Several photos of construction activities are presented in the figures below.

Kingston Fossil Plant
Dike D Buttress Construction and
Slope Inclinometers
Harriman, Roane County, Tennessee

Figure 5. Rip Rap Filled Trench (top) and Toe Ditch (bottom)

Stantec

Dike D Photos.ppt
JSD
Photos 1/12 and 1/14/2009

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt	
JSD	
Photos 1/20 and 1/22/2009	

Figure 6. Bottom Ash Delivery (top) and Placement (bottom)

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt	
JSD	
Photos dated 2/6/2009	

Figure 7. Soil Cover Finished Grade Looking South (top) and North (bottom)

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt	
JSD	
Photos 1/14 and 2/6/2009	

Figure 8. Dike C Wraparound Before (top, looking east) and During (bottom, looking west) Armoring

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt
JSD
Photo dated 2/17/2009

Figure 9. Completed Dike D Buttress and Dike C Wraparound (looking south; photo from TVA)

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt	
JSD	
Photos dated 3/11/2009	

Figure 10. Exposed Buttress End of Concrete Pipe (top) and Vacuum Cleanout of Concrete Pipe (bottom)

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt
JSD
Photos 3/11 and 3/12/2009

Figure 11. Concrete Pipe Downhill (top) and Uphill (bottom) Bulkheads

Kingston Fossil Plant
Dike D Buttress Construction and Slope Inclinometers
Harriman, Roane County, Tennessee

Stantec

Dike D Photos.ppt	
JSD	
Photos dated 3/13/2009	

Figure 12. Grout Pumping (top) and Grout Return at Uphill End (bottom)

8. Laboratory Testing

Soil and ash samples were collected during slope inclinometer and piezometer installation, as well as during bottom ash and soil cover fill placement. Bottom ash and soil cover bulk samples were collected at approximately 5,000 cubic yard intervals. Larger fill materials such as rip rap and shot rock were not sampled.

The recovered samples were transported to Stantec's materials laboratory in Lexington and selected samples were subjected to natural moisture content determinations (ASTM D 2216) and standard engineering classification testing (sieve and hydrometer analyses (ASTM D 422), Atterberg limits (ASTM D 4318) and specific gravity determinations (ASTM D 854)). Laboratory test results are included in Appendix G. Based on the laboratory results and the boring logs (see Appendices D and E), the following comments are offered:

- Samples of in situ KIF ash materials typically classified (per USCS) as silty sand with gravel (SM). This material was non-plastic and well graded, having significant fractions of material larger than the No. 4 sieve (i.e., gravel size) and smaller than the No. 200 sieve (i.e., silt and clay size).

- Occasional layers or zones of predominantly finer ash materials were encountered. These materials classified as silt (ML), were non-plastic, and had fines content of 76 to 93 percent.

- When comparing field descriptions to laboratory results for the in situ KIF ash materials, it was apparent that the SM and ML materials are difficult to distinguish in the field.

- The specific gravity (G_s) of the in situ KIF ash materials ranged from 2.31 to 2.39.

- No “clean” ash materials (i.e., having little to no fines) were encountered.

- In the boring for SI B-4, two layers of sandy lean clay (CL) were encountered that were bounded above and below by ash materials. These clay layers could be portions of previous earth dikes or haul roads that have since been buried by the upstream construction method of raising Dike C.

- The alluvial deposits beneath the ash classified as silty sand (SM). This material was non-plastic and poorly graded, being predominantly fine sand with 17 to 42 percent fines.

- The bottom ash from the Bull Run Fossil Plant classified as silty sand with gravel (SM). The material was non-plastic and well graded. The three samples collected during buttress construction were consistent with each other, having fines content ranging from 22 to 25 percent, gravel content ranging from 20 to 21 percent, and specific gravity of 2.39.

- The soil cover classified as sandy fat clay (CH/CL). The material had less than 2 percent gravel and had 63 percent fines content.

9. As-Built Documentation

During buttress construction, TVA surveyors periodically collected as-built survey information utilized herein to produce as-built drawings. Unfortunately, due to the emergency nature of the project and the rapidly evolving site conditions, TVA was unable to collect survey data at every critical stage of the construction. For example, no surveying was performed immediately after excavation for the ditch and buttress foundation (i.e., prior to placement of stone base material). Also, based on the available data and knowledge of the construction activities, it does not appear that the full extents (in plan view) of various components were surveyed. For example, the centerline of the toe ditch was surveyed, but the edge of the ditch closest to the failed dredge cell was not surveyed. As-built survey files, provided to Stantec by TVA and MACTEC, are included in Appendix H.

Reasonable efforts were made to combine available as-built survey data with aerial mapping data, design data, and construction observations to generate as-built drawings that are fair representations of the constructed features associated with the buttress. As-built drawings, attached in Appendix H, are as follows:

- Dike D Buttress plan view,
- Partial profile along project baseline (to show wraparound armoring),
- Cross sections through buttress at Stations 1+50, 4+00, and 6+50, and
- Profiles along both grouted pipes.

It should be noted that due to ongoing construction activities in the vicinity of Dike D, the conditions shown in as-built drawings only represent the condition at the time of survey and may not represent current conditions. For example, soon after buttress construction was completed, a rock dike (known as Dike 2) was connected to Dike D over top of the wraparound area. Dike 2 is reflected in the April 9, 2009 topographic mapping that is shown on the plan view in Appendix H.

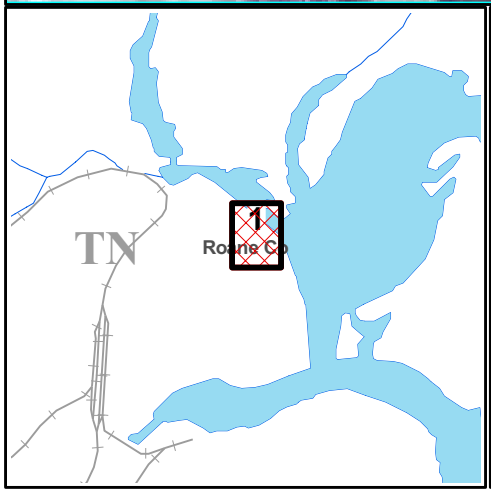
Appendix A

Dikes C and D Monitoring and Reporting

MAIN ASH POND

Note: Photography Taken Prior To Ash Spill

This Is A Draft Plot To Be Used For Visual Representation Only



KINGSTON FOSSIL PLANT

DECEMBER 2008 DREDGE CELL FAILURE
LOCATION OF SURVEYED TENSION & COMPRESSION CRACKS
29 DECEMBER 2008 - PROJECT: TBK776

FILE: TBK776B.XYZ

100 50 0 100 200 Feet

N

Last Updated: Jan 09, 2009

SHEET 1 OF 1

LEGEND

TENSION CRACK

COMPRESSION CRACK

TBK776B.XYZ file provided to Stantec by TVA on 1/9/2009

Kingston Fossil Plant - By-Products Disposal - December 2008 Dredge Cell Failure
Project: TBK776
Tension & Compression Cracks
Date: 22-23 December 2008

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2004,2441999.28,556962.79,763.24,C-CRACK1
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Tennessee Valley Authority

Power System Operations
Surveying & Project Services

Project: Kingston Fossil Plant
By-Products Disposal
December 2008 Dredge Cell Failure
• Tension & Compression Cracks
December 2008
Data File Statistics

Project NO.: TBK776
Survey Date: 22-23 December 2008

Projection: Tennessee Lambert
Note: Coordinates Are Based On Newer (1971) Basic Control
And Will Not Be Compatible With The Original Plant Datum.
Horizontal Datum: NAD 27
Coordinate Type: Ground
Vertical Datum: NGVD 29

Printing Date: 01-09-2009

Statistics For Data File
TBK776B.XYZ

Number Of Points In File: 284

Minimum Northing (Y) Value: 556,580.09
Value Found At Point Number: 9028

Maximum Northing (Y) Value: 557,144.25
Value Found At Point Number: 6007

Minimum Easting (X) Value: 2,441,525.66
Value Found At Point Number: 9021

Maximum Easting (X) Value: 2,442,008.95
Value Found At Point Number: 2001

Minimum Elevation (Z) Value: 761.81
Value Found At Point Number: 2000

Maximum Elevation (Z) Value: 775.26
Value Found At Point Number: 9023

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

Stantec

January 14, 2009 171468117L01

Mr. Mark Cade
MACTEC
105 Fordham Road
Oak Ridge, Tennessee 37830

Re: Dikes C and D Monitoring and Reporting Plan
Kingston Fossil Plant
Harriman, Roane County, Tennessee

Dear Mr. Cade:

Stantec Consulting Services Inc. (Stantec) is providing you with a formal monitoring and reporting plan for your activities related to portions of Dikes C and D at the Kingston Fossil Plant. Details of the plan are as follows:

- The engineering team shall designate a qualified party tasked with performing periodic observations of portions of Dikes C and D. A "qualified party" shall consist of one or more engineers or engineering technicians with experience in geotechnical engineering projects. Further, the qualified party shall be trained by and working under direct supervision of a licensed geotechnical engineer who is familiar with the facilities being monitored and the issues of concern.
- Until further notice, observations shall be performed at least every two hours.
- The areas of concern consist of the northernmost 600 feet of Dike D and northernmost 600 feet of Dike C, including the connection of these two segments. The role of these segments in retention of the pool in the ash pond is the primary focus.
- Issues of concern include dike stability and seepage through or under dikes.
- Visual observations shall be performed on the following components of the dikes: crest, inboard slope, outboard slope, and any penetration areas such as pipe inlets/outlets. Crack monitoring and measurements shall continue per your current procedures.
- The observers shall complete a written log to document that the observation was performed as scheduled and to note any findings, including crack measurements. Logs shall be provided to Stantec (jeff.dingrando@stantec.com) via email every 2 days. Also, all previous measurements taken to date shall be provided to Stantec via email within 2 days of receiving this letter.
- Any indications of new tension cracks, seepage, surface deformations, or other concerning signs of instability or distress shall be immediately reported to Mark Cade (MACTEC, 865-806-0617), Don Fuller (Stantec, 859-619-8960), Jeff Dingrando (Stantec, 859-797-4236), and Barry Snider (TVA, 423-413-3504).

Please review this plan and implement it immediately. If you have any questions or need additional information, please call.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Jeffrey S. Dingrando, PE, PG
Geotechnical Engineer

/rws

cc: Barry Snider (TVA)
Jamey Dotson (TVA)
Missy Hedgecoth (TVA)
Stuart Harris (TVA)

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

Note: The data herein were collected by MACTEC for TVA. Stantec has included this information because it is related to other Dike D Buttress efforts. However, Stantec did not supervise MACTEC's collection of these data and cannot verify its accuracy or completeness.

Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
1	12/25/2008	7:40	35.91288	-84.50734	24 1/4"	No apparent movement in the 5 cracks being observed
1	12/25/2008	9:51	35.91288	-84.50734	24 1/4"	
1	12/25/2008	11:56	35.91288	-84.50734	24 1/4"	
1	12/25/2008	13:43	35.91288	-84.50734	24 1/4"	
1	12/25/2008	17:45	35.91288	-84.50734	24 1/4"	
1	12/25/2008	19:58	35.91288	-84.50734	24 1/4"	
1	12/25/2008	21:40	35.91288	-84.50734	24 1/4"	
1	12/25/2008	23:45	35.91288	-84.50734	24 1/4"	
1	12/26/2008	1:45	35.91288	-84.50734	24 1/4"	
1	12/26/2008	3:45	35.91288	-84.50734	24 1/4"	
1	12/26/2008	5:45	35.91288	-84.50734	24 1/4"	
1	12/26/2008	7:48	35.91288	-84.50734	24 1/4"	
1	12/26/2008	10:01	35.91288	-84.50734	24 1/4"	
1	12/26/2008	12:02	35.91288	-84.50734	24 1/4"	
1	12/26/2008	14:01	35.91288	-84.50734	24 1/4"	
1	12/26/2008	16:43	35.91288	-84.50734		
2	12/25/2008	7:40	35.91290	-84.50773	24"	No apparent movement in the 5 cracks being observed
2	12/25/2008	9:51	35.91290	-84.50773	24"	
2	12/25/2008	11:56	35.91290	-84.50773	24"	
2	12/25/2008	13:43	35.91290	-84.50773	24"	
2	12/25/2008	17:45	35.91290	-84.50773	24"	
2	12/25/2008	19:58	35.91290	-84.50773	24"	
2	12/25/2008	21:40	35.91290	-84.50773	24"	
2	12/25/2008	23:45	35.91290	-84.50773	24"	
2	12/26/2008	1:45	35.91290	-84.50773	24"	
2	12/26/2008	3:45	35.91290	-84.50773	24"	
2	12/26/2008	5:45	35.91290	-84.50773	24"	
2	12/26/2008	7:48	35.91290	-84.50773	23 3/4"	
2	12/26/2008	10:01	35.91290	-84.50773	23 3/4"	
2	12/26/2008	12:02	35.91290	-84.50773	23 3/4"	
2	12/26/2008	14:01	35.91290	-84.50773	23 3/4"	
2	12/26/2008	16:43	35.91290	-84.50773		
3	12/25/2008	7:40	35.91288	-84.50784	25"	No apparent movement in the 5 cracks being observed
3	12/25/2008	9:51	35.91288	-84.50784	25 3/16"	
3	12/25/2008	11:56	35.91288	-84.50784	25 3/8"	
3	12/25/2008	13:43	35.91288	-84.50784	25 1/4"	
3	12/25/2008	17:45	35.91288	-84.50784	25 1/4"	
3	12/25/2008	19:58	35.91288	-84.50784	25 1/4"	
3	12/25/2008	21:40	35.91288	-84.50784	25 1/4"	
3	12/25/2008	23:45	35.91288	-84.50784	25 1/4"	
3	12/26/2008	1:45	35.91288	-84.50784	25 1/4"	
3	12/26/2008	3:45	35.91288	-84.50784	25 1/4"	
3	12/26/2008	5:45	35.91288	-84.50784	25 1/4"	
3	12/26/2008	7:48	35.91288	-84.50784	25 1/4"	
3	12/26/2008	10:01	35.91288	-84.50784	25 1/4"	
3	12/26/2008	12:02	35.91288	-84.50784	25 1/4"	
3	12/26/2008	14:01	35.91288	-84.50784	25 1/4"	
3	12/26/2008	16:43	35.91288	-84.50784		
4	12/25/2008	7:40	35.91217	-84.50769	72 1/4"	No apparent movement in the 5 cracks being observed
4	12/25/2008	9:51	35.91217	-84.50769	72 1/4"	
4	12/25/2008	11:56	35.91217	-84.50769	72 1/4"	
4	12/25/2008	13:43	35.91217	-84.50769	72 1/4"	
4	12/25/2008	17:45	35.91217	-84.50769	72 1/4"	
4	12/25/2008	19:58	35.91217	-84.50769	72 1/4"	
4	12/25/2008	21:40	35.91217	-84.50769	72 1/4"	
4	12/25/2008	23:45	35.91217	-84.50769	72 1/4"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

Note: The data herein were collected by MACTEC for TVA. Stantec has included this information because it is related to other Dike D Buttress efforts. However, Stantec did not supervise MACTEC's collection of these data and cannot verify its accuracy or completeness.

Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
4	12/26/2008	1:45	35.91217	-84.50769	72 1/2"	
4	12/26/2008	3:45	35.91217	-84.50769	72 1/4"	
4	12/26/2008	5:45	35.91217	-84.50769	72 1/4"	
4	12/26/2008	7:48	35.91217	-84.50769	72 1/4"	
4	12/26/2008	10:01	35.91217	-84.50769	72 1/4"	
4	12/26/2008	12:02	35.91217	-84.50769	72 1/4"	
4	12/26/2008	14:01	35.91217	-84.50769	72 1/4"	
4	12/26/2008	16:43	35.91217	-84.50769	72 1/4"	
4	12/26/2008	18:55	35.91217	-84.50769	72 1/4"	
4	12/26/2008	20:50	35.91217	-84.50769	72 1/4"	
4	12/26/2008	22:55	35.91217	-84.50769	72 1/2"	
4	12/27/2008	2:50	35.91217	-84.50769	72 1/2"	
4	12/27/2008	4:45	35.91217	-84.50769	72 1/2"	
4	12/27/2008	6:45	35.91217	-84.50769	72 1/2"	
4	12/27/2008	8:45	35.91217	-84.50769	72 1/2"	
4	12/27/2008	10:46	35.91217	-84.50769	72 1/2"	
4	12/27/2008	14:52	35.91217	-84.50769	72 1/2"	
4	12/27/2008	18:50	35.91217	-84.50769	72 1/2"	
4	12/27/2008	20:50	35.91217	-84.50769	72 1/2"	
4	12/27/2008	22:53	35.91217	-84.50769	72 1/2"	
4	12/27/2008	24:50	35.91217	-84.50769	72 1/2"	
4	12/27/2008	24:55	35.91217	-84.50769	72 1/2"	
4	12/28/2008	3:05	35.91217	-84.50769	72 1/2"	
4	12/28/2008	4:53	35.91217	-84.50769	72 1/2"	
4	12/28/2008	6:50	35.91217	-84.50769	72 1/2"	
4	12/28/2008	8:54	35.91217	-84.50769	72 1/2"	
4	12/28/2008	10:51	35.91217	-84.50769	72 1/2"	
4	12/28/2008	12:46	35.91217	-84.50769	72 1/2"	
4	12/28/2008	14:49	35.91217	-84.50769	72 1/2"	
4	12/28/2008	16:47	35.91217	-84.50769	72 1/2"	
4	12/28/2008	18:45	35.91217	-84.50769	72 1/2"	
4	12/28/2008	20:45	35.91217	-84.50769	72 1/2"	
4	12/28/2008	22:50	35.91217	-84.50769	72 1/2"	
4	12/28/2008	24:45	35.91217	-84.50769	72 1/2"	
4	12/29/2008	2:50	35.91217	-84.50769	72 1/2"	
4	12/29/2008	4:45	35.91217	-84.50769	72 1/2"	
4	12/29/2008	6:52	35.91217	-84.50769	72 1/2"	
4	12/29/2008	8:43	35.91217	-84.50769	72 1/2"	
4	12/29/2008	10:45	35.91217	-84.50769	72 1/2"	
4	12/29/2008	12:51	35.91217	-84.50769	72 1/2"	
4	12/29/2008	14:52	35.91217	-84.50769	72 1/2"	
4	12/29/2008	16:51	35.91217	-84.50769	72 1/2"	
4	12/29/2008	18:50	35.91217	-84.50769	72 1/2"	
4	12/29/2008	20:30	35.91217	-84.50769	72 1/2"	
4	12/29/2008	22:30	35.91217	-84.50769	72 1/2"	
4	12/29/2008	24:30	35.91217	-84.50769	72 1/2"	
4	12/30/2008	2:30	35.91217	-84.50769	72 1/2"	
4	12/30/2008	4:30	35.91217	-84.50769	72 1/2"	
4	12/30/2008	6:47	35.91217	-84.50769	72 1/2"	
4	12/30/2008	8:48	35.91217	-84.50769	72 1/2"	
4	12/30/2008	10:49	35.91217	-84.50769	72 1/2"	
4	12/30/2008	12:44	35.91217	-84.50769	72 1/2"	
4	12/30/2008	14:52	35.91217	-84.50769	72 1/2"	
4	12/30/2008	16:46	35.91217	-84.50769	72 1/2"	
4	12/30/2008	19:05	35.91217	-84.50769	72 1/2"	
4	12/30/2008	21:06	35.91217	-84.50769	72 1/2"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
4	12/30/2008	23:05	35.91217	-84.50769	72 1/2"	
4	12/31/2008	1:04	35.91217	-84.50769	72 1/2"	
4	12/31/2008	3:03	35.91217	-84.50769	72 1/2"	
4	12/31/2008	5:00	35.91217	-84.50769	72 1/2"	
4	12/31/2008	6:59	35.91217	-84.50769	72 1/2"	
4	12/31/2008	8:57	35.91217	-84.50769	72 1/2"	
4	12/31/2008	10:54	35.91217	-84.50769	72 1/2"	
4	12/31/2008	13:09	35.91217	-84.50769	72 1/2"	
4	12/31/2008	15:02	35.91217	-84.50769	72 1/2"	
4	12/31/2008	18:30	35.91217	-84.50769	72 1/2"	
4	12/31/2008	21:05	35.91217	-84.50769	72 1/2"	
4	12/31/2008	22:05	35.91217	-84.50769	72 1/2"	
4	1/1/2009	1:05	35.91217	-84.50769	72 1/2"	
4	1/1/2009	3:00	35.91217	-84.50769	72 1/2"	
4	1/1/2009	5:07	35.91217	-84.50769	72 1/2"	
4	1/1/2009	6:37	35.91217	-84.50769	72 1/2"	
4	1/1/2009	9:36	35.91217	-84.50769	72 1/2"	
4	1/1/2009	11:05	35.91217	-84.50769	72 1/2"	
4	1/1/2009	13:01	35.91217	-84.50769	72 1/2"	
4	1/1/2009	14:42	35.91217	-84.50769	72 1/2"	
4	1/1/2009	17:00	35.91217	-84.50769	72 1/2"	
4	1/1/2009	19:05	35.91217	-84.50769	72 1/2"	
4	1/1/2009	21:05	35.91217	-84.50769	72 1/2"	
4	1/1/2009	23:00	35.91217	-84.50769	72 1/2"	
4	1/2/2009	1:00	35.91217	-84.50769	72 1/2"	
4	1/2/2009	3:10	35.91217	-84.50769	72 1/2"	
4	1/2/2009	5:05	35.91217	-84.50769	72 1/2"	
4	1/2/2009	7:08	35.91217	-84.50769	72 1/2"	
4	1/2/2009	9:22	35.91217	-84.50769	72 1/2"	
4	1/2/2009	11:17	35.91217	-84.50769	72 1/2"	
4	1/2/2009	13:11	35.91217	-84.50769	72 1/2"	
4	1/2/2009	15:20	35.91217	-84.50769	72 1/2"	
4	1/2/2009	17:25	35.91217	-84.50769	72 1/2"	
4	1/2/2009	19:00	35.91217	-84.50769	72 1/2"	
4	1/2/2009	21:05	35.91217	-84.50769	72 1/2"	
4	1/2/2009	23:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	1:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	3:05	35.91217	-84.50769	72 1/2"	
4	1/3/2009	5:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	7:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	9:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	11:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	13:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	15:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	17:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	19:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	21:00	35.91217	-84.50769	72 1/2"	
4	1/3/2009	23:00	35.91217	-84.50769	72 1/2"	
4	1/4/2009	1:00	35.91217	-84.50769	72 1/2"	
4	1/4/2009	3:05	35.91217	-84.50769	72 1/2"	
4	1/4/2009	5:05	35.91217	-84.50769	72 1/2"	
4	1/4/2009	6:50	35.91217	-84.50769	72 1/2"	
4	1/4/2009	8:53	35.91217	-84.50769	72 1/2"	
4	1/4/2009	10:55	35.91217	-84.50769	72 1/2"	
4	1/4/2009	12:50	35.91217	-84.50769	72 1/2"	
4	1/4/2009	14:50	35.91217	-84.50769	72 1/2"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
4	1/4/2009	16:51	35.91217	-84.50769	72 1/2"	
4	1/4/2009	19:10	35.91217	-84.50769	72 1/2"	
4	1/4/2009	21:05	35.91217	-84.50769	72 1/2"	
4	1/4/2009	23:05	35.91217	-84.50769	72 1/2"	
4	1/5/2009	1:05	35.91217	-84.50769	72 1/2"	
4	1/5/2009	3:02	35.91217	-84.50769	72 1/2"	
4	1/5/2009	5:00	35.91217	-84.50769	72 1/2"	
4	1/5/2009	7:00	35.91217	-84.50769	72 1/2"	
4	1/5/2009	9:00	35.91217	-84.50769	72 1/2"	
4	1/5/2009	11:31	35.91217	-84.50769	72 1/2"	
4	1/5/2009	13:20	35.91217	-84.50769	72 1/2"	
4	1/5/2009	15:13	35.91217	-84.50769	72 1/2"	
4	1/5/2009	17:10	35.91217	-84.50769	72 1/2"	
4	1/5/2009	19:00	35.91217	-84.50769	72 1/2"	
4	1/5/2009	21:00	35.91217	-84.50769	72 1/2"	
4	1/5/2009	23:05	35.91217	-84.50769	72 1/2"	
4	1/6/2009	1:05	35.91217	-84.50769	72 1/2"	
4	1/6/2009	3:05	35.91217	-84.50769	72 1/2"	
4	1/6/2009	5:05	35.91217	-84.50769	72 1/2"	
4	1/6/2009	6:47	35.91217	-84.50769	72 1/2"	
4	1/6/2009	9:15	35.91217	-84.50769	72 1/2"	
4	1/6/2009	11:23	35.91217	-84.50769	72 1/2"	
4	1/6/2009	13:09	35.91217	-84.50769	72 1/2"	
4	1/6/2009	15:03	35.91217	-84.50769	72 1/2"	
4	1/6/2009	17:13	35.91217	-84.50769	72 1/2"	
4	1/6/2009	19:15	35.91217	-84.50769	72 1/2"	
4	1/6/2009	21:05	35.91217	-84.50769	72 1/2"	
4	1/6/2009	23:00	35.91217	-84.50769	72 1/2"	
4	1/7/2009	1:05	35.91217	-84.50769	72 1/2"	
4	1/7/2009	3:10	35.91217	-84.50769	72 1/2"	
4	1/7/2009	5:00	35.91217	-84.50769	72 1/2"	
4	1/7/2009	7:24	35.91217	-84.50769	72 1/2"	
4	1/7/2009	9:17	35.91217	-84.50769	72 1/2"	
4	1/7/2009	12:45	35.91217	-84.50769	72 1/2"	
4	1/7/2009	15:00	35.91217	-84.50769	73"	
4	1/7/2009	17:00	35.91217	-84.50769	73"	
4	1/7/2009	19:00	35.91217	-84.50769	72 1/2"	
4	1/7/2009	21:05	35.91217	-84.50769	72 1/2"	
4	1/7/2009	21:10	35.91217	-84.50769	72 3/4"	
4	1/7/2009	23:05	35.91217	-84.50769	72 3/4"	
4	1/8/2009	1:05	35.91217	-84.50769	72 3/4"	
4	1/8/2009	3:10	35.91217	-84.50769	72 3/4"	
4	1/8/2009	5:05	35.91217	-84.50769	72 3/4"	
4	1/8/2009	7:02	35.91217	-84.50769	72 3/4"	
4	1/8/2009	9:00	35.91217	-84.50769	72 3/4"	
4	1/8/2009	10:50	35.91217	-84.50769	72 3/4"	
4	1/8/2009	13:10	35.91217	-84.50769	72 3/4"	
4	1/8/2009	15:04	35.91217	-84.50769	72 3/4"	
4	1/8/2009	16:35	35.91217	-84.50769	72 3/4"	
4	1/8/2009	19:00	35.91217	-84.50769	72 3/4"	
4	1/8/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/8/2009	23:05	35.91217	-84.50769	72 3/4"	
4	1/9/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/9/2009	3:00	35.91217	-84.50769	72 3/4"	
4	1/9/2009	5:00	35.91217	-84.50769	72 3/4"	
4	1/9/2009	7:00	35.91217	-84.50769	72 3/4"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
4	1/9/2009	9:00	35.91217	-84.50769	72 3/4"	
4	1/9/2009	11:02	35.91217	-84.50769	72 3/4"	
4	1/9/2009	13:12	35.91217	-84.50769	72 3/4"	
4	1/9/2009	15:05	35.91217	-84.50769	72 3/4"	
4	1/9/2009	17:01	35.91217	-84.50769	72 3/4"	
4	1/9/2009	19:11	35.91217	-84.50769	72 3/4"	
4	1/9/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/9/2009	23:05	35.91217	-84.50769	72 3/4"	
4	1/10/2009	1:04	35.91217	-84.50769	72 3/4"	
4	1/10/2009	3:03	35.91217	-84.50769	72 3/4"	
4	1/10/2009	5:06	35.91217	-84.50769	72 3/4"	
4	1/10/2009	7:05	35.91217	-84.50769	72 3/4"	
4	1/10/2009	9:05	35.91217	-84.50769	72 3/4"	
4	1/10/2009	11:00	35.91217	-84.50769	72 3/4"	
4	1/10/2009	13:00	35.91217	-84.50769	72 3/4"	
4	1/10/2009	15:00	35.91217	-84.50769	72 3/4"	
4	1/10/2009	17:00	35.91217	-84.50769	72 3/4"	
4	1/10/2009	19:07	35.91217	-84.50769	72 3/4"	
4	1/10/2009	21:01	35.91217	-84.50769	72 3/4"	
4	1/10/2009	23:09	35.91217	-84.50769	72 3/4"	
4	1/11/2009	1:06	35.91217	-84.50769	72 3/4"	
4	1/11/2009	3:09	35.91217	-84.50769	72 3/4"	
4	1/11/2009	5:09	35.91217	-84.50769	72 3/4"	
4	1/11/2009	7:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	9:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	11:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	13:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	15:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	17:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	19:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/11/2009	23:07	35.91217	-84.50769	72 3/4"	
4	1/12/2009	1:03	35.91217	-84.50769	72 3/4"	
4	1/12/2009	3:11	35.91217	-84.50769	72 3/4"	
4	1/12/2009	5:08	35.91217	-84.50769	72 3/4"	
4	1/12/2009	6:53	35.91217	-84.50769	72 3/4"	
4	1/12/2009	13:40	35.91217	-84.50769	72 3/4"	
4	1/12/2009	15:50	35.91217	-84.50769	72 3/4"	
4	1/12/2009	17:20	35.91217	-84.50769	72 3/4"	
4	1/12/2009	19:09	35.91217	-84.50769	72 3/4"	
4	1/12/2009	21:11	35.91217	-84.50769	72 3/4"	
4	1/12/2009	23:09	35.91217	-84.50769	72 3/4"	
4	1/13/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/13/2009	3:07	35.91217	-84.50769	72 3/4"	
4	1/13/2009	5:10	35.91217	-84.50769	72 3/4"	
4	1/13/2009	7:45	35.91217	-84.50769	72 3/4"	
4	1/13/2009	9:36	35.91217	-84.50769	72 3/4"	
4	1/13/2009	13:00	35.91217	-84.50769	72 3/4"	
4	1/13/2009	15:30	35.91217	-84.50769	72 3/4"	
4	1/13/2009	17:30	35.91217	-84.50769	72 3/4"	
4	1/13/2009	19:00	35.91217	-84.50769	72 3/4"	
4	1/13/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/13/2009	23:00	35.91217	-84.50769	72 3/4"	
4	1/14/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/14/2009	3:00	35.91217	-84.50769	72 3/4"	
4	1/14/2009	3:38	35.91217	-84.50769	72 3/4"	

Dike C and Dike D Crack Monitoring Results
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MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
4	1/14/2009	5:00	35.91217	-84.50769	72 3/4"	
4	1/14/2009	7:05	35.91217	-84.50769	72 3/4"	
4	1/14/2009	9:30	35.91217	-84.50769	72 3/4"	
4	1/14/2009	11:40	35.91217	-84.50769	72 3/4"	
4	1/14/2009	13:30	35.91217	-84.50769	72 3/4"	
4	1/14/2009	19:00	35.91217	-84.50769	72 3/4"	
4	1/14/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/14/2009	23:00	35.91217	-84.50769	72 3/4"	
4	1/15/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/15/2009	3:00	35.91217	-84.50769	72 3/4"	
4	1/15/2009	5:00	35.91217	-84.50769	72 3/4"	
4	1/15/2009	6:15	35.91217	-84.50769	72 3/4"	
4	1/15/2009	8:15	35.91217	-84.50769	72 3/4"	
4	1/15/2009	10:03	35.91217	-84.50769	72 3/4"	
4	1/15/2009	11:09	35.91217	-84.50769	72 3/4"	
4	1/15/2009	13:20	35.91217	-84.50769	72 3/4"	
4	1/15/2009	17:43	35.91217	-84.50769	72 3/4"	
4	1/15/2009	19:00	35.91217	-84.50769	72 3/4"	
4	1/15/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/15/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	3:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	5:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	7:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	9:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	11:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	13:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	15:00	35.91217	-84.50769	72 3/4"	
4	1/16/2009	17:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	3:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	5:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	7:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	9:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	11:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	13:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	15:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	17:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	19:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/17/2009	23:00	35.91217	-84.50769	72 3/4"	
4	1/18/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/18/2009	3:00	35.91217	-84.50769	72 3/4"	
4	1/18/2009	5:00	35.91217	-84.50769	72 3/4"	
4	1/18/2009	7:01	35.91217	-84.50769	72 3/4"	
4	1/18/2009	9:00	35.91217	-84.50769	72 3/4"	
4	1/18/2009	11:00	35.91217	-84.50769	72 3/4"	
4	1/18/2009	13:05	35.91217	-84.50769	72 3/4"	
4	1/18/2009	15:03	35.91217	-84.50769	72 3/4"	
4	1/18/2009	17:00	35.91217	-84.50769	72 3/4"	
4	1/18/2009	19:00	35.91217	-84.50769	72 1/2"	
4	1/18/2009	21:00	35.91217	-84.50769	72 1/2"	
4	1/18/2009	23:00	35.91217	-84.50769	72 1/2"	
4	1/19/2009	1:00	35.91217	-84.50769	72 1/2"	
4	1/19/2009	3:00	35.91217	-84.50769	72 1/2"	
4	1/19/2009	5:00	35.91217	-84.50769	72 1/2"	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
4	1/19/2009	7:03	35.91217	-84.50769	72 1/2"	
4	1/19/2009	8:56	35.91217	-84.50769	72 1/2"	
4	1/19/2009	11:00	35.91217	-84.50769	72 1/2"	
4	1/19/2009	13:03	35.91217	-84.50769	72 1/2"	
4	1/19/2009	15:00	35.91217	-84.50769	72 1/2"	
4	1/19/2009	17:02	35.91217	-84.50769	72 1/2"	
4	1/19/2009	19:00	35.91217	-84.50769	72 1/2"	
4	1/19/2009	21:00	35.91217	-84.50769	72 1/2"	
4	1/19/2009	23:00	35.91217	-84.50769	72 1/2"	
4	1/20/2009	1:00	35.91217	-84.50769	72 1/2"	
4	1/20/2009	3:00	35.91217	-84.50769	72 1/2"	
4	1/20/2009	5:00	35.91217	-84.50769	72 1/2"	
4	1/20/2009	7:10	35.91217	-84.50769	72 1/2"	
4	1/20/2009	9:16	35.91217	-84.50769	72 1/2"	
4	1/20/2009	11:07	35.91217	-84.50769	72 1/2"	
4	1/20/2009	13:00	35.91217	-84.50769	72 1/2"	
4	1/20/2009	14:56	35.91217	-84.50769	72 1/2"	
4	1/20/2009	17:03	35.91217	-84.50769	72 1/2"	
4	1/20/2009	19:00	35.91217	-84.50769	72 3/4"	
4	1/20/2009	21:00	35.91217	-84.50769	72 3/4"	
4	1/20/2009	23:00	35.91217	-84.50769	72 3/4"	
4	1/21/2009	1:00	35.91217	-84.50769	72 3/4"	
4	1/21/2009	3:00	35.91217	-84.50769	72 3/4"	
4	1/21/2009	5:00	35.91217	-84.50769	72 3/4"	
4	1/21/2009	6:41	35.91217	-84.50769	72 3/4"	
4	1/21/2009	8:45	35.91217	-84.50769	72 3/4"	
4	1/21/2009	10:45	35.91217	-84.50769	72 3/4"	
5	12/25/2008	7:40	35.91197	-84.50881	34 1/8"	No apparent movement in the 5 cracks being observed
5	12/25/2008	9:51	35.91197	-84.50881	34"	
5	12/25/2008	11:56	35.91197	-84.50881	34 1/8"	
5	12/25/2008	13:43	35.91197	-84.50881	34 1/8"	
5	12/25/2008	17:45	35.91197	-84.50881	34 1/8"	
5	12/25/2008	19:58	35.91197	-84.50881	34 1/8"	
5	12/25/2008	21:40	35.91197	-84.50881	34 1/4"	
5	12/25/2008	23:45	35.91197	-84.50881	34 1/4"	
5	12/26/2008	1:45	35.91197	-84.50881	34 1/4"	
5	12/26/2008	3:45	35.91197	-84.50881	34 1/4"	
5	12/26/2008	5:45	35.91197	-84.50881	34 1/8"	
5	12/26/2008	7:48	35.91197	-84.50881	34 1/8"	
5	12/26/2008	10:01	35.91197	-84.50881	34"	
5	12/26/2008	12:02	35.91197	-84.50881	34"	
5	12/26/2008	14:01	35.91197	-84.50881	34"	
5	12/26/2008	16:43	35.91197	-84.50881	34"	
5	12/26/2008	18:55	35.91197	-84.50881	34"	
5	12/26/2008	20:50	35.91197	-84.50881	34"	
5	12/26/2008	22:55	35.91197	-84.50881	34"	
5	12/27/2008	2:50	35.91197	-84.50881	34"	
5	12/27/2008	4:45	35.91197	-84.50881	34"	
5	12/27/2008	6:45	35.91197	-84.50881	34"	
5	12/27/2008	8:45	35.91197	-84.50881	34"	
5	12/27/2008	10:46	35.91197	-84.50881	34"	
5	12/27/2008	14:52	35.91197	-84.50881	34"	
5	12/27/2008	18:50	35.91197	-84.50881	34"	
5	12/27/2008	20:52	35.91197	-84.50881	34"	
5	12/27/2008	22:56	35.91197	-84.50881	34"	
5	12/27/2008	24:50	35.91197	-84.50881	34"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
5	12/28/2008	1:00	35.91197	-84.50881	34"	
5	12/28/2008	3:08	35.91197	-84.50881	34"	
5	12/28/2008	4:55	35.91197	-84.50881	34"	
5	12/28/2008	6:50	35.91197	-84.50881	34"	
5	12/28/2008	8:54	35.91197	-84.50881	34"	
5	12/28/2008	10:51	35.91197	-84.50881	34"	
5	12/28/2008	12:46	35.91197	-84.50881	34"	
5	12/28/2008	14:49	35.91197	-84.50881	34"	
5	12/28/2008	16:47	35.91197	-84.50881	34"	
5	12/28/2008	18:45	35.91197	-84.50881	34"	
5	12/28/2008	20:45	35.91197	-84.50881	34"	
5	12/28/2008	22:50	35.91197	-84.50881	34"	
5	12/28/2008	24:45	35.91197	-84.50881	34"	
5	12/29/2008	2:50	35.91197	-84.50881	34"	
5	12/29/2008	4:45	35.91197	-84.50881	34"	
5	12/29/2008	6:52	35.91197	-84.50881	34"	
5	12/29/2008	8:43	35.91197	-84.50881	34"	
5	12/29/2008	10:45	35.91197	-84.50881	34"	
5	12/29/2008	12:51	35.91197	-84.50881	34"	
5	12/29/2008	14:52	35.91197	-84.50881	34"	
5	12/29/2008	16:51	35.91197	-84.50881	34"	
5	12/29/2008	18:50	35.91197	-84.50881	34"	
5	12/29/2008	20:30	35.91197	-84.50881	34"	
5	12/29/2008	22:30	35.91197	-84.50881	34"	
5	12/29/2008	24:30	35.91197	-84.50881	34"	
5	12/30/2008	2:30	35.91197	-84.50881	34"	
5	12/30/2008	4:30	35.91197	-84.50881	34"	
5	12/30/2008	6:47	35.91197	-84.50881	34"	
5	12/30/2008	8:48	35.91197	-84.50881	34"	
5	12/30/2008	10:49	35.91197	-84.50881	34"	
5	12/30/2008	12:44	35.91197	-84.50881	34"	
5	12/30/2008	14:52	35.91197	-84.50881	34"	
5	12/30/2008	16:46	35.91197	-84.50881	34"	
5	12/30/2008	19:05	35.91197	-84.50881	34"	
5	12/30/2008	21:08	35.91197	-84.50881	34"	
5	12/30/2008	23:08	35.91197	-84.50881	34"	
5	12/31/2008	1:07	35.91197	-84.50881	34"	
5	12/31/2008	3:07	35.91197	-84.50881	34"	
5	12/31/2008	5:05	35.91197	-84.50881	34"	
5	12/31/2008	6:59	35.91197	-84.50881	34"	
5	12/31/2008	8:57	35.91197	-84.50881	34"	
5	12/31/2008	10:54	35.91197	-84.50881	34"	
5	12/31/2008	13:09	35.91197	-84.50881	34"	
5	12/31/2008	15:02	35.91197	-84.50881	34"	
5	12/31/2008	18:30	35.91197	-84.50881	34"	
5	12/31/2008	21:05	35.91197	-84.50881	34"	
5	12/31/2008	22:05	35.91197	-84.50881	34"	
5	1/1/2009	1:05	35.91197	-84.50881	34"	
5	1/1/2009	3:00	35.91197	-84.50881	34"	
5	1/1/2009	5:07	35.91197	-84.50881	34"	
5	1/1/2009	6:40	35.91197	-84.50881	34"	
5	1/1/2009	9:12	35.91197	-84.50881	34"	
5	1/1/2009	11:08	35.91197	-84.50881	34"	
5	1/1/2009	13:05	35.91197	-84.50881	34"	
5	1/1/2009	14:45	35.91197	-84.50881	34"	
5	1/1/2009	17:04	35.91197	-84.50881	34"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
5	1/1/2009	19:05	35.91197	-84.50881	34"	
5	1/1/2009	21:05	35.91197	-84.50881	34"	
5	1/1/2009	23:00	35.91197	-84.50881	34"	
5	1/2/2009	1:00	35.91197	-84.50881	34"	
5	1/2/2009	3:10	35.91197	-84.50881	34"	
5	1/2/2009	5:05	35.91197	-84.50881	34"	
5	1/2/2009	7:11	35.91197	-84.50881	34"	
5	1/2/2009	9:25	35.91197	-84.50881	34"	
5	1/2/2009	11:19	35.91197	-84.50881	34"	
5	1/2/2009	13:14	35.91197	-84.50881	34"	
5	1/2/2009	15:25	35.91197	-84.50881	34"	
5	1/2/2009	17:28	35.91197	-84.50881	34"	
5	1/2/2009	19:00	35.91197	-84.50881	34"	
5	1/2/2009	21:05	35.91197	-84.50881	34"	
5	1/2/2009	23:00	35.91197	-84.50881	34"	
5	1/3/2009	1:00	35.91197	-84.50881	34"	
5	1/3/2009	3:05	35.91197	-84.50881	34"	
5	1/3/2009	5:00	35.91197	-84.50881	34"	
5	1/3/2009	7:00	35.91197	-84.50881	34"	
5	1/3/2009	9:00	35.91197	-84.50881		
5	1/3/2009	11:00	35.91197	-84.50881	34"	
5	1/3/2009	13:00	35.91197	-84.50881	34"	
5	1/3/2009	15:00	35.91197	-84.50881	34"	
5	1/3/2009	17:00	35.91197	-84.50881	34"	
5	1/3/2009	19:00	35.91197	-84.50881	34"	
5	1/3/2009	21:00	35.91197	-84.50881	34"	
5	1/3/2009	23:00	35.91197	-84.50881	34"	
5	1/4/2009	1:00	35.91197	-84.50881	34"	
5	1/4/2009	3:05	35.91197	-84.50881	34"	
5	1/4/2009	5:05	35.91197	-84.50881	34"	
5	1/4/2009	6:55	35.91197	-84.50881	34"	
5	1/4/2009	8:58	35.91197	-84.50881	34"	
5	1/4/2009	11:00	35.91197	-84.50881	34"	
5	1/4/2009	12:53	35.91197	-84.50881	34"	
5	1/4/2009	14:53	35.91197	-84.50881	34"	
5	1/4/2009	16:54	35.91197	-84.50881	34"	
5	1/4/2009	19:10	35.91197	-84.50881	34"	
5	1/4/2009	21:05	35.91197	-84.50881	34"	
5	1/4/2009	23:05	35.91197	-84.50881	34"	
5	1/5/2009	1:05	35.91197	-84.50881	34"	
5	1/5/2009	3:02	35.91197	-84.50881	34"	
5	1/5/2009	5:00	35.91197	-84.50881	34"	
5	1/5/2009	7:00	35.91197	-84.50881	34"	
5	1/5/2009	9:00	35.91197	-84.50881	34"	
5	1/5/2009	11:31	35.91197	-84.50881	34"	
5	1/5/2009	13:20	35.91197	-84.50881	34"	
5	1/5/2009	15:13	35.91197	-84.50881	34"	
5	1/5/2009	17:10	35.91197	-84.50881	34"	
5	1/5/2009	19:00	35.91197	-84.50881	34"	
5	1/5/2009	21:00	35.91197	-84.50881	34"	
5	1/5/2009	23:05	35.91197	-84.50881	34"	
5	1/6/2009	1:05	35.91197	-84.50881	34"	
5	1/6/2009	3:05	35.91197	-84.50881	34"	
5	1/6/2009	5:05	35.91197	-84.50881	34"	
5	1/6/2009	6:47	35.91197	-84.50881	34"	
5	1/6/2009	9:15	35.91197	-84.50881	34"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
5	1/6/2009	11:23	35.91197	-84.50881	34"	
5	1/6/2009	13:09	35.91197	-84.50881	34"	
5	1/6/2009	15:03	35.91197	-84.50881	34"	
5	1/6/2009	17:13	35.91197	-84.50881	34"	
5	1/6/2009	19:15	35.91197	-84.50881	34"	
5	1/6/2009	21:05	35.91197	-84.50881	34"	
5	1/6/2009	23:00	35.91197	-84.50881	34"	
5	1/7/2009	1:05	35.91197	-84.50881	34"	
5	1/7/2009	3:10	35.91197	-84.50881	34"	
5	1/7/2009	5:00	35.91197	-84.50881	34"	
5	1/7/2009	7:24	35.91197	-84.50881	34"	
5	1/7/2009	9:17	35.91197	-84.50881		Was filled in with surge stone and #57 stone
5	1/7/2009	12:45	35.91197	-84.50881		
5	1/7/2009	15:00	35.91197	-84.50881	34"	
5	1/7/2009	17:00	35.91197	-84.50881	34"	
5	1/7/2009	19:00	35.91197	-84.50881	31 1/2"	Reset
5	1/7/2009	21:05	35.91197	-84.50881	34"	
5	1/7/2009	21:10	35.91197	-84.50881	31 1/2"	
5	1/7/2009	23:05	35.91197	-84.50881	31 1/2"	
5	1/8/2009	1:05	35.91197	-84.50881	31 1/2"	
5	1/8/2009	3:10	35.91197	-84.50881	31 1/2"	
5	1/8/2009	5:05	35.91197	-84.50881	31 1/2"	
5	1/8/2009	7:02	35.91197	-84.50881	31 1/2"	
5	1/8/2009	9:00	35.91197	-84.50881	31 1/2"	
5	1/8/2009	12:45	35.91197	-84.50881	31 1/2"	
5	1/8/2009	13:10	35.91197	-84.50881	31 1/2"	
5	1/8/2009	15:04	35.91197	-84.50881	31 1/2"	
5	1/8/2009	16:35	35.91197	-84.50881	31 1/2"	
5	1/8/2009	19:00	35.91197	-84.50881	31 1/2"	
5	1/8/2009	21:05	35.91197	-84.50881	31 1/2"	
5	1/8/2009	23:05	35.91197	-84.50881	31 1/2"	
5	1/9/2009	1:00	35.91197	-84.50881	31 1/2"	
5	1/9/2009	3:00	35.91197	-84.50881	31 1/2"	
5	1/9/2009	5:00	35.91197	-84.50881	31 1/2"	
5	1/9/2009	7:00	35.91197	-84.50881	31 1/2"	
5	1/9/2009	9:00	35.91197	-84.50881	31 1/2"	
5	1/9/2009	11:02	35.91197	-84.50881	31 1/2"	
5	1/9/2009	13:12	35.91197	-84.50881	31 1/2"	
5	1/9/2009	15:05	35.91197	-84.50881	31 1/2"	
5	1/9/2009	17:01	35.91197	-84.50881	31 1/2"	
5	1/9/2009	19:11	35.91197	-84.50881	31 1/2"	
5	1/9/2009	21:05	35.91197	-84.50881	31 1/2"	
5	1/9/2009	23:05	35.91197	-84.50881	31 1/2"	
5	1/10/2009	1:04	35.91197	-84.50881	31 1/2"	
5	1/10/2009	3:03	35.91197	-84.50881	31 1/2"	
5	1/10/2009	5:06	35.91197	-84.50881	31 1/2"	
5	1/10/2009	7:05	35.91197	-84.50881	31 1/2"	
5	1/10/2009	9:05	35.91197	-84.50881	31 1/2"	
5	1/10/2009	11:00	35.91197	-84.50881	31 1/2"	
5	1/10/2009	13:00	35.91197	-84.50881	31 1/2"	
5	1/10/2009	15:00	35.91197	-84.50881	31 1/2"	
5	1/10/2009	17:00	35.91197	-84.50881	31 1/2"	
5	1/10/2009	19:07	35.91197	-84.50881	31 1/2"	
5	1/10/2009	21:01	35.91197	-84.50881	31 1/2"	
5	1/10/2009	23:09	35.91197	-84.50881	31 1/2"	
5	1/11/2009	1:06	35.91197	-84.50881	31 1/2"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
5	1/11/2009	3:09	35.91197	-84.50881	31 1/2"	
5	1/11/2009	5:09	35.91197	-84.50881	31 1/2"	
5	1/11/2009	7:00	35.91197	-84.50881	31 1/2"	
5	1/11/2009	9:00	35.91197	-84.50881		
5	1/11/2009	11:00	35.91197	-84.50881		
5	1/11/2009	13:00	35.91197	-84.50881		
5	1/11/2009	15:00	35.91197	-84.50881		
5	1/11/2009	17:00	35.91197	-84.50881		
5	1/11/2009	19:00	35.91197	-84.50881		
5	1/11/2009	21:00	35.91197	-84.50881		
5	1/11/2009	23:07	35.91197	-84.50881		
5	1/12/2009	1:03	35.91197	-84.50881		
5	1/12/2009	3:11	35.91197	-84.50881		
5	1/12/2009	5:08	35.91197	-84.50881		
5	1/12/2009	6:53	35.91197	-84.50881		
5	1/12/2009	13:40	35.91197	-84.50881		
5	1/12/2009	15:50	35.91197	-84.50881		
5	1/12/2009	17:20	35.91197	-84.50881		
5	1/12/2009	19:09	35.91197	-84.50881		
5	1/12/2009	21:11	35.91197	-84.50881		
5	1/12/2009	23:09	35.91197	-84.50881		
5	1/13/2009	1:00	35.91197	-84.50881		
5	1/13/2009	3:07	35.91197	-84.50881		
5	1/13/2009	5:10	35.91197	-84.50881		
5	1/13/2009	7:45	35.91197	-84.50881		
5	1/13/2009	9:36	35.91197	-84.50881		
5	1/13/2009	13:00	35.91197	-84.50881		
5	1/13/2009	15:30	35.91197	-84.50881		
5	1/13/2009	17:30	35.91197	-84.50881		
5	1/13/2009	19:00	35.91197	-84.50881		
5	1/13/2009	21:00	35.91197	-84.50881		
5	1/13/2009	23:00	35.91197	-84.50881		
5	1/14/2009	1:00	35.91197	-84.50881		
5	1/14/2009	3:00	35.91197	-84.50881		
5	1/14/2009	3:38	35.91197	-84.50881		
5	1/14/2009	5:00	35.91197	-84.50881		
5	1/14/2009	7:05	35.91197	-84.50881		
5	1/14/2009	9:30	35.91197	-84.50881		
5	1/14/2009	11:40	35.91197	-84.50881		
5	1/14/2009	13:30	35.91197	-84.50881		
5	1/14/2009	19:00	35.91197	-84.50881		
5	1/14/2009	21:00	35.91197	-84.50881		
5	1/14/2009	23:00	35.91197	-84.50881		
5	1/15/2009	1:00	35.91197	-84.50881		
5	1/15/2009	3:00	35.91197	-84.50881		
5	1/15/2009	5:00	35.91197	-84.50881		
5	1/15/2009	6:15	35.91197	-84.50881		
5	1/15/2009	8:15	35.91197	-84.50881		
5	1/15/2009	10:03	35.91197	-84.50881		
5	1/15/2009	11:09	35.91197	-84.50881		
5	1/15/2009	13:20	35.91197	-84.50881		
5	1/15/2009	17:43	35.91197	-84.50881		
5	1/15/2009	19:00	35.91197	-84.50881		
5	1/15/2009	21:00	35.91197	-84.50881		
5	1/15/2009	21:00	35.91197	-84.50881		
5	1/16/2009	1:00	35.91197	-84.50881		

Dike C and Dike D Crack Monitoring Results
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MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
5	1/16/2009	3:00	35.91197	-84.50881		
5	1/16/2009	5:00	35.91197	-84.50881		
6	12/25/2008	19:58	35.91330	-84.50776	29"	
6	12/25/2008	21:40	35.91330	-84.50776	29"	
6	12/25/2008	23:45	35.91330	-84.50776		
6	12/26/2008	1:45	35.91330	-84.50776		No apparent change
6	12/26/2008	3:45	35.91330	-84.50776	NC	
6	12/26/2008	5:45	35.91330	-84.50776	29"	
6	12/26/2008	7:48	35.91330	-84.50776	NC	
6	12/26/2008	10:01	35.91330	-84.50776	NC	
6	12/26/2008	12:02	35.91330	-84.50776	NC	
6	12/26/2008	14:01	35.91330	-84.50776	NC	
6	12/26/2008	16:43	35.91330	-84.50776	NC	
6	12/26/2008	18:55	35.91330	-84.50776	NC	
6	12/26/2008	20:50	35.91330	-84.50776		
6	12/26/2008	22:55	35.91330	-84.50776	NC	
6	12/27/2008	2:50	35.91330	-84.50776		
6	12/27/2008	4:45	35.91330	-84.50776	NC	
6	12/27/2008	6:45	35.91330	-84.50776	NC	
6	12/27/2008	8:45	35.91330	-84.50776	NC	
6	12/27/2008	10:46	35.91330	-84.50776	NC	
6	12/27/2008	14:52	35.91330	-84.50776	NC	
6	12/27/2008	18:51	35.91330	-84.50776	29"	
6	12/27/2008	20:55	35.91330	-84.50776	29"	
6	12/27/2008	23:00	35.91330	-84.50776	29"	
6	12/27/2008	24:50	35.91330	-84.50776	NC	
6	12/28/2008	1:02	35.91330	-84.50776	29"	
6	12/28/2008	3:10	35.91330	-84.50776	29"	
6	12/28/2008	4:58	35.91330	-84.50776	NC	
6	12/28/2008	6:50	35.91330	-84.50776	NC	
6	12/28/2008	8:54	35.91330	-84.50776	NC	
6	12/28/2008	10:51	35.91330	-84.50776	NC	
6	12/28/2008	12:46	35.91330	-84.50776	NC	
6	12/28/2008	14:49	35.91330	-84.50776	NC	
6	12/28/2008	16:47	35.91330	-84.50776	NC	
6	12/28/2008	18:45	35.91330	-84.50776	NC	
6	12/28/2008	20:45	35.91330	-84.50776	NC	
6	12/28/2008	22:50	35.91330	-84.50776	NC	
6	12/28/2008	24:45	35.91330	-84.50776	NC	
6	12/29/2008	2:50	35.91330	-84.50776	NC	
6	12/29/2008	4:45	35.91330	-84.50776		
6	12/29/2008	6:52	35.91330	-84.50776	NC	
6	12/29/2008	8:43	35.91330	-84.50776	NC	
6	12/29/2008	10:45	35.91330	-84.50776	NC	
6	12/29/2008	12:51	35.91330	-84.50776	NC	
6	12/29/2008	14:52	35.91330	-84.50776	NC	
6	12/29/2008	16:51	35.91330	-84.50776	NC	
6	12/29/2008	18:50	35.91330	-84.50776	NC	
6	12/29/2008	20:30	35.91330	-84.50776	NC	
6	12/29/2008	22:30	35.91330	-84.50776	NC	
6	12/29/2008	24:30	35.91330	-84.50776	NC	
6	12/30/2008	2:30	35.91330	-84.50776	NC	
6	12/30/2008	4:30	35.91330	-84.50776	NC	
6	12/30/2008	6:47	35.91330	-84.50776	NC	
6	12/30/2008	8:48	35.91330	-84.50776	NC	
6	12/30/2008	10:49	35.91330	-84.50776	NC	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
6	12/30/2008	12:44	35.91330	-84.50776	NC	
6	12/30/2008	14:52	35.91330	-84.50776	NC	
6	12/30/2008	16:46	35.91330	-84.50776	NC	
6	12/30/2008	19:05	35.91330	-84.50776	NC	
6	12/30/2008	23:14	35.91330	-84.50776	28 2/9"	
6	12/30/2008		35.91330	-84.50776	NC	
6	12/31/2008	6:59	35.91330	-84.50776	NC	
6	12/31/2008	8:57	35.91330	-84.50776	NC	
6	12/31/2008	10:54	35.91330	-84.50776	NC	
6	12/31/2008	13:09	35.91330	-84.50776	NC	
6	12/31/2008	15:02	35.91330	-84.50776	NC	
6	12/31/2008	18:30	35.91330	-84.50776	NC	
6	12/31/2008	21:05	35.91330	-84.50776	NC	
6	12/31/2008	22:05	35.91330	-84.50776	NC	
6	12/31/2008		35.91330	-84.50776	NC	
6	12/31/2008		35.91330	-84.50776	NC	
6	12/31/2008		35.91330	-84.50776	NC	
6	1/1/2009	1:05	35.91330	-84.50776	NC	
6	1/1/2009	3:00	35.91330	-84.50776	NC	
6	1/1/2009	5:07	35.91330	-84.50776	NC	
6	1/1/2009	6:48	35.91330	-84.50776	NC	
6	1/1/2009	9:40	35.91330	-84.50776	29"	
6	1/1/2009	11:13	35.91330	-84.50776	29"	
6	1/1/2009	13:13	35.91330	-84.50776	29"	
6	1/1/2009	14:48	35.91330	-84.50776	29"	
6	1/1/2009	17:08	35.91330	-84.50776	29"	
6	1/1/2009	19:05	35.91330	-84.50776	NC	
6	1/1/2009	21:05	35.91330	-84.50776	NC	
6	1/1/2009	23:00	35.91330	-84.50776	NC	
6	1/2/2009	1:00	35.91330	-84.50776	NC	
6	1/2/2009	3:10	35.91330	-84.50776	NC	
6	1/2/2009	5:05	35.91330	-84.50776	NC	
6	1/2/2009	7:16	35.91330	-84.50776	29"	
6	1/2/2009	9:30	35.91330	-84.50776	29"	
6	1/2/2009	11:24	35.91330	-84.50776	29"	
6	1/2/2009	13:18	35.91330	-84.50776	29"	
6	1/2/2009	15:31	35.91330	-84.50776	29"	
6	1/2/2009	17:33	35.91330	-84.50776	29"	
6	1/2/2009	19:00	35.91330	-84.50776	NC	
6	1/2/2009	21:05	35.91330	-84.50776	NC	
6	1/2/2009	23:00	35.91330	-84.50776	NC	
6	1/3/2009	1:00	35.91330	-84.50776	NC	
6	1/3/2009	3:05	35.91330	-84.50776	NC	
6	1/3/2009	5:00	35.91330	-84.50776	NC	
6	1/3/2009	7:00	35.91330	-84.50776	29"	
6	1/3/2009	9:00	35.91330	-84.50776		
6	1/3/2009	11:00	35.91330	-84.50776	NC	
6	1/3/2009	13:00	35.91330	-84.50776	NC	
6	1/3/2009	15:00	35.91330	-84.50776	NC	
6	1/3/2009	17:00	35.91330	-84.50776	NC	
6	1/3/2009	19:00	35.91330	-84.50776	NC	
6	1/3/2009	21:00	35.91330	-84.50776	NC	
6	1/3/2009	23:00	35.91330	-84.50776	NC	
6	1/4/2009	1:00	35.91330	-84.50776	NC	
6	1/4/2009	3:05	35.91330	-84.50776	NC	
6	1/4/2009	5:05	35.91330	-84.50776	NC	

Dike C and Dike D Crack Monitoring Results
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MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
6	1/4/2009	7:00	35.91330	-84.50776	29"	
6	1/4/2009	9:00	35.91330	-84.50776	29"	
6	1/4/2009	11:02	35.91330	-84.50776	29"	
6	1/4/2009	12:57	35.91330	-84.50776	29"	
6	1/4/2009	14:56	35.91330	-84.50776	29"	
6	1/4/2009	16:57	35.91330	-84.50776	29"	
6	1/4/2009	19:10	35.91330	-84.50776	NC	
6	1/4/2009	21:05	35.91330	-84.50776	NC	
6	1/4/2009	23:05	35.91330	-84.50776	NC	
6	1/5/2009	1:05	35.91330	-84.50776	NC	
6	1/5/2009	3:02	35.91330	-84.50776	NC	
6	1/5/2009	5:00	35.91330	-84.50776	NC	
6	1/5/2009	7:00	35.91330	-84.50776	NC	
6	1/5/2009	9:00	35.91330	-84.50776	NC	
6	1/5/2009	11:31	35.91330	-84.50776	NC	
6	1/5/2009	13:20	35.91330	-84.50776	NC	
6	1/5/2009	15:13	35.91330	-84.50776	NC	
6	1/5/2009	17:10	35.91330	-84.50776	NC	
6	1/5/2009	19:00	35.91330	-84.50776	NC	
6	1/5/2009	21:00	35.91330	-84.50776	NC	
6	1/5/2009	23:05	35.91330	-84.50776	NC	
6	1/6/2009	1:05	35.91330	-84.50776	NC	
6	1/6/2009	3:05	35.91330	-84.50776	NC	
6	1/6/2009	5:05	35.91330	-84.50776	NC	
6	1/6/2009	6:47	35.91330	-84.50776	NC	
6	1/6/2009	9:15	35.91330	-84.50776	NC	
6	1/6/2009	11:23	35.91330	-84.50776	NC	
6	1/6/2009	13:09	35.91330	-84.50776	NC	
6	1/6/2009	15:03	35.91330	-84.50776	NC	
6	1/6/2009	17:13	35.91330	-84.50776	NC	
6	1/6/2009	19:15	35.91330	-84.50776	NC	
6	1/6/2009	21:05	35.91330	-84.50776	NC	
6	1/6/2009	23:00	35.91330	-84.50776	NC	
6	1/7/2009	1:05	35.91330	-84.50776	NC	
6	1/7/2009	3:10	35.91330	-84.50776	NC	
6	1/7/2009	5:00	35.91330	-84.50776	NC	
6	1/7/2009	7:24	35.91330	-84.50776	NC	
6	1/7/2009	9:17	35.91330	-84.50776	NC	
6	1/7/2009	12:45	35.91330	-84.50776		No longer visible due to runoff
6	1/7/2009	15:00	35.91330	-84.50776		No longer visible due to runoff
6	1/7/2009	17:00	35.91330	-84.50776		No longer visible due to runoff
6	1/7/2009	19:00	35.91330	-84.50776	NC	
6	1/7/2009	21:05	35.91330	-84.50776	NC	
6	1/7/2009	21:10	35.91330	-84.50776	NC	
6	1/7/2009	23:05	35.91330	-84.50776	NC	
6	1/8/2009	1:05	35.91330	-84.50776	NC	
6	1/8/2009	3:10	35.91330	-84.50776	NC	
6	1/8/2009	5:05	35.91330	-84.50776	NC	
6	1/8/2009	7:02	35.91330	-84.50776	NC	
6	1/8/2009	9:00	35.91330	-84.50776	NC	
6	1/8/2009	12:45	35.91330	-84.50776	NC	
6	1/8/2009	13:10	35.91330	-84.50776	NC	
6	1/8/2009	15:04	35.91330	-84.50776	NC	
6	1/8/2009	16:35	35.91330	-84.50776		Crack 6 is gone
6	1/8/2009	19:00	35.91330	-84.50776	NC	
6	1/8/2009	21:05	35.91330	-84.50776		

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
6	1/8/2009	23:05	35.91330	-84.50776		
6	1/9/2009	1:00	35.91330	-84.50776		
6	1/9/2009	3:00	35.91330	-84.50776		
6	1/9/2009	5:00	35.91330	-84.50776		
6	1/9/2009	7:00	35.91330	-84.50776		
6	1/9/2009	9:00	35.91330	-84.50776		
6	1/9/2009	11:02	35.91330	-84.50776		
6	1/9/2009	13:12	35.91330	-84.50776		
6	1/9/2009	15:05	35.91330	-84.50776		
6	1/9/2009	17:01	35.91330	-84.50776		
6	1/9/2009	19:11	35.91330	-84.50776		
6	1/9/2009	21:05	35.91330	-84.50776		
6	1/9/2009	23:05	35.91330	-84.50776		
6	1/10/2009	1:04	35.91330	-84.50776		
6	1/10/2009	3:03	35.91330	-84.50776		
6	1/10/2009	5:06	35.91330	-84.50776		
6	1/10/2009	7:05	35.91330	-84.50776		
6	1/10/2009	9:05	35.91330	-84.50776		
6	1/10/2009	11:00	35.91330	-84.50776		
6	1/10/2009	13:00	35.91330	-84.50776		
6	1/10/2009	15:00	35.91330	-84.50776		
6	1/10/2009	17:00	35.91330	-84.50776		
6	1/10/2009	19:07	35.91330	-84.50776		
6	1/10/2009	21:01	35.91330	-84.50776		
6	1/10/2009	23:09	35.91330	-84.50776		
6	1/11/2009	1:06	35.91330	-84.50776		
6	1/11/2009	3:09	35.91330	-84.50776		
6	1/11/2009	5:09	35.91330	-84.50776		
6	1/11/2009	7:00	35.91330	-84.50776		
6	1/11/2009	9:00	35.91330	-84.50776		
6	1/11/2009	11:00	35.91330	-84.50776		
6	1/11/2009	13:00	35.91330	-84.50776		
6	1/11/2009	15:00	35.91330	-84.50776		
6	1/11/2009	17:00	35.91330	-84.50776		
6	1/11/2009	19:00	35.91330	-84.50776		
6	1/11/2009	21:00	35.91330	-84.50776		
6	1/11/2009	23:07	35.91330	-84.50776		
6	1/12/2009	1:03	35.91330	-84.50776		
6	1/12/2009	3:11	35.91330	-84.50776		
6	1/12/2009	5:08	35.91330	-84.50776		
6	1/12/2009	6:53	35.91330	-84.50776		
6	1/12/2009	13:40	35.91330	-84.50776		
6	1/12/2009	15:50	35.91330	-84.50776		
6	1/12/2009	17:20	35.91330	-84.50776		
6	1/12/2009	19:09	35.91330	-84.50776		
6	1/12/2009	21:11	35.91330	-84.50776		
6	1/12/2009	23:09	35.91330	-84.50776		
6	1/13/2009	1:00	35.91330	-84.50776		
6	1/13/2009	3:07	35.91330	-84.50776		
6	1/13/2009	5:10	35.91330	-84.50776		
6	1/13/2009	7:45	35.91330	-84.50776		
6	1/13/2009	9:36	35.91330	-84.50776		
6	1/13/2009	13:00	35.91330	-84.50776		
6	1/13/2009	15:30	35.91330	-84.50776		
6	1/13/2009	17:30	35.91330	-84.50776		
6	1/13/2009	19:00	35.91330	-84.50776		

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
6	1/13/2009	21:00	35.91330	-84.50776		
6	1/13/2009	23:00	35.91330	-84.50776		
6	1/14/2009	1:00	35.91330	-84.50776		
6	1/14/2009	3:00	35.91330	-84.50776		
6	1/14/2009	3:38	35.91330	-84.50776		
6	1/14/2009	5:00	35.91330	-84.50776		
6	1/14/2009	7:05	35.91330	-84.50776		
6	1/14/2009	9:30	35.91330	-84.50776		
6	1/14/2009	11:40	35.91330	-84.50776		
6	1/14/2009	13:30	35.91330	-84.50776		
6	1/14/2009	19:00	35.91330	-84.50776		
6	1/14/2009	21:00	35.91330	-84.50776		
6	1/14/2009	23:00	35.91330	-84.50776		
6	1/15/2009	1:00	35.91330	-84.50776		
6	1/15/2009	3:00	35.91330	-84.50776		
6	1/15/2009	5:00	35.91330	-84.50776		
6	1/15/2009	6:15	35.91330	-84.50776		
6	1/15/2009	8:15	35.91330	-84.50776		
6	1/15/2009	10:03	35.91330	-84.50776		
6	1/15/2009	11:09	35.91330	-84.50776		
6	1/15/2009	13:20	35.91330	-84.50776		
6	1/15/2009	17:43	35.91330	-84.50776		
6	1/15/2009	19:00	35.91330	-84.50776		
6	1/15/2009	21:00	35.91330	-84.50776		
6	1/15/2009	21:00	35.91330	-84.50776		
6	1/16/2009	1:00	35.91330	-84.50776		
6	1/16/2009	3:00	35.91330	-84.50776		
6	1/16/2009	5:00	35.91330	-84.50776		
7	12/26/2008	2:10	35.920972	-84.513056		
7	12/26/2008	3:45	35.920972	-84.513056	NC	
7	12/26/2008	5:45	35.920972	-84.513056	NC	
7	12/26/2008	7:48	35.920972	-84.513056	NC	
7	12/26/2008	10:01	35.920972	-84.513056	NC	
7	12/26/2008	12:02	35.920972	-84.513056	NC	
7	12/26/2008	14:01	35.920972	-84.513056	NC	
7	12/26/2008	16:43	35.920972	-84.513056	NC	
7	12/26/2008	18:55			NC	
7	12/26/2008	20:50			NC	
7	12/26/2008	22:55	35.920972	-84.513056	NC	
7	12/27/2008	2:50	35.920972	-84.513056	NC	
7	12/27/2008	4:45	35.920972	-84.513056	NC	
7	12/27/2008	6:45	35.920972	-84.513056	NC	
7	12/27/2008	8:45	35.920972	-84.513056	NC	
7	12/27/2008	10:46	35.920972	-84.513056	NC	
7	12/27/2008	14:52	35.920972	-84.513056	NC	
7	12/27/2008	24:50	35.920972	-84.513056	NC	
7	12/27/2008		35.920972	-84.513056	NC	
7	12/27/2008		35.920972	-84.513056	NC	
7	12/27/2008		35.920972	-84.513056	NC	
7	12/28/2008	6:50	35.920972	-84.513056	NC	
7	12/28/2008	8:54	35.920972	-84.513056	NC	
7	12/28/2008	10:51	35.920972	-84.513056	NC	
7	12/28/2008	12:46	35.920972	-84.513056	NC	
7	12/28/2008	14:49	35.920972	-84.513056	NC	
7	12/28/2008	16:47	35.920972	-84.513056	NC	
7	12/28/2008	18:45	35.920972	-84.513056	NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
7	12/28/2008	20:45	35.920972	-84.513056	NC	
7	12/28/2008	22:50	35.920972	-84.513056	NC	
7	12/28/2008	24:45	35.920972	-84.513056	NC	
7	12/28/2008		35.920972	-84.513056	NC	
7	12/28/2008		35.920972	-84.513056	NC	
7	12/28/2008		35.920972	-84.513056	NC	
7	12/29/2008	2:50	35.920972	-84.513056	NC	
7	12/29/2008	4:45	35.920972	-84.513056	NC	
7	12/29/2008	6:52	35.920972	-84.513056	NC	
7	12/29/2008	8:43	35.920972	-84.513056	NC	
7	12/29/2008	10:45	35.920972	-84.513056	NC	
7	12/29/2008	12:51	35.920972	-84.513056	NC	
7	12/29/2008	14:52	35.920972	-84.513056	NC	
7	12/29/2008	16:51	35.920972	-84.513056	NC	
7	12/29/2008	18:50	35.920972	-84.513056	NC	
7	12/29/2008	20:30	35.920972	-84.513056	NC	
7	12/29/2008	22:30	35.920972	-84.513056	NC	
7	12/29/2008	24:30	35.920972	-84.513056	NC	
7	12/30/2008	2:30	35.920972	-84.513056	NC	
7	12/30/2008	4:30	35.920972	-84.513056	NC	
7	12/30/2008	6:47	35.920972	-84.513056	NC	
7	12/30/2008	8:48	35.920972	-84.513056	NC	
7	12/30/2008	10:49	35.920972	-84.513056	NC	
7	12/30/2008	12:44	35.920972	-84.513056	NC	
7	12/30/2008	14:52	35.920972	-84.513056	NC	
7	12/30/2008	16:46	35.920972	-84.513056	NC	
7	12/30/2008	19:05	35.920972	-84.513056	NC	
7	12/30/2008		35.920972	-84.513056	NC	
7	12/30/2008		35.920972	-84.513056	NC	
7	12/31/2008	6:59	35.920972	-84.513056	NC	
7	12/31/2008	8:57	35.920972	-84.513056	NC	
7	12/31/2008	10:54	35.920972	-84.513056	NC	
7	12/31/2008	13:09	35.920972	-84.513056	NC	
7	12/31/2008	15:02	35.920972	-84.513056	NC	
7	12/31/2008	18:30	35.920972	-84.513056	NC	
7	12/31/2008	21:05	35.920972	-84.513056	NC	
7	12/31/2008	22:05	35.920972	-84.513056	NC	
7	12/31/2008		35.920972	-84.513056	NC	
7	12/31/2008		35.920972	-84.513056	NC	
7	12/31/2008		35.920972	-84.513056	NC	
7	1/1/2009	1:05	35.920972	-84.513056	NC	
7	1/1/2009	3:00	35.920972	-84.513056	NC	
7	1/1/2009	5:07	35.920972	-84.513056	NC	
7	1/1/2009	19:05	35.920972	-84.513056	NC	
7	1/1/2009	21:05	35.920972	-84.513056	NC	
7	1/1/2009	23:00	35.920972	-84.513056	NC	
7	1/1/2009		35.920972	-84.513056	NC	
7	1/1/2009		35.920972	-84.513056	NC	
7	1/1/2009		35.920972	-84.513056	NC	
7	1/1/2009		35.920972	-84.513056	NC	
7	1/1/2009		35.920972	-84.513056	NC	
7	1/2/2009	1:00	35.920972	-84.513056	NC	
7	1/2/2009	3:10	35.920972	-84.513056	NC	
7	1/2/2009	5:05	35.920972	-84.513056	NC	
7	1/2/2009	19:00	35.920972	-84.513056	NC	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
7	1/2/2009	21:05	35.920972	-84.513056	NC	
7	1/2/2009	23:00	35.920972	-84.513056	NC	
7	1/2/2009		35.920972	-84.513056	NC	
7	1/2/2009		35.920972	-84.513056	NC	
7	1/2/2009		35.920972	-84.513056	NC	
7	1/2/2009		35.920972	-84.513056	NC	
7	1/2/2009		35.920972	-84.513056	NC	
7	1/2/2009		35.920972	-84.513056	NC	
7	1/3/2009	1:00	35.920972	-84.513056	NC	
7	1/3/2009	3:05	35.920972	-84.513056	NC	
7	1/3/2009	5:00	35.920972	-84.513056	NC	
7	1/3/2009	7:00	35.920972	-84.513056	NC	
7	1/3/2009	9:00	35.920972	-84.513056	NC	
7	1/3/2009	11:00	35.920972	-84.513056	NC	
7	1/3/2009	13:00	35.920972	-84.513056	NC	
7	1/3/2009	15:00	35.920972	-84.513056	NC	
7	1/3/2009	17:00	35.920972	-84.513056	NC	
7	1/3/2009	19:00	35.920972	-84.513056	NC	
7	1/3/2009	21:00	35.920972	-84.513056	NC	
7	1/3/2009	23:00	35.920972	-84.513056	NC	
7	1/4/2009	1:00	35.920972	-84.513056	NC	
7	1/4/2009	3:05	35.920972	-84.513056	NC	
7	1/4/2009	5:05	35.920972	-84.513056	NC	
7	1/4/2009	19:10	35.920972	-84.513056	NC	
7	1/4/2009	21:05	35.920972	-84.513056	NC	
7	1/4/2009	23:05	35.920972	-84.513056	NC	
7	1/4/2009		35.920972	-84.513056	NC	
7	1/4/2009		35.920972	-84.513056	NC	
7	1/4/2009		35.920972	-84.513056	NC	
7	1/4/2009		35.920972	-84.513056	NC	
7	1/4/2009		35.920972	-84.513056	NC	
7	1/4/2009		35.920972	-84.513056	NC	
7	1/5/2009	1:05	35.920972	-84.513056	NC	
7	1/5/2009	3:02	35.920972	-84.513056	NC	
7	1/5/2009	5:00	35.920972	-84.513056	NC	
7	1/5/2009	7:00	35.920972	-84.513056	NC	
7	1/5/2009	9:00	35.920972	-84.513056	NC	
7	1/5/2009	11:31	35.920972	-84.513056	NC	
7	1/5/2009	13:20	35.920972	-84.513056	NC	
7	1/5/2009	15:13	35.920972	-84.513056	NC	
7	1/5/2009	17:10	35.920972	-84.513056	NC	
7	1/5/2009	19:00	35.920972	-84.513056	NC	
7	1/5/2009	21:00	35.920972	-84.513056	NC	
7	1/5/2009	23:05	35.920972	-84.513056	NC	
7	1/6/2009	1:05	35.920972	-84.513056	NC	
7	1/6/2009	3:05	35.920972	-84.513056	NC	
7	1/6/2009	5:05	35.920972	-84.513056	NC	
7	1/6/2009	6:47	35.920972	-84.513056	NC	
7	1/6/2009	9:15	35.920972	-84.513056	NC	
7	1/6/2009	11:23	35.920972	-84.513056	NC	
7	1/6/2009	13:09	35.920972	-84.513056	NC	
7	1/6/2009	15:03	35.920972	-84.513056	NC	
7	1/6/2009	17:13	35.920972	-84.513056	NC	
7	1/6/2009	19:15	35.920972	-84.513056	NC	
7	1/6/2009	21:05	35.920972	-84.513056	NC	
7	1/6/2009	23:00	35.920972	-84.513056	NC	

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
7	1/7/2009	1:05	35.920972	-84.513056	NC	
7	1/7/2009	3:10	35.920972	-84.513056	NC	
7	1/7/2009	5:00	35.920972	-84.513056	NC	
7	1/7/2009	7:24	35.920972	-84.513056		No longer visible due to runoff
7	1/7/2009	9:17	35.920972	-84.513056		No longer visible due to runoff
7	1/7/2009	12:45	35.920972	-84.513056		No longer visible due to runoff
7	1/7/2009	15:00	35.920972	-84.513056		No longer visible due to runoff
7	1/7/2009	17:00	35.920972	-84.513056		No longer visible due to runoff
7	1/7/2009	19:00	35.920972	-84.513056	NC	
7	1/7/2009	21:05	35.920972	-84.513056	NC	
7	1/7/2009	21:10	35.920972	-84.513056	NC	
7	1/7/2009	23:05	35.920972	-84.513056	NC	
7	1/8/2009	1:05	35.920972	-84.513056	NC	
7	1/8/2009	3:10	35.920972	-84.513056	NC	
7	1/8/2009	5:05	35.920972	-84.513056	NC	
7	1/8/2009	7:02	35.920972	-84.513056	NC	
7	1/8/2009	9:00	35.920972	-84.513056	NC	
7	1/8/2009	12:45	35.920972	-84.513056	NC	
7	1/8/2009	13:10	35.920972	-84.513056	NC	
7	1/8/2009	15:04	35.920972	-84.513056	NC	
7	1/8/2009	16:35	35.920972	-84.513056	NC	
7	1/8/2009	19:00	35.920972	-84.513056	NC	
7	1/8/2009	21:05	35.920972	-84.513056	NC	
7	1/8/2009	23:05	35.920972	-84.513056	NC	
7	1/9/2009	1:00	35.920972	-84.513056	NC	
7	1/9/2009	3:00	35.920972	-84.513056	NC	
7	1/9/2009	5:00	35.920972	-84.513056	NC	
7	1/9/2009	7:00	35.920972	-84.513056	NC	
7	1/9/2009	9:00	35.920972	-84.513056	NC	
7	1/9/2009	11:02	35.920972	-84.513056	NC	
7	1/9/2009	13:12	35.920972	-84.513056	NC	
7	1/9/2009	15:05	35.920972	-84.513056	NC	
7	1/9/2009	17:01	35.920972	-84.513056	NC	
7	1/9/2009	19:11	35.920972	-84.513056	NC	
7	1/9/2009	21:05	35.920972	-84.513056	NC	
7	1/9/2009	23:05	35.920972	-84.513056	NC	
7	1/10/2009	1:04	35.920972	-84.513056	NC	
7	1/10/2009	3:03	35.920972	-84.513056	NC	
7	1/10/2009	5:06	35.920972	-84.513056	NC	
7	1/10/2009	7:05	35.920972	-84.513056	NC	
7	1/10/2009	9:05	35.920972	-84.513056	NC	
7	1/10/2009	11:00	35.920972	-84.513056	NC	
7	1/10/2009	13:00	35.920972	-84.513056	NC	
7	1/10/2009	15:00	35.920972	-84.513056	NC	
7	1/10/2009	17:00	35.920972	-84.513056	NC	
7	1/10/2009	19:07	35.920972	-84.513056	NC	
7	1/10/2009	21:01	35.920972	-84.513056	NC	
7	1/10/2009	23:09	35.920972	-84.513056	NC	
7	1/11/2009	1:06	35.920972	-84.513056	NC	
7	1/11/2009	3:09	35.920972	-84.513056	NC	
7	1/11/2009	5:09	35.920972	-84.513056	NC	
7	1/11/2009	7:00	35.920972	-84.513056	NC	
7	1/11/2009	9:00	35.920972	-84.513056	NC	
7	1/11/2009	11:00	35.920972	-84.513056	NC	
7	1/11/2009	13:00	35.920972	-84.513056	NC	
7	1/11/2009	15:00	35.920972	-84.513056	NC	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
7	1/11/2009	17:00	35.920972	-84.513056	NC	
7	1/11/2009	19:00	35.920972	-84.513056	NC	
7	1/11/2009	21:00	35.920972	-84.513056	NC	
7	1/11/2009	23:07	35.920972	-84.513056	NC	
7	1/12/2009	1:03	35.920972	-84.513056	NC	
7	1/12/2009	3:11	35.920972	-84.513056	NC	
7	1/12/2009	5:08	35.920972	-84.513056	NC	
7	1/12/2009	6:53	35.920972	-84.513056	NC	
7	1/12/2009	13:40	35.920972	-84.513056	NC	
7	1/12/2009	15:50	35.920972	-84.513056	NC	
7	1/12/2009	17:20	35.920972	-84.513056	NC	
7	1/12/2009	19:09	35.920972	-84.513056	NC	
7	1/12/2009	21:11	35.920972	-84.513056	NC	
7	1/12/2009	23:09	35.920972	-84.513056	NC	
7	1/13/2009	1:00	35.920972	-84.513056	NC	
7	1/13/2009	3:07	35.920972	-84.513056	NC	
7	1/13/2009	5:10	35.920972	-84.513056	NC	
7	1/13/2009	7:45	35.920972	-84.513056	NC	
7	1/13/2009	9:36	35.920972	-84.513056	NC	
7	1/13/2009	13:00	35.920972	-84.513056	NC	
7	1/13/2009	15:30	35.920972	-84.513056	NC	
7	1/13/2009	17:30	35.920972	-84.513056	NC	
7	1/13/2009	19:00	35.920972	-84.513056	NC	
7	1/13/2009	21:00	35.920972	-84.513056	NC	
7	1/13/2009	23:00	35.920972	-84.513056	NC	
7	1/14/2009	1:00	35.920972	-84.513056	NC	
7	1/14/2009	3:00	35.920972	-84.513056	NC	
7	1/14/2009	3:38	35.920972	-84.513056	NC	
7	1/14/2009	5:00	35.920972	-84.513056	NC	
7	1/14/2009	7:05	35.920972	-84.513056	NC	
7	1/14/2009	9:30	35.920972	-84.513056	NC	
7	1/14/2009	11:40	35.920972	-84.513056	NC	
7	1/14/2009	13:30	35.920972	-84.513056	NC	
7	1/14/2009	19:00	35.920972	-84.513056	NC	
7	1/14/2009	21:00	35.920972	-84.513056	NC	
7	1/14/2009	23:00	35.920972	-84.513056	NC	
7	1/15/2009	1:00	35.920972	-84.513056	NC	
7	1/15/2009	3:00	35.920972	-84.513056	NC	
7	1/15/2009	5:00	35.920972	-84.513056	NC	
7	1/15/2009	6:15	35.920972	-84.513056	NC	
7	1/15/2009	8:15	35.920972	-84.513056	NC	
7	1/15/2009	10:03	35.920972	-84.513056	NC	
7	1/15/2009	11:09	35.920972	-84.513056	NC	
7	1/15/2009	13:20	35.920972	-84.513056	NC	
7	1/15/2009	17:43	35.920972	-84.513056	NC	
7	1/15/2009	19:00	35.920972	-84.513056	NC	
7	1/15/2009	21:00	35.920972	-84.513056	NC	
7	1/15/2009	21:00	35.920972	-84.513056	NC	
7	1/16/2009	1:00	35.920972	-84.513056	NC	
7	1/16/2009	3:00	35.920972	-84.513056	NC	
7	1/16/2009	5:00	35.920972	-84.513056	NC	
8	12/26/2008	2:10	35.920972	-84.513058		
8	12/26/2008	3:45	35.920972	-84.513058	NC	
8	12/26/2008	5:45	35.920972	-84.513058	NC	
8	12/26/2008	7:48	35.920972	-84.513058	NC	
8	12/26/2008	10:01	35.920972	-84.513058	NC	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
8	12/26/2008	12:02	35.920972	-84.513058	NC	
8	12/26/2008	14:01	35.920972	-84.513058	NC	
8	12/26/2008	16:43	35.920972	-84.513058	NC	
8	12/26/2008	18:55			NC	
8	12/26/2008	20:50			NC	
8	12/26/2008	22:55	35.920972	-84.513058	NC	
8	12/27/2008	2:50	35.920972	-84.513058	NC	
8	12/27/2008	4:45	35.920972	-84.513058	NC	
8	12/27/2008	6:45	35.920972	-84.513058	NC	
8	12/27/2008	8:45	35.920972	-84.513058	NC	
8	12/27/2008	10:46	35.920972	-84.513058	NC	
8	12/27/2008	14:52	35.920972	-84.513058	NC	
8	12/27/2008	24:50	35.920972	-84.513058	NC	
8	12/27/2008		35.920972	-84.513058	NC	
8	12/27/2008		35.920972	-84.513058	NC	
8	12/27/2008		35.920972	-84.513058	NC	
8	12/28/2008	6:50	35.920972	-84.513058	NC	
8	12/28/2008	8:54	35.920972	-84.513058	NC	
8	12/28/2008	10:51	35.920972	-84.513058	NC	
8	12/28/2008	12:46	35.920972	-84.513058	NC	
8	12/28/2008	14:49	35.920972	-84.513058	NC	
8	12/28/2008	16:47	35.920972	-84.513058	NC	
8	12/28/2008	18:45	35.920972	-84.513058	NC	
8	12/28/2008	20:45	35.920972	-84.513058	NC	
8	12/28/2008	22:50	35.920972	-84.513058	NC	
8	12/28/2008	24:45	35.920972	-84.513058	NC	
8	12/28/2008		35.920972	-84.513058	NC	
8	12/28/2008		35.920972	-84.513058	NC	
8	12/28/2008		35.920972	-84.513058	NC	
8	12/29/2008	2:50	35.920972	-84.513058	NC	
8	12/29/2008	4:45	35.920972	-84.513058	NC	
8	12/29/2008	6:52	35.920972	-84.513058	NC	
8	12/29/2008	8:43	35.920972	-84.513058	NC	
8	12/29/2008	10:45	35.920972	-84.513058	NC	
8	12/29/2008	12:51	35.920972	-84.513058	NC	
8	12/29/2008	14:52	35.920972	-84.513058	NC	
8	12/29/2008	16:51	35.920972	-84.513058	NC	
8	12/29/2008	18:50	35.920972	-84.513058	NC	
8	12/29/2008	20:30	35.920972	-84.513058	NC	
8	12/29/2008	22:30	35.920972	-84.513058	NC	
8	12/29/2008	24:30	35.920972	-84.513058	NC	
8	12/30/2008	2:30	35.920972	-84.513058	NC	
8	12/30/2008	4:30	35.920972	-84.513058	NC	
8	12/30/2008	6:47	35.920972	-84.513058	NC	
8	12/30/2008	8:48	35.920972	-84.513058	NC	
8	12/30/2008	10:49	35.920972	-84.513058	NC	
8	12/30/2008	12:44	35.920972	-84.513058	NC	
8	12/30/2008	14:52	35.920972	-84.513058	NC	
8	12/30/2008	16:46	35.920972	-84.513058	NC	
8	12/30/2008	19:05	35.920972	-84.513058	NC	
8	12/30/2008		35.920972	-84.513058	NC	
8	12/30/2008		35.920972	-84.513058	NC	
8	12/31/2008	6:59	35.920972	-84.513058	NC	
8	12/31/2008	8:57	35.920972	-84.513058	NC	
8	12/31/2008	10:54	35.920972	-84.513058	NC	
8	12/31/2008	13:09	35.920972	-84.513058	NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
8	12/31/2008	15:02	35.920972	-84.513058	NC	
8	12/31/2008	18:30	35.920972	-84.513058	NC	
8	12/31/2008	21:05	35.920972	-84.513058	NC	
8	12/31/2008	22:05	35.920972	-84.513058	NC	
8	12/31/2008		35.920972	-84.513058	NC	
8	12/31/2008		35.920972	-84.513058	NC	
8	12/31/2008		35.920972	-84.513058	NC	
8	1/1/2009	1:05	35.920972	-84.513058	NC	
8	1/1/2009	3:00	35.920972	-84.513058	NC	
8	1/1/2009	5:07	35.920972	-84.513058	NC	
8	1/1/2009	19:05	35.920972	-84.513058	NC	
8	1/1/2009	21:05	35.920972	-84.513058	NC	
8	1/1/2009	23:00	35.920972	-84.513058	NC	
8	1/1/2009		35.920972	-84.513058	NC	
8	1/1/2009		35.920972	-84.513058	NC	
8	1/1/2009		35.920972	-84.513058	NC	
8	1/1/2009		35.920972	-84.513058	NC	
8	1/1/2009		35.920972	-84.513058	NC	
8	1/1/2009		35.920972	-84.513058	NC	
8	1/2/2009	1:00	35.920972	-84.513058	NC	
8	1/2/2009	3:10	35.920972	-84.513058	NC	
8	1/2/2009	5:05	35.920972	-84.513058	NC	
8	1/2/2009	19:00	35.920972	-84.513058	NC	
8	1/2/2009	21:05	35.920972	-84.513058	NC	
8	1/2/2009	23:00	35.920972	-84.513058	NC	
8	1/2/2009		35.920972	-84.513058	NC	
8	1/2/2009		35.920972	-84.513058	NC	
8	1/2/2009		35.920972	-84.513058	NC	
8	1/2/2009		35.920972	-84.513058	NC	
8	1/2/2009		35.920972	-84.513058	NC	
8	1/2/2009		35.920972	-84.513058	NC	
8	1/3/2009	1:00	35.920972	-84.513058	NC	
8	1/3/2009	3:05	35.920972	-84.513058	NC	
8	1/3/2009	5:00	35.920972	-84.513058	NC	
8	1/3/2009	7:00	35.920972	-84.513058	NC	
8	1/3/2009	9:00	35.920972	-84.513058	NC	
8	1/3/2009	11:00	35.920972	-84.513058	NC	
8	1/3/2009	13:00	35.920972	-84.513058	NC	
8	1/3/2009	15:00	35.920972	-84.513058	NC	
8	1/3/2009	17:00	35.920972	-84.513058	NC	
8	1/3/2009	19:00	35.920972	-84.513058	NC	
8	1/3/2009	21:00	35.920972	-84.513058	NC	
8	1/3/2009	23:00	35.920972	-84.513058	NC	
8	1/4/2009	1:00	35.920972	-84.513058	NC	
8	1/4/2009	3:05	35.920972	-84.513058	NC	
8	1/4/2009	5:05	35.920972	-84.513058	NC	
8	1/4/2009	19:10	35.920972	-84.513058	NC	
8	1/4/2009	21:05	35.920972	-84.513058	NC	
8	1/4/2009	23:05	35.920972	-84.513058	NC	
8	1/4/2009		35.920972	-84.513058	NC	
8	1/4/2009		35.920972	-84.513058	NC	
8	1/4/2009		35.920972	-84.513058	NC	
8	1/4/2009		35.920972	-84.513058	NC	
8	1/4/2009		35.920972	-84.513058	NC	
8	1/4/2009		35.920972	-84.513058	NC	
8	1/5/2009	1:05	35.920972	-84.513058	NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
8	1/5/2009	3:02	35.920972	-84.513058	NC	
8	1/5/2009	5:00	35.920972	-84.513058	NC	
8	1/5/2009	7:00	35.920972	-84.513058	NC	
8	1/5/2009	9:00	35.920972	-84.513058	NC	
8	1/5/2009	11:31	35.920972	-84.513058	NC	
8	1/5/2009	13:20	35.920972	-84.513058	NC	
8	1/5/2009	15:13	35.920972	-84.513058	NC	
8	1/5/2009	17:10	35.920972	-84.513058	NC	
8	1/5/2009	19:00	35.920972	-84.513058	NC	
8	1/5/2009	21:00	35.920972	-84.513058	NC	
8	1/5/2009	23:05	35.920972	-84.513058	NC	
8	1/6/2009	1:05	35.920972	-84.513058	NC	
8	1/6/2009	3:05	35.920972	-84.513058	NC	
8	1/6/2009	5:05	35.920972	-84.513058	NC	
8	1/6/2009	6:47	35.920972	-84.513058	NC	
8	1/6/2009	9:15	35.920972	-84.513058	NC	
8	1/6/2009	11:23	35.920972	-84.513058	NC	
8	1/6/2009	13:09	35.920972	-84.513058	NC	
8	1/6/2009	15:03	35.920972	-84.513058	NC	
8	1/6/2009	17:13	35.920972	-84.513058	NC	
8	1/6/2009	19:15	35.920972	-84.513058	NC	
8	1/6/2009	21:05	35.920972	-84.513058	NC	
8	1/6/2009	23:00	35.920972	-84.513058	NC	
8	1/7/2009	1:05	35.920972	-84.513058	NC	
8	1/7/2009	3:10	35.920972	-84.513058	NC	
8	1/7/2009	5:00	35.920972	-84.513058	NC	
8	1/7/2009	7:24	35.920972	-84.513058		No longer visible due to runoff
8	1/7/2009	9:17	35.920972	-84.513058		No longer visible due to runoff
8	1/7/2009	12:45	35.920972	-84.513058	NC	
8	1/7/2009	15:00	35.920972	-84.513058	NC	
8	1/7/2009	17:00	35.920972	-84.513058	NC	
8	1/7/2009	19:00	35.920972	-84.513058	NC	
8	1/7/2009	21:05	35.920972	-84.513058	NC	
8	1/7/2009	21:10	35.920972	-84.513058	NC	
8	1/7/2009	23:05	35.920972	-84.513058	NC	
8	1/8/2009	1:05	35.920972	-84.513058	NC	
8	1/8/2009	3:10	35.920972	-84.513058	NC	
8	1/8/2009	5:05	35.920972	-84.513058	NC	
8	1/8/2009	7:02	35.920972	-84.513058	NC	
8	1/8/2009	9:00	35.920972	-84.513058	NC	
8	1/8/2009	12:45	35.920972	-84.513058	NC	
8	1/8/2009	13:10	35.920972	-84.513058	NC	
8	1/8/2009	15:04	35.920972	-84.513058	NC	
8	1/8/2009	16:35	35.920972	-84.513058	NC	
8	1/8/2009	19:00	35.920972	-84.513058	NC	
8	1/8/2009	21:05	35.920972	-84.513058	NC	
8	1/8/2009	23:05	35.920972	-84.513058	NC	
8	1/9/2009	1:00	35.920972	-84.513058	NC	
8	1/9/2009	3:00	35.920972	-84.513058	NC	
8	1/9/2009	5:00	35.920972	-84.513058	NC	
8	1/9/2009	7:00	35.920972	-84.513058	NC	
8	1/9/2009	9:00	35.920972	-84.513058	NC	
8	1/9/2009	11:02	35.920972	-84.513058	NC	
8	1/9/2009	13:12	35.920972	-84.513058	NC	
8	1/9/2009	15:05	35.920972	-84.513058	NC	
8	1/9/2009	17:01	35.920972	-84.513058	NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
8	1/9/2009	19:11	35.920972	-84.513058	NC	
8	1/9/2009	21:05	35.920972	-84.513058	NC	
8	1/9/2009	23:05	35.920972	-84.513058	NC	
8	1/10/2009	1:04	35.920972	-84.513058	NC	
8	1/10/2009	3:03	35.920972	-84.513058	NC	
8	1/10/2009	5:06	35.920972	-84.513058	NC	
8	1/10/2009	7:05	35.920972	-84.513058	NC	
8	1/10/2009	9:05	35.920972	-84.513058	NC	
8	1/10/2009	11:00	35.920972	-84.513058	NC	
8	1/10/2009	13:00	35.920972	-84.513058	NC	
8	1/10/2009	15:00	35.920972	-84.513058	NC	
8	1/10/2009	17:00	35.920972	-84.513058	NC	
8	1/10/2009	19:07	35.920972	-84.513058	NC	
8	1/10/2009	21:01	35.920972	-84.513058	NC	
8	1/10/2009	23:09	35.920972	-84.513058	NC	
8	1/11/2009	1:06	35.920972	-84.513058	NC	
8	1/11/2009	3:09	35.920972	-84.513058	NC	
8	1/11/2009	5:09	35.920972	-84.513058	NC	
8	1/11/2009	7:00	35.920972	-84.513058	NC	
8	1/11/2009	9:00	35.920972	-84.513058	NC	
8	1/11/2009	11:00	35.920972	-84.513058	NC	
8	1/11/2009	13:00	35.920972	-84.513058	NC	
8	1/11/2009	15:00	35.920972	-84.513058	NC	
8	1/11/2009	17:00	35.920972	-84.513058	NC	
8	1/11/2009	19:00	35.920972	-84.513058	NC	
8	1/11/2009	21:00	35.920972	-84.513058	NC	
8	1/11/2009	23:07	35.920972	-84.513058	NC	
8	1/12/2009	1:03	35.920972	-84.513058	NC	
8	1/12/2009	3:11	35.920972	-84.513058	NC	
8	1/12/2009	5:08	35.920972	-84.513058	NC	
8	1/12/2009	6:53	35.920972	-84.513058	NC	
8	1/12/2009	13:40	35.920972	-84.513058	NC	
8	1/12/2009	15:50	35.920972	-84.513058	NC	
8	1/12/2009	17:20	35.920972	-84.513058	NC	
8	1/12/2009	19:09	35.920972	-84.513058	NC	
8	1/12/2009	21:11	35.920972	-84.513058	NC	
8	1/12/2009	23:09	35.920972	-84.513058	NC	
8	1/13/2009	1:00	35.920972	-84.513058	NC	
8	1/13/2009	3:07	35.920972	-84.513058	NC	
8	1/13/2009	5:10	35.920972	-84.513058	NC	
8	1/13/2009	7:45	35.920972	-84.513058	NC	
8	1/13/2009	9:36	35.920972	-84.513058	NC	
8	1/13/2009	13:00	35.920972	-84.513058	NC	
8	1/13/2009	15:30	35.920972	-84.513058	NC	
8	1/13/2009	17:30	35.920972	-84.513058	NC	
8	1/13/2009	19:00	35.920972	-84.513058	NC	
8	1/13/2009	21:00	35.920972	-84.513058	NC	
8	1/13/2009	23:00	35.920972	-84.513058	NC	
8	1/14/2009	1:00	35.920972	-84.513058	NC	
8	1/14/2009	3:00	35.920972	-84.513058	NC	
8	1/14/2009	3:38	35.920972	-84.513058	NC	
8	1/14/2009	5:00	35.920972	-84.513058	NC	
8	1/14/2009	7:05	35.920972	-84.513058	NC	
8	1/14/2009	9:30	35.920972	-84.513058	NC	
8	1/14/2009	11:40	35.920972	-84.513058	NC	
8	1/14/2009	13:30	35.920972	-84.513058	NC	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
8	1/14/2009	19:00	35.920972	-84.513058	NC	
8	1/14/2009	21:00	35.920972	-84.513058	NC	
8	1/14/2009	23:00	35.920972	-84.513058	NC	
8	1/15/2009	1:00	35.920972	-84.513058	NC	
8	1/15/2009	3:00	35.920972	-84.513058	NC	
8	1/15/2009	5:00	35.920972	-84.513058	NC	
8	1/15/2009	6:15	35.920972	-84.513058	NC	
8	1/15/2009	8:15	35.920972	-84.513058	NC	
8	1/15/2009	10:03	35.920972	-84.513058	NC	
8	1/15/2009	11:09	35.920972	-84.513058	NC	
8	1/15/2009	13:20	35.920972	-84.513058	NC	
8	1/15/2009	17:43	35.920972	-84.513058	NC	
8	1/15/2009	19:00	35.920972	-84.513058	NC	
8	1/15/2009	21:00	35.920972	-84.513058	NC	
8	1/15/2009	21:00	35.920972	-84.513058	NC	
8	1/16/2009	1:00	35.920972	-84.513058	NC	
8	1/16/2009	3:00	35.920972	-84.513058	NC	
8	1/16/2009	5:00	35.920972	-84.513058	NC	
9a	12/27/2008	14:52	35.920972	-84.513056	38 1/2"	
9a	12/27/2008	19:00	35.920972	-84.513056	38 1/2"	
9a	12/27/2008	20:51	35.920972	-84.513056	38 1/2"	
9a	12/27/2008	22:53	35.920972	-84.513056	38 1/2"	
9a	12/27/2008	24:55	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	3:06	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	4:53	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	6:50	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	8:54	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	10:51	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	12:53	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	14:59	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	16:47	35.920972	-84.513056	38 1/2"	
9a	12/28/2008	18:45	35.920972	-84.513056	38 3/8"	
9a	12/28/2008	20:45	35.920972	-84.513056	38 3/8"	
9a	12/28/2008	22:50	35.920972	-84.513056	38 3/8"	
9a	12/28/2008	24:45	35.920972	-84.513056	38 3/8"	
9a	12/29/2008	2:50	35.920972	-84.513056	38 3/8"	
9a	12/29/2008	4:45	35.920972	-84.513056	38 3/8"	
9a	12/29/2008	6:52	35.920972	-84.513056	38 3/8"	
9a	12/29/2008	8:43	35.920972	-84.513056	38 3/8"	
9a	12/29/2008	10:45	35.920972	-84.513056	38 1/2"	
9a	12/29/2008	12:51	35.920972	-84.513056	38 1/2"	
9a	12/29/2008	14:52	35.920972	-84.513056	38 1/2"	
9a	12/29/2008	16:51	35.920972	-84.513056	38 1/2"	
9a	12/29/2008	18:50	35.920972	-84.513056	38 1/2"	
9a	12/29/2008	20:30	35.920972	-84.513056	38 1/2"	
9a	12/29/2008	22:30	35.920972	-84.513056	38 3/8"	
9a	12/29/2008	24:30	35.920972	-84.513056	38 3/8"	
9a	12/30/2008	2:30	35.920972	-84.513056	38 3/8"	
9a	12/30/2008	4:30	35.920972	-84.513056	38 3/8"	
9a	12/30/2008	6:47	35.920972	-84.513056	38 3/8"	
9a	12/30/2008	8:48	35.920972	-84.513056	38 3/8"	
9a	12/30/2008	10:49	35.920972	-84.513056	38 1/2"	
9a	12/30/2008	12:44	35.920972	-84.513056	38 1/2"	
9a	12/30/2008	14:52	35.920972	-84.513056	38 1/2"	
9a	12/30/2008	16:46	35.920972	-84.513056	38 1/2"	
9a	12/30/2008	19:05	35.920972	-84.513056	38 1/2"	

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9a	12/30/2008	21:07	35.920972	-84.513056	38 1/2"	
9a	12/30/2008	23:06	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	1:05	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	3:04	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	5:01	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	6:59	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	8:57	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	10:54	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	13:09	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	15:02	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	18:30	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	21:05	35.920972	-84.513056	38 1/2"	
9a	12/31/2008	22:05	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	1:05	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	3:00	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	5:07	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	6:38	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	8:57	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	11:06	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	13:02	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	14:43	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	17:00	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	19:05	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	21:05	35.920972	-84.513056	38 1/2"	
9a	1/1/2009	23:00	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	3:10	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	5:05	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	7:09	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	9:22	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	11:19	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	13:12	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	15:21	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	17:25	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	19:00	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	21:05	35.920972	-84.513056	38 1/2"	
9a	1/2/2009	23:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	3:05	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	5:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	7:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	9:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	11:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	13:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	15:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	17:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	19:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	21:00	35.920972	-84.513056	38 1/2"	
9a	1/3/2009	23:00	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	3:05	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	5:05	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	6:51	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	8:54	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	10:56	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	12:51	35.920972	-84.513056	38 1/2"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9a	1/4/2009	14:51	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	16:52	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	19:10	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	21:05	35.920972	-84.513056	38 1/2"	
9a	1/4/2009	23:05	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	1:05	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	3:02	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	5:00	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	7:00	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	9:00	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	11:31	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	13:20	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	15:13	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	17:10	35.920972	-84.513056	38 1/2"	
9a	1/5/2009	19:00	35.920972	-84.513056	38 1/4"	
9a	1/5/2009	21:00	35.920972	-84.513056	38 1/4"	
9a	1/5/2009	23:05	35.920972	-84.513056	38 142"	
9a	1/6/2009	1:05	35.920972	-84.513056	38 1/4"	
9a	1/6/2009	3:05	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	5:05	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	6:47	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	9:15	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	11:23	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	13:09	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	15:03	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	17:13	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	19:15	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	21:05	35.920972	-84.513056	38 1/2"	
9a	1/6/2009	23:00	35.920972	-84.513056	38 1/2"	
9a	1/7/2009	1:05	35.920972	-84.513056	38 1/2"	
9a	1/7/2009	3:10	35.920972	-84.513056	38 1/2"	
9a	1/7/2009	5:00	35.920972	-84.513056	38 1/2"	
9a	1/7/2009	7:24	35.920972	-84.513056	38 3/4"	
9a	1/7/2009	9:17	35.920972	-84.513056	38 3/4"	
9a	1/7/2009	12:45	35.920972	-84.513056	38 1/2"	
9a	1/7/2009	15:00	35.920972	-84.513056	39 1/8"	
9a	1/7/2009	17:00	35.920972	-84.513056	39 1/8"	
9a	1/7/2009	19:00	35.920972	-84.513056	38 3/4"	
9a	1/7/2009	21:05	35.920972	-84.513056	38 1/2"	
9a	1/7/2009	21:10	35.920972	-84.513056	38 3/4"	
9a	1/7/2009	23:05	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	1:05	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	3:10	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	5:05	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	7:02	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	9:00	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	12:45	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	13:10	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	15:04	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	16:35	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	19:00	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	21:05	35.920972	-84.513056	38 3/4"	
9a	1/8/2009	23:05	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	1:00	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	3:00	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	5:00	35.920972	-84.513056	38 3/4"	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9a	1/9/2009	7:00	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	9:00	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	11:02	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	13:12	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	15:05	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	17:01	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	19:11	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	21:05	35.920972	-84.513056	38 3/4"	
9a	1/9/2009	23:05	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	1:04	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	3:03	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	5:06	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	7:05	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	9:05	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	11:00	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	13:00	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	15:00	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	17:00	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	19:07	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	21:01	35.920972	-84.513056	38 3/4"	
9a	1/10/2009	23:09	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	1:06	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	3:09	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	5:09	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	7:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	9:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	11:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	13:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	15:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	17:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	19:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	21:00	35.920972	-84.513056	38 3/4"	
9a	1/11/2009	23:07	35.920972	-84.513056	38 3/4"	
9a	1/12/2009	1:03	35.920972	-84.513056	38 3/4"	
9a	1/12/2009	3:11	35.920972	-84.513056	38 3/4"	
9a	1/12/2009	5:08	35.920972	-84.513056	38 3/4"	
9a	1/12/2009	6:53	35.920972	-84.513056	38 3/4"	
9a	1/12/2009	13:40	35.920972	-84.513056	38 1/2"	
9a	1/12/2009	15:50	35.920972	-84.513056	38 1/2"	
9a	1/12/2009	17:20	35.920972	-84.513056	38 1/2"	
9a	1/12/2009	19:09	35.920972	-84.513056	38 1/2"	
9a	1/12/2009	21:11	35.920972	-84.513056	38 1/2"	
9a	1/12/2009	23:09	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	3:07	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	5:10	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	7:45	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	9:36	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	13:00	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	15:30	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	17:30	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	19:00	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	21:00	35.920972	-84.513056	38 1/2"	
9a	1/13/2009	23:00	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	3:00	35.920972	-84.513056	38 1/2"	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9a	1/14/2009	3:38	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	5:00	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	7:05	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	9:30	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	11:40	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	13:30	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	19:00	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	21:00	35.920972	-84.513056	38 1/2"	
9a	1/14/2009	23:00	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	3:00	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	5:00	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	6:15	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	8:15	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	10:03	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	11:09	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	13:20	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	17:43	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	19:00	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	21:00	35.920972	-84.513056	38 1/2"	
9a	1/15/2009	21:00	35.920972	-84.513056	38 1/2"	
9a	1/16/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/16/2009	3:00	35.920972	-84.513056	38 1/2"	
9a	1/16/2009	5:00	35.920972	-84.513056	38 1/2"	
9a	1/16/2009	7:00	35.920972	-84.513056	38 3/4"	
9a	1/16/2009	9:00	35.920972	-84.513056	38 3/4"	
9a	1/16/2009	11:00	35.920972	-84.513056	38 3/4"	
9a	1/16/2009	13:00	35.920972	-84.513056	38 3/4"	
9a	1/16/2009	15:00	35.920972	-84.513056	38 3/4"	
9a	1/16/2009	17:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	1:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	3:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	5:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	7:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	9:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	11:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	13:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	15:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	17:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	19:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	21:00	35.920972	-84.513056	38 3/4"	
9a	1/17/2009	23:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	1:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	3:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	5:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	7:01	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	9:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	11:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	13:05	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	15:03	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	17:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	19:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	21:00	35.920972	-84.513056	38 3/4"	
9a	1/18/2009	23:00	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	1:00	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	3:00	35.920972	-84.513056	38 3/4"	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9a	1/19/2009	5:00	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	7:03	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	8:56	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	11:00	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	13:03	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	15:00	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	17:02	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	19:00	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	21:00	35.920972	-84.513056	38 3/4"	
9a	1/19/2009	23:00	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	1:00	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	3:00	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	5:00	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	7:10	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	9:16	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	11:07	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	13:00	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	14:56	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	17:03	35.920972	-84.513056	38 3/4"	
9a	1/20/2009	19:00	35.920972	-84.513056	38 1/2"	
9a	1/20/2009	21:00	35.920972	-84.513056	38 1/2"	
9a	1/20/2009	23:00	35.920972	-84.513056	38 1/2"	
9a	1/21/2009	1:00	35.920972	-84.513056	38 1/2"	
9a	1/21/2009	3:00	35.920972	-84.513056	38 1/2"	
9a	1/21/2009	5:00	35.920972	-84.513056	38 1/2"	
9a	1/21/2009	6:41	35.920972	-84.513056	38 1/2"	
9a	1/21/2009	8:45	35.920972	-84.513056	38 1/2"	
9a	1/21/2009	10:45	35.920972	-84.513056	38 1/2"	
9b	12/27/2008	14:52	35.920972	-84.513056	61 1/4"	
9b	12/27/2008	19:00	35.920972	-84.513056	61 1/8"	
9b	12/27/2008	20:51	35.920972	-84.513056	61 1/8"	
9b	12/27/2008	22:53	35.920972	-84.513056	61 1/8"	
9b	12/27/2008	24:55	35.920972	-84.513056	61 1/8"	
9b	12/28/2008	3:06	35.920972	-84.513056	61 1/8"	
9b	12/28/2008	4:53	35.920972	-84.513056	61 1/8"	
9b	12/28/2008	7:05	35.920972	-84.513056	61 1/4"	
9b	12/28/2008	9:06	35.920972	-84.513056	61 1/4"	
9b	12/28/2008	11:01	35.920972	-84.513056	61 1/4"	
9b	12/28/2008	12:53	35.920972	-84.513056	61 1/4"	
9b	12/28/2008	14:59	35.920972	-84.513056	61 1/4"	
9b	12/28/2008	17:00	35.920972	-84.513056	61 1/4"	
9b	12/28/2008	18:45	35.920972	-84.513056	61 1/8"	
9b	12/28/2008	20:45	35.920972	-84.513056	61 1/8"	
9b	12/28/2008	22:50	35.920972	-84.513056	61 1/8"	
9b	12/28/2008	24:45	35.920972	-84.513056	61 1/8"	
9b	12/29/2008	2:50	35.920972	-84.513056	61 1/8"	
9b	12/29/2008	4:45	35.920972	-84.513056	61 1/8"	
9b	12/29/2008	6:52	35.920972	-84.513056	61 1/8"	
9b	12/29/2008	8:43	35.920972	-84.513056	61 1/8"	
9b	12/29/2008	10:45	35.920972	-84.513056	61 1/4"	
9b	12/29/2008	12:51	35.920972	-84.513056	61 1/4"	
9b	12/29/2008	14:52	35.920972	-84.513056	61 1/4"	
9b	12/29/2008	16:51	35.920972	-84.513056	61 1/4"	
9b	12/29/2008	18:50	35.920972	-84.513056	61 1/4"	
9b	12/29/2008	20:30	35.920972	-84.513056	61 1/4"	
9b	12/29/2008	22:30	35.920972	-84.513056	61 1/8"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9b	12/29/2008	24:30	35.920972	-84.513056	61 1/8"	
9b	12/30/2008	2:30	35.920972	-84.513056	61 1/8"	
9b	12/30/2008	4:30	35.920972	-84.513056	61 1/8"	
9b	12/30/2008	6:47	35.920972	-84.513056	61 1/8"	
9b	12/30/2008	8:48	35.920972	-84.513056	61 1/8"	
9b	12/30/2008	10:49	35.920972	-84.513056	61 1/4"	
9b	12/30/2008	12:44	35.920972	-84.513056	61 1/4"	
9b	12/30/2008	14:52	35.920972	-84.513056	61 1/4"	
9b	12/30/2008	16:46	35.920972	-84.513056	61 1/4"	
9b	12/30/2008	19:05	35.920972	-84.513056	61 1/4"	
9b	12/30/2008	21:07	35.920972	-84.513056	61 1/4"	
9b	12/30/2008	23:06	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	1:05	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	3:04	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	5:01	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	6:59	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	8:57	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	10:54	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	13:09	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	15:02	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	18:30	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	21:05	35.920972	-84.513056	61 1/4"	
9b	12/31/2008	22:05	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	1:05	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	3:00	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	5:07	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	6:38	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	8:57	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	11:06	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	13:02	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	14:43	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	17:00	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	19:05	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	21:05	35.920972	-84.513056	61 1/4"	
9b	1/1/2009	23:00	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	1:00	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	3:10	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	5:05	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	7:10	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	9:22	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	11:18	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	13:12	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	15:21	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	17:25	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	19:00	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	21:05	35.920972	-84.513056	61 1/4"	
9b	1/2/2009	23:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	1:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	3:05	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	5:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	7:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	9:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	11:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	13:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	15:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	17:00	35.920972	-84.513056	61 1/4"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9b	1/3/2009	19:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	21:00	35.920972	-84.513056	61 1/4"	
9b	1/3/2009	23:00	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	1:00	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	3:05	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	5:05	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	6:51	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	8:54	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	10:56	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	12:51	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	14:51	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	16:52	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	19:10	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	21:05	35.920972	-84.513056	61 1/4"	
9b	1/4/2009	23:05	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	1:05	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	3:02	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	5:00	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	7:00	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	9:00	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	11:31	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	13:20	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	15:13	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	17:10	35.920972	-84.513056	61 1/4"	
9b	1/5/2009	19:00	35.920972	-84.513056	61 1/2"	
9b	1/5/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/5/2009	23:05	35.920972	-84.513056	61 1/2"	
9b	1/6/2009	1:05	35.920972	-84.513056	61 1/2"	
9b	1/6/2009	3:05	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	5:05	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	6:47	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	9:15	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	11:23	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	13:09	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	15:03	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	17:13	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	19:15	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	21:05	35.920972	-84.513056	61 1/4"	
9b	1/6/2009	23:00	35.920972	-84.513056	61 1/4"	
9b	1/7/2009	1:05	35.920972	-84.513056	61 1/2"	
9b	1/7/2009	3:10	35.920972	-84.513056	61 1/2"	
9b	1/7/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/7/2009	7:24	35.920972	-84.513056	61 1/2"	
9b	1/7/2009	9:17	35.920972	-84.513056	61 1/2"	
9b	1/7/2009	12:45	35.920972	-84.513056	61 1/4"	
9b	1/7/2009	15:00	35.920972	-84.513056	62 1/8"	
9b	1/7/2009	17:00	35.920972	-84.513056	62 1/8"	
9b	1/7/2009	19:00	35.920972	-84.513056	61 1/2"	
9b	1/7/2009	21:05	35.920972	-84.513056	61 1/4"	
9b	1/7/2009	21:10	35.920972	-84.513056	61 1/4"	
9b	1/7/2009	23:05	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	1:05	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	3:10	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	5:05	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	7:02	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	9:00	35.920972	-84.513056	61 1/2"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9b	1/8/2009	12:45	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	13:10	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	15:04	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	16:35	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	19:00	35.920972	-84.513056	61 1/4"	
9b	1/8/2009	21:05	35.920972	-84.513056	61 1/2"	
9b	1/8/2009	23:05	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	3:00	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	7:00	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	9:00	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	11:02	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	13:12	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	15:05	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	17:01	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	19:11	35.920972	-84.513056	61 1/4"	
9b	1/9/2009	21:05	35.920972	-84.513056	61 1/2"	
9b	1/9/2009	23:05	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	1:04	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	3:03	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	5:06	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	7:05	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	9:05	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	11:00	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	13:00	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	15:00	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	17:00	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	19:07	35.920972	-84.513056	61 1/4"	
9b	1/10/2009	21:01	35.920972	-84.513056	61 1/2"	
9b	1/10/2009	23:09	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	1:06	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	3:09	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	5:09	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	7:00	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	9:00	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	11:00	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	13:00	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	15:00	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	17:00	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	19:00	35.920972	-84.513056	61 1/4"	
9b	1/11/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/11/2009	23:07	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	1:03	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	3:11	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	5:08	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	6:53	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	13:40	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	15:50	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	17:20	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	19:09	35.920972	-84.513056	61 1/4"	
9b	1/12/2009	21:11	35.920972	-84.513056	61 1/2"	
9b	1/12/2009	23:09	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	3:07	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	5:10	35.920972	-84.513056	61 1/2"	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9b	1/13/2009	7:45	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	9:36	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	13:00	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	15:30	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	17:30	35.920972	-84.513056	61 1/4"	
9b	1/13/2009	19:00	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/13/2009	23:00	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	3:00	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	3:38	35.920972	-84.513056	61 1/4"	
9b	1/14/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	7:05	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	9:30	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	11:40	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	13:30	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	19:00	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/14/2009	23:00	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	3:00	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	6:15	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	8:15	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	10:03	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	11:09	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	13:20	35.920972	-84.513056	61 1/4"	
9b	1/15/2009	17:43	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	19:00	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/15/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	3:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	7:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	9:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	11:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	13:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	15:00	35.920972	-84.513056	61 1/2"	
9b	1/16/2009	17:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	3:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	7:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	9:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	11:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	13:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	15:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	17:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	19:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/17/2009	23:00	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	3:00	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	7:01	35.920972	-84.513056	61 1/2"	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
9b	1/18/2009	9:00	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	11:00	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	13:05	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	15:03	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	17:00	35.920972	-84.513056	61 1/2"	
9b	1/18/2009	19:00	35.920972	-84.513056	61 3/4"	
9b	1/18/2009	21:00	35.920972	-84.513056	61 3/4"	
9b	1/18/2009	23:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	1:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	3:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	5:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	7:03	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	8:56	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	11:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	13:03	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	15:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	17:02	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	19:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	21:00	35.920972	-84.513056	61 3/4"	
9b	1/19/2009	23:00	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	1:00	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	3:00	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	5:00	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	7:10	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	9:16	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	11:07	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	13:00	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	14:56	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	17:03	35.920972	-84.513056	61 3/4"	
9b	1/20/2009	19:00	35.920972	-84.513056	61 1/2"	
9b	1/20/2009	21:00	35.920972	-84.513056	61 1/2"	
9b	1/20/2009	23:00	35.920972	-84.513056	61 1/2"	
9b	1/21/2009	1:00	35.920972	-84.513056	61 1/2"	
9b	1/21/2009	3:00	35.920972	-84.513056	61 1/2"	
9b	1/21/2009	5:00	35.920972	-84.513056	61 1/2"	
9b	1/21/2009	6:41	35.920972	-84.513056	61 1/2"	
9b	1/21/2009	8:45	35.920972	-84.513056	61 1/2"	
9b	1/21/2009	10:45	35.920972	-84.513056	61 1/2"	
10	12/29/2008	2:50			NC	
10	12/29/2008	4:45				
10	12/29/2008	6:52			NC	
10	12/29/2008	8:43			NC	
10	12/29/2008	10:45			NC	
10	12/29/2008	12:51			NC	
10	12/29/2008	15:03			NC	
10	12/29/2008	17:04			NC	
10	12/29/2008	18:50			NC	
10	12/29/2008	20:30			NC	
10	12/29/2008	22:30			NC	
10	12/29/2008	24:30			NC	
10	12/30/2008	2:30			NC	
10	12/30/2008	4:30			NC	
10	12/30/2008	6:47			NC	
10	12/30/2008	8:48			NC	
10	12/30/2008	10:49			NC	
10	12/30/2008	12:44			NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
10	12/30/2008	14:52			NC	
10	12/30/2008	16:46				
10	12/30/2008	19:05			NC	
10	12/30/2008				NC	
10	12/30/2008				NC	
10	12/31/2008	6:59				Not able to observe
10	12/31/2008	8:57				
10	12/31/2008	10:54				
10	12/31/2008	13:09				
10	12/31/2008	15:02				
10	12/31/2008	18:30				
10	12/31/2008	21:05				
10	12/31/2008	22:05				
10	12/31/2008				NC	
10	12/31/2008				NC	
10	12/31/2008				NC	
10	1/1/2009	1:05			NC	
10	1/1/2009	3:00			NC	
10	1/1/2009	5:07			NC	
10	1/1/2009	6:59			NC	
10	1/1/2009	19:05				
10	1/1/2009	21:05				
10	1/1/2009	23:00				
10	1/1/2009				NC	
10	1/1/2009				NC	
10	1/1/2009				NC	
10	1/1/2009				NC	
10	1/1/2009				NC	
10	1/2/2009	1:00			NC	
10	1/2/2009	3:10			NC	
10	1/2/2009	5:05			NC	
10	1/2/2009	19:00			NC	
10	1/2/2009	21:05			NC	
10	1/2/2009	23:00			NC	
10	1/2/2009				NC	
10	1/2/2009				NC	
10	1/2/2009				NC	
10	1/2/2009				NC	
10	1/2/2009				NC	
10	1/2/2009				NC	
10	1/2/2009				NC	
10	1/3/2009	1:00			NC	
10	1/3/2009	3:05			NC	
10	1/3/2009	5:00			NC	
10	1/3/2009	7:00			NC	
10	1/3/2009	9:00			NC	
10	1/3/2009	11:00			NC	
10	1/3/2009	13:00			NC	
10	1/3/2009	15:00			NC	
10	1/3/2009	17:00			NC	
10	1/3/2009	19:00			NC	
10	1/3/2009	21:00			NC	
10	1/3/2009	23:00			NC	
10	1/4/2009	1:00			NC	
10	1/4/2009	3:05			NC	
10	1/4/2009	5:05			NC	
10	1/4/2009	19:10			NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
10	1/4/2009	21:05			NC	
10	1/4/2009	23:05			NC	
10	1/4/2009				NC	
10	1/4/2009				NC	
10	1/4/2009				NC	
10	1/4/2009				NC	
10	1/4/2009				NC	
10	1/4/2009				NC	
10	1/5/2009	1:05			NC	
10	1/5/2009	3:02			NC	
10	1/5/2009	5:00			NC	
10	1/5/2009	7:00				
10	1/5/2009	9:00				
10	1/5/2009	11:31				
10	1/5/2009	13:20				
10	1/5/2009	15:13				
10	1/5/2009	17:10				
10	1/5/2009	19:00			NC	
10	1/5/2009	21:00			NC	
10	1/5/2009	23:05			NC	
10	1/6/2009	1:05			NC	
10	1/6/2009	3:05			NC	
10	1/6/2009	5:05			NC	
10	1/6/2009	6:47				
10	1/6/2009	9:15				
10	1/6/2009	11:23				
10	1/6/2009	13:09				
10	1/6/2009	15:03				
10	1/6/2009	17:13				
10	1/6/2009	19:15			NC	
10	1/6/2009	21:05			NC	
10	1/6/2009	23:00			NC	
10	1/7/2009	1:05			NC	
10	1/7/2009	3:10			NC	
10	1/7/2009	5:00			NC	
10	1/7/2009	7:24				
10	1/7/2009	9:17				
10	1/7/2009	12:45				
10	1/7/2009	15:00				
10	1/7/2009	17:00				
10	1/7/2009	19:00				
10	1/7/2009	21:05			NC	
10	1/7/2009	21:10			NC	
10	1/7/2009	23:05			NC	
10	1/8/2009	1:05			NC	
10	1/8/2009	3:10			NC	
10	1/8/2009	5:05			NC	
10	1/8/2009	7:02				
10	1/8/2009	9:00			NC	
10	1/8/2009	12:45			NC	
10	1/8/2009	13:10			NC	
10	1/8/2009	15:04			NC	
10	1/8/2009	16:35				
10	1/8/2009	19:00			NC	
10	1/8/2009	21:05				
10	1/8/2009	23:05				

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
10	1/9/2009	1:00				
10	1/9/2009	3:00				
10	1/9/2009	5:00				
10	1/9/2009	7:00				
10	1/9/2009	9:00				
10	1/9/2009	11:02				
10	1/9/2009	13:12				
10	1/9/2009	15:05				
10	1/9/2009	17:01				
10	1/9/2009	19:11				
10	1/9/2009	21:05				
10	1/9/2009	23:05				
10	1/10/2009	1:04				
10	1/10/2009	3:03				
10	1/10/2009	5:06				
10	1/10/2009	7:05				
10	1/10/2009	9:05				
10	1/10/2009	11:00				
10	1/10/2009	13:00				
10	1/10/2009	15:00				
10	1/10/2009	17:00				
10	1/10/2009	19:07				
10	1/10/2009	21:01				
10	1/10/2009	23:09				
10	1/11/2009	1:06				
10	1/11/2009	3:09				
10	1/11/2009	5:09				
10	1/11/2009	7:00				
10	1/11/2009	9:00				
10	1/11/2009	11:00				
10	1/11/2009	13:00				
10	1/11/2009	15:00				
10	1/11/2009	17:00				
10	1/11/2009	19:00				
10	1/11/2009	21:00				
10	1/11/2009	23:07				
10	1/12/2009	1:03				
10	1/12/2009	3:11				
10	1/12/2009	5:08				
10	1/12/2009	6:53				
10	1/12/2009	13:40				
10	1/12/2009	15:50				
10	1/12/2009	17:20				
10	1/12/2009	19:09				
10	1/12/2009	21:11				
10	1/12/2009	23:09				
10	1/13/2009	1:00				
10	1/13/2009	3:07				
10	1/13/2009	5:10				
10	1/13/2009	7:45				
10	1/13/2009	9:36				
10	1/13/2009	13:00				
10	1/13/2009	15:30				
10	1/13/2009	17:30				
10	1/13/2009	19:00				
10	1/13/2009	21:00				

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
10	1/13/2009	23:00				
10	1/14/2009	1:00				
10	1/14/2009	3:00				
10	1/14/2009	3:38				
10	1/14/2009	5:00				
10	1/14/2009	7:05				
10	1/14/2009	9:30				
10	1/14/2009	11:40				
10	1/14/2009	13:30				
10	1/14/2009	19:00				
10	1/14/2009	21:00				
10	1/14/2009	23:00				
10	1/15/2009	1:00				
10	1/15/2009	3:00				
10	1/15/2009	5:00				
10	1/15/2009	6:15				
10	1/15/2009	8:15				
10	1/15/2009	10:03				
10	1/15/2009	11:09				
10	1/15/2009	13:20				
10	1/15/2009	17:43				
10	1/15/2009	19:00				
10	1/15/2009	21:00				
10	1/15/2009	21:00				
10	1/16/2009	1:00				
10	1/16/2009	3:00				
10	1/16/2009	5:00				
11	12/29/2008	2:50				3 additional cracks approximately 20 ft west of 9
11	12/29/2008	4:45			NC	
11	12/29/2008	6:52			NC	
11	12/29/2008	8:43			NC	
11	12/29/2008	10:45			NC	
11	12/29/2008	12:51			NC	
11	12/29/2008	15:03			NC	
11	12/29/2008	17:04			NC	
11	12/29/2008	18:50			NC	
11	12/29/2008	20:30			NC	
11	12/29/2008	22:30			NC	
11	12/29/2008	24:30			NC	
11	12/30/2008	2:30			NC	
11	12/30/2008	4:30			NC	Clear water
11	12/30/2008	7:00			NC	
11	12/30/2008	8:48			NC	
11	12/30/2008	10:49			NC	
11	12/30/2008	12:44			NC	
11	12/30/2008	14:52			NC	
11	12/30/2008	16:46			NC	
11	12/30/2008	19:05			NC	
11	12/30/2008				NC	
11	12/30/2008				NC	
11	12/31/2008	6:59			NC	
11	12/31/2008	9:11			NC	
11	12/31/2008	10:54			NC	
11	12/31/2008	13:09			NC	
11	12/31/2008	15:02			NC	
11	12/31/2008	18:30			NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
11	12/31/2008	21:05			NC	
11	12/31/2008	22:05			NC	
11	12/31/2008				NC	
11	12/31/2008				NC	
11	12/31/2008				NC	
11	1/1/2009	1:05			NC	
11	1/1/2009	3:00			NC	
11	1/1/2009	5:07			NC	
11	1/1/2009	6:59			NC	
11	1/1/2009	19:05			NC	
11	1/1/2009	21:05			NC	
11	1/1/2009	23:00			NC	
11	1/1/2009				NC	
11	1/1/2009				NC	
11	1/1/2009				NC	
11	1/1/2009				NC	
11	1/1/2009				NC	
11	1/2/2009	1:00			NC	
11	1/2/2009	3:10			NC	
11	1/2/2009	5:05			NC	
11	1/2/2009	19:00			NC	
11	1/2/2009	21:05			NC	
11	1/2/2009	23:00			NC	
11	1/2/2009				NC	
11	1/2/2009				NC	
11	1/2/2009				NC	
11	1/2/2009				NC	
11	1/2/2009				NC	
11	1/3/2009	1:00			NC	
11	1/3/2009	3:05			NC	
11	1/3/2009	5:00			NC	
11	1/3/2009	7:00			NC	
11	1/3/2009	9:00			NC	
11	1/3/2009	11:00			NC	
11	1/3/2009	13:00			NC	
11	1/3/2009	15:00			NC	
11	1/3/2009	17:00			NC	
11	1/3/2009	19:00			NC	
11	1/3/2009	21:00			NC	
11	1/3/2009	23:00			NC	
11	1/4/2009	1:00			NC	
11	1/4/2009	3:05			NC	
11	1/4/2009	5:05			NC	
11	1/4/2009	19:10			NC	
11	1/4/2009	21:05			NC	
11	1/4/2009	23:05			NC	
11	1/4/2009				NC	
11	1/4/2009				NC	
11	1/4/2009				NC	
11	1/4/2009				NC	
11	1/4/2009				NC	
11	1/4/2009				NC	
11	1/5/2009	1:05			NC	
11	1/5/2009	3:02			NC	
11	1/5/2009	5:00			NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
11	1/5/2009	7:00			NC	
11	1/5/2009	9:00			NC	
11	1/5/2009	11:31			NC	
11	1/5/2009	13:20			NC	
11	1/5/2009	15:22			NC	
11	1/5/2009	17:10			NC	
11	1/5/2009	19:00			NC	
11	1/5/2009	21:00			NC	
11	1/5/2009	23:05			NC	
11	1/6/2009	1:05			NC	
11	1/6/2009	3:05			NC	
11	1/6/2009	5:05			NC	
11	1/6/2009	6:47			NC	
11	1/6/2009	9:15			NC	
11	1/6/2009	11:23			NC	
11	1/6/2009	13:09			NC	
11	1/6/2009	15:03			NC	
11	1/6/2009	17:13			NC	
11	1/6/2009	19:15			NC	
11	1/6/2009	21:05			NC	
11	1/6/2009	23:00			NC	
11	1/7/2009	1:05			NC	
11	1/7/2009	3:10			NC	
11	1/7/2009	5:00			NC	
11	1/7/2009	7:24			NC	
11	1/7/2009	9:17			NC	
11	1/7/2009	12:45			NC	
11	1/7/2009	15:00			NC	
11	1/7/2009	17:00			NC	
11	1/7/2009	19:00			NC	
11	1/7/2009	21:05			NC	
11	1/7/2009	21:10			NC	
11	1/7/2009	23:05			NC	
11	1/8/2009	1:05			NC	
11	1/8/2009	3:10			NC	
11	1/8/2009	5:05			NC	
11	1/8/2009	7:02			NC	
11	1/8/2009	9:00			NC	
11	1/8/2009	12:45			NC	
11	1/8/2009	13:10			NC	
11	1/8/2009	15:04			NC	
11	1/8/2009	16:35			NC	
11	1/8/2009	19:00			NC	
11	1/8/2009	21:05			NC	
11	1/8/2009	23:05			NC	
11	1/9/2009	1:00			NC	
11	1/9/2009	3:00			NC	
11	1/9/2009	5:00			NC	
11	1/9/2009	7:00			NC	
11	1/9/2009	9:00			NC	
11	1/9/2009	11:02			NC	
11	1/9/2009	13:12			NC	
11	1/9/2009	15:05			NC	
11	1/9/2009	17:01			NC	
11	1/9/2009	19:11			NC	
11	1/9/2009	21:05			NC	

Dike C and Dike D Crack Monitoring Results
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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
11	1/9/2009	23:05			NC	
11	1/10/2009	1:04			NC	
11	1/10/2009	3:03			NC	
11	1/10/2009	5:06			NC	
11	1/10/2009	7:05			NC	
11	1/10/2009	9:05			NC	
11	1/10/2009	11:00			NC	
11	1/10/2009	13:00			NC	
11	1/10/2009	15:00			NC	
11	1/10/2009	17:00			NC	
11	1/10/2009	19:07			NC	
11	1/10/2009	21:01			NC	
11	1/10/2009	23:09			NC	
11	1/11/2009	1:06			NC	
11	1/11/2009	3:09			NC	
11	1/11/2009	5:09			NC	
11	1/11/2009	7:00			NC	
11	1/11/2009	9:00			NC	
11	1/11/2009	11:00			NC	
11	1/11/2009	13:00			NC	
11	1/11/2009	15:00			NC	
11	1/11/2009	17:00			NC	
11	1/11/2009	19:00			NC	
11	1/11/2009	21:00			NC	
11	1/11/2009	23:07			NC	
11	1/12/2009	1:03			NC	
11	1/12/2009	3:11			NC	
11	1/12/2009	5:08			NC	
11	1/12/2009	6:53			NC	
11	1/12/2009	13:40			NC	
11	1/12/2009	15:50			NC	
11	1/12/2009	17:20			NC	
11	1/12/2009	19:09			NC	
11	1/12/2009	21:11			NC	
11	1/12/2009	23:09			NC	
11	1/13/2009	1:00			NC	
11	1/13/2009	3:07			NC	
11	1/13/2009	5:10			NC	
11	1/13/2009	7:45			NC	
11	1/13/2009	9:36			NC	
11	1/13/2009	13:00			NC	
11	1/13/2009	15:30			NC	
11	1/13/2009	17:30			NC	
11	1/13/2009	19:00			NC	
11	1/13/2009	21:00			NC	
11	1/13/2009	23:00			NC	
11	1/14/2009	1:00			NC	
11	1/14/2009	3:00			NC	
11	1/14/2009	3:38			NC	
11	1/14/2009	5:00			NC	
11	1/14/2009	7:05			NC	
11	1/14/2009	9:30			NC	
11	1/14/2009	11:40			NC	
11	1/14/2009	13:30			NC	
11	1/14/2009	19:00			NC	
11	1/14/2009	21:00			NC	

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
11	1/14/2009	23:00			NC	
11	1/15/2009	1:00			NC	
11	1/15/2009	3:00			NC	
11	1/15/2009	5:00			NC	
11	1/15/2009	6:15			NC	
11	1/15/2009	8:15			NC	
11	1/15/2009	10:03			NC	
11	1/15/2009	11:09			NC	
11	1/15/2009	13:20			NC	
11	1/15/2009	17:43			NC	
11	1/15/2009	19:00			NC	
11	1/15/2009	21:00			NC	
11	1/15/2009	21:00			NC	
11	1/16/2009	1:00			NC	
11	1/16/2009	3:00			NC	
11	1/16/2009	5:00			NC	
12	12/29/2008	18:50				Clear water
12	12/29/2008	20:30			NC	Water
12	12/29/2008	22:30				Clear water
12	12/29/2008	24:30				Clear water
12	12/30/2008	2:30				Clear water
12	12/30/2008	4:30				
12	12/30/2008	7:00				Clear water
12	12/30/2008	8:48				Clear water
12	12/30/2008	11:01				Clear water
12	12/30/2008	12:44				Clear water
12	12/30/2008	14:52				Clear water
12	12/30/2008	16:46			NC	
12	12/30/2008	19:05			NC	
12	12/30/2008				NC	
12	12/30/2008				NC	
12	12/31/2008	7:13			NC	
12	12/31/2008	9:11			NC	
12	12/31/2008	11:01			NC	
12	12/31/2008	13:09			NC	
12	12/31/2008	15:02			NC	
12	12/31/2008	18:30			NC	Clear
12	12/31/2008	21:05			NC	Clear
12	12/31/2008	22:05			NC	Clear
12	12/31/2008				NC	
12	12/31/2008				NC	
12	12/31/2008				NC	
12	1/1/2009	1:05			NC	Clear
12	1/1/2009	3:00			NC	Clear
12	1/1/2009	5:07			NC	Clear
12	1/1/2009	7:13			NC	
12	1/1/2009	19:05			NC	Clear
12	1/1/2009	21:05			NC	Clear
12	1/1/2009	23:00			NC	Clear
12	1/1/2009				NC	
12	1/1/2009				NC	
12	1/1/2009				NC	
12	1/1/2009				NC	
12	1/1/2009				NC	
12	1/2/2009	1:00			NC	Clear
12	1/2/2009	3:10			NC	Clear

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
12	1/2/2009	5:05			NC	Clear
12	1/2/2009	19:00			NC	Clear
12	1/2/2009	21:05			NC	Clear
12	1/2/2009	23:00			NC	Clear
12	1/2/2009				NC	
12	1/2/2009				NC	
12	1/2/2009				NC	
12	1/2/2009				NC	
12	1/2/2009				NC	
12	1/2/2009				NC	
12	1/3/2009	1:00			NC	Clear
12	1/3/2009	3:05			NC	Clear
12	1/3/2009	5:00			NC	Clear
12	1/3/2009	7:00			NC	
12	1/3/2009	9:00				Water
12	1/3/2009	11:00			NC	
12	1/3/2009	13:00			NC	
12	1/3/2009	15:00			NC	
12	1/3/2009	17:00			NC	
12	1/3/2009	19:00			NC	Clear
12	1/3/2009	21:00			NC	Clear
12	1/3/2009	23:00			NC	Clear
12	1/4/2009	1:00			NC	Clear
12	1/4/2009	3:05			NC	Clear
12	1/4/2009	5:05			NC	Clear
12	1/4/2009	19:10			NC	Clear
12	1/4/2009	21:05			NC	Clear
12	1/4/2009	23:05			NC	Clear
12	1/4/2009				NC	
12	1/4/2009				NC	
12	1/4/2009				NC	
12	1/4/2009				NC	
12	1/4/2009				NC	
12	1/4/2009				NC	
12	1/5/2009	1:05			NC	Clear
12	1/5/2009	3:02			NC	Clear
12	1/5/2009	5:00			NC	Clear
12	1/5/2009	7:00			NC	
12	1/5/2009	9:00			NC	
12	1/5/2009	11:31			NC	
12	1/5/2009	13:20			NC	
12	1/5/2009	15:22			NC	
12	1/5/2009	17:10			NC	
12	1/5/2009	19:00			NC	Clear
12	1/5/2009	21:00			NC	Clear
12	1/5/2009	23:05			NC	Clear
12	1/6/2009	1:05			NC	Clear
12	1/6/2009	3:05			NC	Clear
12	1/6/2009	5:05			NC	Clear
12	1/6/2009	6:47			NC	
12	1/6/2009	9:15			NC	
12	1/6/2009	11:23			NC	
12	1/6/2009	13:09			NC	
12	1/6/2009	15:03			NC	
12	1/6/2009	17:13			NC	
12	1/6/2009	19:15			NC	Clear

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
12	1/6/2009	21:05			NC	Clear
12	1/6/2009	23:00			NC	Clear
12	1/7/2009	1:05			NC	Clear
12	1/7/2009	3:10			NC	Clear
12	1/7/2009	5:00			NC	Clear
12	1/7/2009	7:24			NC	
12	1/7/2009	9:17			NC	
12	1/7/2009	12:45			NC	
12	1/7/2009	15:00			NC	
12	1/7/2009	17:00			NC	
12	1/7/2009	19:00			NC	
12	1/7/2009	21:05			NC	Clear
12	1/7/2009	21:10			NC	Clear
12	1/7/2009	23:05			NC	Clear
12	1/8/2009	1:05			NC	Clear
12	1/8/2009	3:10			NC	Clear
12	1/8/2009	5:05			NC	Clear
12	1/8/2009	7:02			NC	
12	1/8/2009	9:00			NC	
12	1/8/2009	12:45			NC	
12	1/8/2009	13:10			NC	
12	1/8/2009	15:04			NC	
12	1/8/2009	16:35			NC	
12	1/8/2009	19:00			NC	Ponded
12	1/8/2009	21:05			NC	Ponded
12	1/8/2009	23:05			NC	Ponded
12	1/9/2009	1:00			NC	Clear
12	1/9/2009	3:00			NC	Clear
12	1/9/2009	5:00			NC	Clear
12	1/9/2009	7:00			NC	
12	1/9/2009	9:00			NC	
12	1/9/2009	11:02			NC	
12	1/9/2009	13:12			NC	
12	1/9/2009	15:05			NC	
12	1/9/2009	17:01			NC	
12	1/9/2009	19:11			NC	Ponded
12	1/9/2009	21:05			NC	Ponded
12	1/9/2009	23:05			NC	Ponded
12	1/10/2009	1:04			NC	Clear
12	1/10/2009	3:03			NC	Ponded
12	1/10/2009	5:06			NC	Ponded
12	1/10/2009	7:05			NC	Ponded
12	1/10/2009	9:05			NC	Cleared for dike D buttress walls. No more measurements
12	1/10/2009	11:00				
12	1/10/2009	13:00				
12	1/10/2009	15:00				
12	1/10/2009	17:00				
12	1/10/2009	19:07				
12	1/10/2009	21:01				
12	1/10/2009	23:09				
12	1/11/2009	1:06				
12	1/11/2009	3:09				
12	1/11/2009	5:09				
12	1/11/2009	7:00				
12	1/11/2009	9:00				
12	1/11/2009	11:00				

Dike C and Dike D Crack Monitoring Results
TVA Kingston Fossil Plant
MACTEC Project 3043081022

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Monitoring Station	Date	Time	Latitude	Longitude	Measurement	Comments
12	1/11/2009	13:00				
12	1/11/2009	15:00				
12	1/11/2009	17:00				
12	1/11/2009	19:00				
12	1/11/2009	21:00				
12	1/11/2009	23:07				
12	1/12/2009	1:03				
12	1/12/2009	3:11				
12	1/12/2009	5:08				
12	1/12/2009	6:53				
12	1/12/2009	13:40				
12	1/12/2009	15:50				
12	1/12/2009	17:20				
12	1/12/2009	19:09				
12	1/12/2009	21:11				
12	1/12/2009	23:09				
12	1/13/2009	1:00				
12	1/13/2009	3:07				
12	1/13/2009	5:10				
12	1/13/2009	7:45				
12	1/13/2009	9:36				
12	1/13/2009	13:00				
12	1/13/2009	15:30				
12	1/13/2009	17:30				
12	1/13/2009	19:00				
12	1/13/2009	21:00				
12	1/13/2009	23:00				
12	1/14/2009	1:00				
12	1/14/2009	3:00				
12	1/14/2009	3:38				
12	1/14/2009	5:00				
12	1/14/2009	7:05				
12	1/14/2009	9:30				
12	1/14/2009	11:40				
12	1/14/2009	13:30				
12	1/14/2009	19:00				
12	1/14/2009	21:00				
12	1/14/2009	23:00				
12	1/15/2009	1:00				
12	1/15/2009	3:00				
12	1/15/2009	5:00				
12	1/15/2009	6:15				
12	1/15/2009	8:15				
12	1/15/2009	10:03				
12	1/15/2009	11:09				
12	1/15/2009	13:20				
12	1/15/2009	17:43				
12	1/15/2009	19:00				
12	1/15/2009	21:00				
12	1/15/2009	21:00				
12	1/16/2009	1:00				
12	1/16/2009	3:00				
12	1/16/2009	5:00				

Appendix B

Bull Run Fossil Plant Bottom Ash

784

MACTEC

MACTEC ENGINEERING AND CONSULTING, INC.
1725 Louisville Drive
Knoxville, Tennessee 37921
Phone: (865) 588-8544 Fax: (865) 588-2710

AASHTO Method T 27-06 / ASTM Method C136-06

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates

TVA Bull Run Fossil Plant Dark gray bottom and fly ash

Job Name: TVA-Kingston Recovery Date: 4-13-9

Job Number: ~~30458~~ 1022.03.01 Sample No: 3939 (Bulk #2)

Test Performed By: REF Test Reviewed By: GTZ

Scales (circle): 15844 Toledo 089601 Ohaus (1850 Ohaus) 119601 Ohaus Oven: OHT-1

INITIAL WEIGHT	1804.8
FINAL WEIGHT	1658.0
% WASHED 200	8.1

Amount of Material Finer Than 0.075mm Sieve in Aggregate

AASHTO Designation: T 11-05

ASTM Method C117-04

Sieve Analysis Location: N36.01211° + W084.15919° (GPS)

Sieve No.	M.M. Dia.	Weight Retained	% Retained	% Passing	Specs

REF ~~786~~ 787

MACTEC

MACTEC ENGINEERING AND CONSULTING, INC.
1725 Louisville Drive
Knoxville, Tennessee 37921
Phone: (865) 588-8544 Fax: (865) 588-2710

AASHTO Method T 27-06 / ASTM Method C136-06

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates

TVA Bull Run Fossil Plant Dark gray bottom and fly ash by REF

Job Name: TVA-Kingston Recovery Date: 1-13-9

Job Number: 30430810 22.03.01 Sample No: 3938(Mix/Bulk)

Test Performed By: REF Test Reviewed By: GTZ

Scales (circle): 15844 Toledo 089601 Ohaus ~~1850 Ohaus~~ 119601 Ohaus Oven: OHT-1

INITIAL WEIGHT	1530.7
FINAL WEIGHT	1144.1
% WASHED 200	26.2

Amount of Material Finer Than 0.075mm Sieve in Aggregate

AASHTO Designation: T 11-05

ASTM Method C117-04

Sieve Analysis Location: N 36.01299° + W 084.15935° GPS

Sieve No.	M.M. Dia.	Weight Retained	% Retained	% Passing	Specs

786

MACTEC

MACTEC ENGINEERING AND CONSULTING, INC.
1725 Louisville Drive
Knoxville, Tennessee 37921
Phone: (865) 588-8544 Fax: (865) 588-2710

AASHTO Method T 27-06 / ASTM Method C136-06

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates

TVA Bull Run Fossil Plant, Gray Bottom + fly ash

Job Name: TVA Kingston Recovery Date: 4-13-9

Job Number: 30430810222 Sample No: 3940 ~~4-13-9~~ (Bulk #3) REF

Test Performed By: REF Test Reviewed By: GTZ

Scales (circle): 15844 Toledo 089601 Ohaus (1850 Ohaus) 119601 Ohaus Oven: OHT-1

INITIAL WEIGHT	1490.7
FINAL WEIGHT	1243.6
% WASHED 200	16.6

Amount of Material Finer Than 0.075mm Sieve in Aggregate

AASHTO Designation: T 11-05

ASTM Method C117-04

Sieve Analysis Location: N36.010810° + W084.15831°

Sieve No.	M.M. Dia.	Weight Retained	% Retained	% Passing	Specs

Appendix C

Design Sketches and Construction Notes

TVA - KINGSTON PLANT
DIKE D BUTTRESS

Stantec / AFR
16 Jan 2009

SCALE : 1 inch = 50 ft

0 10 20 30 40 50 100 ft

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress is intended to improve the interim stability of Dikes C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.
2. Portions of the buttress shown hereon have already been constructed. Actual elevations and/or dimensions may vary from those shown. It is not the intent of these drawings to require changes to portions of the buttress that have already been constructed (e.g., rip rap lined drainage ditch).
3. These drawings do not address removal or grouting of existing pipes within the footprint of the Dike D buttress. Such activities will be addressed on future drawing(s).
4. The existing subsurface conditions and stability of the proposed wraparound area, particularly below the intermediate bench, are unknown. The Contractor's ability to access this area and construct the features shown could be limited due to safety and stability issues.

NORTH (approximate)

DIKE C

DIKE D

BUTTRESS

DRAINAGE DITCH

Corrugated Plastic Pipe (Location Approx.)

Concrete Pipe (Location Approx.)

Elev. 774'

Elev. 774'

PT = 9+62.41

PC = 10+89.70

A
A'
B
B'
C
C'
D
E
E'

TVA KINGSTON PLANT
BUTTRESS for DIKE D

Scale 1 inch = 10 ft

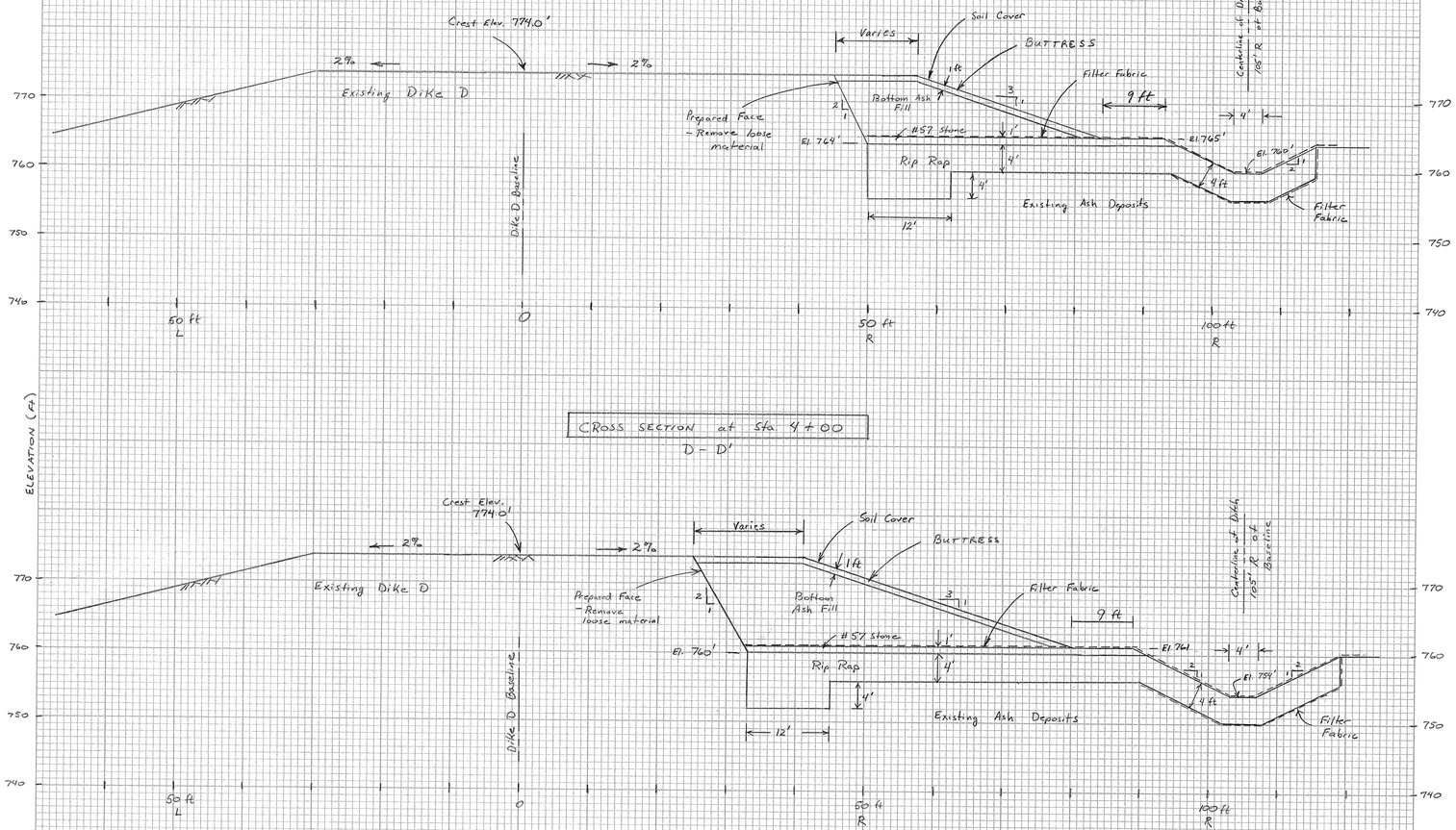
0 5' 10' 20'
Scale

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress is intended to improve the interim stability of Dikes C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.
2. Portions of the buttress shown hereon have already been constructed. Actual elevations and/or dimensions may vary from those shown. It is not the intent of these drawings to require changes to portions of the buttress that have already been constructed (e.g., rip rap lined drainage ditch).
3. These sections are considered typical of the lengths of Dike D near the noted stations. They are not indicative of definitive transitions between sections as one proceeds along the baseline.
4. These typical sections shall not be used in the Dike C wraparound area. Unique sections are provided for this area.

STANTEC

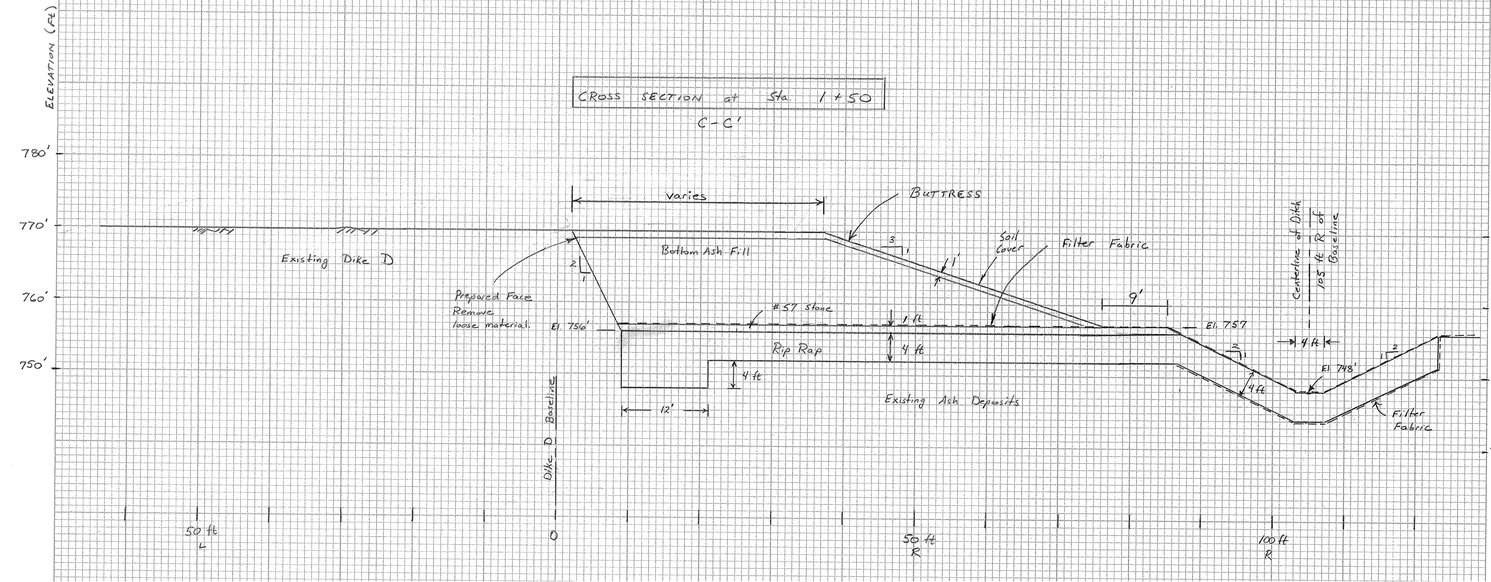
15 Jan 2009	AFR
16 Jan 2009	Revision

CROSS SECTION AT Sta. 6+50
E - E'



CROSS SECTION at Sta 4+00
D - D'

CROSS SECTION at Sta. 1+50
C - C'



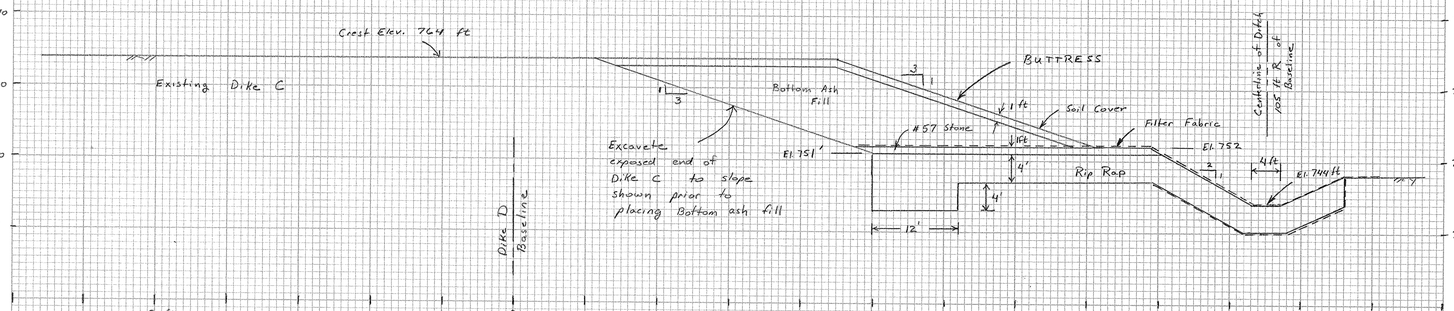
TVA KINGSTON PLANT
BUTTRESS for DIKE C

Scale: 1 inch = 10 ft

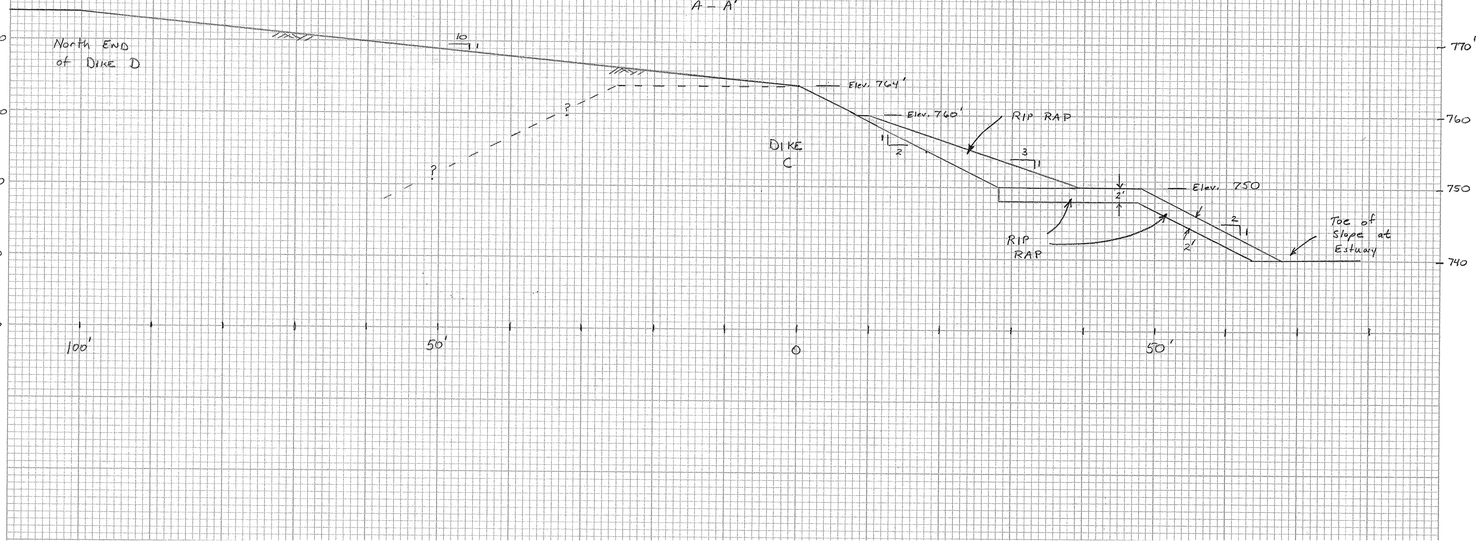
STANTEC
16 Jan 2009 AFR

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress is intended to improve the interim stability of Dike C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.
2. Portions of the buttress shown hereon have already been constructed. Actual elevations and/or dimensions may vary from those shown. It is not the intent of these drawings to require changes to portions of the buttress that have already been constructed (e.g., rip rap placed on intermediate bench).
3. These sections are considered typical of the lengths of Dike C near the noted stations. They are not indicative of definitive transitions between sections.
4. The existing subsurface conditions and stability of the proposed wraparound area, particularly below the intermediate bench, are unknown. The Contractor's ability to access this area and construct the features shown could be limited due to safety and stability issues.

CROSS SECTION THROUGH END OF DIKE C
B - B'



CROSS SECTION THROUGH WRAP AROUND ON DIKE C
A - A'

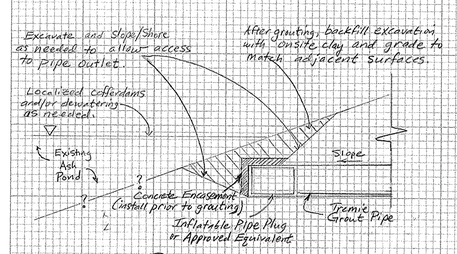


Dikes C and D Buttress Construction Notes
Bottom Ash and Cover Soil Placement
Prepared by Stantec Consulting Services, Inc.
JSD 01/15/2009
Revised JSD 01/16/2009

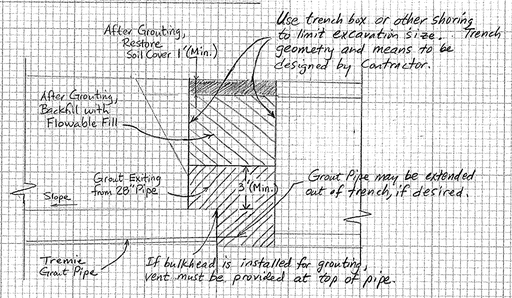
- No vibratory compaction equipment is allowed
- Blade in with dozer or other equipment in maximum 6" thick lifts
- Track in each lift with minimum of 3 passes with dozer
- Do not damage or conceal piezometer riser pipes.
- Do not place fill on frozen ground. Frozen “crust” on the surface to receive fill must be scraped off prior to placement of additional lifts.
- Prior to placement against features such as existing Dike D scarp, access ramps, etc. remove all loose material and large stones.
- At interfaces with existing features, avoid leaving uncompacted material against the interface. Adjacent to steep slopes (such as existing Dike D scarp), run dozer tracks parallel to and as close as possible to the interface. Where possible, run dozer perpendicular/across the interface.
- The exposed end of Dike C shall be cut back prior to additional buttress placement. A typical section showing the excavation is provided for this area.
- Rate of placement, with regard to increasing fill height, will be governed in part by pore pressure buildup and dissipation, as estimated by piezometer readings (to be taken by Stantec). Stantec may restrict the rate of placement or otherwise modify construction procedures based on the piezometric levels measured during construction.
- Fill placement shall proceed by placing a 6” lift over the entire footprint of Dike D buttress before starting the next lift at the starting point of the previous lift.
- All final grading shall promote positive drainage. Unless otherwise shown on drawings, minimum surface slopes shall be 2 percent.

TVA KINGSTON FOSSIL PLANT DIKE D BUTTRESS
TEMPORARY PIPE GROUTING

Project No. 171468117
Stantec
J. Dingrando
4 Feb 2009
18 Feb 2009 Revised JSD

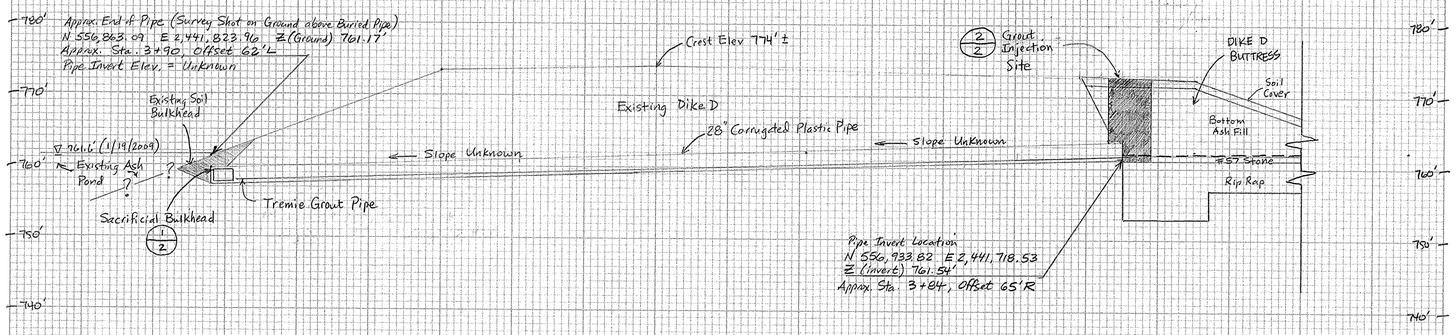


1/2 DETAIL – SACRIFICIAL BULKHEAD
SCALE: 1" = 5'

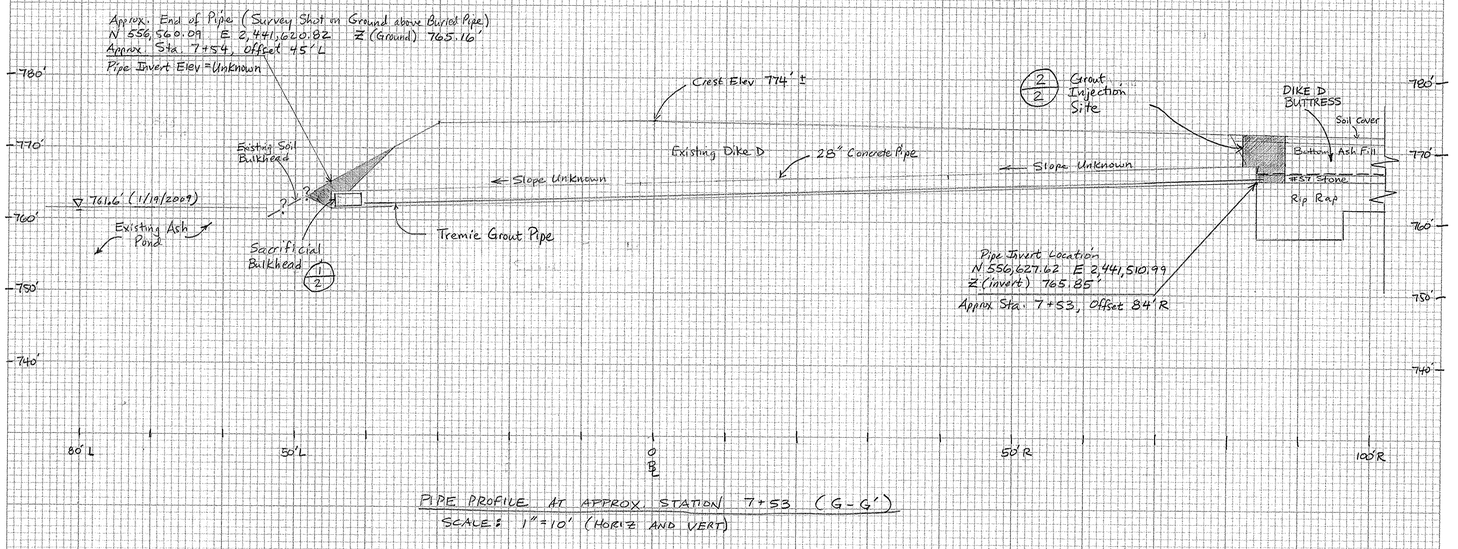


2/2 DETAIL – PIPE VENT EXCAVATION
SCALE: 1" = 5'

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress and pipe backfilling are intended to improve the interim stability of Dikes C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.
2. Portions of the buttress shown hereon have already been constructed. Actual elevations and/or dimensions may vary from those shown. It is not the intent of these drawings to require changes to portions of the buttress that have already been constructed.
3. See the sheet titled "Dike D Temporary Pipe Grouting Construction Notes" for more information necessary to implement this emergency repair.



PIPE PROFILE AT APPROX. STATION 3+87 (SKEWED, F-F')
SCALE: 1" = 10' (HORIZ AND VERT)



PIPE PROFILE AT APPROX. STATION 7+53 (G-G')
SCALE: 1" = 10' (HORIZ AND VERT)

Dike D Temporary Pipe Grouting Construction Notes
Prepared by Stantec Consulting Services, Inc.
JSD 02/05/2009
Revised JSD 02/18/2009

1. Two drain pipes, penetrating Dike D and terminating at the interface of Dike D with the new Dike D buttress, are to be grouted full as a temporary means to improve the interim stability of Dike D. It is assumed that TVA will implement their stated long term plan to excavate both drain pipes and replace them with an engineered backfill as a part of their overall Closure Plan.

2. The general steps for backfilling each drain pipe are as follows:

a. Excavate soil to expose the ash pond end of the drain pipe; slope and/or shore soil as needed to allow access to install sacrificial bulkhead and concrete encasement.

b. Excavate Dike D Buttress materials to expose the buttress end of the drain pipe; Utilize trench boxes or other shoring to limit excavation size, while still allowing necessary access for grouting operations. All shoring shall be selected and designed by the Contractor to meet applicable OSHA regulations.

c. Prior to insertion of tremie grout pipe and bulkhead, drain pipe interior shall be jetted or otherwise cleaned, to the extent practicable, to remove sediment and debris along the length of the drain pipe.

d. Install a sacrificial bulkhead (such as an inflatable pipe plug) to seal the ash pond end of the drain pipe. Bulkhead shall be designed by the Contractor to resist forces applied by the grout while it is in a fluid state. After bulkhead installation, but prior to grouting, the exposed ash pond end of the pipe shall be encased in concrete and allowed to harden.

e. A tremie grout pipe shall be inserted from the buttress end of the drain pipe and shall terminate at the sacrificial bulkhead at the ash pond end. The buttress end of the tremie pipe may be extended out of the trench to facilitate grouting operations, if desired. If a bulkhead is utilized at the buttress end of the drain pipe, a vent shall be provided at the top of the pipe to allow for grout return into the trench box excavation.

f. Pump grout through the tremie pipe and into the drain pipe, fully grouting the length of the drain pipe in a single effort (i.e., no cold joints). Drain pipe will be filled starting at the ash pond end and proceeding uphill towards the buttress end. The outlet of the tremie pipe shall not be withdrawn during grouting, meaning that grout pump(s) must have adequate capacity to fully displace grout from the ash pond end to the buttress end of the drain pipe. Grouting is considered complete after a specified height of grout is verified in the trench excavation (see Drawings).

g. After grout has set, backfill excavations as described in the Drawings and Construction Notes, and restore surfaces to match adjacent grades.

3. Survey data (Northing, Easting, Elevation) for drain pipe locations were provided by TVA Heavy Equipment Division (HED) surveyors. Dike D baseline stationing and offsets are based on drawings (dated January 2009) provided Worley Parsons, as well as transformations to Northing and Easting coordinate system as provided by TVA.

4. After the ash pond end of the drain pipe is exposed, the Contractor shall survey the invert location and elevation, verify the pipe diameter, and provide this information to the Owner.

5. The ash pond end of the drain pipe may be submerged below the ash pond pool. If the Contractor desires to dewater this area, he/she shall be prepared to construct temporary, localized cofferdams/berms and/or perform temporary dewatering.

6. The condition and shape of the drain pipes, including joints, and the degree of sediment/debris inside the pipes, is unknown.

7. Contractor shall have the necessary experience, personnel, and equipment to mix and place grout as required to backfill the drain pipes. Contractor shall document grout component quantities, grout takes, and delivery rate.

8. Grout mix design ratios shall be as follows: 94-lbs Portland cement, 4.7-lbs powdered or granulated bentonite, 8.5-gal potable water. Return grout (from the trench excavation) shall have a mud weight (as measured by a mud balance or similar tool) within 2 lbs/gal (plus or minus) of the injected grout. Alternate mix designs suggested by the Contractor would require approval by the Owner prior to use.

9. Tremie grout pipe material and size shall be selected by the Contractor, but shall be capable of delivering the grout as needed and be resistant to collapse and heat of hydration during grouting. Grout pipes shall be protected from clogging with sediment/debris during insertion into the drain pipe, and shall be tested for blockage prior to initiation of grouting.

10. If a trench is excavated to expose the uphill end of the drain pipe, the major axis of the trench shall be oriented roughly perpendicular to the axis of the pipe.

11. Excavated material shall be stockpiled a safe distance away from the excavation. Temporary fencing or other barriers shall be installed as needed to control worker access to excavations that are not sloped or shored per OSHA guidelines for worker access. Any excavations meant for worker access shall be sloped or shored per OSHA guidelines.

12. Concrete and flowable fill backfill shall be locally available from ready mix suppliers and suitable for the purposes described herein and on the Drawings. Soil backfill shall be clayey material from onsite and shall be similar to existing soils used for Dike D Buttress soil cover.

13. All final grading shall promote positive drainage. Unless otherwise shown on drawings, minimum surface slopes shall be 2 percent.

Appendix D

Slope Inclinometer Installations and Data

SUBSURFACE LOG

Project No.	171468117	Location	N 556623.08, E 2441563.81 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-1** Total Depth 73.7 ft
Location	Kingston, Tennessee	Surface Elevation	774.2 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	12/28/08 Completed 12/28/08
Supervisor	Patrick Kiser Driller G. Thompson	Depth to Water	N/A Date/Time N/A
Logged By	Patrick Kiser	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
774.2'	0.0'	Top of Hole							
772.5'	1.7'	Fat Clay (fill), red - brown, moist, medium stiff							Boring location surveyed by TVA
		Ash, dark gray, dry, fine to coarse grained sand-sized particles, non-plastic							Boring logged by auger cuttings; no sampling performed
765.7'	8.5'	Bottom Ash, dark gray, dry to wet, fine to coarse grained sand-sized particles, non-plastic							material becomes wet at 18.5 feet
736.7'	37.5'	Silty Sand (alluvium), orange to brown, wet, fine grained, poorly graded							

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556623.08, E 2441563.81 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-1**
		Total Depth	73.7 ft

Lithology		Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
Elevation	Depth								
		Silty Sand (alluvium), orange to brown, wet, fine grained, poorly graded *(Continued)*							decreasing fines content with depth
707.5'	66.7'								
		Shale, (augered)							Slope Inclinometer B-1 installed
700.5'	73.7'								
		No Refusal / Bottom of Hole Top of Rock = 66.7' Elevation (707.5')							

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556877.44, E 2441744.70 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-2** Total Depth 78.0 ft
Location	Kingston, Tennessee	Surface Elevation	774.1 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	12/26/08 Completed 12/27/08
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	N/A Date/Time N/A
Logged By	Jim Andrew	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
774.1'	0.0'	Top of Hole							
		Bottom Ash, gray to dark gray, dry to wet, very loose to dense, fine to coarse grained, sand-sized particles, non-plastic							Boring location surveyed by TVA SPTs driven with 140-lb auto hammer
				SPT-1	5.0 - 6.5		5-6-15	--	
				SPT-2	10.0 - 11.5		8-14-11	15	material is dry from 5.0 feet to 12.5 feet
				SPT-3	12.5 - 14.0		19-24-24	--	
				SPT-4	15.0 - 16.5		8-13-14	--	
				SPT-5	17.5 - 19.0		5-5-6	--	material becomes wet at 17.5 feet
				SPT-6	20.0 - 21.5		3-2-2	--	
				SPT-7	22.5 - 24.0		wh-wh-wh	24	
				SPT-8	25.0 - 26.5		wh-wh-wh	--	wh = weight of hammer
				SPT-9	27.5 - 29.0		wh-wh-wh	--	
				SPT-10	30.0 - 31.5		wh-wh-wh	--	
				SPT-11	32.5 - 34.0		wh-wh-wh	--	
				SPT-12	35.0 - 36.5		1-1-3	--	
				SPT-13	37.5 - 39.0		2-2-1	26	
				SPT-14	40.0 - 41.5		wh-wh-wh	46	
730.6'	43.5'			SPT-15	42.5 - 44.0		wh-wh-3	--	

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556877.44, E 2441744.70 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-2**
		Total Depth	78.0 ft

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
		Silty Sand (alluvium), orange to brown, wet, very loose to medium dense, fine grained, poorly graded *(Continued)*		SPT-16	45.0 - 46.5		2-3-2	--	
				SPT-17	47.5 - 49.0		1-wh-wh	21	
				SPT-18	50.0 - 51.5		wh-wh-wh	--	
				SPT-19	52.5 - 54.0		2-1-3	--	
				SPT-20	55.0 - 56.5		2-4-5	--	decreasing fines content with depth
				SPT-21	57.5 - 59.0		2-2-2	24	
				SPT-22	60.0 - 61.5		5-5-6	--	
				SPT-23	62.5 - 64.0		6-9-8	--	
				SPT-24	65.0 - 66.5		3-2-1	--	
				SPT-25	67.5 - 69.0		9-10-10	--	
				SPT-26	70.0 - 71.5		9-7-10	23	
700.5'	73.6'								
696.1'	78.0'	Shale, (augered)							Slope Inclinometer B-2 installed
		No Refusal / Bottom of Hole Top of Rock = 73.6' Elevation (700.5')							

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 557061.67, E 2441887.56 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-3** Total Depth 60.2 ft
Location	Kingston, Tennessee	Surface Elevation	770.9 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	12/29/08 Completed 12/29/08
Supervisor	Patrick Kiser Driller G. Thompson	Depth to Water	N/A Date/Time N/A
Logged By	Patrick Kiser	Depth to Water	N/A Date/Time N/A

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
770.9'	0.0'	Top of Hole							
		Bottom Ash, dark gray to gray, damp to wet, fine to coarse grained sand-sized particles, non-plastic							Boring location surveyed by TVA Boring logged by auger cuttings; no sampling performed material becomes wet at 18.0 feet Zone of coarse gravel 25.0 feet - 30.0 feet
728.9'	42.0'								

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 557061.67, E 2441887.56 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-3**
		Total Depth	60.2 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
		Silty Sand (alluvium), orange to brown, wet, fine grained, poorly graded *(Continued)*							
714.4'	56.5'								
710.7'	60.2'	Shale, (augered)							Slope Inclinometer B-3 installed
		No Refusal / Bottom of Hole Top of Rock = 56.5' Elevation (714.4')							

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556934.61, E 2442066.28 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-4** Total Depth 59.5 ft
Location	Kingston, Tennessee	Surface Elevation	764.2 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	12/28/08 Completed 12/29/08
Supervisor	Patrick Kiser Driller G. Thompson	Depth to Water	N/A Date/Time N/A
Logged By	Patrick Kiser	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
764.2'	0.0'	Top of Hole							
759.7'	4.5'	Bottom Ash, gray to dark gray, dry to damp, very dense, fine to coarse grained sand-sized particles, non-plastic		SPT-1	2.0 - 3.5	1.5	8-24-35	--	Boring location surveyed by TVA SPTs driven with 140-lb auto hammer
756.4'	7.8'	Sandy Lean Clay, red - brown, moist, medium stiff to stiff, with sand sized chert particles		SPT-2	5.0 - 6.5	1.4	5-5-7	24	
		Bottom Ash, gray to dark gray, dry to wet, loose to medium dense, fine to coarse grained sand-sized particles, non-plastic		SPT-3	7.5 - 9.0	1.2	5-14-16	17	
				SPT-4	10.0 - 11.5	0.6	3-7-5	17	material becomes wet at 12.0 feet
748.3'	15.9'			SPT-5	15.0 - 16.5	0.6	2-3-1	--	
		Sandy Lean Clay, red - brown, moist, medium stiff to stiff, with sand layers and lenses		SPT-6	20.0 - 21.5	0.9	1-1-3	29	
741.6'	22.6'								
		Bottom Ash, gray to dark gray, dry to wet, loose to medium dense, fine to coarse grained sand-sized particles, non-plastic		SPT-7	22.5 - 24.0	1.5	4-10-9	--	
				SPT-8	25.0 - 26.5	1.0	3-4-5	--	
				SPT-9	27.5 - 29.0	1.5	4-5-3	20	
				SPT-10	30.0 - 31.5	1.5	2-2-4	--	
				SPT-11	32.5 - 34.0	1.5	3-3-1	--	
728.8'	35.4'								
		Silty Sand (alluvium), orange to brown, wet, very loose to loose, fine grained, poorly graded		SPT-12	35.0 - 36.5	1.5	2-1-3	--	SPT-12 sample split, 35.0 - 35.6 & 35.6 - 36.5
				SPT-13	37.5 - 39.0	0.6	1-2-3	--	
				SPT-14	40.0 - 41.5	1.2	1-1-1	19	

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

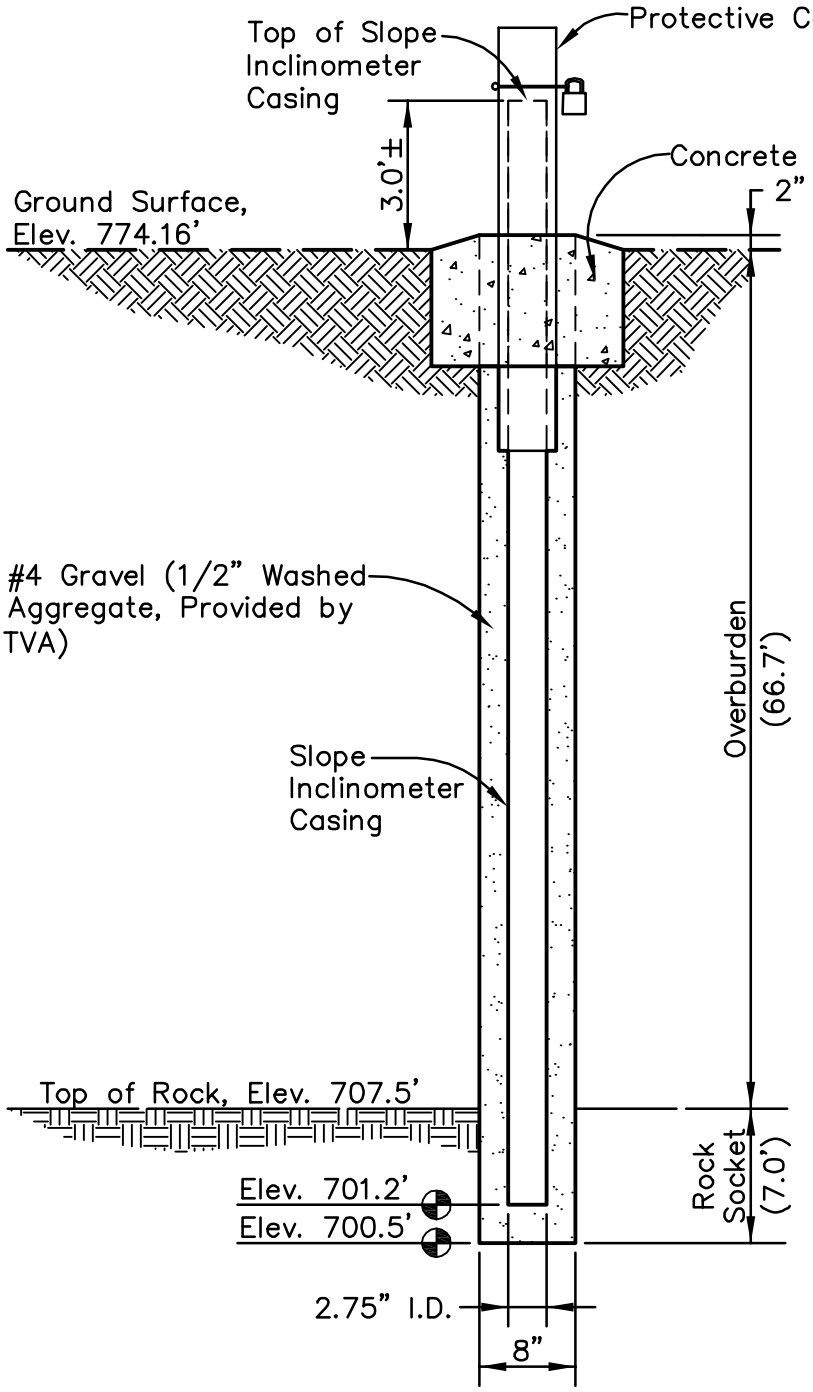
Project No.	171468117	Location	N 556934.61, E 2442066.28 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**B-4**
		Total Depth	59.5 ft

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
		Silty Sand (alluvium), orange to brown, wet, very loose to loose, fine grained, poorly graded *(Continued)*							
712.1'	52.1'								
		Shale, (augered)							
704.7'	59.5'								Slope Inclinometer B-4 installed

No Refusal /
Bottom of Hole

Top of Rock = 52.1'
Elevation (712.1')

FMSM_LEGACY 171468117 SLOPE INCLINOMETERS.GPJ FMSM.GDT 4/20/09



NOTES:

1. Installed on 12/28/2008. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden and rock stratigraphy.
3. Casing axis A0 oriented to magnetic compass bearing of approximately 308 degrees.

LOCATION
Northing: 556,623.08 feet
Easting: 2,441,563.81 feet
Ground Elevation: 774.16 feet

Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

SLOPE INCLINOMETER B-1
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	1 OF 5
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/05/2009 USER: JOHNSON, TRACY
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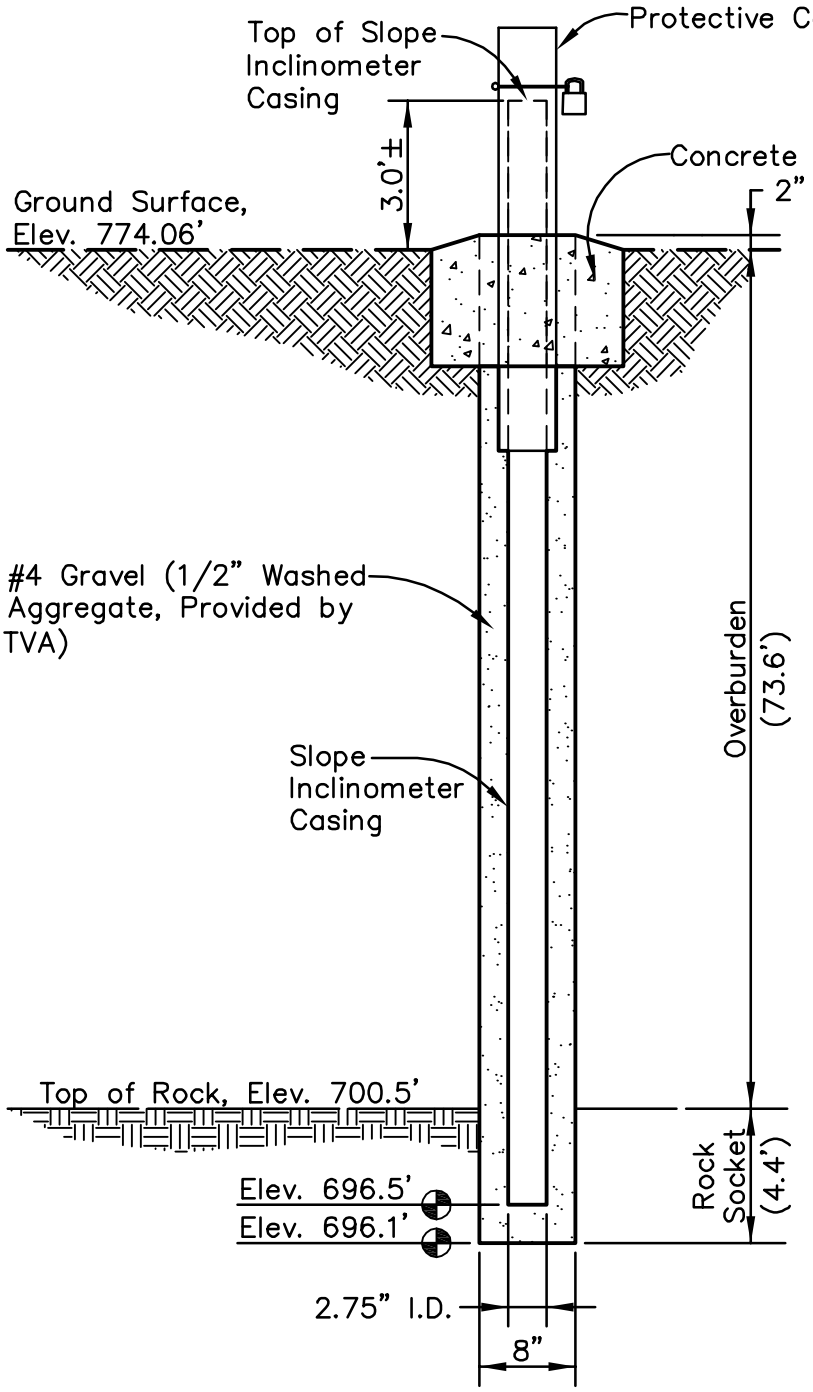

NOTES:

1. Installed on 12/27/2008. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden and rock stratigraphy.
3. Casing axis A0 oriented to magnetic compass bearing of approximately 292 degrees.

LOCATION
Northing: 556,877.44 feet
Easting: 2,441,744.70 feet
Ground Elevation: 774.06 feet

Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

SLOPE INCLINOMETER B-2
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
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DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	2 OF 5
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/05/2009 USER: JOHNSON, TRACY
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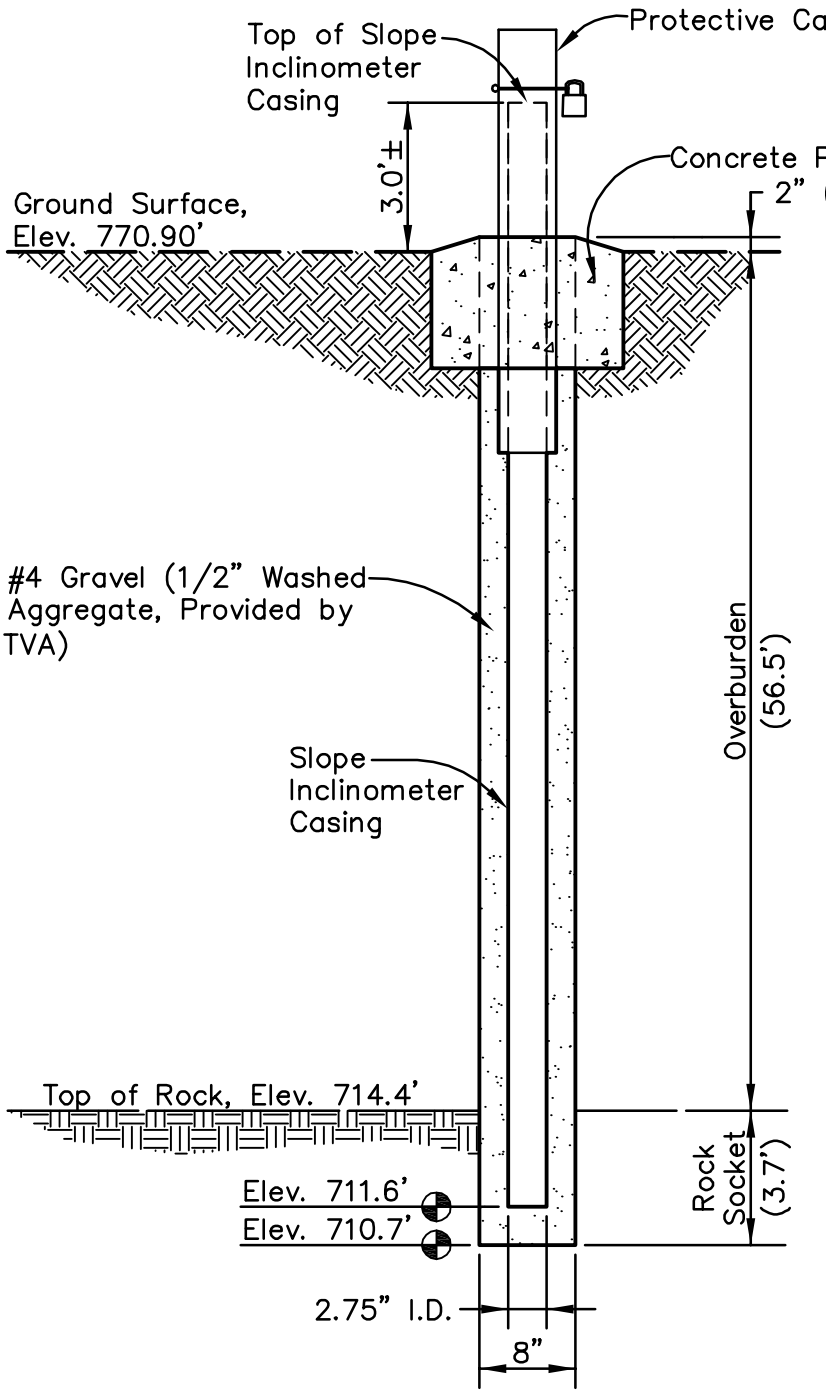

NOTES:

1. Installed on 12/29/2008. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden and rock stratigraphy.
3. Casing axis A0 oriented to magnetic compass bearing of approximately 36 degrees.

LOCATION
Northing: 557,061.67 feet
Easting: 2,441,887.56 feet
Ground Elevation: 770.90 feet

Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

SLOPE INCLINOMETER B-3
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
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CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/05/2009 USER: JOHNSON, TRACY
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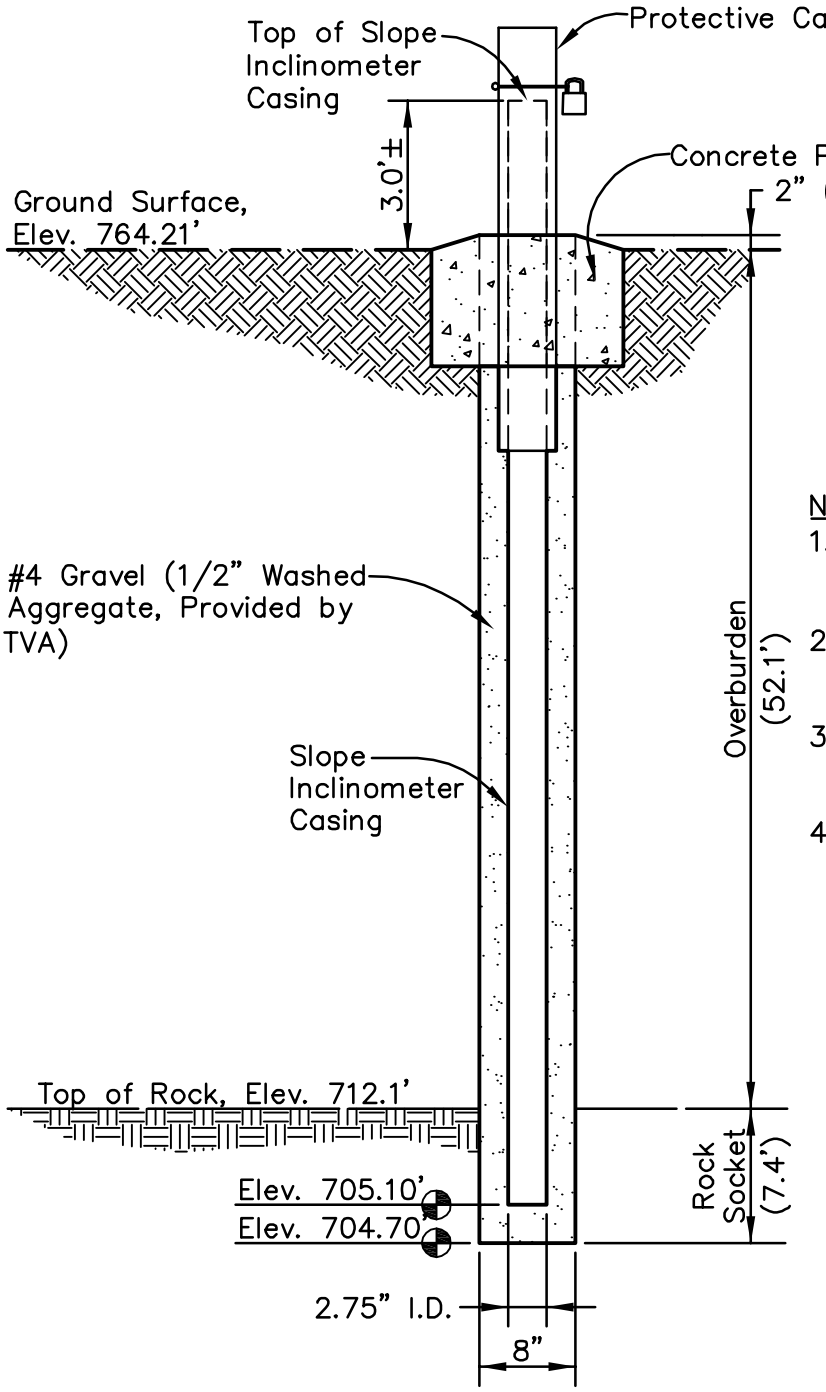

NOTES:

1. Installed on 12/28/2008. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden and rock stratigraphy.
3. Casing axis A0 oriented to magnetic compass bearing of approximately 18 degrees.
4. Surface protection was damaged on 02/05/2009. After repair, installation was renamed B–4A for data installation detail reporting purposes. See B–4A for more information.

DATE: 05/05/2009 USER: JOHNSON, TRACY
V:\1714\ACTIVE\171468117\ENVIRONMENTAL\DRAWINGS\KIF\DIKE_D\68117C-KIF-304-SI4.DWG

LOCATION
Northing: 556,934.61 feet
Easting: 2,442,066.28 feet
Ground Elevation: 764.21 feet

Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

SLOPE INCLINOMETER B-4
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
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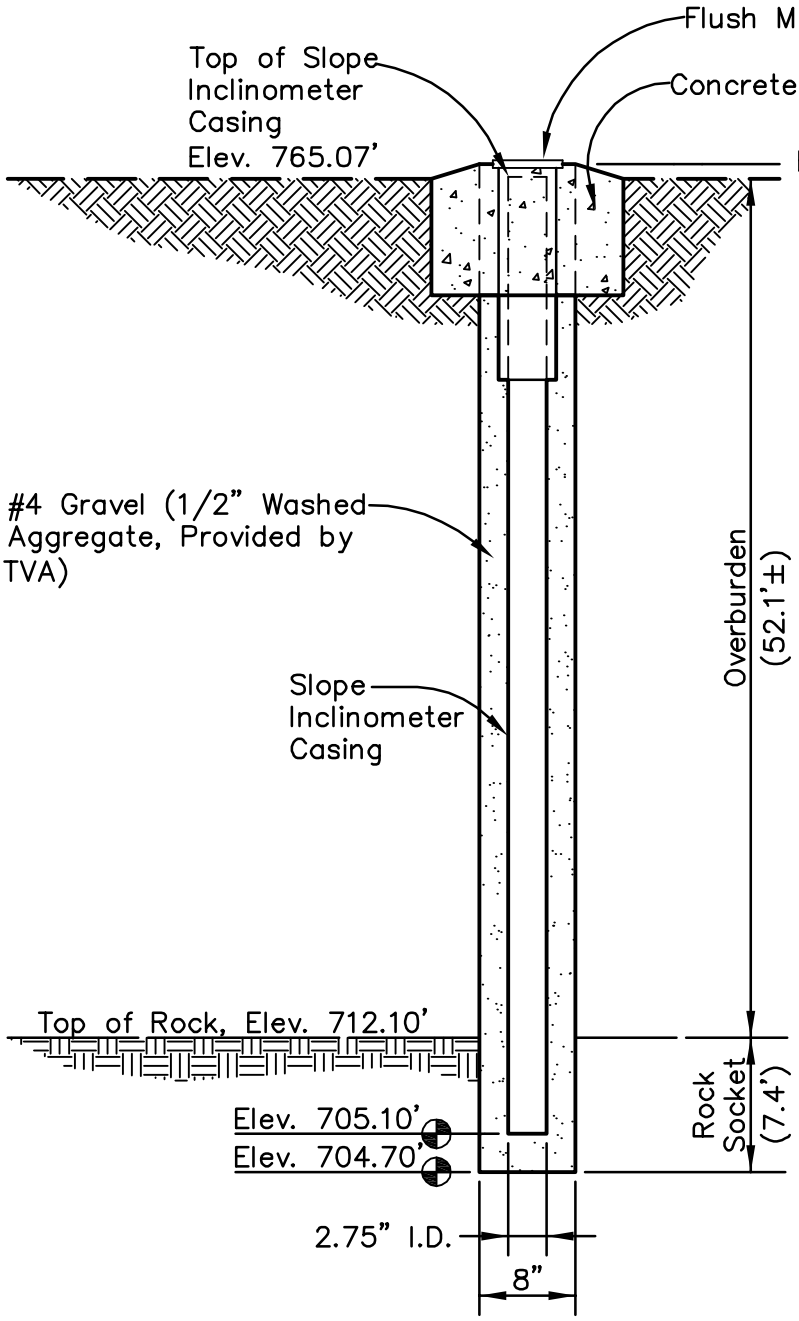
CHECKED BY	JSD	SCALE	NTS	2.	4.	



NOTES:

1. B-4 originally installed on 12/28/2008. After damage to surface protection, repairs made on 02/24/2009 and installation renamed B-4A.
2. Boring advanced with 3.25-inch (I.D.) hollow stem augers.
3. Refer to boring log for overburden and rock stratigraphy.
4. Casing axis A0 oriented to magnetic compass bearing of approximately 18 degrees.

DATE: 05/05/2009 USER: JOHNSON, TRACY
V:\1714\ACTIVE\171468117\ENVIRONMENTAL\DRAWINGS\KIF\DIKE_D\68117C-KIF-305-SI5.DWG

LOCATION (TOP OF CONCRETE)
Northing: 556,934.37 feet
Easting: 2,442,065.92 feet
Top of Concrete Elevation: 765.17 feet
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

SLOPE INCLINOMETER B-4A
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec
Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	5 OF 5
CHECKED BY	JSD	SCALE	NTS	2.	4.	

SLOPE INCLINOMETER DATA ACQUISITION NOTES

Project No.: 171468117
Site: Dikes C and D at the Kingston Fossil Plant
Location: Kingston, Tennessee

Date	Climate	Slope Inclinometer	Time[1]	Bottom Reading[2]	Top Reading[2]	Top of Casing[3]	Field Notes
12/30/2008	Sunny, Clear Warm (≈ 58º F)	B-1	16:45	71 ft	1 ft	+3 ft	Baseline Data. Data acquired by PVK and JWA.
		B-2	16:05	76 ft	2 ft	+3 ft	
		B-3	15:30	58 ft	2 ft	+3 ft	
		B-4	14:40	57 ft	1 ft	+3 ft	
1/1/2009	Clear, Cold (≈ 27º F)	B-1	7:35	71 ft	1 ft	+3 ft	Data acquired by PVK.
		B-2	8:10	76 ft	2 ft	+3 ft	
		B-3	8:48	58 ft	2 ft	+3 ft	
		B-4	6:55	57 ft	1 ft	+3 ft	
1/3/2009	Overcast, Cool (≈ 48º F)	B-1	12:05	71 ft	1 ft	+3 ft	Data acquired by PVK and TSM.
		B-2	11:29	76 ft	2 ft	+3 ft	
		B-3	10:29	58 ft	2 ft	+3 ft	
		B-4	9:45	57 ft	1 ft	+3 ft	
1/5/2009	Overcast, Cool (~ 42°F)	B-1	8:40	71 ft	1 ft	+3 ft	Data acquired by TSM. Also took direct measurements in the B-direction.
		B-2	10:35	76 ft	2 ft	+3 ft	
		B-3	11:35	58 ft	2 ft	+3 ft	
		B-4	12:45	57 ft	1 ft	+3 ft	
1/7/2009	Overcast, Cool (~ 47°F)	B-1	9:05	71 ft	1 ft	+3 ft	Data acquired by TSM. Also took direct measurements in the B-direction. Heavy rainfall at the site on 1/6/09 and into early morning of 1/7/09.
		B-2	10:15	76 ft	2 ft	+3 ft	
		B-3	11:20	58 ft	2 ft	+3 ft	
		B-4	12:20	57 ft	1 ft	+3 ft	
1/9/2009	Clear, Cool (~ 43°F)	B-1	12:20	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took direct measurements in the B-direction at SI B-3.
		B-2	12:55	76 ft	2 ft	+3 ft	
		B-3	3:25	58 ft	2 ft	+3 ft	
		B-4	2:25	57 ft	1 ft	+3 ft	
1/11/2009	Overcast, Cold (~ 35°F)	B-1	9:20	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took direct measurements in the B-direction at SI B-3.
		B-2	8:20	76 ft	2 ft	+3 ft	
		B-3	10:05	58 ft	2 ft	+3 ft	
		B-4	11:45	57 ft	1 ft	+3 ft	

[1] Eastern Standard Time

[2] Depth below the ground surface

[3] The top of the casing is about 3 feet of the ground surface at each of the inclinometer locations. Therefore, to make sure the probe is positioned at the proper depth below the ground surface, the cable reference at the top of the casing should be 3 feet higher than the subject depth (i.e for the probe to be positioned 49 feet below the ground surface, the bottom of the tape maker on the cable representing 52 feet should be positioned even with the top of the inclinometer casing).

SLOPE INCLINOMETER DATA ACQUISITION NOTES

Project No.: 171468117
Site: Dikes C and D at the Kingston Fossil Plant
Location: Kingston, Tennessee

Date	Climate	Slope Inclinometer	Time[1]	Bottom Reading[2]	Top Reading[2]	Top of Casing[3]	Field Notes
1/13/2009	Overcast, Cold (~ 32°F)	B-1	10:05	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took direct measurements in the B-direction at SI B-3.
		B-2	10:55	76 ft	2 ft	+3 ft	
		B-3	11:40	58 ft	2 ft	+3 ft	
		B-4	12:50	57 ft	1 ft	+3 ft	
1/15/2009	Clear, Windy Cold (~ 19°F)	B-1	9:45	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took direct measurements in the B-direction at SI B-3.
		B-2	10:20	76 ft	2 ft	+3 ft	
		B-3	11:30	58 ft	2 ft	+3 ft	
		B-4	12:35	57 ft	1 ft	+3 ft	
1/17/2009	Overcast Cold (~ 11°F)	B-1	8:50	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took direct measurements in the B-direction at SI B-3.
		B-2	9:35	76 ft	2 ft	+3 ft	
		B-3	10:20	58 ft	2 ft	+3 ft	
		B-4	11:35	57 ft	1 ft	+3 ft	
1/19/2009	Overcast, Snow Cold (~ 33°F)	B-1	12:45	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took direct measurements in the B-direction at SI B-3.
		B-2	11:20	76 ft	2 ft	+3 ft	
		B-3	13:40	58 ft	2 ft	+3 ft	
		B-4	14:40	57 ft	1 ft	+3 ft	
1/21/2009	Clear, Calm Cold (~ 24°F)	B-1	11:55	71 ft	1 ft	+3 ft	Data acquired by TSM and ABE. Only took measurements in the A-axis all locations.
		B-2	11:15	76 ft	2 ft	+3 ft	
		B-3	12:30	58 ft	2 ft	+3 ft	
		B-4	15:00	57 ft	1 ft	+3 ft	
1/22/2009	Clear, Calm Cool (~ 38°F)	B-1	11:40	71 ft	1 ft	+3 ft	Data acquired by TSM. Also took direct measurements in the B-direction all 4 holes.
		B-2	9:45	76 ft	2 ft	+3 ft	
		B-3	13:25	58 ft	2 ft	+3 ft	
		B-4	15:00	57 ft	1 ft	+3 ft	
1/23/2009	Overcast, Calm Mild (~ 45°F)	B-1	12:00	71 ft	1 ft	+3 ft	Data acquired by TSM and JWA. Only took measurements in the A-axis all locations.
		B-2	12:45	76 ft	2 ft	+3 ft	
		B-3	17:20	58 ft	2 ft	+3 ft	
		B-4	16:15	57 ft	1 ft	+3 ft	

[1] Eastern Standard Time NR = No Reading

[2] Depth below the ground surface

[3] The top of the casing is about 3 feet of the ground surface at each of the inclinometer locations. Therefore, to make sure the probe is positioned at the proper depth below the ground surface, the cable reference at the top of the casing should be 3 feet higher than the subject depth (i.e for the probe to be positioned 49 feet below the ground surface, the bottom of the tape maker on the cable representing 52 feet should be positioned even with the top of the inclinometer casing).

SLOPE INCLINOMETER DATA ACQUISITION NOTES

Project No.: 171468117
Site: Dikes C and D at the Kingston Fossil Plant
Location: Kingston, Tennessee

Date	Climate	Slope Inclinometer	Time[1]	Bottom Reading[2]	Top Reading[2]	Top of Casing[3]	Field Notes
1/24/2009	Cloudy Mild (~ 42°F)	B-1	9:48	71 ft	1 ft	+3 ft	Data acquired by JWA. Only took measurements in the A-axis all locations.
		B-2	10:32	76 ft	2 ft	+3 ft	
		B-3	11:17	58 ft	2 ft	+3 ft	
		B-4	11:47	57 ft	1 ft	+3 ft	
1/25/2009	Partly Cloudy Mild (~ 48°F)	B-1	10:10	71 ft	1 ft	+3 ft	Data acquired by JWA. Only took measurements in the A-axis all locations.
		B-2	10:50	76 ft	2 ft	+3 ft	
		B-3	11:24	58 ft	2 ft	+3 ft	
		B-4	12:10	57 ft	1 ft	+3 ft	
1/26/2009	Overcast Mild (~ 55°F)	B-1	12:20	71 ft	1 ft	+3 ft	Data acquired by JWA. Only took measurements in the A-axis all locations.
		B-2	12:50	76 ft	2 ft	+3 ft	
		B-3	13:30	58 ft	2 ft	+3 ft	
		B-4	14:10	57 ft	1 ft	+3 ft	
1/30/2009	Clear Cool (~ 36°F)	B-1	14:15	71 ft	1 ft	+3 ft	Data acquired by PVK & SFF. Only took measurements in the A-axis all locations.
		B-2	15:15	76 ft	2 ft	+3 ft	
		B-3	12:51	58 ft	2 ft	+3 ft	
		B-4	12:12	57 ft	1 ft	+3 ft	
2/6/2009	Partly Cloudy Mild (~ 43°F)	B-1	9:40	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took measurements in the A-axis B-1 thru B-3. B-4 damaged by equipment - access for readings not possible.
		B-2	10:30	76 ft	2 ft	+3 ft	
		B-3	11:40	58 ft	2 ft	+3 ft	
		B-4	NR	NR	NR	NR	
2/11/2009	Overcast Mild (~ 65°F)	B-1	8:52	71 ft	1 ft	+3 ft	Data acquired by JWA. Only took measurements in the A-axis B-1 thru B-3. B-4 damaged by equipment - access for readings not possible.
		B-2	9:25	76 ft	2 ft	+3 ft	
		B-3	10:01	58 ft	2 ft	+3 ft	
		B-4	NR	NR	NR	NR	
2/20/2009	Clear Cool (~ 33°F)	B-1	10:35	71 ft	1 ft	+3 ft	Data acquired by TSM. Only took measurements in the A-axis B-1 thru B-3. B-4 damaged by equipment - access for readings not possible.
		B-2	11:15	76 ft	2 ft	+3 ft	
		B-3	12:10	58 ft	2 ft	+3 ft	
		B-4	NR	NR	NR	NR	

[1] Eastern Standard Time NR = No Reading

[2] Depth below the ground surface

[3] The top of the casing is about 3 feet of the ground surface at each of the inclinometer locations. Therefore, to make sure the probe is positioned at the proper depth below the ground surface, the cable reference at the top of the casing should be 3 feet higher than the subject depth (i.e for the probe to be positioned 49 feet below the ground surface, the bottom of the tape maker on the cable representing 52 feet should be positioned even with the top of the inclinometer casing).

SLOPE INCLINOMETER DATA ACQUISITION NOTES

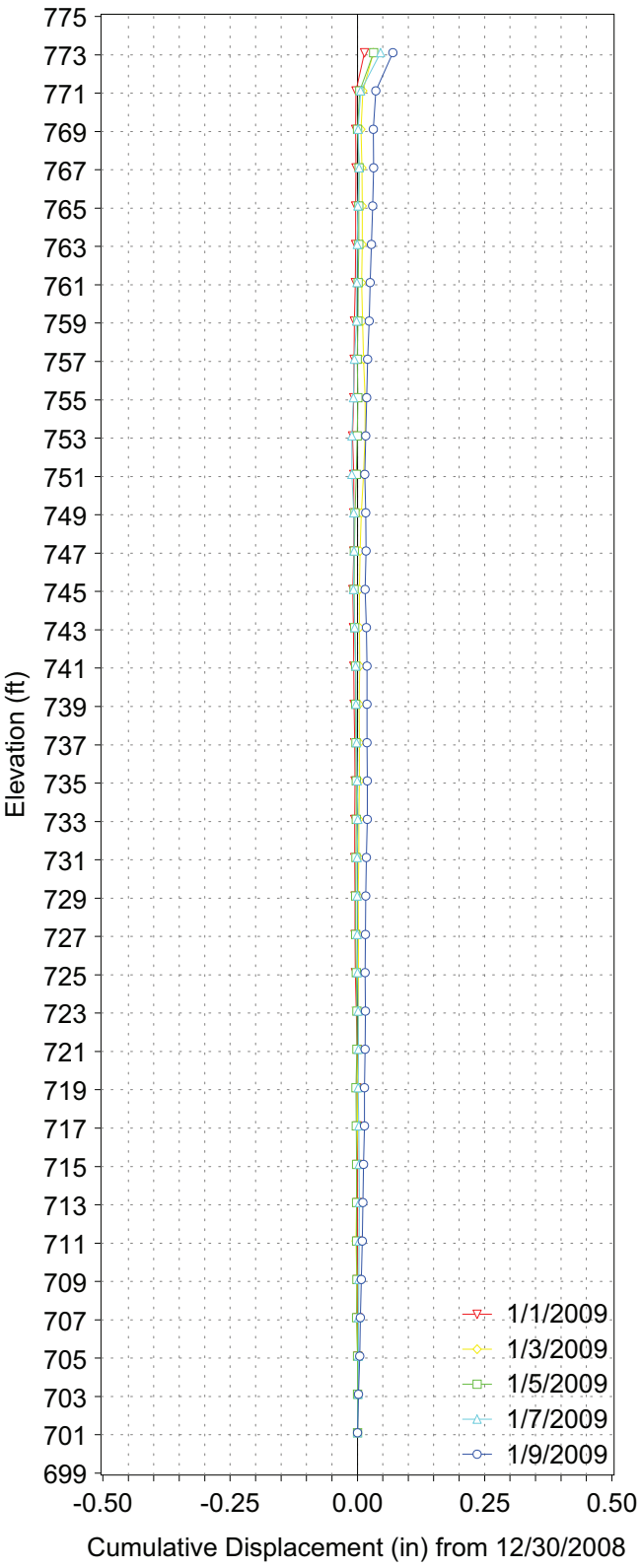
Project No.: 171468117
Site: Dikes C and D at the Kingston Fossil Plant
Location: Kingston, Tennessee

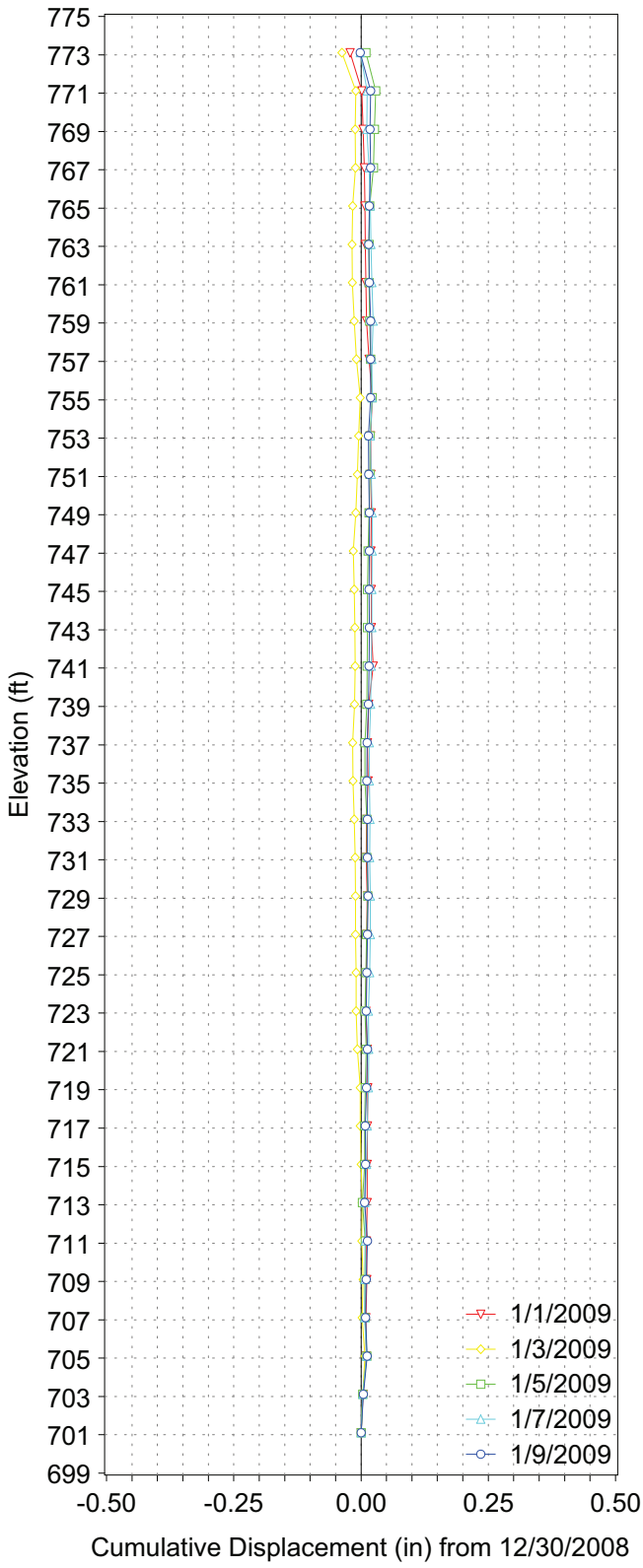
Date	Climate	Slope Inclinometer	Time[1]	Bottom Reading[2]	Top Reading[2]	Top of Casing[3]	Field Notes
2/25/2009	Overcast Mild (~ 55°F)	B-1	NR	71 ft	1 ft	+3 ft	Data acquired by JWA. B-4 repaired and renamed B-4A. Ins talled new flush mount cover on 2-24-09. New baseline readings taken along the A-axis only.
		B-2	NR	76 ft	2 ft	+3 ft	
		B-3	NR	58 ft	2 ft	+3 ft	
		B-4A	9:25	57 ft	2 ft	+0 ft	
3/4/2009	Mostly Clear Mild (~ 55°F)	B-1	NR	71 ft	1 ft	+3 ft	Data acquired by JWA. Only took measurements in th e A-axis at B-4A. Used readings from 2-25-09 post repair as the baseline.
		B-2	NR	76 ft	2 ft	+3 ft	
		B-3	NR	58 ft	2 ft	+3 ft	
		B-4A	15:45	57 ft	2 ft	+0 ft	

[1] Eastern Standard Time NR = No Reading

[2] Depth below the ground surface

[3] The top of the casing is about 3 feet of the ground surface at each of the inclinometer locations. Therefore, to make sure the probe is positioned at the proper depth below the ground surface, the cable reference at the top of the casing should be 3 feet higher than the subject depth (i.e for the probe to be positioned 49 feet below the ground surface, the bottom of the tape maker on the cable representing 52 feet should be positioned even with the top of the inclinometer casing). The B-4A installation employs a flush-mount cover instead of a riser so no correction for top of the casing is necessary.





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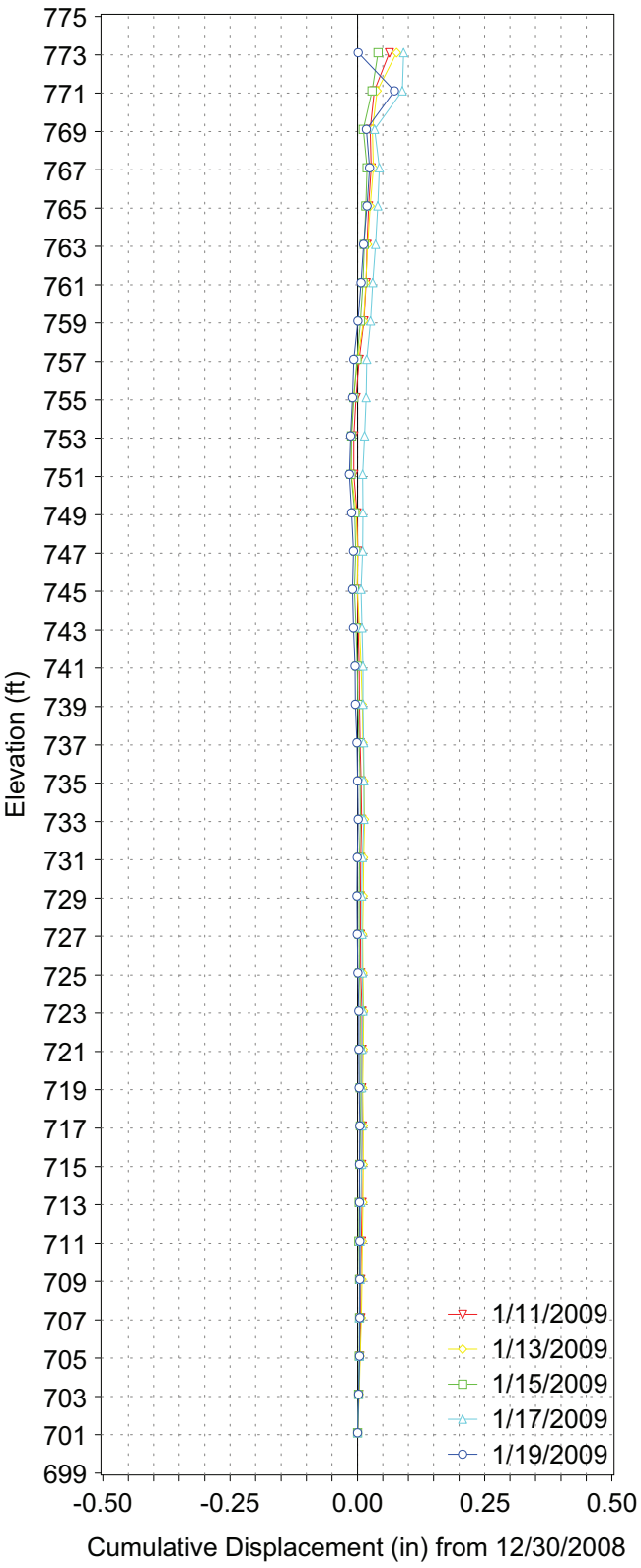
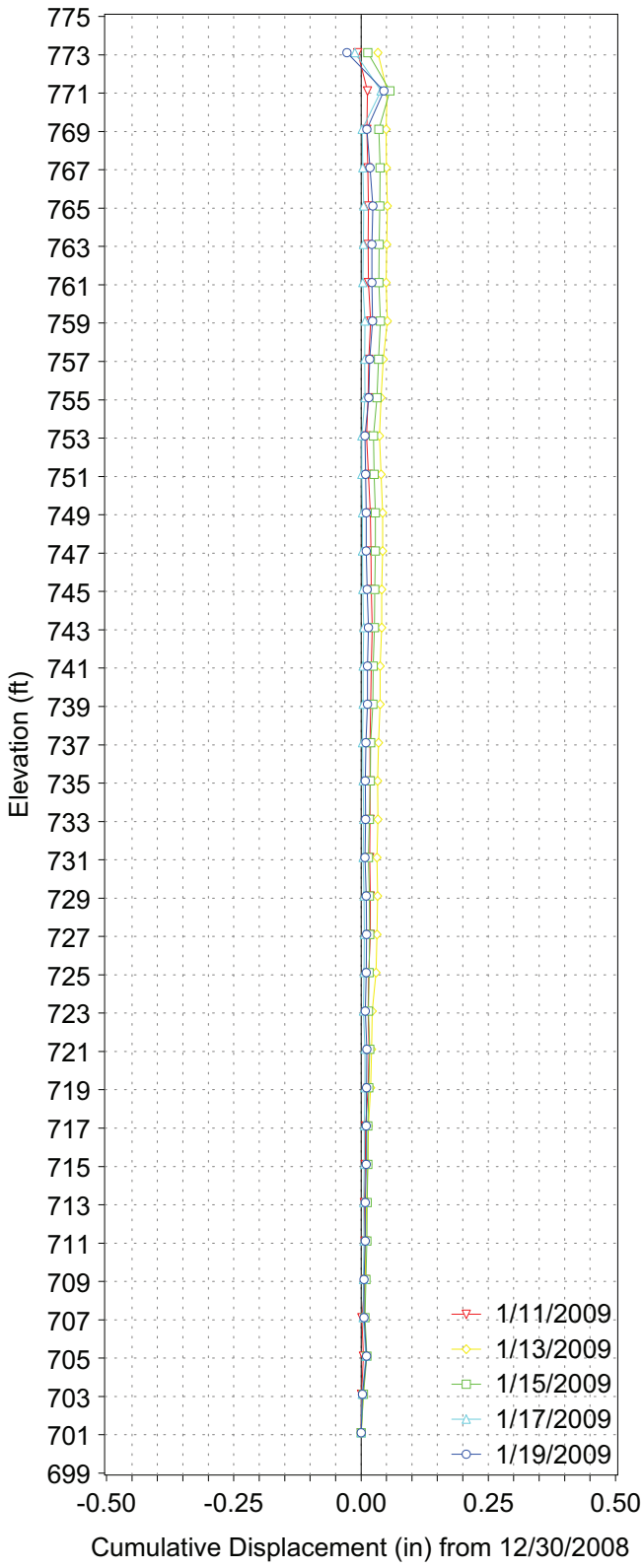
Kingston, Tennessee





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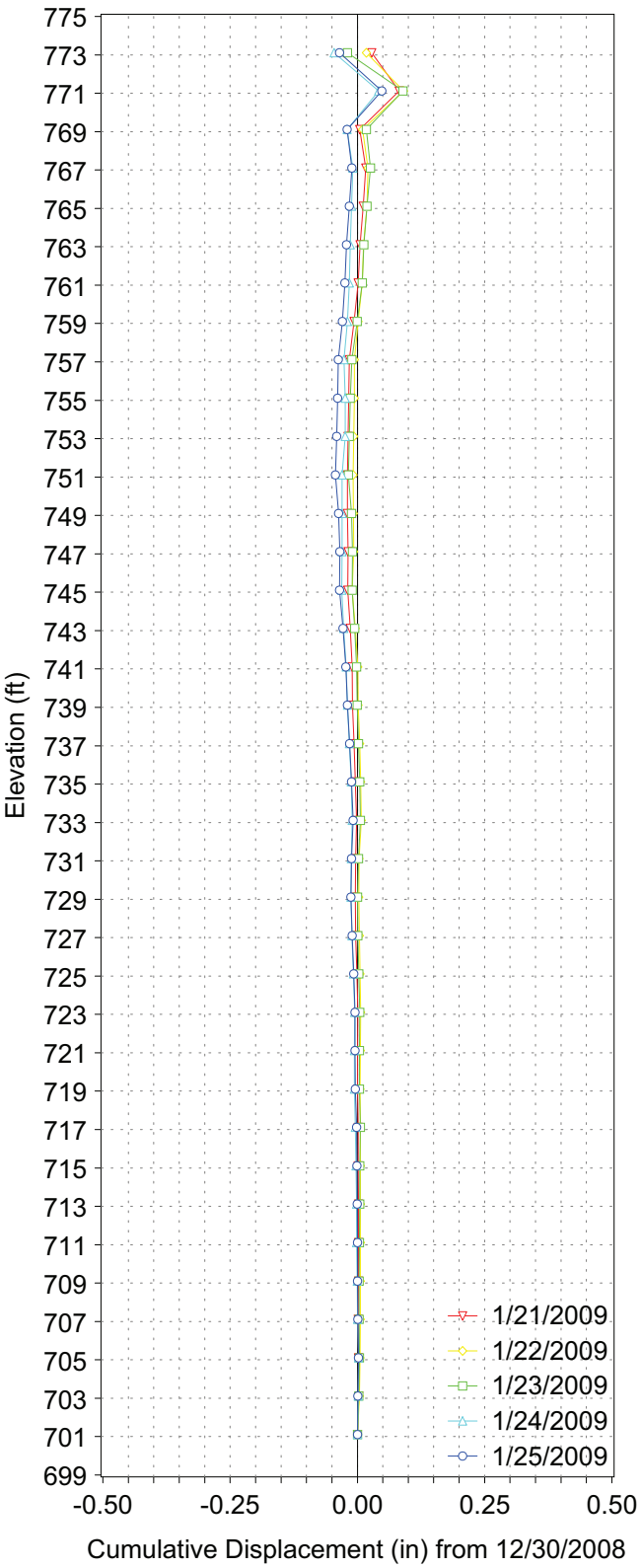
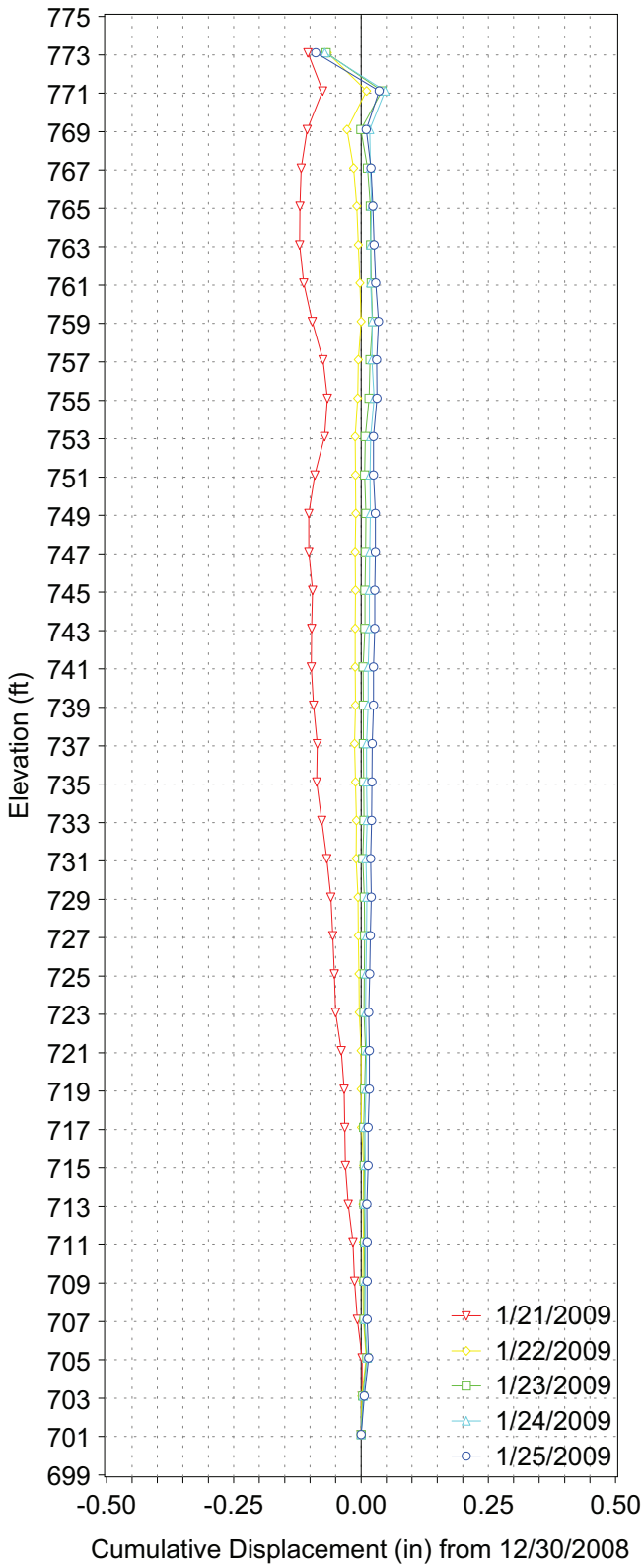
Kingston, Tennessee





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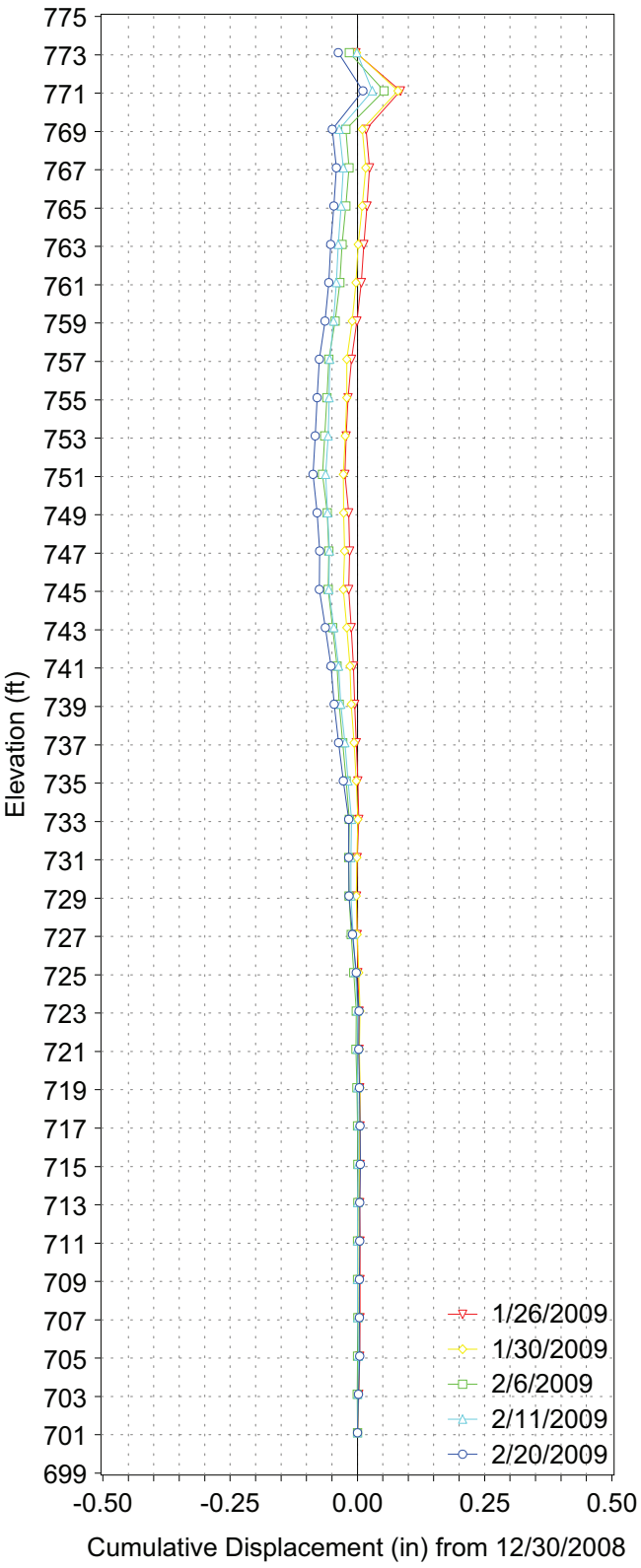

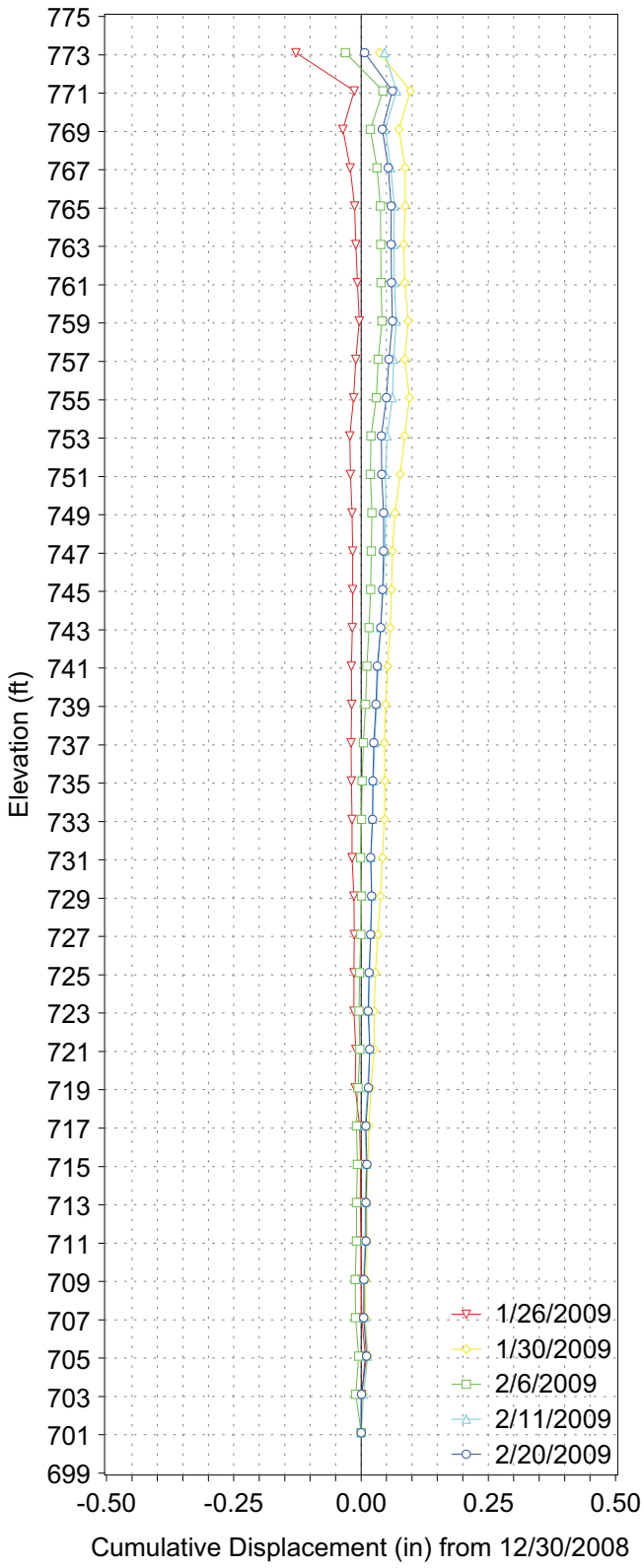

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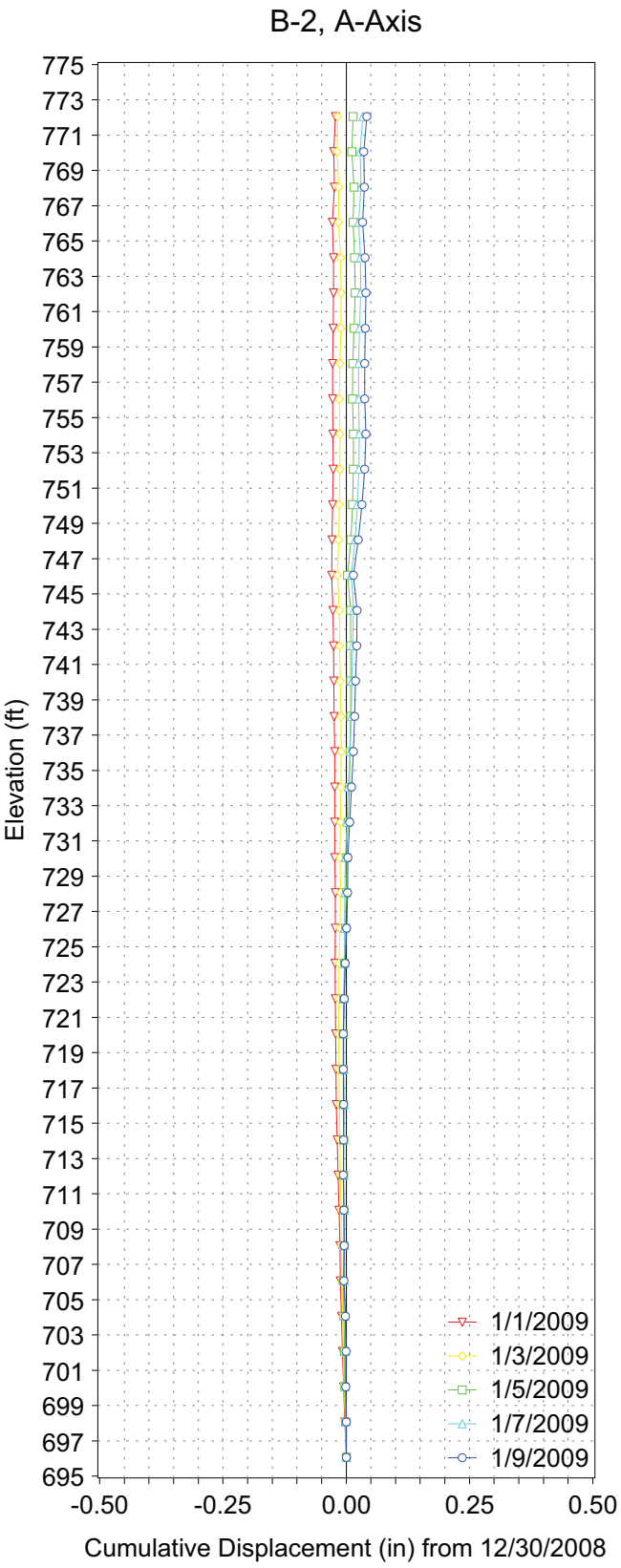

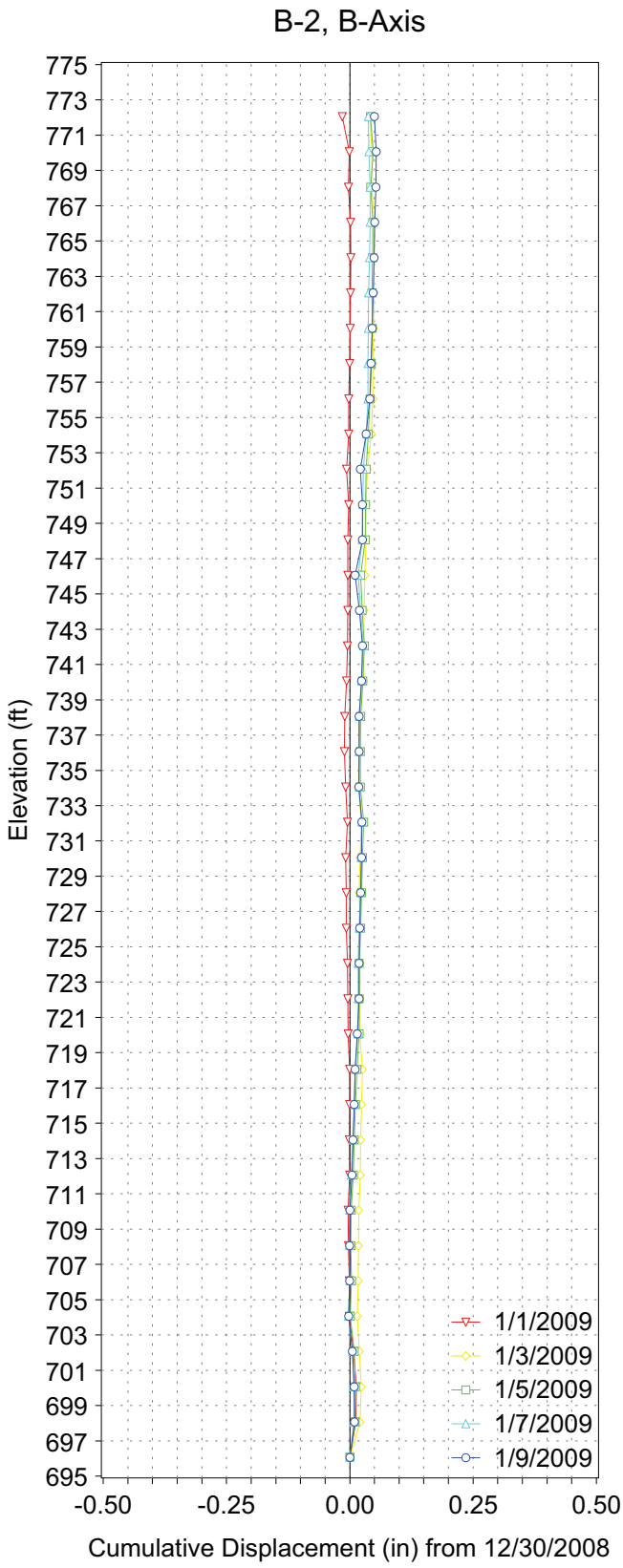

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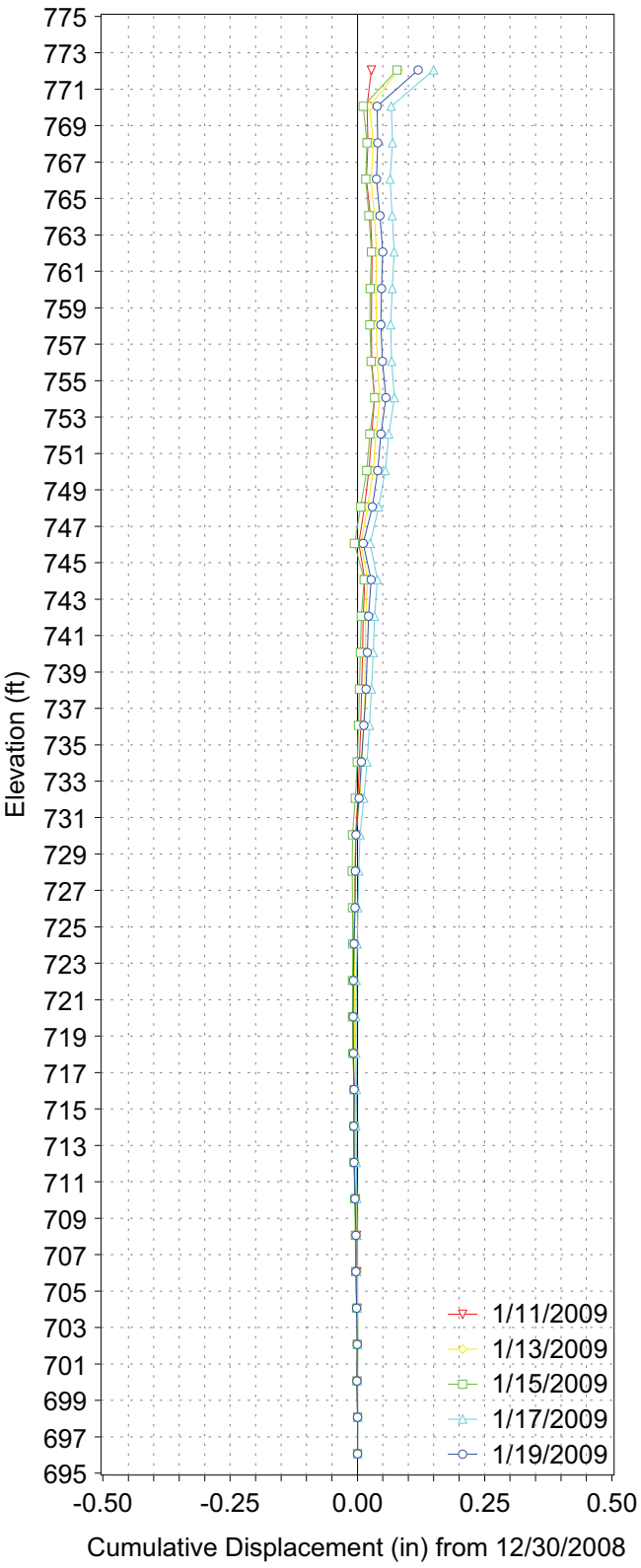

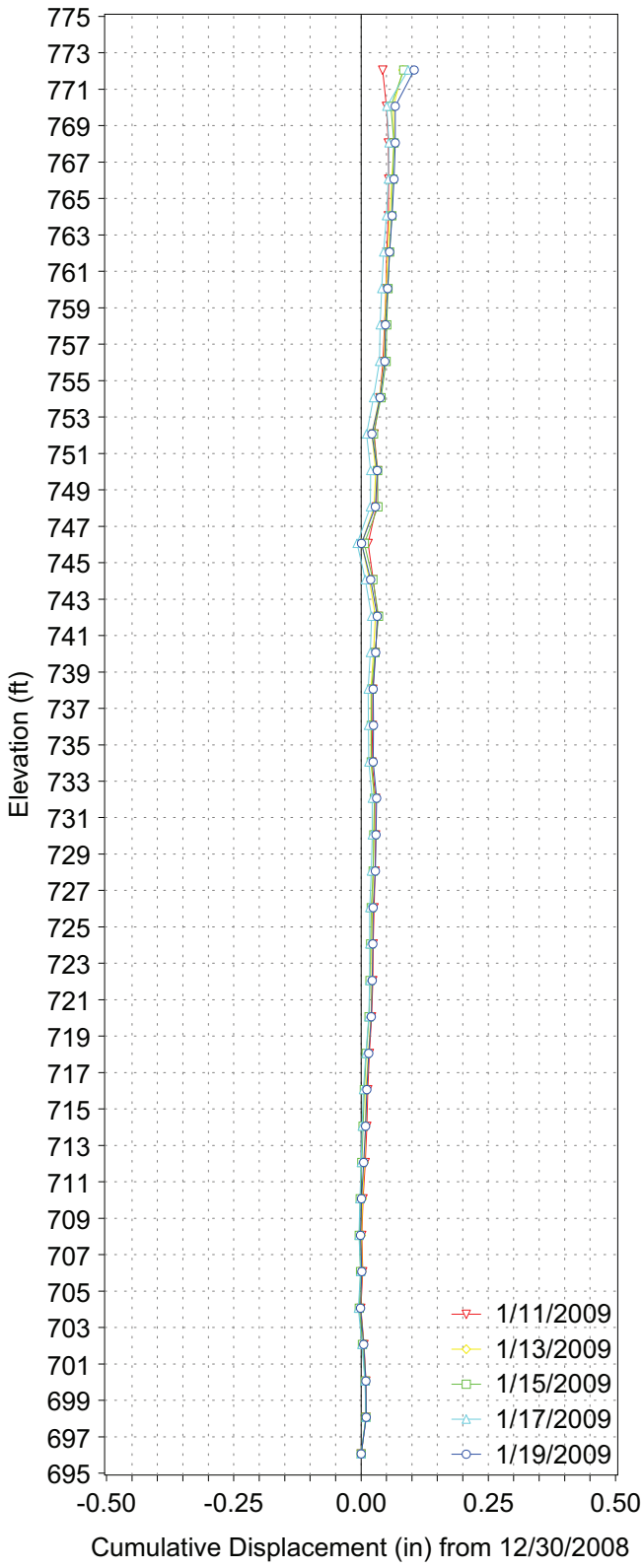

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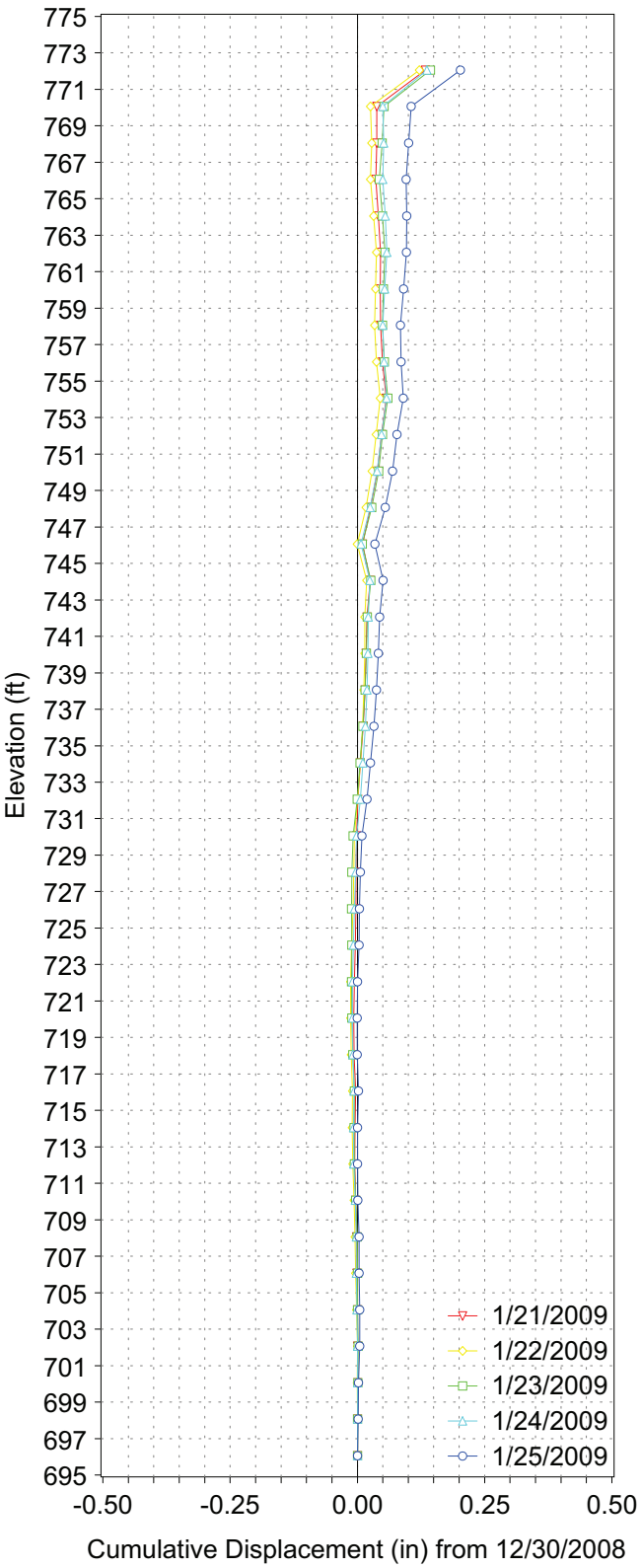

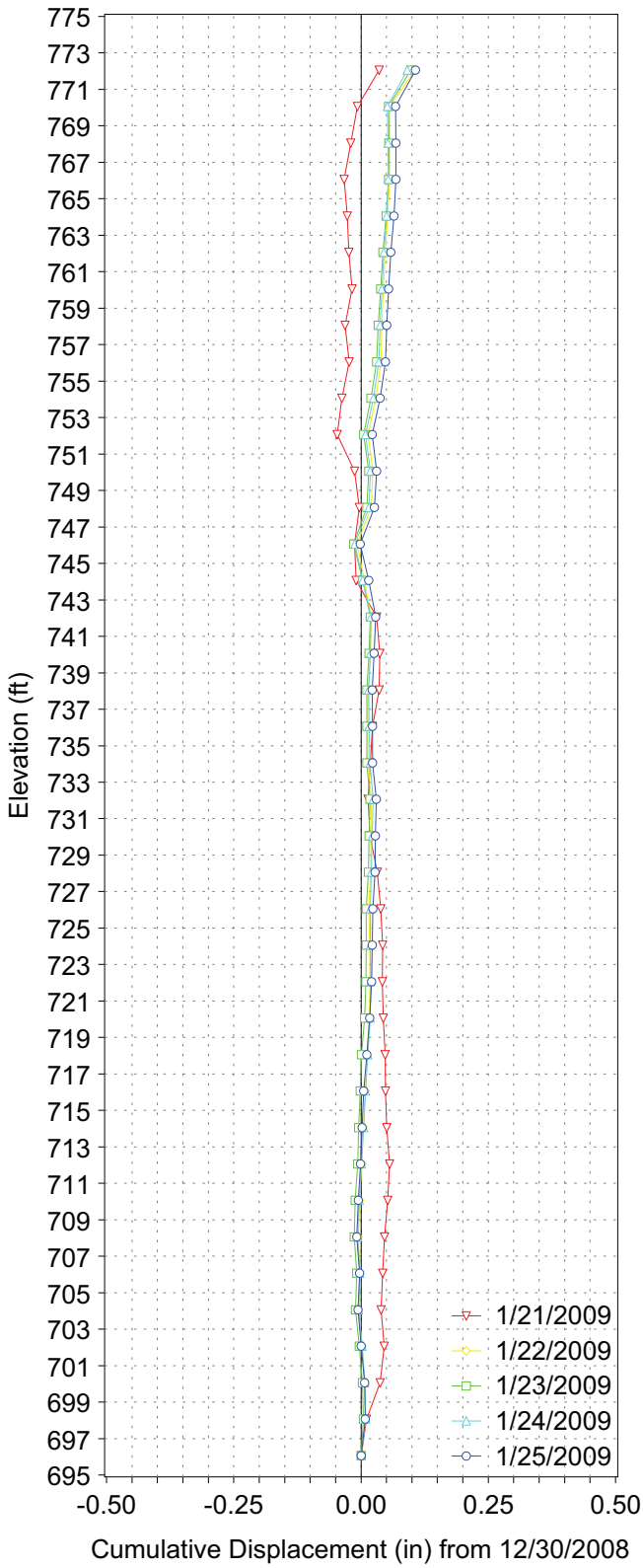

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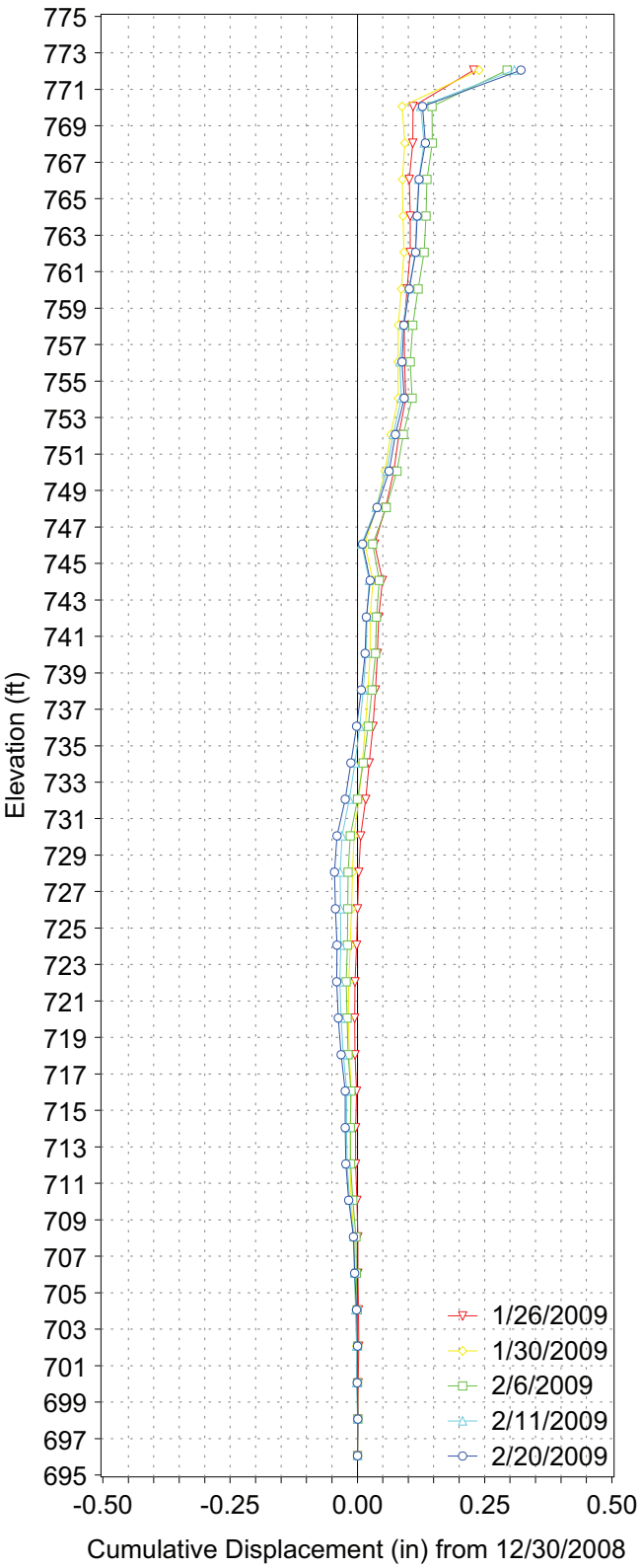

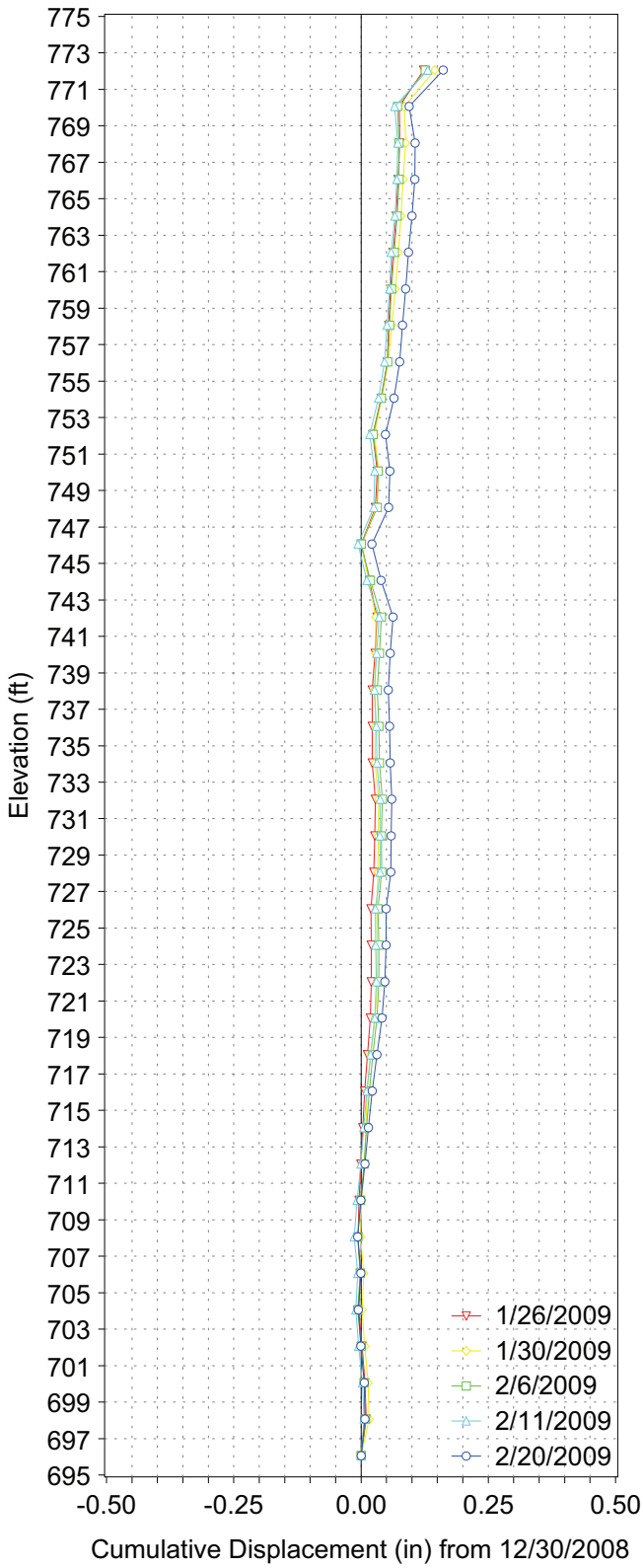

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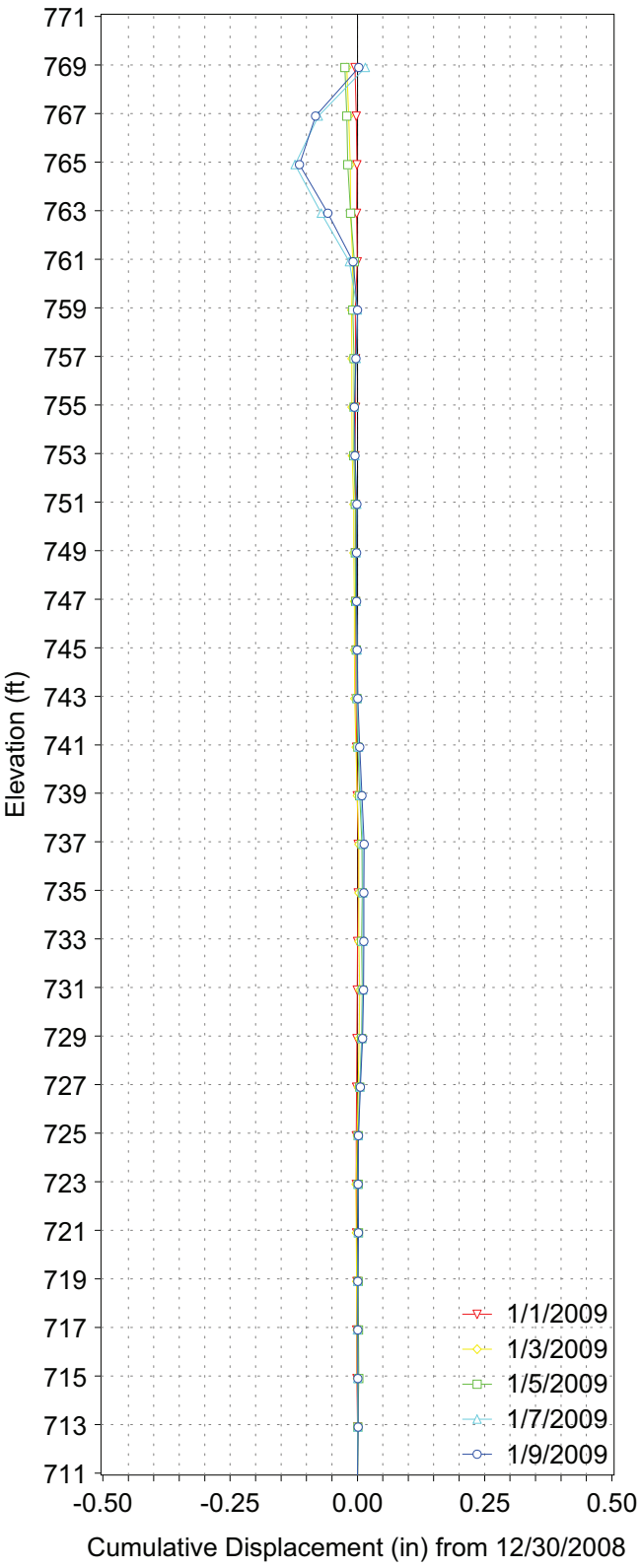

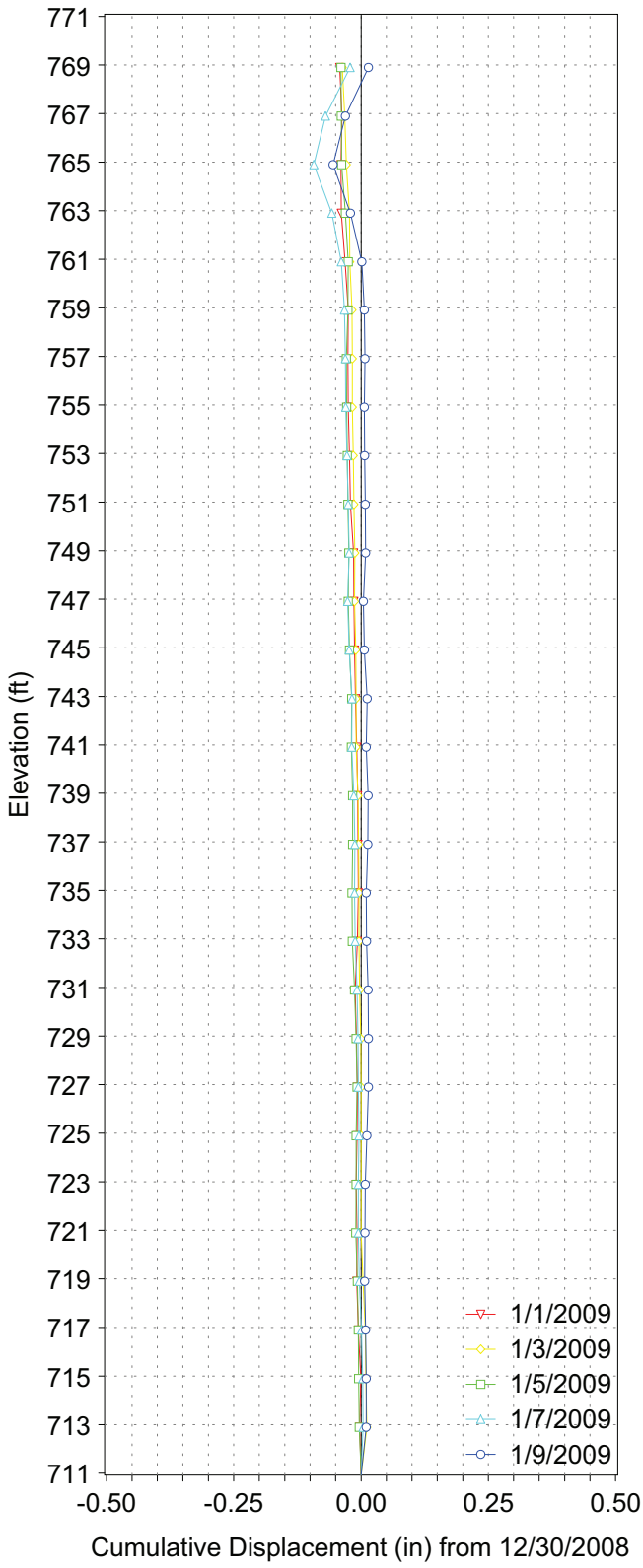

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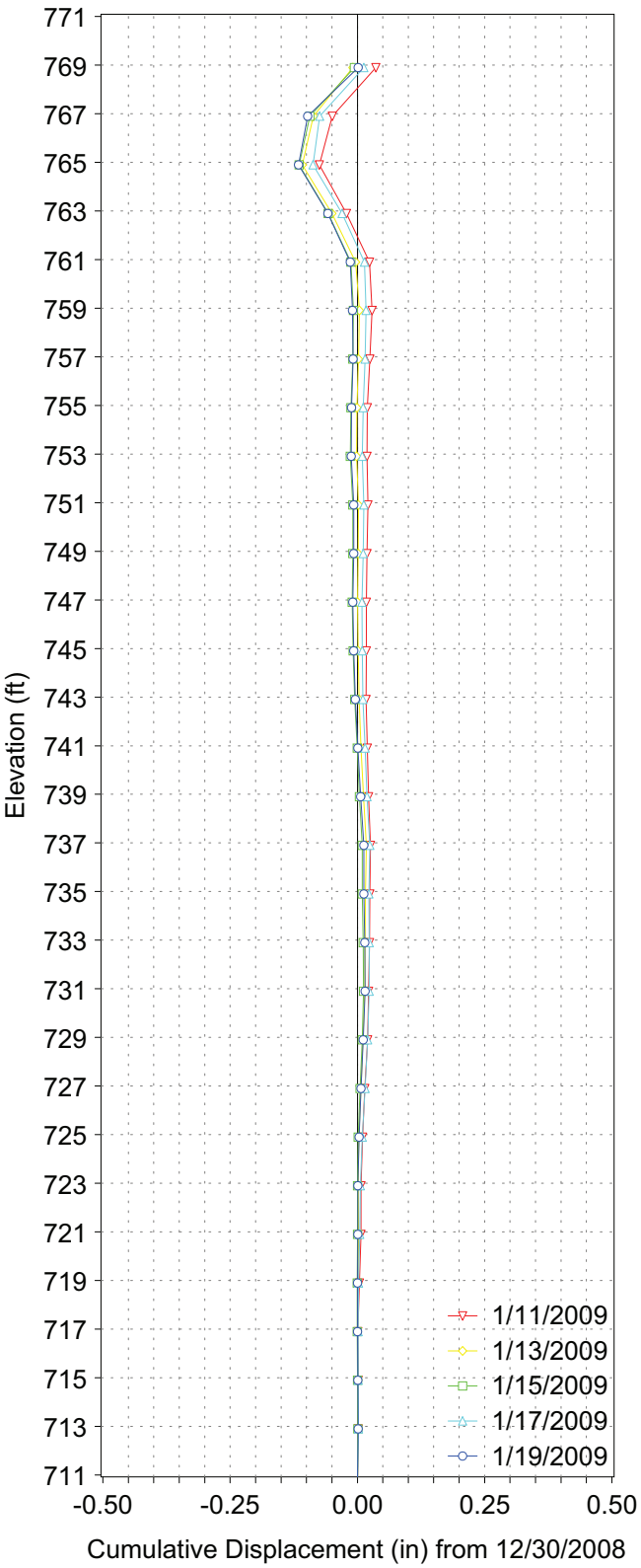

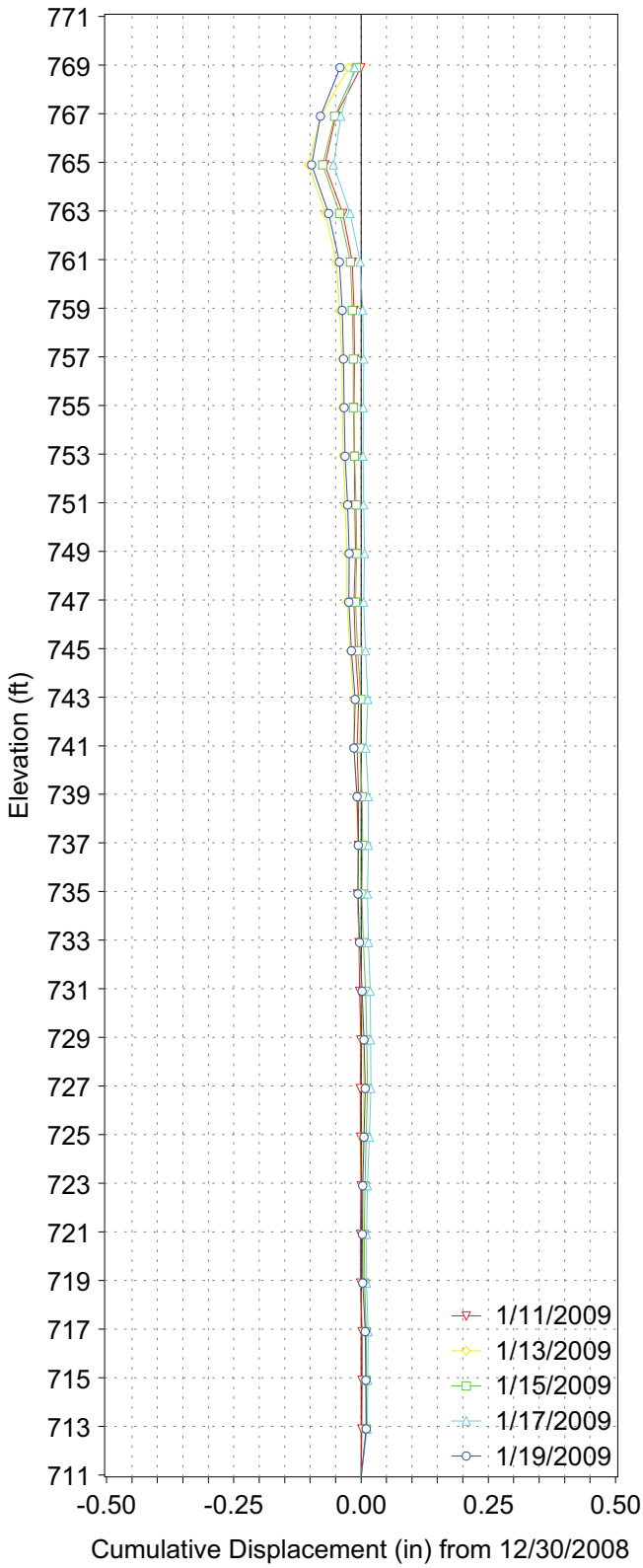

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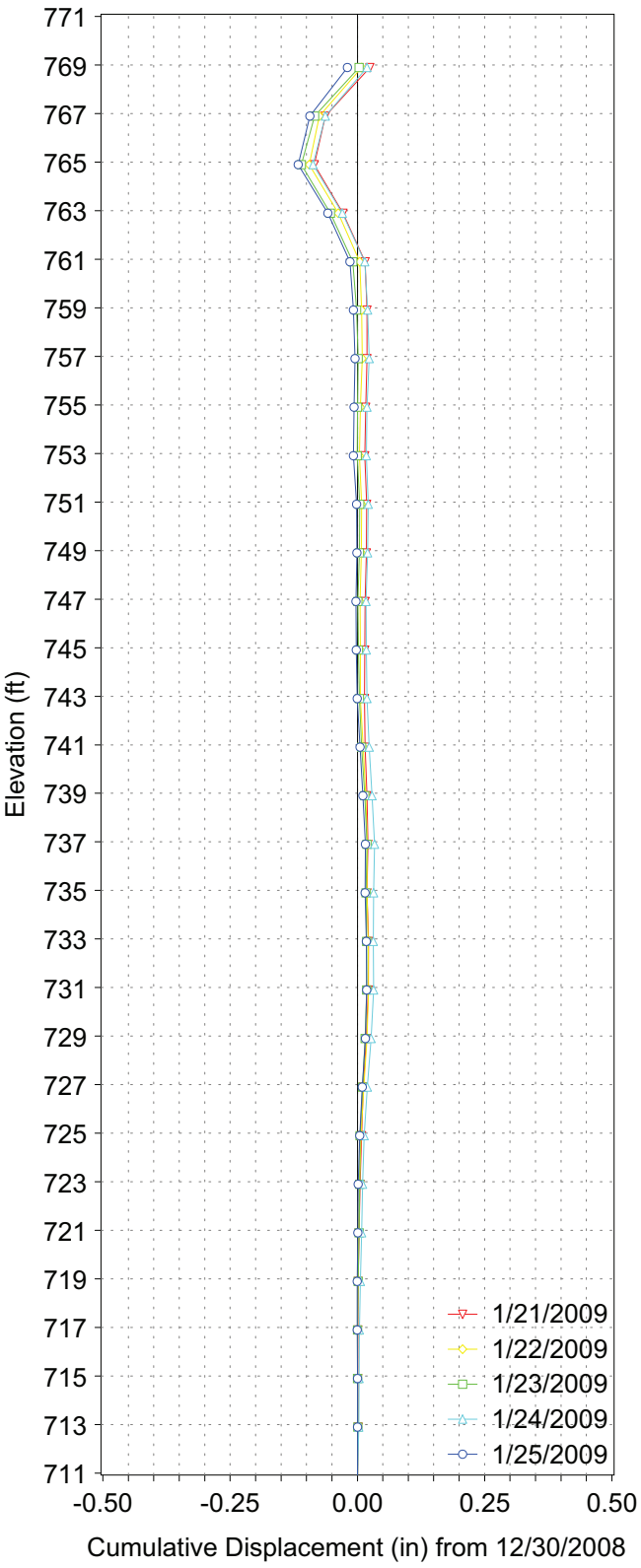

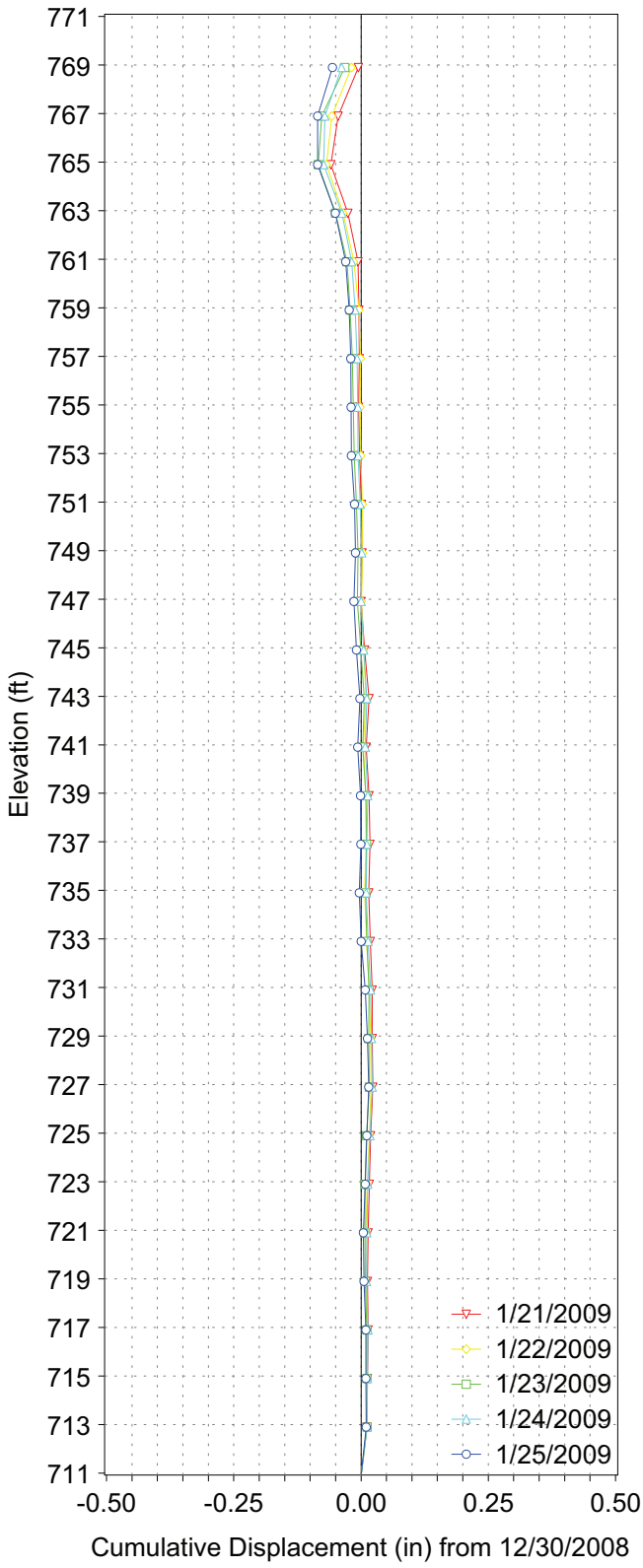

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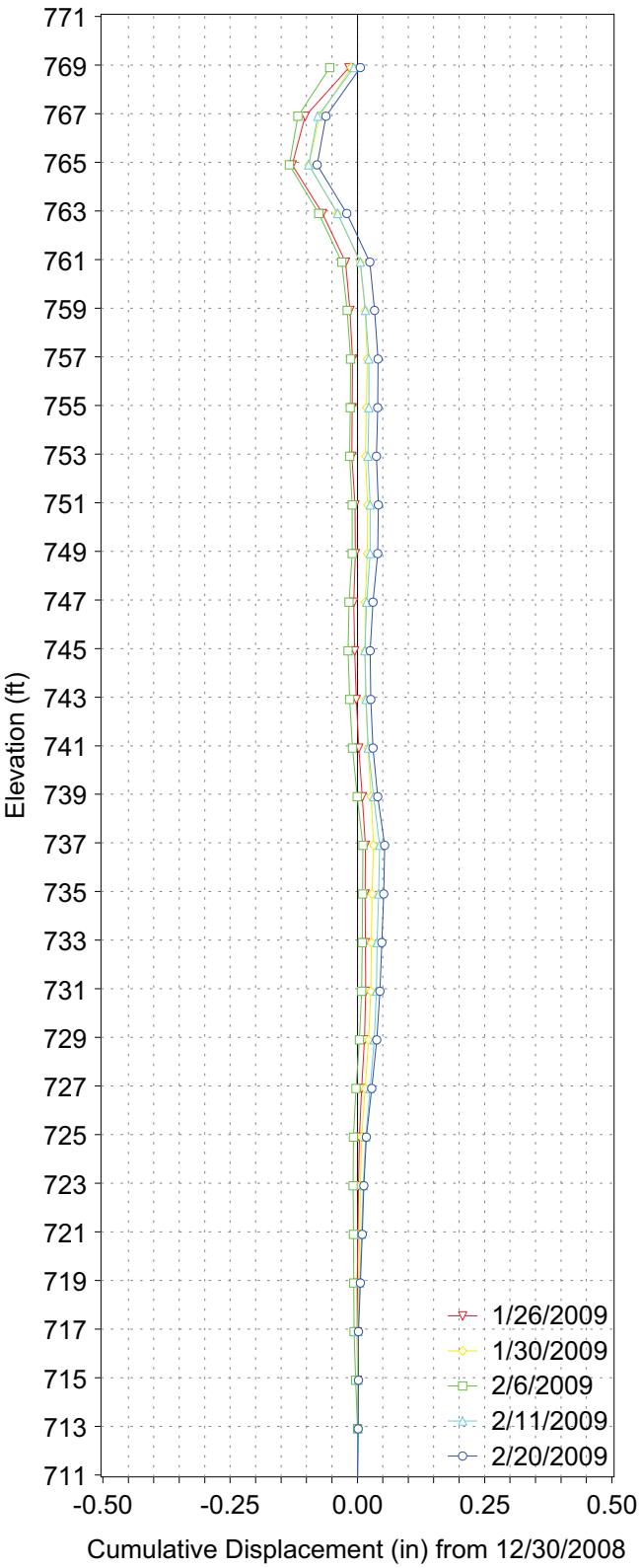

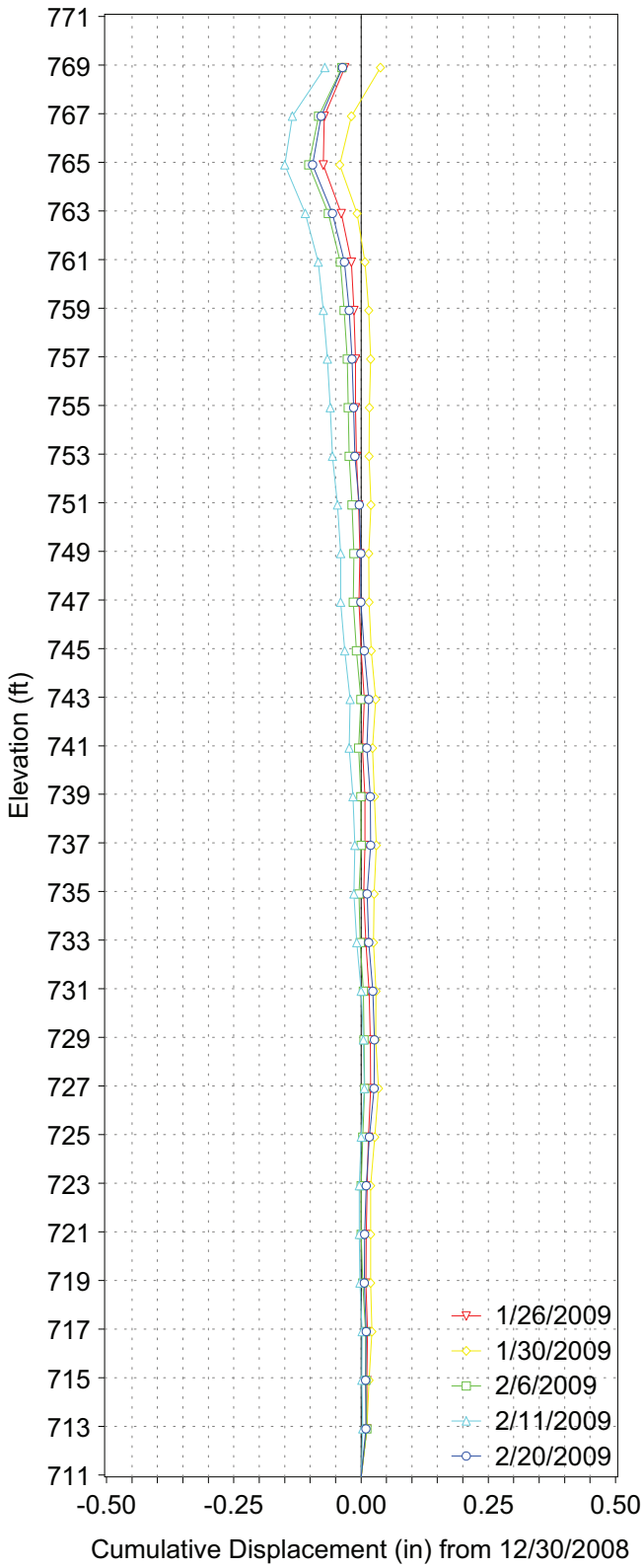

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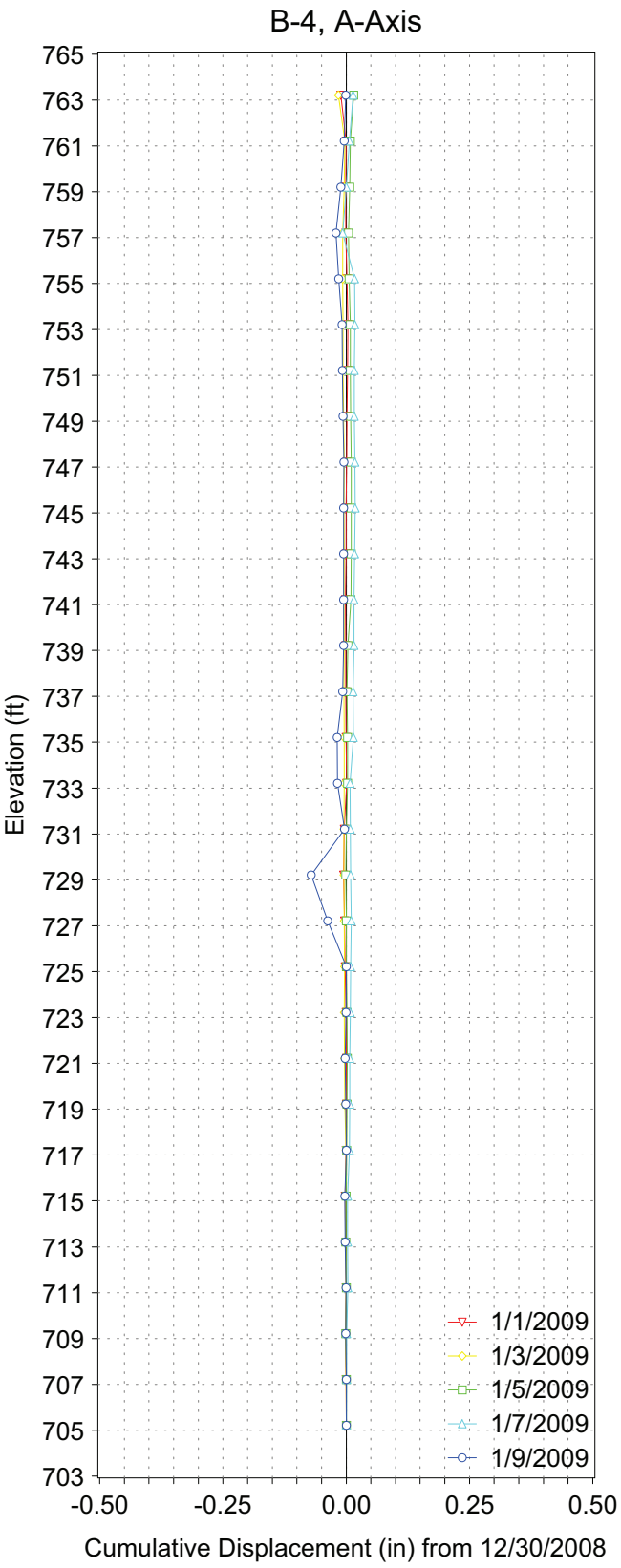

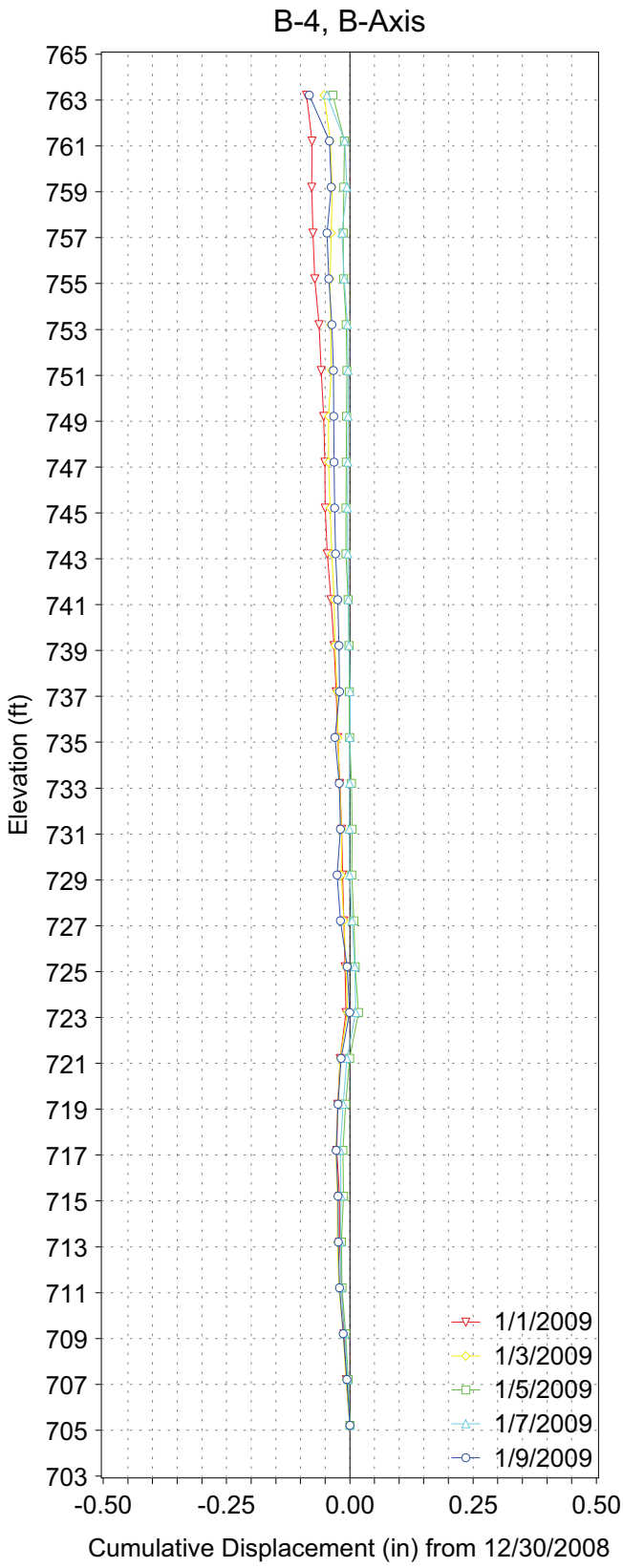

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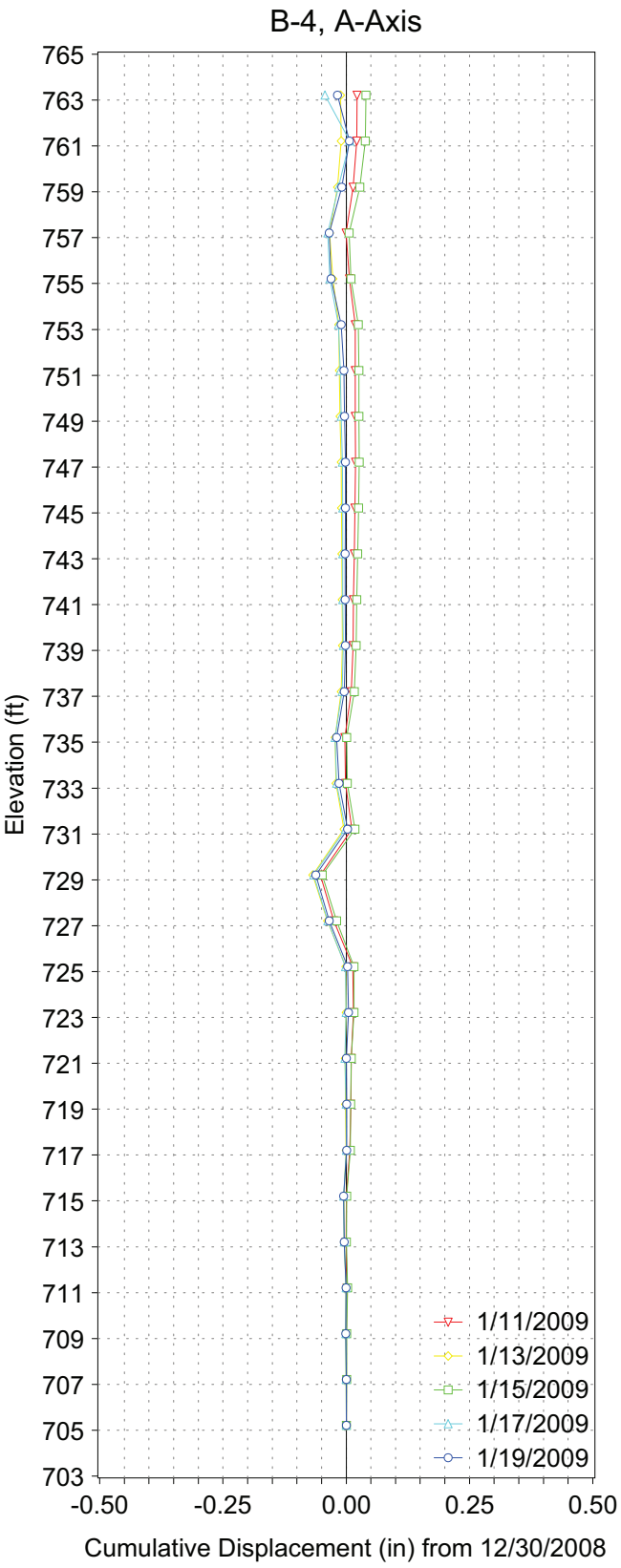
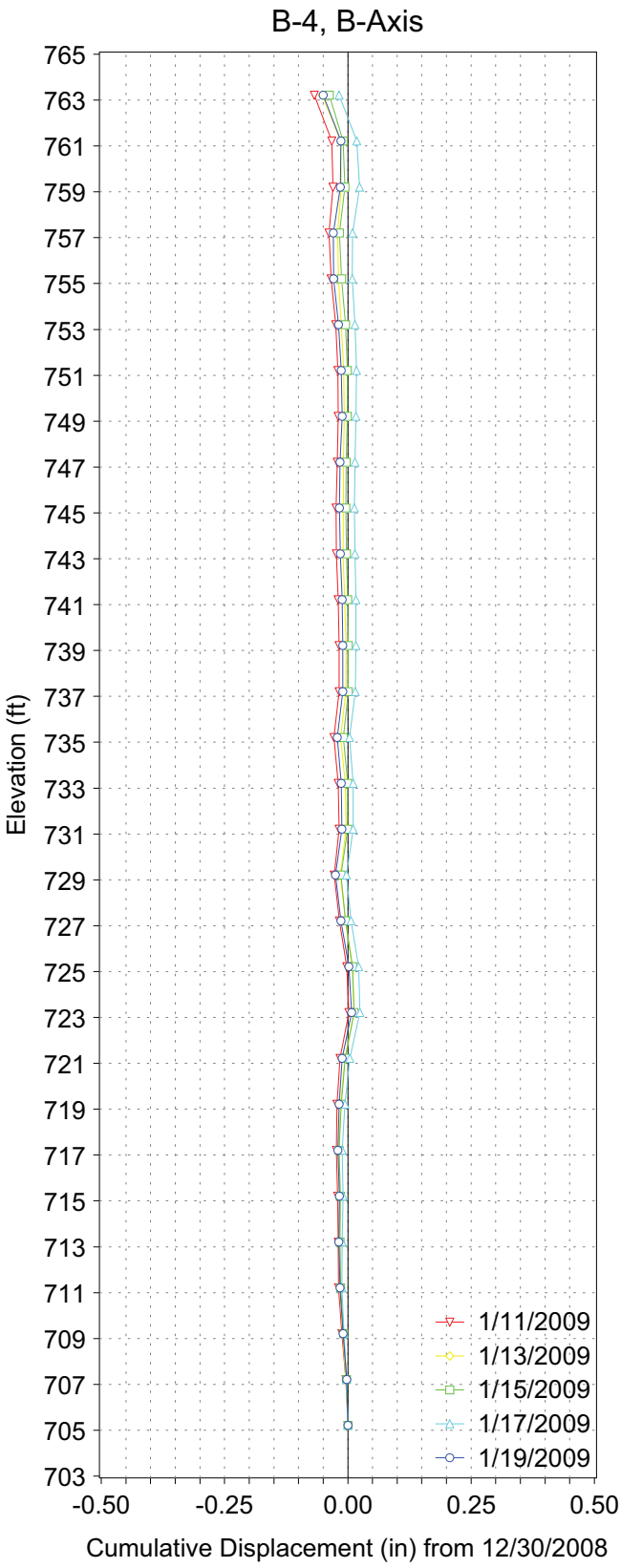
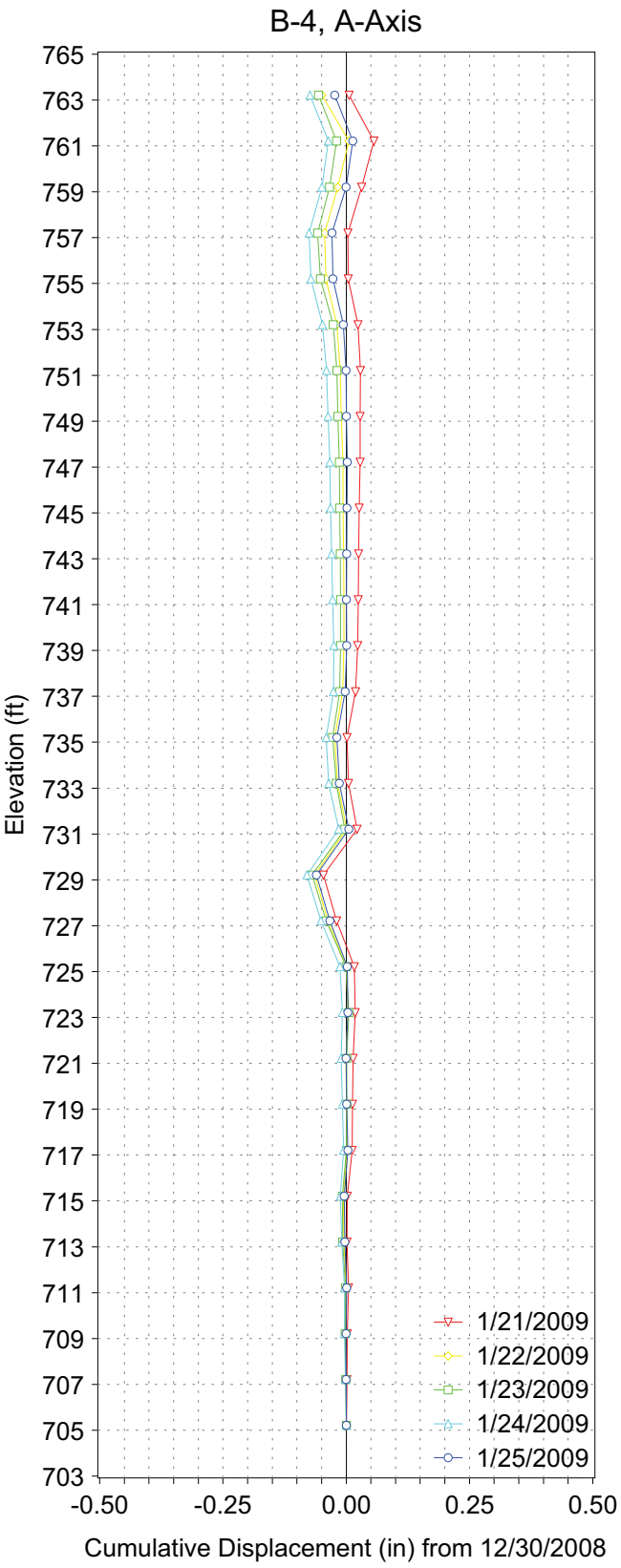
Kingston, Tennessee

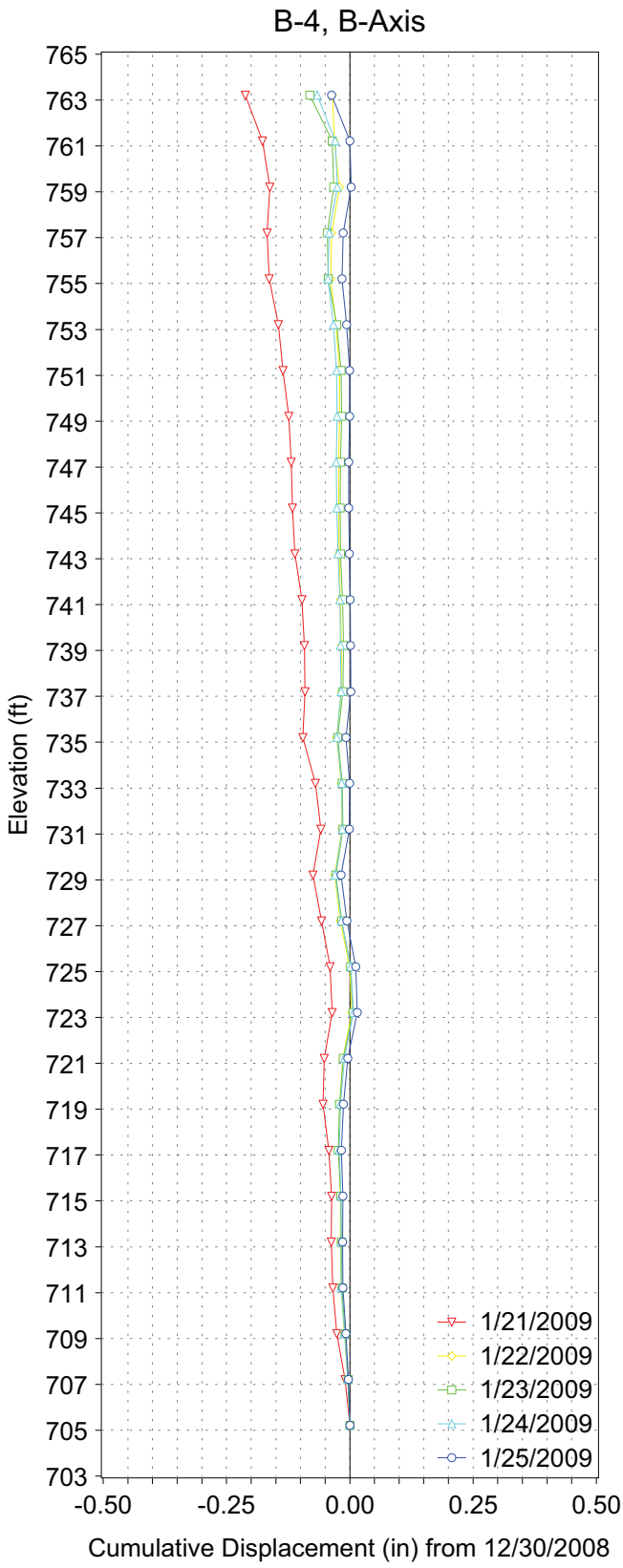




Stantec

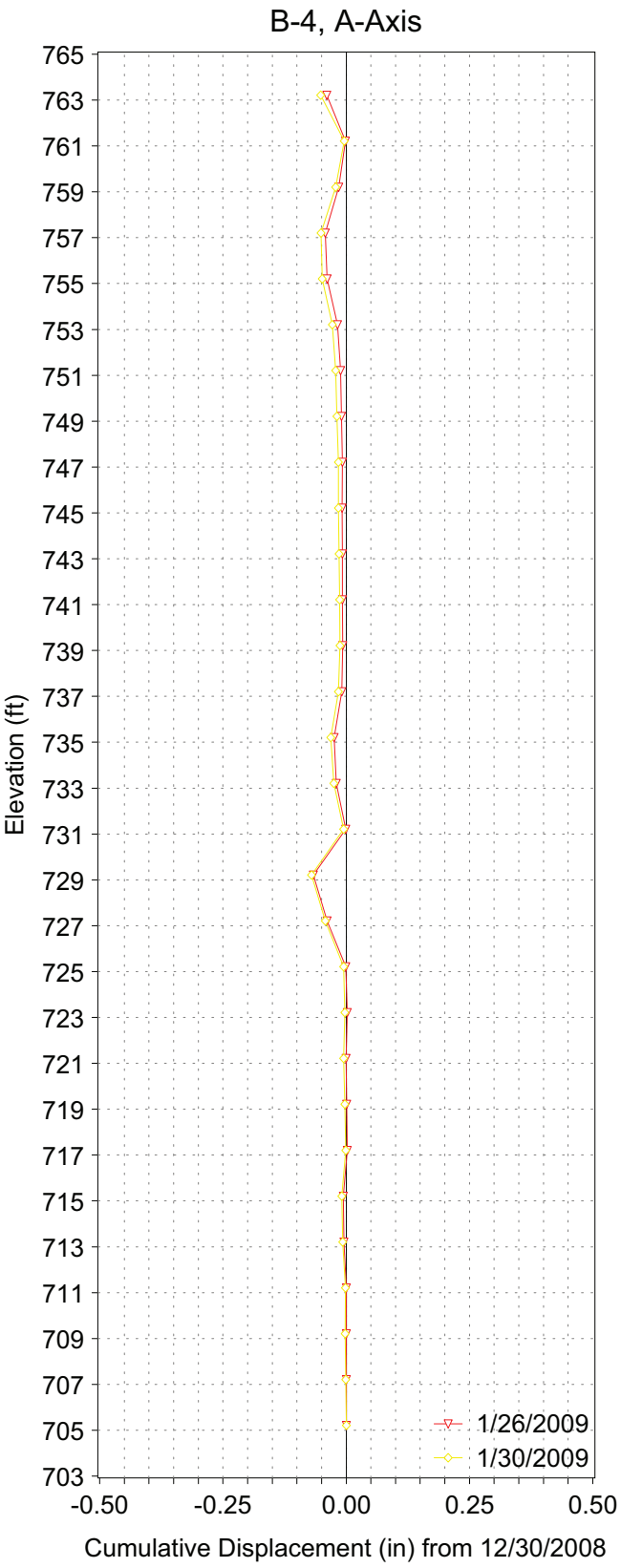
Dikes C and D
TVA Kingston Fossil Plant
Kingston, Tennessee

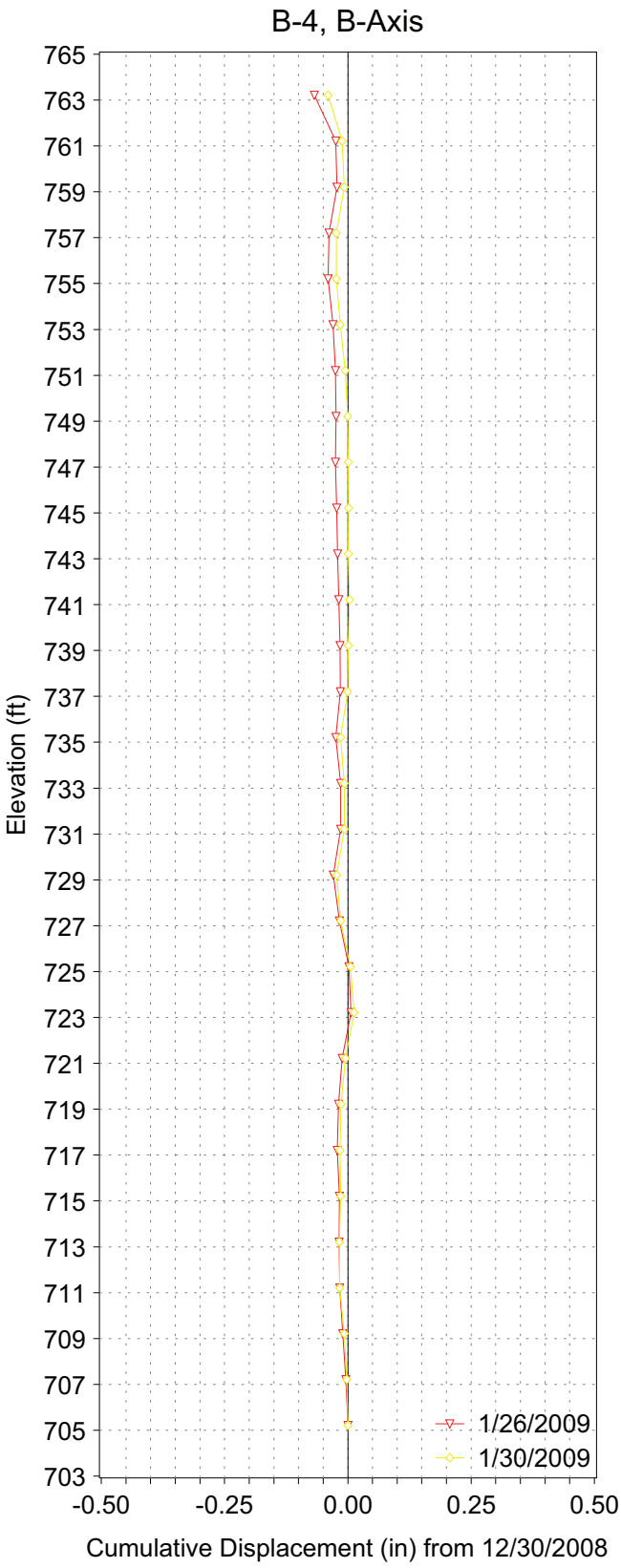




Stantec

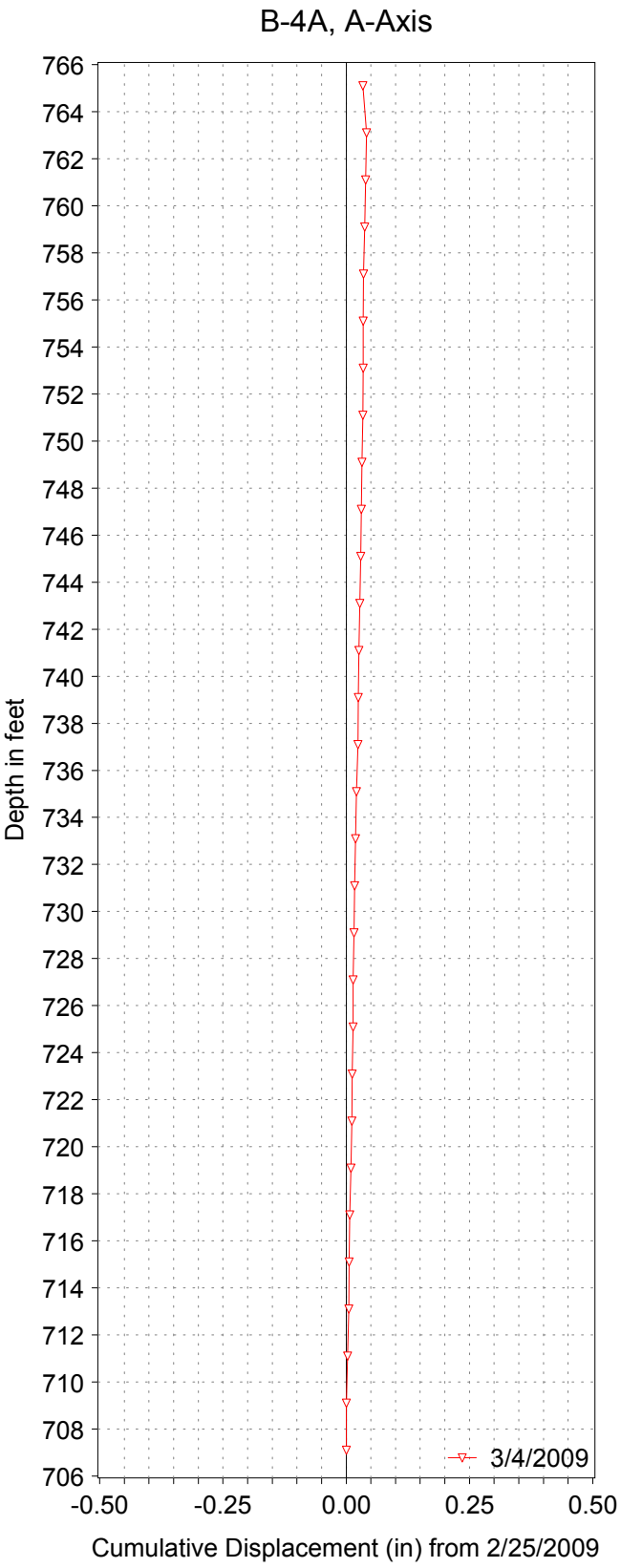
Dikes C and D
TVA Kingston Fossil Plant
Kingston, Tennessee

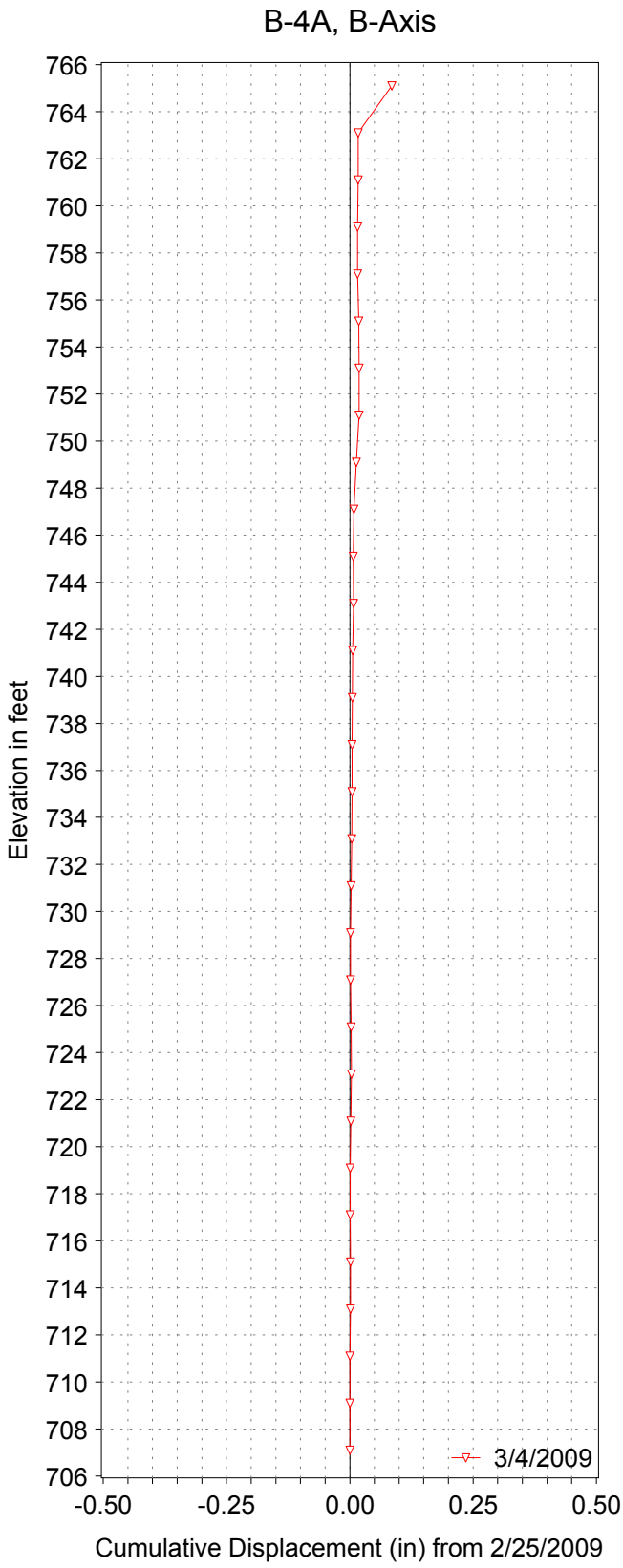




Stantec

Dikes C and D
TVA Kingston Fossil Plant
Kingston, Tennessee





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Dikes C and D
TVA Kingston Fossil Plant
Kingston, Tennessee

Appendix E

Piezometer Installations and Data

SUBSURFACE LOG

Project No.	171468117	Location	N 556650.99, E 2441468.02 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**PZ-1** Total Depth 26.5 ft
Location	Kingston, Tennessee	Surface Elevation	765.3 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	1/14/09 Completed 1/14/09
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	3.6 ft Date/Time 1/14/09
Logged By	Jim Andrew	Depth to Water	5.4 ft Date/Time 1/16/09

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
765.3'	0.0'	Top of Hole							
		Bottom Ash, dark gray, dry to wet, very loose to loose, fine to coarse grained sand-sized particles, non-plastic		SPT-1	0.0 - 1.5	0.5	5-3-2	--	SPTs driven with 140-lb auto hammer
				SPT-2	5.0 - 6.5	1.0	4-3-2	--	Boring performed prior to completion of buttress
				SPT-3	10.0 - 11.5	1.5	1-1-1	25	
				SPT-4	15.0 - 16.5	1.0	1-1-1	23	
744.8'	20.5'								
		Fly Ash, dark gray, wet, soft to very soft, non-plastic		SPT-5	20.0 - 21.5	1.5	2-1-2	--	wh = weight of hammer
738.8'	26.5'			SPT-6	25.0 - 26.5	0.5	wh-wh-2	28	Piezometer installed
		No Refusal / Bottom of Hole							

FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556636.98, E 2441500.52 (NAD27)		
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**PZ-2**	Total Depth	16.5 ft
Location	Kingston, Tennessee	Surface Elevation	766.9 ft. (NGVD29)		
Project Type	Geotechnical Exploration	Date Started	1/14/09	Completed	1/14/09
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	3.8 ft	Date/Time	1/14/09
Logged By	Jim Andrew	Depth to Water	4.7 ft	Date/Time	1/16/09

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
766.9'	0.0'	Top of Hole							
		Buttress Aggregate (Not Sampled)							SPTs driven with 140-lb auto hammer
762.4'	4.5'								
		Bottom Ash, dark gray, moist to wet, very loose to loose, fine to coarse grained sand-sized particles, non-plastic		SPT-1	5.0 - 6.5	1.0	5-3-5	--	Boring performed prior to completion of buttress
				SPT-2	10.0 - 11.5	1.5	3-2-3	--	wh = weight of hammer
750.4'	16.5'			SPT-3	15.0 - 16.5	1.0	wh-wh-wh	--	Piezometer installed
		No Refusal / Bottom of Hole							

FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556822.89, E 2441588.49 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**PZ-3** Total Depth 26.5 ft
Location	Kingston, Tennessee	Surface Elevation	766.3 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	1/14/09 Completed 1/15/09
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	4.0 ft Date/Time 1/15/09
Logged By	Jim Andrew	Depth to Water	5.9 ft Date/Time 1/16/09

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
766.3'	0.0'	Top of Hole							
763.3'	3.0'	Buttress Aggregate (Not Sampled)							SPTs driven with 140-lb auto hammer
756.3'	10.0'	Bottom Ash, dark gray, moist, loose, fine to coarse grained sand-sized particles, non-plastic, some fly ash		SPT-1	5.0 - 6.5	1.5	3-4-4	31	Boring performed prior to completion of buttress
751.3'	15.0'	Bottom Ash (50%), dark gray, moist, very loose, fine to coarse grained sand-sized particles, non-plastic, mixed with fly ash (50%)		SPT-2	10.0 - 11.5	1.5	2-2-2	--	
		Fly Ash, dark gray, moist to wet, very soft, non-plastic		SPT-3	15.0 - 16.5	1.5	2-2-3	--	
				SPT-4	20.0 - 21.5	1.5	1-1-1	--	
739.8'	26.5'			SPT-5	25.0 - 26.5	1.0	1-1-1	--	Piezometer installed
		No Refusal / Bottom of Hole							

FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556814.11, E 2441602.33 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**PZ-4** Total Depth 16.5 ft
Location	Kingston, Tennessee	Surface Elevation	766.0 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	1/14/09 Completed 1/14/09
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	3.5 ft Date/Time 1/14/09
Logged By	Jim Andrew	Depth to Water	5.0 ft Date/Time 1/16/09

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
766.0'	0.0'	Top of Hole							
762.0'	4.0'	Buttress Aggregate (Not Sampled)							SPTs driven with 140-lb auto hammer
		Bottom Ash, dark gray, dry to moist, loose to medium dense, fine to coarse grained sand-sized particles, non-plastic, some fly ash		SPT-1	5.0 - 6.5	1.0	9-5-5	--	Boring performed prior to completion of buttress
754.5'	11.5'			SPT-2	10.0 - 11.5	1.5	2-5-5	--	10.0 - 11.5, bulk sample taken
		Fly Ash, dark gray, wet, very soft, non-plastic							wh = weight of hammer
749.5'	16.5'			SPT-3	15.0 - 16.5	1.0	wh-wh-wh	35	Piezometer installed
		No Refusal / Bottom of Hole							

FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 556958.41, E 2441690.90 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**PZ-5** Total Depth 31.5 ft
Location	Kingston, Tennessee	Surface Elevation	763.7 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	1/15/09 Completed 1/15/09
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	5.7 ft Date/Time 1/16/09
Logged By	Jim Andrew	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
763.7'	0.0'	Top of Hole							
		Buttress Aggregate (Not Sampled)							SPTs driven with 140-lb auto hammer Boring performed prior to completion of buttress
750.7'	13.0'								
		Bottom Ash, dark gray, moist, loose to medium dense, fine to coarse grained sand-sized particles, non-plastic		SPT-1	15.0 - 16.5	0.5	4-5-5	16	
742.7'	21.0'			SPT-2	20.0 - 21.5	1.5	2-2-3	--	
		Fly Ash, dark gray, moist to wet, medium stiff, non-plastic		SPT-3	25.0 - 26.5	1.0	2-2-2	17	
733.2'	30.5'								Piezometer installed
732.2'	31.5'	Sandy Clay, red - brown, moist, soft		SPT-4	30.0 - 31.5	1.5	2-2-3	--	
		No Refusal / Bottom of Hole							

FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117		Location	N 556944.60, E 2441707.83 (NAD27)	
Project Name	Kingston Fossil Plant Dike D Buttress		Boring No.	**PZ-6**	Total Depth 16.5 ft
Location	Kingston, Tennessee		Surface Elevation	763.7 ft. (NGVD29)	
Project Type	Geotechnical Exploration		Date Started	1/15/09	Completed 1/15/09
Supervisor	Jim Andrew	Driller G. Thompson	Depth to Water	4.3 ft	Date/Time 1/16/09
Logged By	Jim Andrew		Depth to Water	N/A	Date/Time N/A

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
763.7'	0.0'	Top of Hole							
		Buttress Aggregate (Not Sampled)							SPTs driven with 140-lb auto hammer
759.2'	4.5'								
		Bottom Ash, dark gray, dry, medium dense, fine to coarse grained sand-sized particles, non-plastic		SPT-1	5.0 - 6.5	0.5	8-6-9	--	Boring performed prior to completion of buttress
753.2'	10.5'								
752.2'	11.5'	Clay, red - brown, moist, very stiff		SPT-2	10.0 - 11.5	0.5	8-11-13	--	
		Fly Ash, dark gray, wet, soft, non-plastic							
747.2'	16.5'			SPT-3	15.0 - 16.5	1.0	1-2-2	--	Piezometer installed
		No Refusal / Bottom of Hole							

FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 557105.47, E 2441791.06 (NAD27)
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**PZ-7** Total Depth 26.5 ft
Location	Kingston, Tennessee	Surface Elevation	760.0 ft. (NGVD29)
Project Type	Geotechnical Exploration	Date Started	1/15/09 Completed 1/15/09
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	5.4 ft Date/Time 1/16/09
Logged By	Jim Andrew	Depth to Water	N/A Date/Time N/A

Lithology Elevation	Lithology Depth	Description	Overburden / Rock Core	Sample # / RQD	Depth / Run	Rec. Ft. / Rec. Ft.	Blows / Rec. %	Mois.Cont. % / Run Depth	Remarks
760.0'	0.0'	Top of Hole							
		Buttress Aggregate (Not Sampled)							SPTs driven with 140-lb auto hammer
755.0'	5.0'								
		Bottom Ash, dark gray, moist, medium dense, fine to coarse grained sand-sized particles, non-plastic		SPT-1	5.0 - 6.5	0.0	4-8-7	--	Boring performed prior to completion of buttress
750.0'	10.0'								
		Fly Ash, dark gray, moist to wet, very soft, non-plastic		SPT-2	10.0 - 11.5	0.5	2-1-1	20	
				SPT-3	15.0 - 16.5	0.5	wh-wh-wh	9	wh = weight of hammer
				SPT-4	20.0 - 21.5	0.5	1-1-1	--	
736.8'	23.2'								
		Sandy Clay, red - brown, moist, soft							Piezometer installed
733.5'	26.5'			SPT-5	25.0 - 26.5	1.0	1-2-2	--	
		No Refusal / Bottom of Hole							

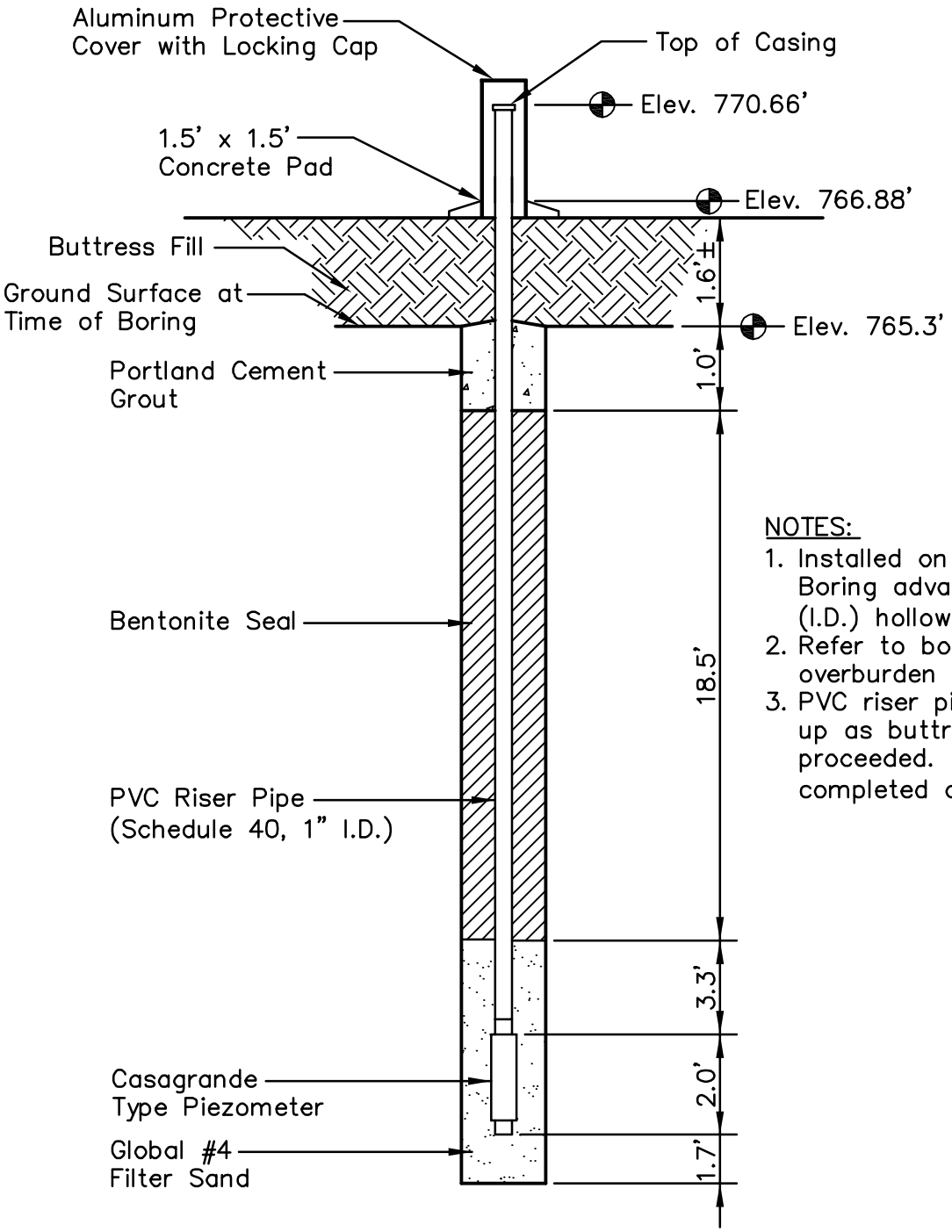
FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09

SUBSURFACE LOG

Project No.	171468117	Location	N 557088.57, E 2441818.68 (NAD27)		
Project Name	Kingston Fossil Plant Dike D Buttress	Boring No.	**PZ-8**	Total Depth	16.5 ft
Location	Kingston, Tennessee	Surface Elevation	760.1 ft. (NGVD29)		
Project Type	Geotechnical Exploration	Date Started	1/15/09	Completed	1/15/09
Supervisor	Jim Andrew Driller G. Thompson	Depth to Water	5.0 ft	Date/Time	1/15/09
Logged By	Jim Andrew	Depth to Water	N/A	Date/Time	N/A

Lithology			Overburden	Sample #	Depth	Rec. Ft.	Blows	Mois.Cont. %	
Elevation	Depth	Description	Rock Core	RQD	Run	Rec. Ft.	Rec. %	Run Depth	Remarks
760.1'	0.0'	Top of Hole							
		Buttress Aggregate (Not Sampled)							SPTs driven with 140-lb auto hammer
752.8'	7.3'								Boring performed prior to completion of buttress
		Ash, dark gray, wet, very soft, non-plastic							
				SPT-1	10.0 - 11.5	0.0	1-2-2	--	
743.6'	16.5'			SPT-2	15.0 - 16.5	0.0	2-1-1	--	Piezometer installed
		No Refusal / Bottom of Hole							

FMSM_LEGACY 171468117 PZ BORINGS.GPJ FMSM.GDT 4/20/09



NOTES:

1. Installed on 01/14/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 02/24/2009.

LOCATION (TOP OF CASING)
Northing: 556,650.76
Easting: 2,441,468.15
Elevation: 770.66'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-1
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	1 OF 8
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/14/2009 USER: SAMS, BRIAN
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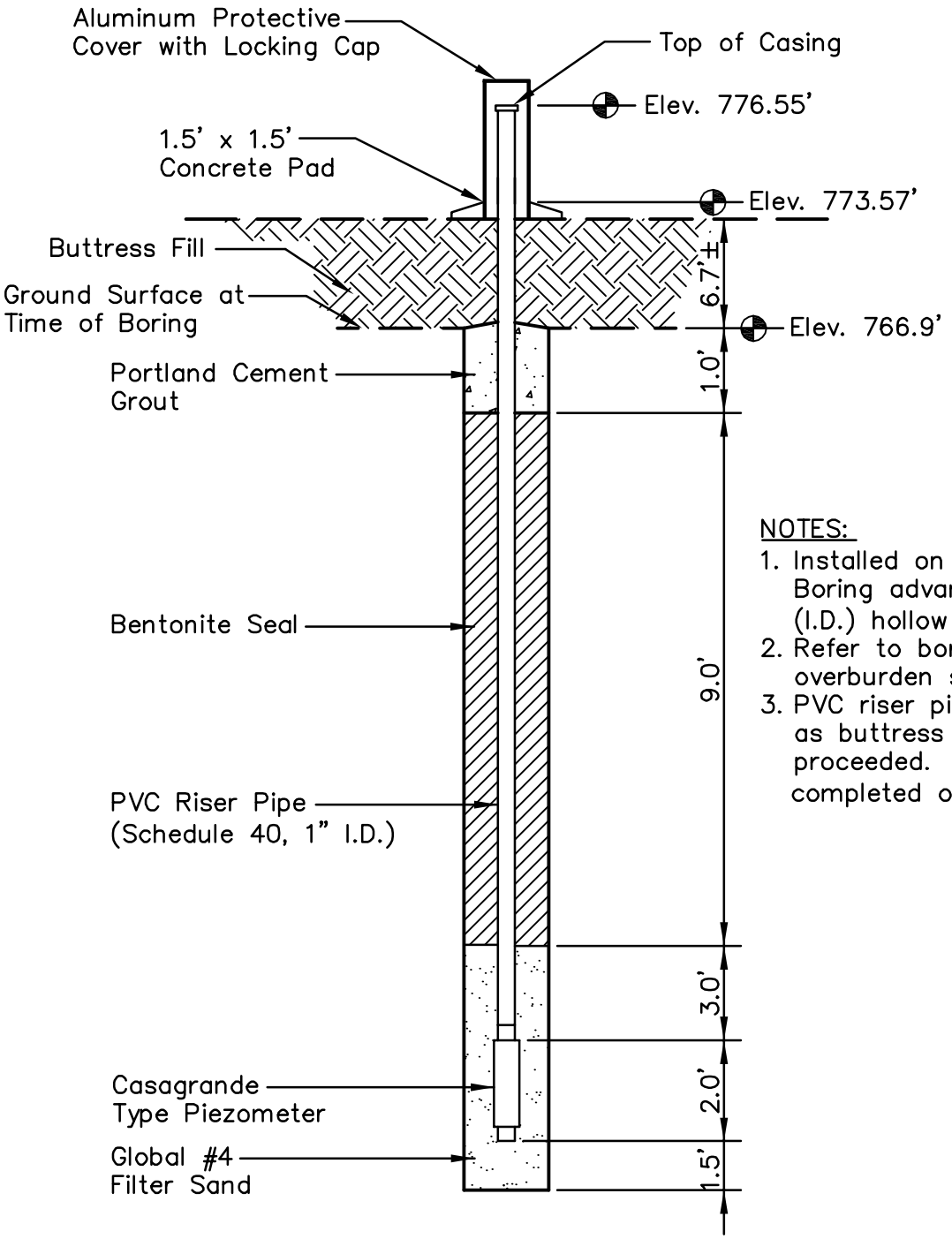

NOTES:

1. Installed on 01/14/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 2/24/2009.

LOCATION (TOP OF CASING)
Northing: 556,636.44
Easting: 2,441,500.11
Elevation: 776.55'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-2
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

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1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
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DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	2 OF 8
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/14/2009 USER: SAMS, BRIAN
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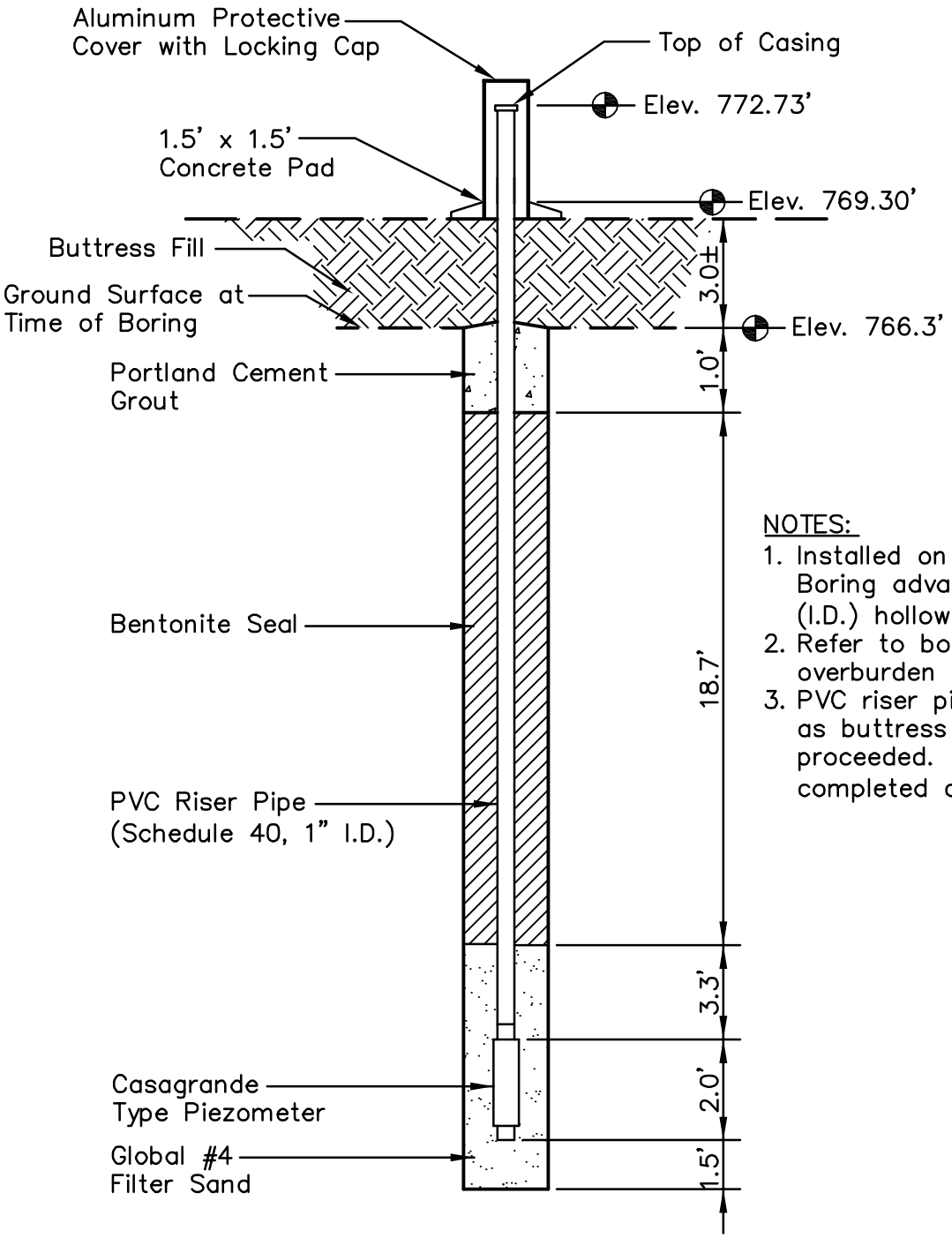

NOTES:

1. Installed on 01/15/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 02/25/2009.

LOCATION (TOP OF CASING)
Northing: 556,822.95
Easting: 2,441,588.54
Elevation: 772.73'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-3
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

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1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	3 OF 8
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/14/2009 USER: SAMS, BRIAN
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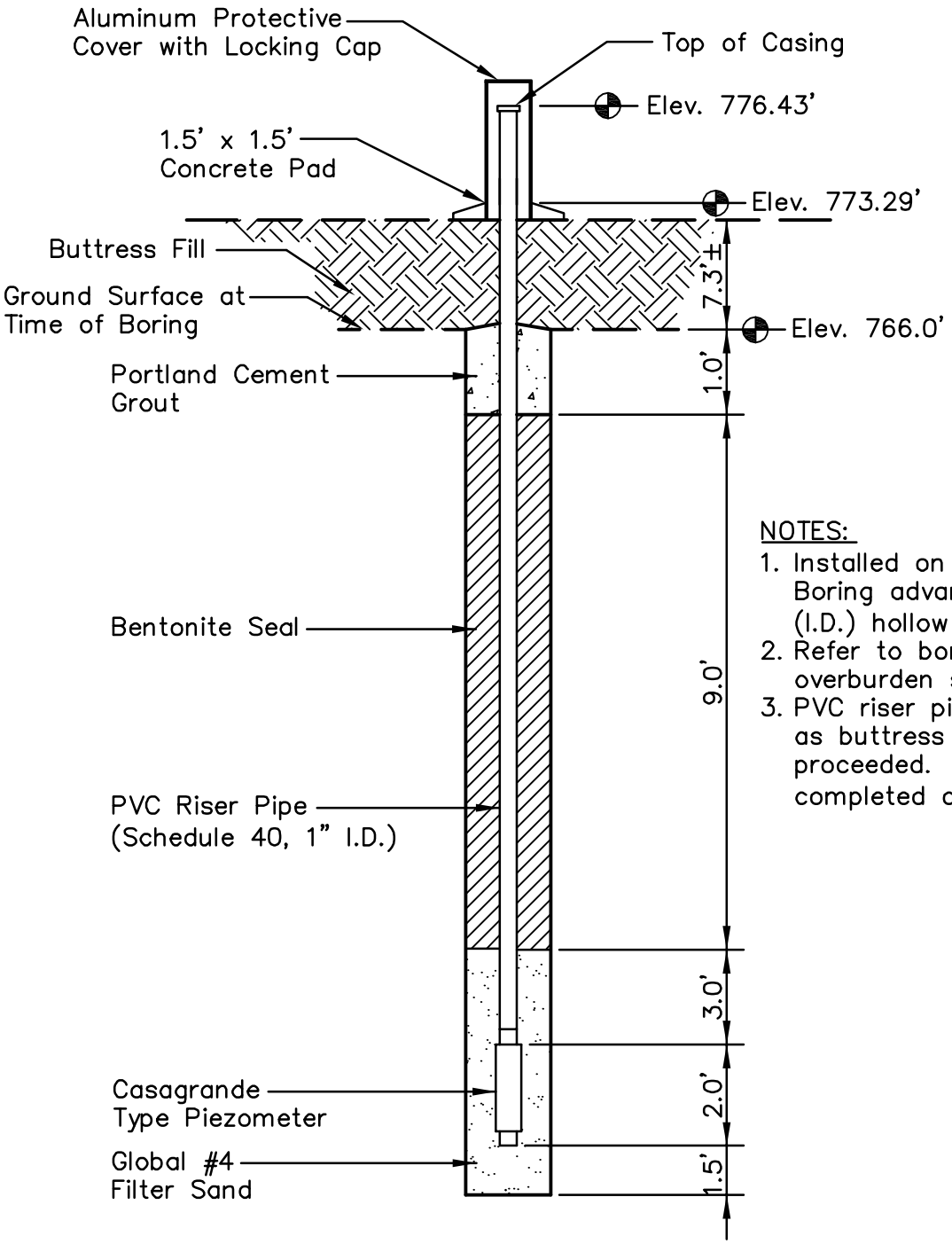

NOTES:

1. Installed on 01/14/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 02/25/2009.

LOCATION (TOP OF CASING)
Northing: 556,814.34
Easting: 2,441,602.15
Elevation: 776.43'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-4
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

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www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	4 OF 8
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/14/2009 USER: SAMS, BRIAN
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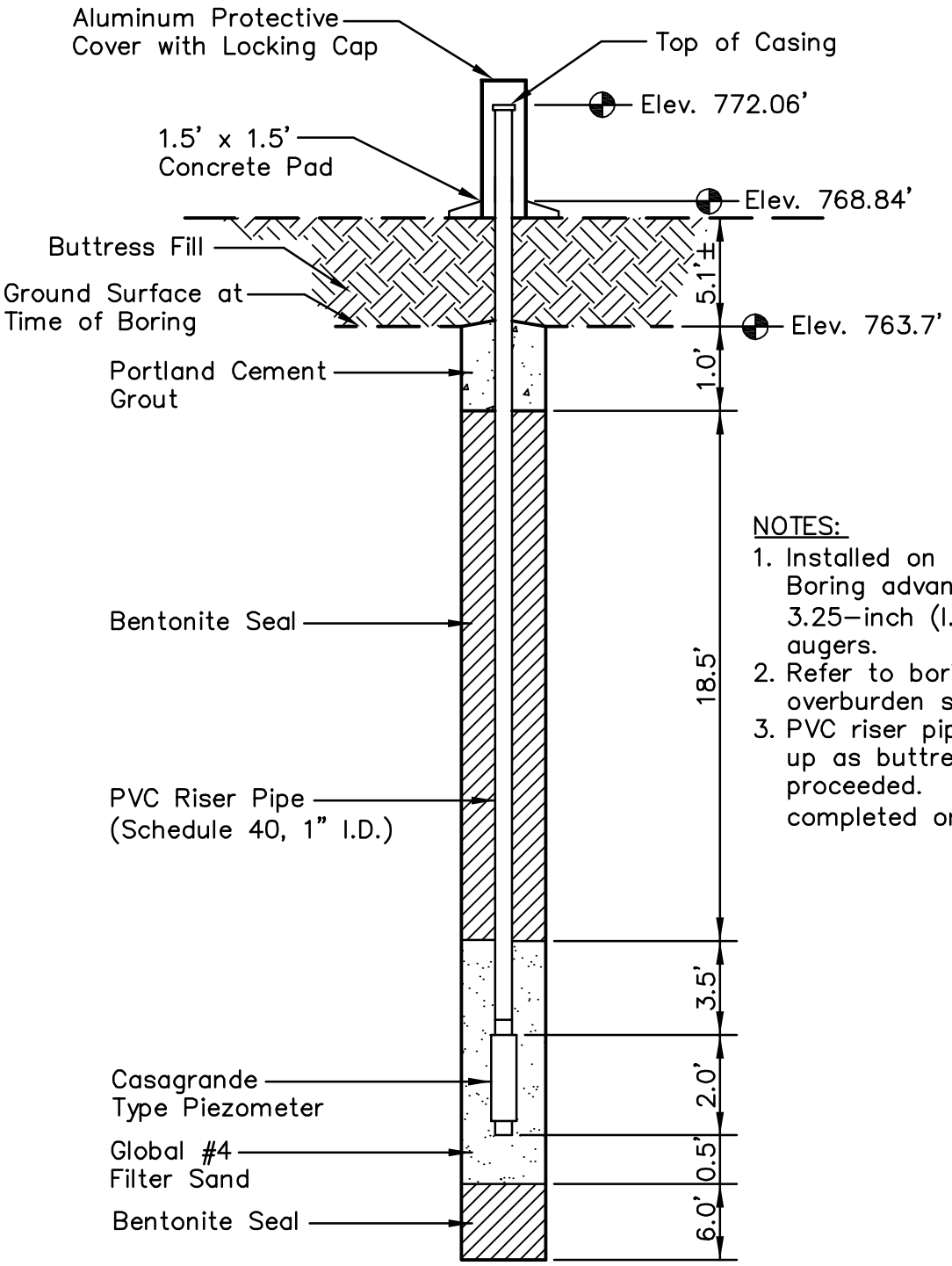

NOTES:

1. Installed on 01/15/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 02/25/2009.

LOCATION (TOP OF CASING)
Northing: 556,958.55
Easting: 2,441,690.87
Elevation: 772.06'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-5
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

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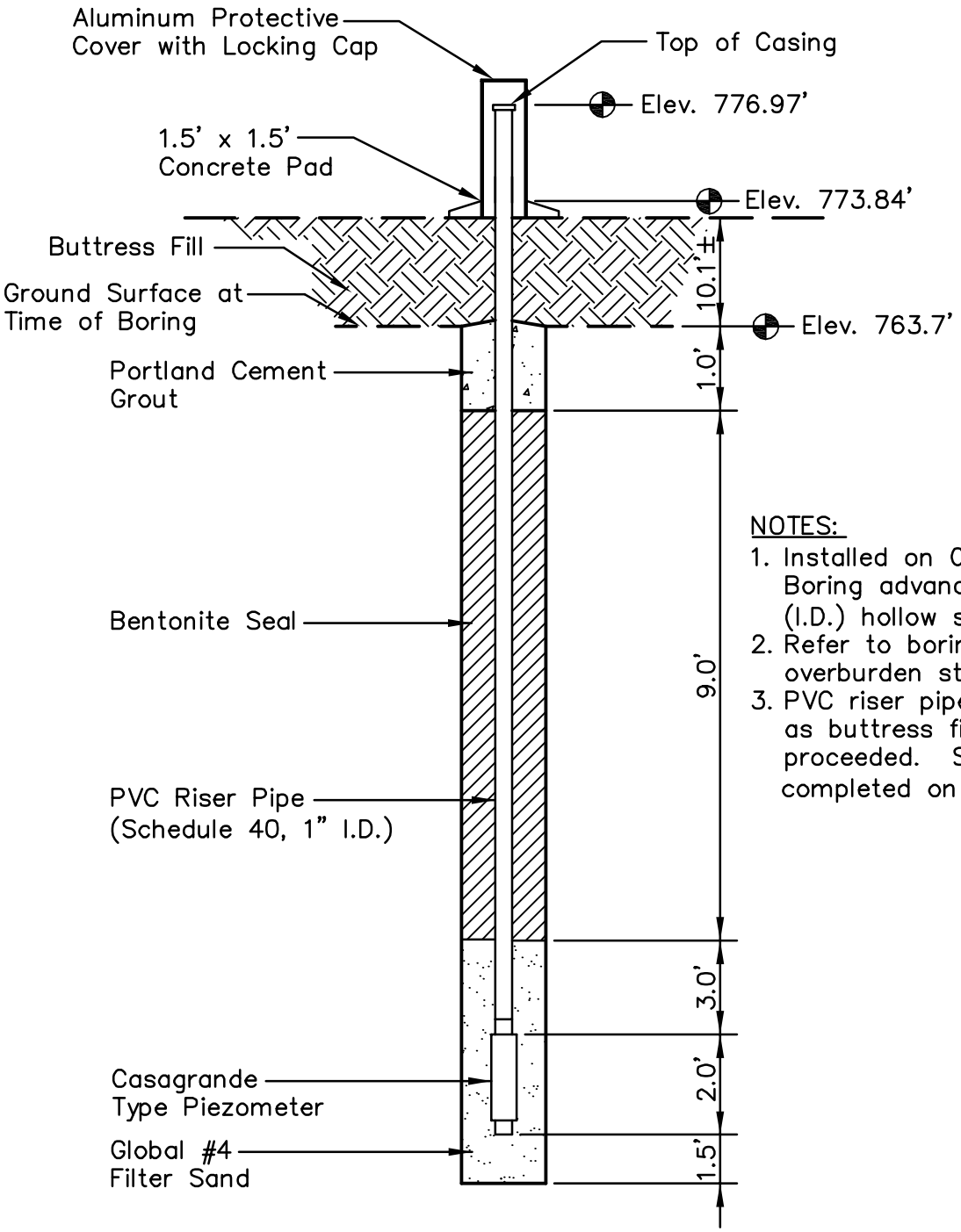
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	5 OF 8
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/14/2009 USER: SAMS, BRIAN
V:\1714\ACTIVE\171468117\ENVIRONMENTAL\DRAWINGS\KIF\DIKE_D\68117C-KIF-305-PZ5.DWG



NOTES:

1. Installed on 01/15/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 2/26/2009.

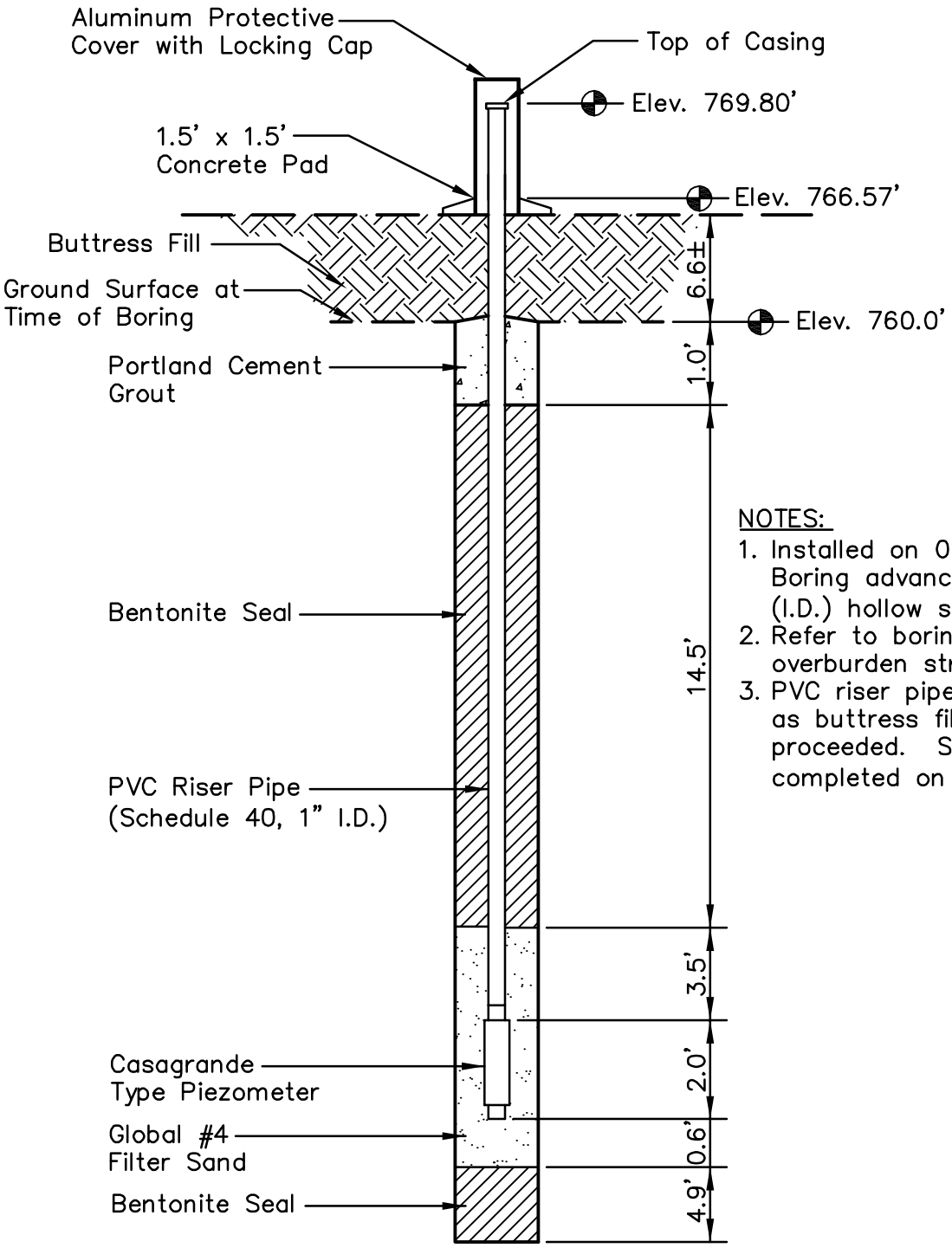
LOCATION (TOP OF CASING)
Northing: 556,942.41
Easting: 2,441,708.59
Elevation: 776.97'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-6
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	6 OF 8
CHECKED BY	JSD	SCALE	NTS	2.	4.	

DATE: 05/14/2009 USER: SAMS, BRIAN
V:\1714\ACTIVE\171468117\ENVIRONMENTAL\DRAWINGS\KIF\DIKE_D\68117C-KIF-306-PZ6.DWG



NOTES:

1. Installed on 01/15/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 2/26/2009.

DATE: 05/14/2009 USER: SAMS, BRIAN
V:\1714\ACTIVE\171468117\ENVIRONMENTAL\DRAWINGS\KIF\DIKE_D\68117C-KIF-307-PZ7.DWG

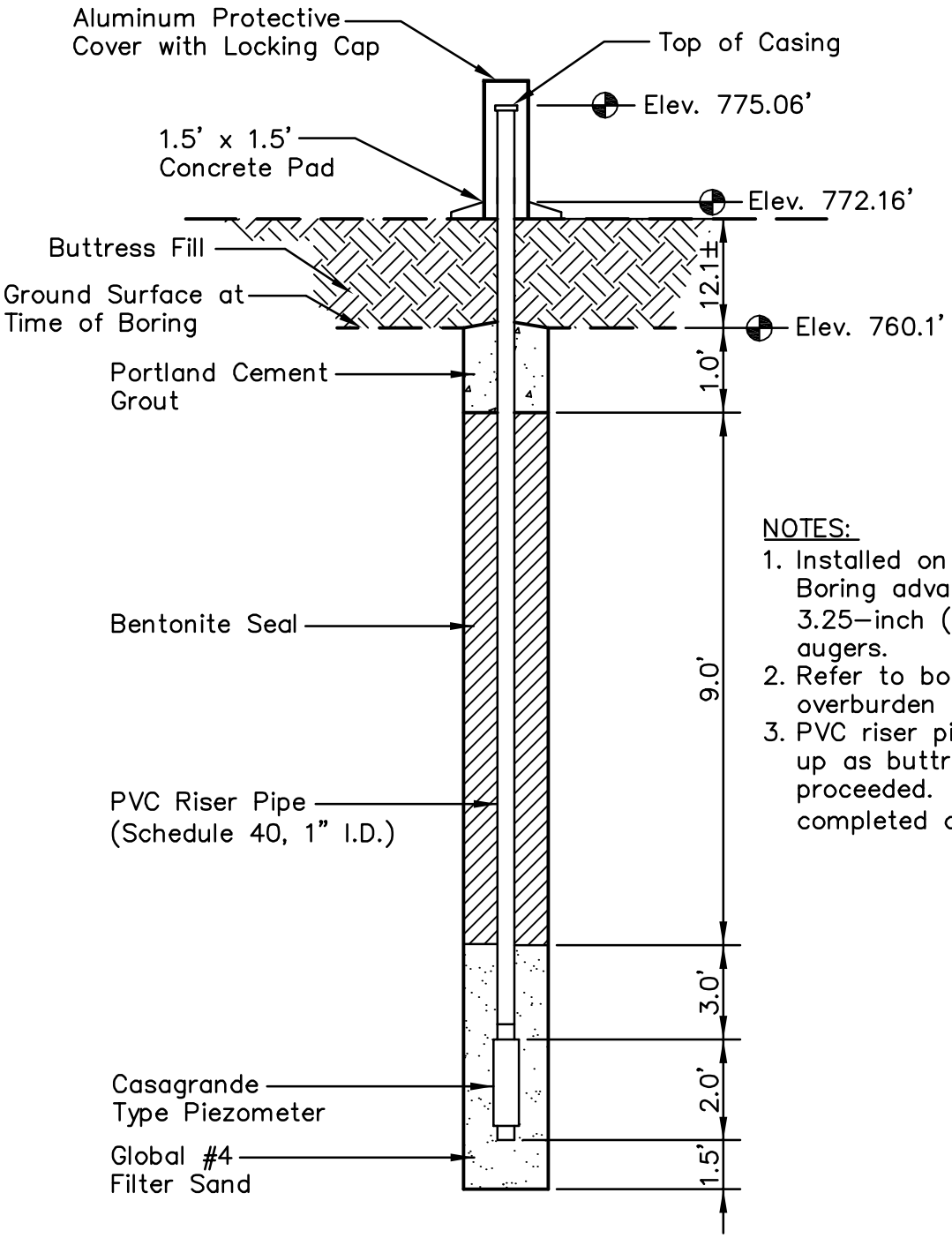
LOCATION (TOP OF CASING)
Northing: 557,106.66
Easting: 2,441,791.01
Elevation: 769.80'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-7
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	7 OF 8
CHECKED BY	JSD	SCALE	NTS	2.	4.	



NOTES:

1. Installed on 01/15/2009. Boring advanced with 3.25–inch (I.D.) hollow stem augers.
2. Refer to boring log for overburden stratigraphy.
3. PVC riser pipe was extended up as buttress fill placement proceeded. Surface protection completed on 2/26/2009.

LOCATION (TOP OF CASING)
Northing: 557,091.55
Easting: 2,441,819.11
Elevation: 775.06'
Locations provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

PIEZOMETER PZ-8
KINGSTON FOSSIL PLANT DIKE D BUTTRESS

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000
www.stantec.com

DRAWN BY	RWE	DATE	MAY, 2009	REVISED		SHEET	
CHECKED BY	JDE	PROJ. NO.	171468117	1.	3.	8 OF 8	
CHECKED BY	JSD	SCALE	NTS	2.	4.		

DATE: 05/14/2009 USER: SAMS, BRIAN
V:\1714\ACTIVE\171468117\ENVIRONMENTAL\DRAWINGS\KIF\DIKE_D\68117C-KIF-308-PZ8.DWG

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-1
Northing (NAD27): 556650.99
Easting (NAD27): 2441468.02

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	10:20	10.40	769.97	759.57	
	19:10	10.36	769.97	759.61	
20-Jan-09	7:15	10.75	769.97	759.22	765.33
	12:00	10.50	769.97	759.47	765.32
	18:00	10.48	769.97	759.49	765.82
21-Jan-09	7:55	10.59	769.97	759.38	766.09
	12:25	10.55	769.97	759.42	765.32
	17:50	10.38	769.97	759.59	765.32
22-Jan-09	7:25	10.64	769.97	759.33	765.32
	12:37	10.42	769.97	759.55	766.04
	18:07	10.49	769.97	759.48	766.04
23-Jan-09	7:52	10.60	769.97	759.37	766.04
	13:23	10.58	769.97	759.39	766.04
	18:04	10.64	769.97	759.33	766.04
24-Jan-09	7:55	10.72	769.97	759.25	766.04
	13:52	10.70	769.97	759.27	766.04
	18:19	10.73	769.97	759.24	766.04
25-Jan-09	7:49	10.80	769.97	759.17	766.04
	18:20	10.80	769.97	759.17	766.04
26-Jan-09	7:14	10.88	769.97	759.09	766.04
	14:52	12.68	771.97	759.29	766.72
	17:38	12.76	771.97	759.21	766.72
30-Jan-09	11:44	12.60	771.97	759.37	766.27
	15:00	12.53	771.97	759.44	766.27
31-Jan-09	8:07	12.60	771.97	759.37	766.37
	15:36	12.55	771.97	759.42	766.47
6-Feb-09	15:00	12.50	771.97	759.47	766.51
11-Feb-09	11:15	12.67	771.97	759.30	766.47
20-Feb-09	14:25	12.37	771.97	759.60	766.49

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-2
Northing (NAD27): 556636.98
Easting (NAD27): 2441500.52

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	10:15	12.75	774.22	761.47	
	19:05	12.72	774.22	761.50	767.32
20-Jan-09	7:15	12.95	774.22	761.27	767.32
	12:23	12.88	774.22	761.34	767.87
	18:02	12.9	774.22	761.32	768.72
21-Jan-09	7:51	13.08	774.22	761.14	768.72
	12:28	13.11	774.22	761.11	769.12
	17:53	12.76	774.22	761.46	770.71
22-Jan-09	7:23	13.22	774.22	761.00	770.71
	12:34	13.07	774.22	761.15	771.35
	18:10	13.09	774.22	761.13	772.17
23-Jan-09	7:48	13.21	774.22	761.01	772.17
	13:25	13.24	774.22	760.98	772.47
	18:06	13.3	774.22	760.92	773.01
24-Jan-09	7:52	13.46	774.22	760.76	773.01
	13:49	13.45	774.22	760.77	773.05
	18:15	17.14	777.87	760.73	773.20
25-Jan-09	7:45	17.21	777.87	760.66	773.20
	18:22	17.23	777.87	760.64	773.20
26-Jan-09	7:10	17.35	777.87	760.52	773.20
	14:49	17.23	777.87	760.64	773.29
	17:42	17.28	777.87	760.59	773.45
30-Jan-09	11:40	17.4	777.87	760.47	773.47
	15:05	17.4	777.87	760.47	773.47
31-Jan-09	8:11	17.46	777.87	760.41	773.47
	15:40	17.43	777.87	760.44	773.47
6-Feb-09	15:05	17.59	777.87	760.28	773.46
11-Feb-09	11:19	17.7	777.87	760.17	773.47
20-Feb-09	14:28	17.74	777.87	760.13	773.44

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-3
Northing (NAD27): 556822.89
Easting (NAD27): 2441588.49

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	10:10	13.58	773.61	760.03	
	19:00	13.36	773.61	760.25	766.61
20-Jan-09	7:10	13.75	773.61	759.86	766.61
	12:28	13.48	773.61	760.13	767.34
	18:09	13.3	773.61	760.31	767.86
21-Jan-09	7:48	13.77	773.61	759.84	767.86
	12:32	13.5	773.61	760.11	767.95
	17:56	13.47	773.61	760.14	767.89
22-Jan-09	7:26	13.87	773.61	759.74	767.89
	12:31	13.66	773.61	759.95	768.16
	18:12	13.29	773.61	760.32	769.83
23-Jan-09	7:42	13.82	773.61	759.79	769.83
	13:30	13.48	773.61	760.13	769.36
	18:14	13.53	773.61	760.08	769.36
24-Jan-09	7:48	14.11	773.61	759.50	769.36
	13:47	13.83	773.61	759.78	769.36
	18:12	13.96	773.61	759.65	768.61
25-Jan-09	7:38	14.11	773.61	759.50	768.61
	18:25	14.12	773.61	759.49	768.61
26-Jan-09	7:17	14.25	773.61	759.36	768.61
	14:46	14.25	773.61	759.36	768.61
	17:46	14.26	773.61	759.35	768.61
30-Jan-09	11:57	13.9	773.61	759.71	769.31
	15:11	14.1	773.61	759.51	769.31
31-Jan-09	8:18	14.35	773.61	759.26	769.41
	15:44	14.3	773.61	759.31	769.36
6-Feb-09	15:10	14.64	773.61	758.97	769.36
11-Feb-09	11:25	14.71	773.61	758.90	769.36
20-Feb-09	14:32	14.81	773.61	758.80	769.41

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-4
Northing (NAD27): 556814.11
Easting (NAD27): 2441602.33

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	10:05	12.26	773.06	760.80	
	18:30	12.03	773.06	761.03	766.81
20-Jan-09	7:10	12.5	773.06	760.56	766.81
	12:40	12.22	773.06	760.84	767.71
	18:13	12.13	773.06	760.93	768.31
21-Jan-09	7:45	12.45	773.06	760.61	768.31
	12:35	12.12	773.06	760.94	768.92
	17:59	12.21	773.06	760.85	769.37
22-Jan-09	7:28	12.56	773.06	760.50	769.37
	12:28	12.4	773.06	760.66	770.17
	18:15	21.99	783.06	761.07	771.51
23-Jan-09	7:38	22.42	783.06	760.64	771.51
	13:33	21.97	783.06	761.09	772.46
	18:23	22.18	783.06	760.88	772.96
24-Jan-09	7:45	22.51	783.06	760.55	772.96
	13:44	22.44	783.06	760.62	772.96
	18:09	18.58	778.96	760.38	773.46
25-Jan-09	7:35	18.72	778.96	760.24	773.46
	18:27	18.75	778.96	760.21	773.46
26-Jan-09	7:19	18.92	778.96	760.04	773.46
	14:44	18.90	778.96	760.06	773.46
	17:48	18.94	778.96	760.02	773.46
30-Jan-09	11:53	18.80	778.96	760.16	773.26
	15:16	18.90	778.96	760.06	773.56
31-Jan-09	8:22	19.10	778.96	759.86	773.56
	15:47	19.10	778.96	759.86	773.46
6-Feb-09	15:15	19.45	778.96	759.51	773.49
11-Feb-09	11:29	19.63	778.96	759.33	773.46
20-Feb-09	14:36	19.78	778.96	759.18	773.48

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-5
Northing (NAD27): 556958.41
Easting (NAD27): 2441690.90

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	10:00	12.9	771.04	758.14	763.74
	18:25	12.84	771.04	758.20	764.84
20-Jan-09	7:05	13	771.04	758.04	764.84
	12:57	12.94	771.04	758.10	765.24
	18:19	12.62	771.04	758.42	766.29
21-Jan-09	7:41	13.05	771.04	757.99	766.29
	12:38	13.02	771.04	758.02	766.12
	18:04	12.69	771.04	758.35	767.19
22-Jan-09	7:31	13.11	771.04	757.93	767.19
	12:25	13.02	771.04	758.02	767.82
	18:18	12.82	771.04	758.22	769.02
23-Jan-09	7:33	13.07	771.04	757.97	769.02
	13:37	12.88	771.04	758.16	769.02
	18:30	12.7	771.04	758.34	769.02
24-Jan-09	7:41	13.04	771.04	758.00	769.02
	13:42	12.87	771.04	758.17	769.02
	18:05	13	771.04	758.04	768.37
25-Jan-09	7:28	13.22	771.04	757.82	768.37
	18:30	13.23	771.04	757.81	768.37
26-Jan-09	7:21	13.32	771.04	757.72	768.37
	14:37	16.28	774.04	757.76	771.37
	17:52	16.29	774.04	757.75	771.37
30-Jan-09	11:31	16.3	774.04	757.74	768.34
	15:25	16.2	774.04	757.84	768.34
31-Jan-09	8:30	16.36	774.04	757.68	769.74
	15:51	16.33	774.04	757.71	769.34
6-Feb-09	15:20	15.76	774.04	758.28	769.30
11-Feb-09	11:35	15.95	774.04	758.09	769.24
20-Feb-09	14:40	15.96	774.04	758.08	770.35

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-6
Northing (NAD27): 556944.60
Easting (NAD27): 2441707.83

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	9:55	11.76	771.01	759.25	
	18:02	11.74	771.01	759.27	764.46
20-Jan-09	7:05	11.9	771.01	759.11	764.46
	13:02	11.78	771.01	759.23	765.09
	18:22	11.63	771.01	759.38	766.26
21-Jan-09	7:43	11.92	771.01	759.09	766.26
	12:41	11.92	771.01	759.09	765.79
	18:07	11.52	771.01	759.49	767.44
22-Jan-09	7:34	11.97	771.01	759.04	767.44
	12:23	11.84	771.01	759.17	768.33
	18:20	21.57	781.01	759.44	769.23
23-Jan-09	7:29	21.96	781.01	759.05	769.23
	13:40	20.53	779.71	759.18	770.21
	18:34	20.48	779.71	759.23	771.46
24-Jan-09	7:35	20.92	779.71	758.79	771.46
	13:39	20.78	779.71	758.93	773.46
	18:02	20.92	779.71	758.79	773.71
25-Jan-09	7:25	21.05	779.71	758.66	773.71
	18:32	21.09	779.71	758.62	773.71
26-Jan-09	7:23	21.18	779.71	758.53	773.71
	14:35	21.22	779.71	758.49	773.71
	17:54	21.19	779.71	758.52	773.71
30-Jan-09	11:34	21.4	779.71	758.31	772.91
	15:21	21.3	779.71	758.41	772.91
31-Jan-09	8:35	21.38	779.71	758.33	773.91
	15:55	21.35	779.71	758.36	773.86
6-Feb-09	15:25	21.71	779.71	758.00	773.89
11-Feb-09	11:40	21.96	779.71	757.75	773.86
20-Feb-09	14:43	22.09	779.71	757.62	773.66

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-7
Northing (NAD27): 557105.47
Easting (NAD27): 2441791.06

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	9:05	16.33	771.28	754.95	
	18:15	6.07	760.98	754.91	
20-Jan-09	7:00	6.5	760.98	754.48	
	18:31	15.62	770.28	754.66	760.28
21-Jan-09	7:34	15.72	770.28	754.56	760.28
	12:45	15.55	770.28	754.73	763.30
	18:10	15.48	770.28	754.80	763.90
22-Jan-09	7:37	15.74	770.28	754.54	763.90
	12:20	15.54	770.28	754.74	764.39
	18:25	15.47	770.28	754.81	764.95
23-Jan-09	7:26	15.76	770.28	754.52	764.95
	13:40	15.59	770.28	754.69	765.62
	18:38	15.56	770.28	754.72	765.78
24-Jan-09	7:28	15.84	770.28	754.44	765.78
	13:36	15.65	770.28	754.63	765.78
	17:59	15.72	770.28	754.56	765.78
25-Jan-09	7:21	15.87	770.28	754.41	765.78
	18:35	15.88	770.28	754.40	765.78
26-Jan-09	7:25	15.98	770.28	754.30	765.78
	14:32	15.95	770.28	754.33	765.78
	17:56	15.97	770.28	754.31	765.78
30-Jan-09	11:28	15.9	770.28	754.38	765.68
	15:30	15.88	770.28	754.40	765.58
31-Jan-09	8:38	15.95	770.28	754.33	765.68
	16:00	15.85	770.28	754.43	766.78
6-Feb-09	15:30	16.19	770.28	754.09	766.72
11-Feb-09	11:51	16.25	770.28	754.03	766.78
20-Feb-09	14:47	16.25	770.28	754.03	766.74

Piezometer Monitoring Log
TVA Kingston Plant
KIF Dike D Emergency Buttress
Stantec Consulting Services, Inc.
Project 171468117

Piezometer Number: PZ-8
Northing (NAD27): 557088.57
Easting (NAD27): 2441818.68

Date	Time	Depth to Water Level in PZ (ft)	PZ Ref. Elev. (Depth = 0 ft)	PZ Surface Elev. (ft)	Ground/Fill Surface Elev. at PZ (ft)
19-Jan-09	9:45	12.02	767.15	755.13	760.05
	18:10	11.98	767.15	755.17	760.75
20-Jan-09	7:00	12.2	767.15	754.95	760.75
	18:33	12.11	767.15	755.04	760.75
21-Jan-09	7:37	12.18	767.15	754.97	760.75
	12:48	12.11	767.15	755.04	763.55
	18:12	21.94	777.07	755.13	764.43
22-Jan-09	7:40	22.02	777.07	755.05	764.43
	12:15	21.95	777.07	755.12	766.02
	18:28	21.91	777.07	755.16	767.14
23-Jan-09	7:20	22.05	777.07	755.02	767.14
	13:49	20.80	776.07	755.27	768.05
	18:41	20.87	776.07	755.20	769.32
24-Jan-09	7:24	21.05	776.07	755.02	769.32
	13:33	20.96	776.07	755.11	771.82
	17:56	20.95	776.07	755.12	772.40
25-Jan-09	7:18	21.02	776.07	755.05	772.40
	18:38	21.02	776.07	755.05	772.40
26-Jan-09	7:27	21.06	776.07	755.01	772.40
	14:30	21.09	776.07	754.98	772.40
	17:59	21.10	776.07	754.97	772.40
30-Jan-09	11:25	20.80	776.07	755.27	771.57
	15:32	21.00	776.07	755.07	771.57
31-Jan-09	8:40	21.02	776.07	755.05	771.67
	16:04	21.00	776.07	755.07	772.62
6-Feb-09	15:35	21.15	776.07	754.92	772.57
11-Feb-09	11:54	21.24	776.07	754.83	772.57
20-Feb-09	14:51	21.4	776.07	754.67	772.54

Appendix F

Construction Observation
Daily Field Reports

Stantec
100 Westwood Place, Suite 420
Brentwood, Tennessee 37027
Phone: (615) 885-1144
Fax: (615) 885-1102

Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 1 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 01/08/2009	Day of the Week: Thursday
	Weather: Windy	Temperature: 44 °F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent, (2) Operator, (2) D6 Dozer			

Visitor's Name	Representing	Arrive	Depart
Mark Cade	MACTEC		

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Tyler Marshall	Report No: 1	Date: 01/08/2009

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Spoke with Mark Cade and J. J. Templeton to review initial construction plan.

Work has begun on excavating slope of Dike D at north end (near SI B-3) to stable material for installation of rip rap, working pad.

Mark Cade discussed possibly reducing installation of Dike C buttress to the east from ± 200 feet to ± 100 feet in length based on material found in initial excavation. Will need to review changes with Jim Andrew on Monday before changes in planned work are made.

Rescue vehicle ramp cut into slope at north end of Dike D will remain during initial work in this area. Will build working pad on either side of the existing ramp, then construct new ramp as part of new buttress as work progresses.

Stantec Field Representative's Activities

Arrive	4:00 PM EST
Depart	6:10 PM EST

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☐ **This Field Report is Preliminary** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**Stantec Field Representative** Tyler Marshall T. S. Marshall	**Date** 01-08-09
☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Fax: (615) 885-1102

Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 2 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 01/09/2009	Day of the Week: Friday
	Weather: Calm	Temperature: 26 °F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Rogers Group, Inc.

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent, (1) Flagger, (3) Operators			
(2) D6 Dozer, (1) Excavator			

Visitor's Name	Representing	Arrive	Depart
Mark Cade	MACTEC		

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Tyler Marshall	Report No: 2	Date: 01/09/2009

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Began work excavating slope on Dike C.

Constructing temporary ramp for rescue vehicle on southern end of Dike D work area (near SI B-1) to allow construction of working pad for stabilization at north end of Dike D.

4 (four) loads of ¾" – 1" stone placed on road on top of Dike D for access to new ramp for delivery of rock for working pad.

6 (six) loads shot rock dumped at bottom of ramp ± 100 feet south of SI B-2 and walked in with D6 dozer.

Working on filling crack and seep below SI B-2 with shot rock, working north along toe of Dike D.

Trimming loose material off top of slope south of SI B-3 late in the day.

Stantec Field Representative's Activities

Arrive	7:00 AM EST
Depart	5:55 PM EST

Took readings on inclinometers:
A-axis for B-1, B-2, B-4
A- and B- axis for B-3

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando, Jeffrey S. DinGrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 3 Page No: 1 of 4
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 01/10/2009	Day of the Week: Saturday
	Weather: Overcast	Temperature: 37° F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Rogers Group, Inc.

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent, (1) Flagger, (3) Operators, (2) D6			
Dozers, (1) Excavator			

Visitor's Name	Representing	Arrive	Depart
Mark Cade	MACTEC		

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☒ ☐ Yes
High percentage of fine material in shot rock being placed, few large stones

Did you observe anything unexpected? ☐ No ☒ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 2 of 4
Stantec Field Representative: Tyler Marshall	Report No: 3	Date: 01/10/2009

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

45 loads large rock delivered today.

Checked seeps below SI B-2 at 9:00 – running clear

Light rain beginning at 9:10

Shot rock being placed in working pad at toe of slope below SI B-1 and SI B-2 contains excess percentage of fines – design sketches call for rip rap.

Talked to J. J. Templeton and Mark Cade about rock being placed. TVA work plan calls for shot rock. But after review of design intent and results of current material placement, Mark agreed improvement in material gradation was needed.

12 loads of graded rock delivered between 12:45 and 2:50. Material coming now is cleaner, mostly 8" to 12" stone with few fines. Working pad is much more stable and progressing smoothly.

Excavator clearing ash at toe of slope to north of rock placement for continued working pad installation.

Intermittent rain stopped approx. 3:15, but more is expected later this evening.

Emailed copy of design sketches to Mark Cade after verifying with Jim Andrew.

Last truck arrived 5:40.

Had 8 to 10 trucks hauling today, expect 16 trucks tomorrow.

Photos: #1 – Shot rock delivered early in the day.
#2 – Shot rock walked in, showing high percentage of fine material.
#3 – Rip rap placed beginning after lunch.

Stantec Field Representative's Activities

Arrive	7:30 AM EST
Depart	5:55 PM EST

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Photographs

Photo 1: Shot Rock Delivered Early in the Day

Photo 2: Shot Rock Walked in; Showing High Percentage of Fine Material

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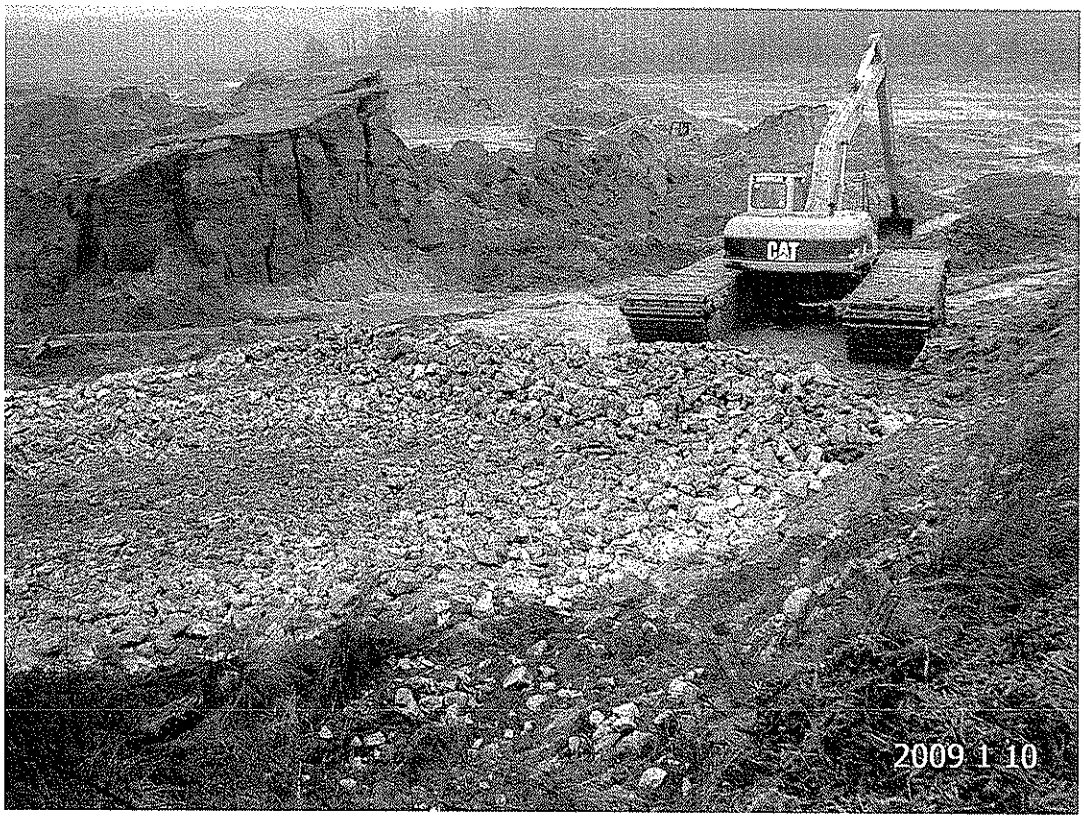

Photo 3: Rip Rap Being Placed After Lunch

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 4 Page No: 1 of 4
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 1-12-09	Day of the Week: Monday
	Weather: Partly Cloudy	Temperature: 35°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Jim Andrew / Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Rip Rap – Rogers Group Quarry

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent, (1) Flagger, (2) Operators,			
(2) D6 Dozer, (1) Excavator			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☐ x ☐ No ☐ Yes

Did you observe everything you expected to? ☐ x ☐ No ☐ Yes
No geogrid had been placed

Did you observe anything unexpected? ☐ No ☐ x ☐ Yes
Rip Rap was not tracking into the ash to the depth expected without geogrid (+/- 10 feet)

Did you see, hear, smell, or touch anything unusual or unexplained? ☐ x ☐ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?
Width and depth of trench to be cut at toe of existing Dike D

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 2 of 4
Stantec Field Representative: Jim Andrew	Report No: 4	Date: 1-12-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Prior to the arrival of Mr. Andrew on this date, HED had graded an area approximately 50 to 60 feet wide along the toe of the northwest slope of Dike D, from the existing northwest end of Dike C for a distance of about 500 feet southwest, and pushed loose unconsolidated material off the northwest crest of Dike D. A truck access ramp had been constructed from the road along the top of Dike D, approximately 550 feet southwest of Dike C, north to the above referenced graded area along the toe of Dike D. A drainage channel was also under construction along the northwest side of the referenced graded area at the toe of Dike D, with fall from southwest to northeast. Several tons of shot rock fill and riprap-size rock had been placed and compacted across the referenced graded area with a D-6 dozer from this truck access ramp for a distance of approximately 150 feet northeast. Previous field reports pointed out that the initial procedure of 'tracking in' the limestone shot rock fill with the D-6 dozer was not effectively stabilizing the ash by-product material beneath the graded area. The shot rock fill apparently contained a high percentage of small aggregate particles (minus ¼ inch) and fines that were preventing the migration of water up out of the ash. Previous field reports indicate that approximately 50 tons of shot rock fill was placed before the material being placed was changed at the suggestion of Stantec from shot rock to riprap-size aggregate (6 – 8 inch size).

It was observed at this time that the rock fill material was not settling into the ash to the depth (8 to 10 feet) that had been anticipated in the design of the Dike D interim stabilization berm. With the exception of some isolated sections, the rock fill being tracked in was stabilizing at a depth of approximately 3 to 4 feet. Mr. Andrew noted that the section of rock fill that was to be tracked in to a depth of 10 feet that would serve as a keyway for lateral stabilization of the interim stabilization berm was not in place. Also, the geogrid specified in the design to be placed from the toe of the interim stabilization berm for a width of 35 feet along the length of the berm prior to the placement of the rock fill had not been placed. Mr. Andrew discussed these issues with Mr. Templeton, Mr. Don Fuller (Project Manager with Stantec), Mr. Gary Melton (Worley Parsons), and Mr. Mark Cade (MACTEC). Stantec requested that HED excavate a trench approximately 12 to 15 feet wide, 3 to 4 feet deep, along the toe of the northwest slope of Dike D from the

Stantec Field Representative's Activities

Arrive	7:30
Depart	18:30

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X **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By**	**Date**

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 3 of 4
Stantec Field Representative: Jim Andrew	Report No: 4	Date: 1-12-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

existing truck access ramp southwest to the end of the interim stabilization berm (approximately 100 feet in length). Stantec also requested that the geogrid not be used as designed, as the primary purpose of the geogrid was to bridge the ash material, preventing excessive depths of rock fill in the areas outside of the keyway. The riprap-size rock was stabilizing the ash material at shallow depths, and therefore the geogrid was not necessary in this construction.

Mr. Melton informed Mr. Andrew that TVA would prefer to use bottom ash material from the Bull Run Fossil Plant (BRF) as the fill material for the Dike D interim stabilization berm, and that TVA would like to substitute the bottom ash material for the number 57-size aggregate material specified in the Dike D interim stabilization berm design to cap the riprap. Mr. Andrew communicated these requests to Mr. Fuller, Project Manager, and Mr. Fuller agreed that the bottom ash would be suitable fill material, contingent upon gradation test results indicating the material contained no significant percentage of fly ash, however the bottom ash would not be a suitable alternative to the number 57-size aggregate. This information was communicated via telephone conversation from Mr. Andrew to Mr. Mike Sutton, TVA Engineer representing BRF.

Mr. Andrew was informed on this date via telephone conversation by Mr. Jeff Dingrando (Project Manager with Stantec) that a horizontal drain pipe had been observed passing through Dike D. Upon further investigation, Mr. Andrew observed two drain pipes, each approximately 28 inches in diameter, could be seen passing through Dike D from northwest to southeast, at a depth of about 20 feet below the crest. Mr. Andrew was informed by Mr. Templeton that these drain pipes had been installed to allow drainage from the dredge cell on the northwest side of Dike D to the ash pond on the southeast side of Dike D. One of the drain pipes appeared to be a corrugated plastic pipe, and was located approximately 300 feet southwest of Dike C, and the other drain pipe appeared to be a concrete pipe, and was located approximately 600 feet southwest of Dike C. Mr. Andrew discussed options for sealing these drain pipes with Mr. Templeton and Mr. Dingrando, however a feasible option was not presented at this time.

Stantec Field Representative's Activities

Arrive	
Depart	

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By**	**Date**

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 4 of 4
Stantec Field Representative: Jim Andrew	Report No: 4	Date: 1-12-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

HED constructed a second truck access ramp on this date that provided access from the road on the crest of Dike D, at a point approximately 650 feet southwest of Dike C, to the graded area at the toe of the northwest slope of Dike D. Construction was also initiated on this date of a third truck access ramp from the road along the crest of Dike D at a point approximately 150 feet from Dike C to the graded area. A total of 108 truck loads (approximately 2,300 tons) of riprap-size aggregate were delivered and placed along the graded area on this date. Mr. Andrew observed that the gradation of the riprap rock delivered varied, with the majority of the rock delivered (70 to 80 percent) in the 6 to 8 inch size, and some of the loads contained a gradation with a significant percentage of small (3/4 to 2 inch) aggregate.

Stantec Field Representative's Activities

Arrive	
Depart	

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 5 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 1-15-09	Day of the Week: Thursday
	Weather: Clear, very windy	Temperature: 20°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Jim Andrew / Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill 57 stone – local stockpile

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent, (1) Flagger, (3) Operators, (2) Laborers			
(2) D6 Dozers, (1) Excavator			

Visitor's Name	Representing	Arrive	Depart
Greg Thompson and Mike Rigsby	Stantec	7:30	18:00

Follow-up from prior report? [x] No [ ] Yes

Did you observe everything you expected to? [ ] No [x] Yes

Did you observe anything unexpected? [x] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [x] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit?
Geofabric properly spread and weighted down

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew/Tyler Marshall	Report No: 5	Date: 1-15-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

On this date Mr. Andrew arrived on site at 7:30 am to observe the construction of the interim stabilization berm for Dike D. Upon arrival Mr. Andrew met with Greg Thompson and Mike Rigsby, drillers with Stantec, and J.J. Templeton, Superintendent for HED. Mr. Thompson and Mr. Rigsby continued drilling and sampling for the installation of piezometers for the Dike D Buttress.

On this date, HED was continuing to place and track in No. 57 crushed aggregate to create a working surface on top of the previously placed riprap rock. The No. 57 crushed aggregate was placed to a depth of about 6 inches to 8 inches. Geofabric was then placed on top of the No. 57 crushed aggregate. On this date, the No. 57 aggregate placement was completed, and approximately 90 percent of the rock base had been covered with geofabric. No. 57 aggregate was then placed on most of the geofabric to hold it in place until the bottom ash that is to be placed above the geofabric begins to be hauled to the site from the Bull Run Fossil Plant. Hauling of the bottom ash from the Bull Run Plant is to begin on the following Monday morning.

The Stantec Drill Crew (Mr. Thompson and Mr. Rigsby) completed the installation of piezometers 4, 5, 6, 7, and 8 on this date. Piezometer 5 is located at approximately Station 3+90, about 35 feet northwest of the toe of Dike D. Piezometer 6 is located at approximately Station 3+90, about 14 feet northwest of the toe of Dike D. Piezometer 7 is located at approximately Station 1+80, about 40 feet from the toe of Dike D, and Piezometer 8 is located at approximately Station 1+80, about 10 feet from the toe of Dike D.

Photos Taken:
#1 – PZ-1 and PZ-2 at south end stabilization area (looking north)
#2 - PZ-2 and marker pipe at concrete pipe through Dike D
#3 – concrete pipe, upstream end
#4 – PZ-1 and PZ-2 at south end stabilization area (looking south)
#5 – PZ-5 and PZ-6 in stabilization area (looking north). Work continues placing geotextile and anchoring with stone
#6 – Corrugated plastic pipe near PZ-6, upstream end

Stantec Field Representative's Activities

Arrive	7:30
Depart	18:30

Tyler Marshall:
on-site 8:30
16:30

Took readings on inclinometers
A-axis: B-1, B-2, B-4
A- and B- axis: B-3

Remained on-site to observe installation of piezometer PZ-7

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

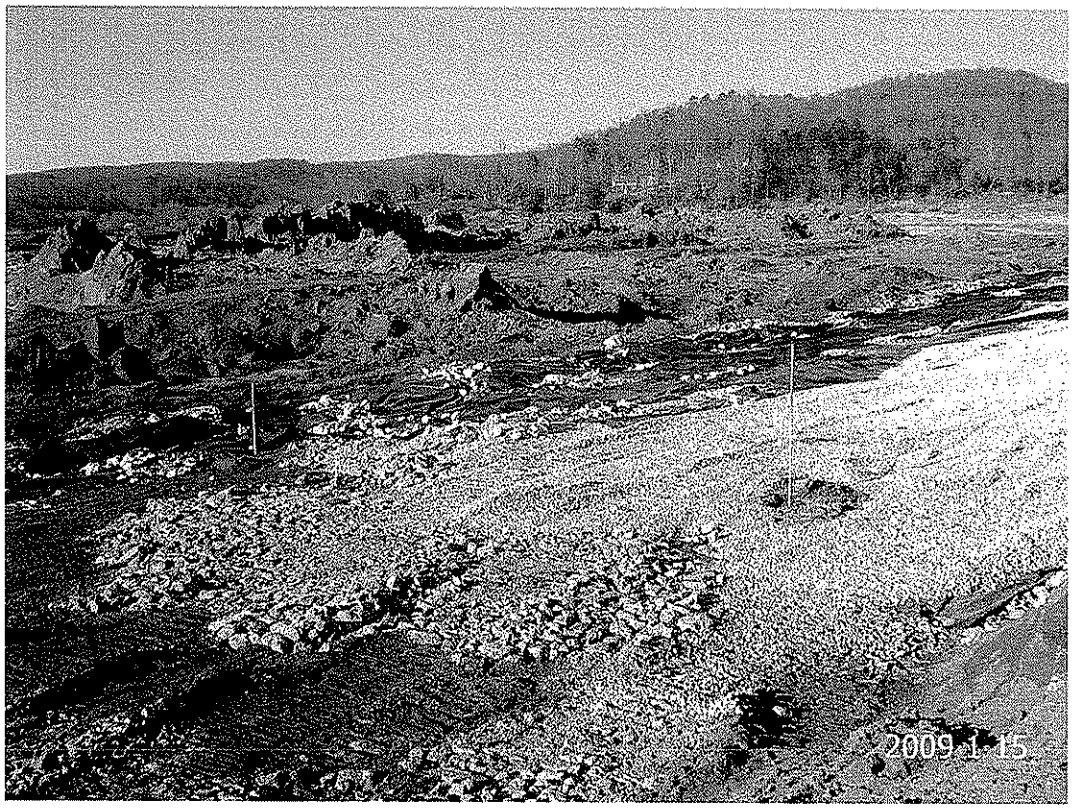

Photo 1: PZ-1 and PZ-2 At South End Stabilization Area (Looking North)

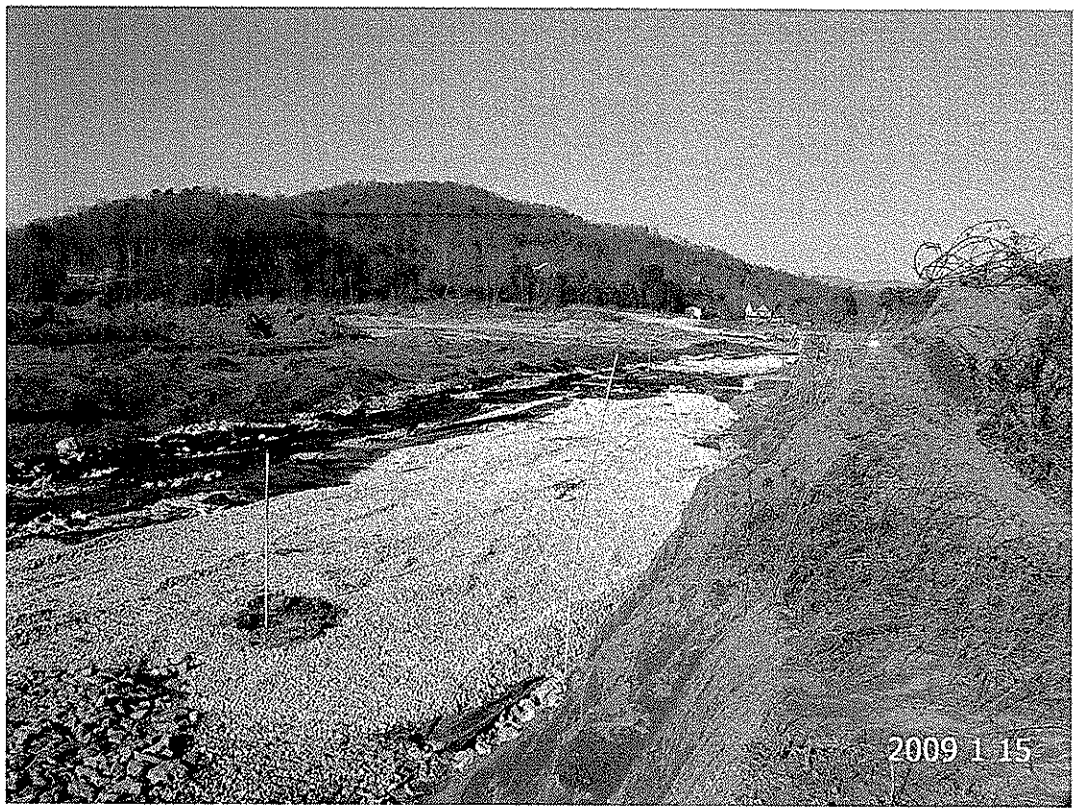

Photo 2: PZ-2 and Marker Pipe at Concrete Pipe through Dike D

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Photo 3: Concrete Pipe, Upstream End

Photo 4: PZ-1 And PZ-2 At South End Stabilization Area (Looking South)

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Photo 5: PZ-5 And PZ-6 In Stabilization Area (Looking North)

Photo 6: Corrugated Plastic Pipe Near PZ-6, Upstream End

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TV)A	
Distribution:	
Jeff Dingrando (Stantec)	
Patrick Kiser (Stantec)	

Project No.: 171468117	Rep No.: 6	Page No: 1 of 2
Project Name: KIF Plant Support – Dike D Buttress Construction		
Location or Address: Kingston, TN		
Date: 1-16-09	Day of the Week: Friday	
Weather: Clear, light wind	Temperature: 10°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Jim Andrew

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill 57 stone – local stockpile

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent; (3) Operators			
(2) D6 Dozers, (1) Excavator			

Visitor's Name	Representing	Arrive	Depart
Greg Thompson and Mike Rigsby	Stantec	7:30	16:00

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew	Report No: 6	Date: 01-16-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

On this date Mr. Andrew arrived on site at 7:30 am to observe the construction of the interim stabilization berm for Dike D. Upon arrival Mr. Andrew met with Greg Thompson and Mike Rigsby, Drillers with Stantec, and J.J. Templeton, Superintendent for HED. Mr. Thompson and Mr. Rigsby completed the installation of piezometers for the interim stabilization berm.

On this date, HED completed the placement of #57 crushed aggregate on top of the geofabric filter. Hauling of the bottom ash from the Bull Run Plant is to begin on the following Monday morning.

Mr. Andrew handed off samples from the borings for the installation of the piezometers to the drill crew to transport them to the Lexington Stantec lab. Mr. Andrew collected water level measurements for the previously installed piezometers, and then met with Mr. Jamey Dotson, Engineer with TVA. Mr. Dotson showed Mr. Andrew the locations of the various structures that would be assessed by Stantec during a Phase I Assessment for the Kingston TVA Facility.

Stantec Field Representative's Activities

Arrive	7:30
Depart	18:30

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	
Distribution:	
Jeff Dingrando (Stantec)	
Patrick Kiser (Stantec)	

Project No.: 171468117	Rep No.: 7	Page No: 1 of 2
Project Name: KIF Plant Support – Dike D Buttress Construction		
Location or Address: Kingston, TN		
Date: 1-17-09	Day of the Week: Saturday	
Weather: Clear, turning overcast, Lt. Wind	Temperature: 11°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J J Templeton	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use: None	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? [x] No [ ] Yes

Did you observe everything you expected to? [ ] No [x] Yes

Did you observe anything unexpected? [x] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [x] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Tyler Marshall	Report No: 7	Date: 1-17-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

No construction activity. Waiting for gradation test results for bottom ash at Bull Run Facility to verify suitability for use.

Stantec Field Representative's Activities

Arrive	8:30 AM EST
Depart	1:00 PM EST

Took readings on inclinometers
A-axis: B-1, B-2, B-4
A- and B-axis: B-3

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. DiGrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 8	Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction		
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN		
Patrick Kiser (Stantec)	Date: 1-19-09	Day of the Week: Monday	
	Weather: Overcast, Lt. Wind, Lt. Snow all day	Temperature: 33°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☒ Other Clayburn Hauling	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill TVA Bull Run Fossil Plant

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent, (1) Flagger, (2) Operators,			
(2) D6 Dozers			

Visitor's Name	Representing	Arrive	Depart
Mark Cade	MACTEC	9:00 ±	11:00 ±

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☐ ☒ Yes Bottom ash placed in fill was less coarse than anticipated but material considerably more coarse than existing ash at the site

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Tyler Marshall	Report No: 8	Date: 1-19-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

One truck load of bottom ash arrived and was dumped near north end of Dike D.

I talked to JJ Templeton concerning placement of ash from south end of work area & progressing north toward estuary in a single lift. Discussed placement direction, lift thickness, width of fill, and required passes for compaction with bulldozer operator at request of JJ.

Bottom ash deliveries began arriving 11:30. Observed placement of 15-18 loads of ash before continuing inclinometer readings.

Talked to Mark Cade and TVA surveyor to get baseline elevations for piezometers prior to ash placement.

Ash placement continued intermittently until 6:15 PM. One full lift placed below Dike D today. Last 4 trucks dumped at south end of Dike D to begin second lift.

Stantec Field Representative's Activities

Arrive	7:20 AM EST
Depart	7:35 PM EST

Marked fill level indicators at one foot intervals on piezometer pipes.

Took PZ water level readings at 9:15 and 18:15

Took readings on inclinometers
A-axis: B-1, B-2, B-4
A- and B-axis: B-3

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 9	Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction		
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN		
Patrick Kiser (Stantec)	Date: 1-20-09	Day of the Week: Tuesday	
	Weather: Partly clear, very windy	Temperature: 20°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Jim Andrew

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other Clayburn Hauling	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill 57 stone – local stockpile Bottom Ash – Bull Run Fossil Plant

Contractor's Personnel Present/Equipment Observed in Use: (1) Superintendent, (1) Flagger, (1) Operator	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(2) D-6 Dozers			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?
Approx. 600 feet of Dikes D and C extending south and east from the intersection should be visually assessed three times every day

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew	Report No: 9	Date: 1-20-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

On this date Mr. Andrew, P.E. with Stantec, arrived on site at 7:30 am to observe the construction of the interim stabilization berm for Dike D at the Kingston, TN TVA Fossil Plant. Upon arrival Mr. Andrew met with J.J. Templeton, superintendent with TVA - HED. HED was placing and compacting bottom ash that was trucked in from the Bull Run TVA Fossil Plant.

Mr. Andrew conducted piezometer water level readings prior to commencement of fill activities, about midway through the fill placement for this date, and at the end of the shift. No changes in construction sequence were required based on observed piezometric levels. Approximately 2,000 tons (112 truckloads) of bottom ash were placed and tracked in with a D-6 dozer on this date. All truckloads delivered on this date appeared to contain suitable materials. Mr. Andrew also discussed the crack monitoring that had previously been conducted by personnel from MACTEC, as Mr. Andrew was informed that Stantec would commence this monitoring at the beginning of the shift, at the midpoint of the shift, and at the end of the shift. Mr. Andrew conducted a visual evaluation of a section of Dike D from the corner with Dike C about 600 feet southwest, and along Dike C about 600 feet from the corner with Dike D. No change in previously observed conditions was noted.

Stantec Field Representative's Activities

Arrive	7:30
Depart	19:00

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 10 Page No: 1 of 3
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 1-21-09	Day of the Week: Wednesday
	Weather: Clear, Calm	Temperature: 14°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other Clayburn Hauling	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill TVA Bull Run Fossil Plant

Contractor's Personnel Present/Equipment Observed in Use: (1) Superintendent, (2) Operator, (1) Flagger	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(2) D6 Dozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☐ Yes

Did you observe anything unexpected? ☐ ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☐ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 3
Stantec Field Representative: Tyler Marshall	Report No: 10	Date: 1-21-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Met Briggs Evans (Stantec) at site and reviewed work to be monitored.

Trucks delivering bottom ash began at 7:30. Bottom ash placed using the D6 dozers.

Talked to Jeff Dingrando about removing ash at the edge of drainage ditch, locating toe of bottom ash slope a minimum of one bulldozer blade width (±13 feet) away from edge of ditch, as he discussed with Jim Andrew on Tuesday afternoon.

Confirmed this adjustment with JJ Templeton. He stated he had talked with Jim concerning this.

Talked to JJ about trimming slope at end of Dike C back to 3H:1V versus benching each lift of bottom ash into slope as work progressing, but no change in method of placement made.

Talked to Jeff Dingrando about gathering data on materials used in stabilization work for As-Built drawings. Also wants bottom ash samples for lab testing in Lexington. Stantec will collect 1 bag/5,000CY, meaning approx. 3 bags will be collected throughout bottom ash placement. Collected 1 bag near edge of fill at PZ-3.

Stantec Field Representative's Activities

Arrive	7:15 AM EST
Depart	6:25 PM EST

Took first PZ readings beginning at 7:30.

Took inclinometer readings
A-axis B-1 thru B-4

Added pipe to PZ-8, marked one foot increments and adjusted datum in PZ log

Measured cracks in pond east of Dike D at 14:00

Measured cracks at 17:45

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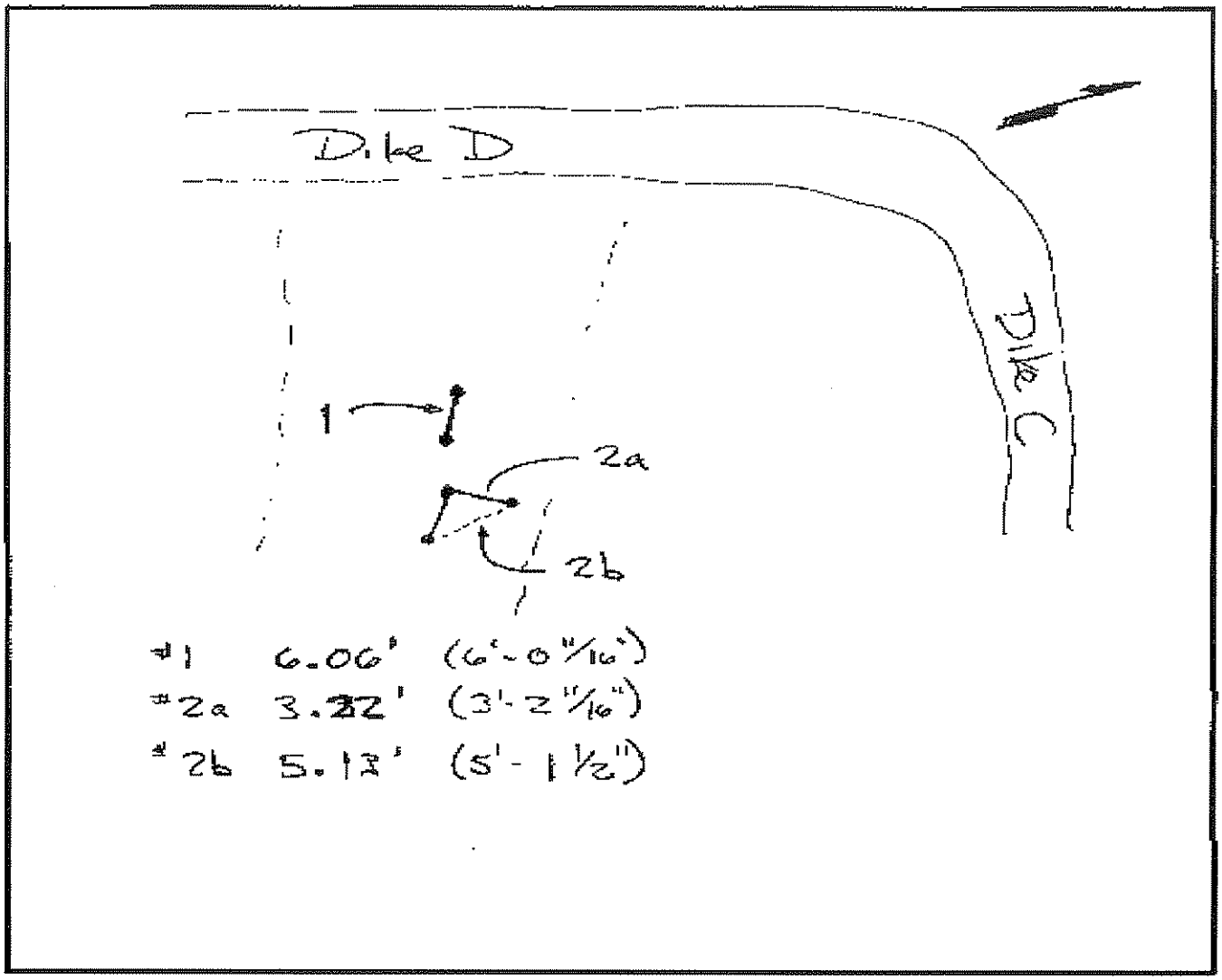
Daily Field Report
Plan View Drawing



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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 11	Page No: 1 of 3
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction		
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN		
Patrick Kiser (Stantec)	Date: 1-22-09	Day of the Week: Thursday	
	Weather: Clear, Calm	Temperature: 20°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other Clayburn Hauling	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill TVA Bull Run Fossil Plant

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) Superintendent, (2) Operator, (1) Flagger			
(2) D6 Dozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☒ No ☐ Yes _____

Did you observe everything you expected to? ☐ No ☒ Yes _____

Did you observe anything unexpected? ☒ ☐ Yes _____

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes _____

What, in particular, should be observed, checked, or tested during the next visit? _____

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 3
Stantec Field Representative: Tyler Marshall	Report No: 11	Date: 1-22-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Trucks with bottom ash from TVA Bull Run began arriving @ 7:30 AM. Bottom ash placed using the D6 dozers.

Talked to JJ Templeton about anticipated completion of bottom ash fill. Expects to finish sometime Friday. Starting to stockpile clay for capping bottom ash at top of Dike D adjacent to roadway.

Stantec Field Representative's Activities

Arrive	7:20 AM EST
Depart	6:55 PM EST

Initial piezometer readings beginning 7:20 AM – Briggs Evans.
Morning crack monitoring 7:35 AM – Tyler Marshall
Visual check Dike C completed 8:05 – no changes noted
Added pipe sections for PZ-4 and PZ-6
Inclinometer readings taken A- and B-axis: B-1 thru B-4 began @ 9:45
Evening crack monitoring 6:15 PM – Tyler Marshall
Evening crack readings unchanged from morning
Sketch drainage ditch approx. location

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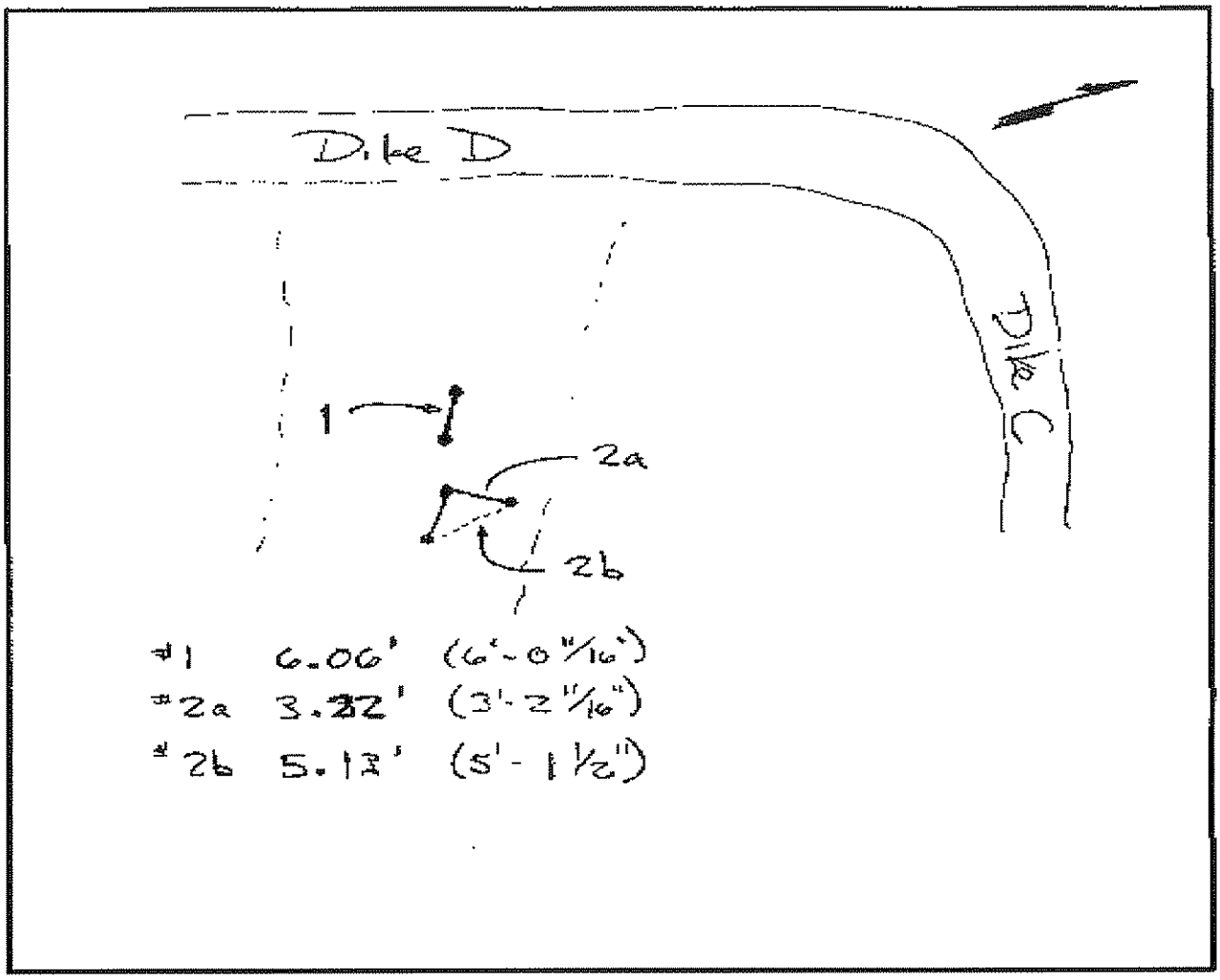
Daily Field Report
Plan View Drawing



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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 12 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 1-23-09	Day of the Week: Friday
	Weather: Partly cloudy, light wind	Temperature: 35°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Jim Andrew

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other Clayburn Hauling	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Bottom Ash – Bull Run Fossil Plant

Contractor's Personnel Present/Equipment Observed in Use: (1) Superintendent, (1) Operator, (1) Flagger	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) D-6 Dozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? [x] No ☐ Yes

Did you observe everything you expected to? ☐ No [x] Yes

Did you observe anything unexpected? [x] No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [x] No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?
Placement of fill in the ditch between the road along Dike C and the end of Dike D

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew	Report No: 12	Date: 1-23-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

On this date Mr. Andrew, P.E. with Stantec, arrived on site at 7:00 am to observe the construction of the interim stabilization berm for Dike D at the Kingston, TN TVA Fossil Plant. Upon arrival Mr. Andrew met with J.J. Templeton, superintendent with TVA - HED. HED was placing and compacting bottom ash that was trucked in from the Bull Run TVA Fossil Plant. Mr. Tyler Marshall, P.E. with Stantec, was also on site on this date to conduct slope inclinometer readings, and to conduct the visual observation of the overall status of Dikes D and C.

Mr. Andrew conducted piezometer water level readings previously installed in the Dike D interim stabilization berm prior to commencement of fill activities, about midway through the fill placement for this date, and at the end of the shift. No changes to construction sequence were required based on piezometric levels. Approximately 2,000 tons (122 truckloads) of bottom ash were placed and tracked in with a D-6 dozer on this date. All truckloads delivered on this date appeared to contain suitable materials. A bulk sample of the bottom ash fill material was collected by Mr. Andrew on this date.

Mr. Andrew observed riprap-size rock being placed on the slope of Dike C near the end of Dike D. Mr. Andrew discussed the placement of the riprap rock with Mr. Templeton and Mr. Marshall, and some concern was expressed that the slope of Dike C at this location was not at the same slope as the design indicated. Also, it was observed that the ditch between the road along Dike C and the end of Dike D was presently not shown on the design, and would need to be filled or extended through the end of the interim stabilization berm. Mr. Andrew consulted with Mr. Jeff Dingrando, Project Manager with Stantec, regarding these issues, and it was determined that the slope of Dike C should be left at the existing 1.5H:1H, and the ditch should be filled to pass surface runoff from the end of Dike D across the crest of Dike C on to the outer slope of Dike C.

Stantec Field Representative's Activities

Arrive	7:00
Depart	19:00

Tyler Marshall
On site 7:20
18:55

Crack monitoring 9:00 – no changes noted.
Read inclinometers at 12:00 – review process with Jim
Crack monitoring 13:25
Crack monitoring 18:15

Notice:
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☐ **This Field Report is Preliminary** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**Stantec Field Representative**	**Date**
☐ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By**	**Date**

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew	Report No: 12	Date: 1-23-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Mr. Andrew met with Mr. Don Fuller, Project Manager with Stantec, and Mr. Fuller requested that Mr. Andrew photograph the progress of the buttress trench along Swan Pond Road. Mr. Andrew visited the Swan Pond Road section of the project and collected several photographs of the trench that had been excavated as part of the buttress.

Mr. Andrew met with Mr. Brad Workman, Project Superintendent with HED, to request copies of the quantities and types of materials employed to construct the Dike D interim stabilization berm. Mr. Workman informed Mr. Andrew that he would get Mr. Andrew copies of the truck quantities for the bottom ash; however the quantities of rip rap rock and No. 57 crushed aggregate were not recorded.

By end of shift on this date, HED had completed the placement of the bottom ash to the required height on the southwest end of the Dike D interim stabilization berm for approximately 200 feet towards the northeast end.

Stantec Field Representative's Activities

Arrive	7:00
Depart	19:00

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffery S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 13 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 1-24-09	Day of the Week: Saturday
	Weather: Partly cloudy, windy	Temperature: 40°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Jim Andrew

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other Clayburn Hauling	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Bottom Ash – Bull Run Fossil Plant Soil Cover – On Site Borrow

Contractor's Personnel Present/Equipment Observed in Use: (1) Superintendent	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) D-6 Dozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? [x] No [ ] Yes

Did you observe everything you expected to? [ ] No [x] Yes

Did you observe anything unexpected? [x] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [x] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit?
The fill in the ditch between the road along Dike C and the end of Dike D; and collect a bulk sample of the soil cover material

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew	Report No: 13	Date: 1-24-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

On this date Mr. Andrew, P.E. with Stantec, arrived on site at 7:00 am to observe the construction of the interim stabilization berm for Dike D at the Kingston, TN TVA Fossil Plant. Upon arrival Mr. Andrew met with the HED dozer operator to discuss with him Stantec's request to fill the ditch between the end of Dike D and Dike C. Mr. Andrew requested that the topsoil and vegetation be removed from the ditch prior to placing fill.

Mr. Andrew conducted piezometer water level readings previously installed in the Dike D interim stabilization berm prior to commencement of fill activities, about midway through the fill placement for this date, and at the end of the shift. No changes in construction sequence were required based on the piezometric levels. Approximately 1,000 tons (73 truckloads) of bottom ash were placed and tracked in with a D-6 dozer on this date. All truckloads delivered on this date appeared to contain suitable materials. A bulk sample of the bottom ash fill material was collected on this date. At 12:30, a sufficient quantity of bottom ash had been delivered and tracked in to complete the bottom ash section of the interim stabilization berm, and delivery of bottom ash was terminated. TVA surveyors were on site at 14:00 to survey profiles of the top of the ash portion of the berm.

Mr. Andrew conducted slope inclinometer readings for the four slope inclinometers previously installed along the crest of Dike D, and one on Dike C approximately 200 feet southeast of Dike D.

Mr. Andrew also conducted visual observations of the condition of Dike D and a section of Dike C from the intersection with Dike D approximately 600 feet southeast, as well as the size of a pre-existing crack in the divider dike in the main ash pond. These visual observations were conducted in the morning, at about mid-day, and once more in the evening, prior to leaving the site. No changes in the condition of Dike D, the 600-foot section of Dike C, or the crack in the divider dike were observed.

By end of shift on this date, HED had completed the placement of the bottom ash to required height for the entire length of the Dike D interim stabilization berm, and soil cover had been placed only along the crest of Dike D. A total of ten off road haul truckloads of the soil fill material were delivered and tracked in on this date.

Stantec Field Representative's Activities

Arrive	7:00
Depart	18:30

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffery S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 14 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 1-25-09	Day of the Week: Sunday
	Weather: Partly cloudy, light wind	Temperature: 48°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: Nathan	Stantec Field Representative: Jim Andrew

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Soil Cover – On Site Borrow

Contractor's Personnel Present/Equipment Observed in Use: (1) Superintendent	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) D-6 Dozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? [x] No [ ] Yes

Did you observe everything you expected to? [ ] No [x] Yes

Did you observe anything unexpected? [x] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [x] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit?
The fill in the ditch between the road along Dike C and the end of Dike D; and collect a bulk sample of the soil cover material

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew	Report No: 14	Date: 1-25-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

On this date Mr. Andrew, P.E. with Stantec, arrived on site at 7:30 am to observe the construction of the interim stabilization berm for Dike D at the Kingston, TN TVA Fossil Plant.

Mr. Andrew conducted piezometer water level readings previously installed in the Dike D interim stabilization berm prior to commencement of fill activities, about midway through the fill placement for this date, and at the end of the shift. No changes in construction sequence were required due to piezometric levels.

Mr. Andrew conducted slope inclinometer readings for the four slope inclinometers previously constructed along the crest of Dike D, and one on Dike C approximately 200 feet southeast of Dike D.

Mr. Andrew also conducted visual observations of the condition of Dike D and a section of Dike C from the intersection with Dike D approximately 600 feet southeast, as well as the size of a pre-existing crack in the divider dike in the main ash pond. These visual observations were conducted in the morning, at about mid-day, and once more in the evening, prior to leaving the site. No changes in the condition of Dike D, the 600-foot section of Dike C, or the crack in the divider dike were observed.

By end of shift on this date, HED had completed the placement of the soil cover along the crest of Dike D, and for about 100 feet of the interim stabilization berm from the southwest end. A total of twenty off road haul truckloads of the soil fill material were delivered and tracked in on this date.

Stantec Field Representative's Activities

Arrive	7:30
Depart	18:30

Notice:
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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffery S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 15 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 1-26-09	Day of the Week: Monday
	Weather: Overcast	Temperature: 40°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J.J. Templeton	Stantec Field Representative: Jim Andrew

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Soil Cover – On Site Borrow

Contractor's Personnel Present/Equipment Observed in Use: (1) Superintendent	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1) D-6 Dozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? [x] No [ ] Yes

Did you observe everything you expected to? [ ] No [x] Yes

Did you observe anything unexpected? [x] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [x] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit?
The thickness of the soil cover

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page: 2 of 2
Stantec Field Representative: Jim Andrew	Report No: 15	Date: 1-26-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

On this date Mr. Andrew, P.E. with Stantec, arrived on site at 7:00 am to observe the construction of the interim stabilization berm for Dike D at the Kingston, TN TVA Fossil Plant.

Mr. Andrew conducted piezometer water level readings previously installed in the Dike D interim stabilization berm prior to commencement of fill activities, about midway through the fill placement for this date, and at the end of the shift, and all piezometric levels were acceptable. Mr. Andrew also excavated around the base of the piezometer stand pipes in order to straighten the stand pipes, and then painted the stand pipes with high visibility orange paint, and installed caps on the stand pipes.

Mr. Andrew conducted slope inclinometer readings for the four slope inclinometers previously constructed along the crest of Dike D, and one on Dike C approximately 200 feet southeast of Dike D.

Mr. Andrew also conducted visual observations of the condition of Dike D and a section of Dike C from the intersection with Dike D approximately 600 feet southeast, as well as the size of a pre-existing crack in the divider dike in the main ash pond. These visual observations were conducted in the morning, at about mid-day, and once more in the evening, prior to leaving the site. No changes in the condition of Dike D, the 600-foot section of Dike C, or the crack in the divider dike were observed.

By end of shift on this date, HED had completed the placement of the soil cover along the face of Dike D, for about 200 feet of the interim stabilization berm from the southwest end, and in the ditch between the end of Dike D and Dike C. A total of fifty off road haul truckloads of the soil fill material were delivered and tracked in on this date.

Stantec Field Representative's Activities

Arrive	7:00
Depart	18:30

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X **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 16	Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction		
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN		
Patrick Kiser (Stantec)	Date: 01/30/2009	Day of the Week: Friday	
	Weather: Overcast	Temperature: Mid-30's F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Patrick Kiser / Steven Field

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Onsite borrow

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(6) articulating dump trucks			
(1) D-6 bulldozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Patrick Kiser/Steven Field	Report No: 16	Date: 01/30/2009

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Patrick Kiser and Steven Field with Stantec traveled from Nashville, TN to KIF Plant to provide construction observation services for the Buttress at Dike D.

P. Kiser and S. Field commenced to take water level readings in all 8 PZ's

P. Kiser and S. Field commenced to take Slope Inclinometer readings at all SI's

P. Kiser and S. Field conducted a visual observations of the condition of Dike D and a section of Dike C from the intersection with Dike D approximately 600 feet southeast, as well as the size of a pre-existing crack in the divider dike in the main ash pond. These visual observations were conducted in the afternoon. No changes in the condition of Dike D, the 600-foot section of Dike C, or the crack in the divider dike were observed. Although the cracks were filled in with Ash due to recent rains.

Upon arrival at the site, HED had advanced the placement of the soil cover along the crest and outward slope of Dike D and Buttress to approximately the mid-point between PZ's 3 and 4. The soil cover is an onsite material, red in color with a minor amount of chert and organic material. P. Kiser requested that the loading operator try and get below the root and organic material. The soil cover is approximately 1' thick.

By end of shift on this date, HED had completed the placement of the soil cover along the crest and outward slope of Dike D and buttress to within 60' of PZ's 7 and 8 on the crest and within 15' of PZ's 7 and 8 on the outward slope. According to the HED foreman, they were averaging ~ 18 trucks per hour. All soil was tracked in by the dozer.

Stantec Field Representative's Activities

Arrive	10:30 EST
Depart	18:15 EST

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffery S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 17 Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 01/31/2009	Day of the Week: Saturday
	Weather: Overcast	Temperature: Mid-20's (AM)

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: J. J. Templeton	Stantec Field Representative: Steven Field

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill Onsite borrow

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(6) articulating dump trucks			
(1) D-6 bulldozer			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☒ No ☐ Yes _____

Did you observe everything you expected to? ☐ No ☒ Yes _____

Did you observe anything unexpected? ☒ No ☐ Yes _____

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes _____

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Steven Field	Report No: 17	Date: 01/31/2009

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

S. Field arrived on site at 7:30 EST. No construction activity had commenced.

S. Field commenced to take water level readings in all 8 PZ's. Construction activities began at approximately 8:00 EST

S. Field conducted visual observations of the condition of Dike D and a section of Dike C from the intersection with Dike D approximately 600 feet southeast, as well as the size of a pre-existing crack in the divider dike in the main ash pond. These visual observations were conducted in the morning, and prior to leaving the site in the evening. No changes in the condition of Dike D, the 600-foot section of Dike C, or the crack in the divider dike were observed. Although the cracks were filled in with ash due to recent rains.

HED advanced the placement of the soil cover along the crest and outward slope of Dike D and Buttress to completion during the day. The soil cover is an onsite material, red in color with a minor amount of chert and organic material. The soil cover is approximately 1' thick.

The HED foreman indicated they would not be working on the buttress the next day.

Stantec Field Representative's Activities

Arrive	7:30 EST
Depart	18:15 EST

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffery S. Dingrando Jeffery S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 18	Page No: 1 of 2
Distribution:	Project Name: KIF Plant Support – Dike D Buttress Construction		
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN		
Patrick Kiser (Stantec)	Date: 02/20/2009	Day of the Week: Friday	
	Weather: Clear, Lt. Wind	Temperature: 26° F -36 ° F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: Heavy Equipment Division (HED) – TVA	Stantec Lab Supervisor:
GC Rep.: None	Stantec Field Representative: Tyler Marshall

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use: (1) Operator, (1) Flagger	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
(1)Cat. D6			

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☒ No ☐ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☐ No ☒ Yes Erosion in 3 locations at toe of stabilization buttress due to runoff from top of slopes. Repair should be initiated before slope is damaged further.

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?
Monitor erosion at toe of stabilization buttress

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Daily Field Report
Activities and Observations

Project Name: KIF Plant Support – Dike D Buttress Construction	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Tyler Marshall	Report No: 18	Date: 02/20/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Grading top of Dike D – slope top of dike to drain toward buttress slope and drainage ditch beyond.

Trucks delivering 1"-2" crushed stone in afternoon. Covering top of Dike D with 6" thick layer across full width.

Runoff from recent rainfall running down 3H:1V slope of stabilization buttress has caused rill erosion at toe of slope at edge of drainage ditch in 3 locations.

Photos taken, starting at south end of stabilization moving north toward estuary. Largest rill is toward north end near PZ-7.

Stantec Field Representative's Activities

Arrive	9:00 AM EST
Depart	3:30 PM EST

Crack monitoring
#1 – 6.06'
#2a – 3.23"
#2b – 5.14"
No changes noted
Slope inclinometer readings start at 10:00; read B-1, B-2, and B-3.

Piezometer readings started at 2:20

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☐ **This Field Report is Preliminary** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**Stantec Field Representative** Tyler Marshall Ty S. Marshall	**Date** 2/20/09
☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffery S. Dingrando Jeffery S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 19	Page No: 1 of 2
Distribution:	Project Name: TVA Kingston Fossil Plant Dike D Buttress		
Jeff Dingrando (Stantec)	Location or Address: Kingston, Tennessee		
Patrick Kiser (Stantec)	Date: February 24, 2009	Day of the Week: Tuesday	
	Weather: Mostly Sunny	Temperature: low 50°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: TVA - HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.:	Stantec Field Representative: Dusty Gray / Russell Mehnert

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other N/A	Specialty Contractor Foreman: NA
Plans and Specifications: By:	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
None			

Visitor's Name	Representing	Arrive	Depart
N/A			

Follow-up from prior report? ☐ No ☒ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: TVA Kingston Fossil Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Dusty Gray / Russell Mehnert	Report No: 19	Date: 02/24/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

I met with Jim Andrew of Stantec upon arrival to site. We began by removing a riser from inclinometer SI-4 that was damaged by a piece of heavy equipment on the site. We removed the concrete pad by hand and then used a reciprocating saw to cut the riser and inclinometer pipe off at ground level. Due to the damaged pipe we installed a flush mount inclinometer cover and poured concrete pad surveying the cover. Risers for piezometers PZ-1 and PZ-2 were also installed today. After risers were set and backfilled forms were placed around the risers and then a concrete pad was poured around the piezometers for stability and to ensure water does not stand around the piezometer. All forms measured approximately 1.5' x 1.5' except for the inclinometer and it measured approximately 2' x 2'. Slope inclinometer SI-4 is located on Dike C and all piezometers are located on Dike D. All concrete placed was mixed on site using Quick-crete 80 lb bags.

Stantec Field Representative's Activities

Arrive	9:30 a.m.
Depart	7:00 p.m.

6:00 a.m. to 9:30 a.m. – Travel time

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 20	Page No: 1 of 2
Distribution:	Project Name: TVA Kingston Fossil Plant Dike D Buttress		
Jeff Dingrando (Stantec)	Location or Address: Kingston, Tennessee		
Patrick Kiser (Stantec)	Date: February 25, 2009	Day of the Week: Wednesday	
	Weather: Mostly Sunny	Temperature: low 50°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: TVA - HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.:	Stantec Field Representative: Dusty Gray / Russell Mehnert

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other N/A	Specialty Contractor Foreman: NA
Plans and Specifications: By:	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
None			

Visitor's Name	Representing	Arrive	Depart
N/A			

Follow-up from prior report? ☐ No ☒ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: TVA Kingston Fossil Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Dusty Gray / Russell Mehnert	Report No: 20	Date: 02/25/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Installation of piezometer risers by Stantec continued today. Piezometer risers PZ-3, PZ-4, PZ-5, PZ-6, PZ-7 and PZ-8 were all set today. After backfilling around the risers, 1.5' x 1.5' forms were placed around the risers. PZ-3, PZ-4 and PZ-5 had concrete pads poured around them today. The three remaining risers will have concrete placed around them tomorrow. All concrete placed was mixed on site using Quick-crete 80 lb bags. All piezometers are located on Dike D.

Stantec Field Representative's Activities

Arrive	7:00 a.m.
Depart	7:00 p.m.

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 21	Page No: 1 of 2
Distribution:	Project Name: TVA Kingston Fossil Plant Dike D Buttress		
Jeff Dingrando (Stantec)	Location or Address: Kingston, Tennessee		
Patrick Kiser (Stantec)	Date: February 26, 2009	Day of the Week: Thursday	
	Weather: Sunny	Temperature: low 60°F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: TVA - HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.:	Stantec Field Representative: Dusty Gray / Russell Mehnert

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other N/A	Specialty Contractor Foreman: NA
Plans and Specifications: By:	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
None			

Visitor's Name	Representing	Arrive	Depart
N/A			

Follow-up from prior report? ☐ No ☒ Yes

Did you observe everything you expected to? ☐ No ☒ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit?

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Daily Field Report
Activities and Observations

Project Name: TVA Kingston Fossil Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Dusty Gray / Russell Mehnert	Report No: 21	Date: 02/26/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Installation of piezometer risers was completed today. PZ-6, PZ-7, and PZ-8 were set and backfilled yesterday (02/25/09), but all the pads were poured today. All concrete was mixed on site using Quick-crete 80 lb bags. All piezometers were located on Dike D. All spaces around the forms were filled in today to promote positive drainage and reduce puddling.

Stantec Field Representative's Activities

Arrive	8:00 a.m.
Depart	1:30 p.m.

1:30 p.m. to 5:00 p.m. - Travel

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 22	Page No: 1 of 2
Distribution:	Project Name: TVA Kingston Plant Dike D Buttress		
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN		
Patrick Kiser (Stantec)	Date: 03/03/2009	Day of the Week: Tuesday	
	Weather: Sunny	Temperature: 39° F @ 1:00 PM	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: TVA - HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.:	Stantec Field Representative: Dusty Gray

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other	Specialty Contractor Foreman:
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.

Visitor's Name	Representing	Arrive	Depart
Mark Cade	MACTEC		

Follow-up from prior report? [X] No [ ] Yes

Did you observe everything you expected to? [X] No [ ] Yes

Did you observe anything unexpected? [X] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [X] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit? Excavation of material from drainage pipe ends and placement of grout inside drainage pipes.

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Daily Field Report
Activities and Observations

Project Name: TVA Kingston Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Dusty Gray	Report No: 22	Date: 03/03/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

After meeting with Mark Cade of MACTEC, I was told that the excavation of material on the openings of both drainage pipes along Dike D would begin tomorrow (3-4-09). After numerous phone calls made to Mr. Cade, I was finally able to locate him. No material was excavated today. Initial excavation was planned to start today (3/3/09) according to Mr. Cade, but has been delayed for unknown reasons.

Stantec Field Representative's Activities

Arrive	10:30 AM
Depart	3:00 PM

Travel: 7:00-10:30

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 23 / Page No: 1 of 2
Distribution:	Project Name: TVA Kingston Plant Dike D Buttress	
Jeff Dingrando (Stantec)	Location or Address: Kingston, TN	
Patrick Kiser (Stantec)	Date: 03/04/2009	Day of the Week: Wednesday
	Weather: Sunny	Temperature: 44° F @ 1:30 PM

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: TVA - HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.:	Stantec Field Representative: Dusty Gray

Specialty Contractor: ☐ Earthwork ☐ Concrete ☐ Other NA	Specialty Contractor Foreman: NA
Plans and Specifications: By: Stantec	Date:
Project Briefing: ☐ Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use: None	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? ☐ No ☒ Yes

Did you observe everything you expected to? ☐ No ☐ Yes

Did you observe anything unexpected? ☒ No ☐ Yes

Did you see, hear, smell, or touch anything unusual or unexplained? ☒ No ☐ Yes

What, in particular, should be observed, checked, or tested during the next visit? Excavation of material from drainage pipe ends and placement of grout inside drainage pipes.

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Daily Field Report
Activities and Observations

Project Name: TVA Kingston Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Dusty Gray	Report No: 23	Date: 03/04/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

I was notified by Mark Cade of MACTEC that excavation would not begin first thing today as previously planned due to some confusion with HED. Mr. Cade said he would notify me as soon as he knew when excavation of the entrance and exits of the drainage pipe along Dike D would begin. Received a phone call from Mr. Cade this afternoon saying that excavation has been delayed until next week. We will be notified as soon as possible.

Stantec Field Representative's Activities

Arrive	8:30 AM
Depart	5:00 PM

Travel: 5:00-8:30

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 24 Page No: 1 of 2
Distribution:	Project Name: TVA Kingston Fossil Plant Dike D Buttress	
Jeff Dingrando (Stantec)	Location or Address: Kingston, Tennessee	
Patrick Kiser (Stantec)	Date: March 11, 2009	Day of the Week: Wednesday
	Weather: Mostly Cloudy	Temperature: low 50°F

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: TVA - HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.:	Stantec Field Representative: Dusty Gray

Specialty Contractor: [ ] Earthwork [ ] Concrete [X] Other Fenton Rigging Eagle Construction and Environmental	Specialty Contractor Foreman: Steve Marlow Chris Thompson
Plans and Specifications: By:	Date:
Project Briefing: [ ] Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
HED: (1) C320 Cat trackhoe, (1) operator, (2) spotters;			
SWS/Eagle: (1) Vacuum truck, (1) operator;			
Fenton Rigging: (1) supervisor, (4) laborers			

Visitor's Name	Representing	Arrive	Depart
N/A			

Follow-up from prior report? [ ] No [X] Yes

Did you observe everything you expected to? [ ] No [X] Yes

Did you observe anything unexpected? [X] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [X] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit? Continuation of jetting drain pipe, install bulkheads

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Daily Field Report
Activities and Observations

Project Name: TVA Kingston Fossil Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Dusty Gray	Report No: 24	Date: 03/11/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Excavation of the southern most drainage pipe (concrete) had already began prior to my arrival at the site. Little excavation was needed on the ash pond side. The east end was completely uncovered and the west end nearing completion. SWS/Edge Environmental is in the process of cleaning out the concrete drainage pipe utilizing a vacuum truck and a higher pressure water jet to break loose any ash or sediment that may lay in the drainage pipe. No large objects were visible and daylight could be seen from the opposite end of the pipe. After the pipes had been cleaned and free of any large objects, Steve Marlow of Fenton Rigging stated he would like to install inflatable plugs and bulkheads on both ends of the pipe due the slope at which the pipe lays the angle is not steep enough and Mr. Marlow thinks the grout would work its way out of the west end of the pipe, prior to the rest of the pipe is completely filled with grout. The concrete drainage pipe has a inside diameter of 30", and approximately 110' long. The inflatable plugs to be used are constructed of an inner-tube, plywood and 3 bolts. Photographs of the bulkhead were taken. The west end of the pipe appears to be approximately 12' below the current surface level of Dike D. Excavation of the north most drainage pipe through Dike D Buttress ash was also completed today. All excavation was done with a CAT C320 trackhoe. Due to the depth of this pipe and its location being so close to a piezometer, approximately 10' of the pipe was removed in order to lay back the excavated material at such an angle that access may be gained in a safe manner and no damage would be done to the piezometer. SWS/Eagle began cleaning out the pipe by means of a vacuum truck and high pressure water jet line and ran out of water. Cleaning out of the pipe shall resume tomorrow.

Stantec Field Representative's Activities

Arrive	10:30 a.m.
Depart	6:00 p.m.

7:00 a.m. to 10:30 a.m. - Travel

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☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

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Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 25	Page No: 1 of 3
Distribution:	Project Name: TVA Kingston Fossil Plant Dike D Buttress		
Jeff Dingrando (Stantec)	Location or Address: Kingston, Tennessee		
Patrick Kiser (Stantec)	Date: March 12, 2009	Day of the Week: Thursday	
	Weather: Cloudy	Temperature: low 40° F	

Client: TVA	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: TVA - HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.:	Stantec Field Representative: Dusty Gray

Specialty Contractor: [ ] Earthwork [ ] Concrete [X] Other Fenton Rigging Eagle Construction and Environmental	Specialty Contractor Foreman: Steve Marlow Chris Thompson
Plans and Specifications: By:	Date:
Project Briefing: [ ] Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
HED - (1) C320 Cat trackhoe, (1) operator;			
Fenton - (1) superintendent, (1) concrete pump, (4) laborers;			
SWS/Eagle – (2) Vacuum trucks, (3) operators			

Visitor's Name	Representing	Arrive	Depart
N/A			

Follow-up from prior report? [ ] No [X] Yes

Did you observe everything you expected to? [ ] No [X] Yes

Did you observe anything unexpected? [X] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [X] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit? Placement of grout inside of drainage pipes, along Dike D.

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Daily Field Report
Activities and Observations

Project Name: TVA Kingston Fossil Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 3
Stantec Field Representative: Dusty Gray	Report No: 25	Date: 03/12/09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

SWS/Eagle Environmental completed the cleaning of the north most corrugated plastic drainage pipe on Dike D today. There may be a partial collapse near the center of the pipe due to a slight bend in the pipe. Daylight is visible from opposite ends of the pipe, but a slight change in direction is visible as well as what appears to be a small section of collapsed pipe. The pipe is cleaned out as much as possible without human entry. Fenton Rigging installed inflatable plugs in east and west openings for both the north and south drainage pipes on Dike D. Tremie pipes were installed prior to the plugs being installed. Utilizing a 2" core barrel, 2" vent holes were drilled in the east and west ends of the concrete while a reciprocating saw was used in creating vent holes in the east and west ends of the plastic pipe. Plastic tubes were inserted in the vent holes on the east side openings. Bulkheads were constructed for all 4 pipe ends by means of shotcrete through the use of a concrete pump. The thickness of the bulkheads is approximately 22" in the center of the pipe. Prior to placement of any shotcrete, all 4 pipe ends were cleaned around the entire opening and were allowed to be fully encased in concrete.

Stantec Field Representative's Activities

Arrive	7:30 a.m.
Depart	5:00 p.m.

Notice:
Stantec professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations and sequences of construction.

☐ **This Field Report is Preliminary** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**Stantec Field Representative** Dusty Gray Dusty Gray by FSD	**Date** 03/12/09
☒ **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

Stantec
100 Westwood Place, Suite 420
Brentwood, Tennessee 37027
Phone: (615) 885-1144
Fax: (615) 885-1102

Daily Field Report
Activities and Observations

Owner: Tennessee Valley Authority (TVA)	Project No.: 171468117	Rep No.: 26	Page No: 1 of 2
Distribution:	Project Name: TVA Kingston Fossil Plant Dike D Buttress		
Jeff Dingrando (Stantec)	Location or Address: Kingston, Tennessee		
Patrick Kiser (Stantec)	Date: 3-13-09	Day of the Week: Friday	
	Weather: Cloudy/ Light rain	Temperature: Low 40's F	

Client: Tennessee Valley Authority	Stantec Project Manager/Engineer: Jeff Dingrando
General Contractor: HED	Stantec Lab Supervisor: Terry Kephart
GC Rep.: Brad Workman	Stantec Field Representative: Dusty Gray

Specialty Contractor: [ ] Earthwork [x] Concrete [ ] Other Fenton Rigging	Specialty Contractor Foreman: Steve Marlow
Plans and Specifications: By:	Date:
Project Briefing: [ ] Previously Reported By: On:	Source of Fill

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used: Type/Model	Manufacturer	Ser. No./ID No.
HED-(1) Cat 320 Trackhoe, (1) Operator, (1) D6R Dozer	Mud Balance	Rudd Manufacturing	
Fenton Rigging - (1) Reed B-45 Concrete Pump			

Visitor's Name	Representing	Arrive	Depart
N/A			

Follow-up from prior report? [ ] No [x] Yes

Did you observe everything you expected to? [ ] No [x] Yes

Did you observe anything unexpected? [x] No [ ] Yes

Did you see, hear, smell, or touch anything unusual or unexplained? [x] No [ ] Yes

What, in particular, should be observed, checked, or tested during the next visit?

Stantec
100 Westwood Place, Suite 420
Brentwood, Tennessee 37027
Phone: (615) 885-1144
Fax: (615) 885-1102

Daily Field Report
Activities and Observations

Project Name: TVA Kingston Fossil Plant Dike D Buttress	Project No: 171468117	Page No: 2 of 2
Stantec Field Representative: Dusty Gray	Report No: 26	Date: 3-13-09

Field Observation/Contractor Activities and Discussions:
Indicate activities you did and did not observe.

Grouting of the northern drainage pipe on Dike D began at about 8:00 am. All shotcrete placed over the bulkheads yesterday had hardened by the time I arrived on site today. A sample of the grout placed was obtained for testing the unit weight using a mud balance. The unit weight prior to entering the pipe was 13.5 lb/gallon and the unit weight of the grout once it had been pumped through the pipe and had exited through the vent tube on the west end was 13.3 lb/gallon. The grout was placed by utilizing a tremie tube that was inserted from the west end, but due to a blockage or possible collapse that was approximately 40 ft in, the tremie pipe could only be inserted about halfway. Prior to any grout exiting the vent tube on the east end, the grout forced out water from the pipe. The water shot out of the vent tube for approximately 3 minutes before any grout exited the vent tube. Grout was allowed to run out of the vent tube for about 1 minute before the vent was plugged with burlap and then wrapped with duct tape. The same procedure was done on the west end of the pipe once I had completed the unit weight and the results met project specifications. Approximately 12 yd^3 were placed in the pipe. Grouting of the southern drainage pipe on Dike D began next. The same process was used in grouting of second pipe as well. A sample was obtained prior to it being pumped into the tremie tube for the unit weight. The pre-entry unit weight was 13.7 lbs/gallon and the unit weight after it had exited the west end vent tube was also 13.7 lbs/gallon. Grout was allowed to run out the east end vent tube before plugging it with burlap and duct tape. After grout was allowed to run out of the west vent tube and my sample was taken and the weight met project specifications, it was then plugged. Approximately 24 yd^3 of grout was placed in the concrete drainage pipe. A Reed B-45 concrete pump was used in placement of all grout today. The pressure of the pump was monitored throughout the day, maintaining close to 25 PSI reading. DJ McJunken of HED approved placement of backfill without having the ends of both pipes surveyed. He said they have the coordinates for the pipes from when they located pipes before the excavation began. Backfilling of the excavated areas began as soon as grout had set. The first 9 lifts of ash backfill placed in the west end of the northern pipe were put in with a Cat 320C trackhoe and were compacted by using the bucket. The last 10 lifts were bladed in with a Cat D6R dozer and then walked in also using the D6R. Approximately 4 passes were made over each lift of backfill placed. The west end of the southern pipe was backfilled the same way. The first 7 lifts were put in using the 320C and compacted with the bucket. The last 7 were bladed in to place and walked in using the D6. Approximately 4 passes were made per lift with the D6.

Stantec Field Representative's Activities

Arrive	7:30 A.M.
Depart	4:45 P.M.

Notice:
Stantec professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations and sequences of construction.

☐ **This Field Report is Preliminary** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**Stantec Field Representative** Dusty Gray Dusty Gray by JSD	**Date** 3-13-09
X **This Field Report is Final** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**Reviewed By** Jeffrey S. Dingrando Jeffrey S. Dingrando	**Date** May 20, 2009

Appendix G

Laboratory Testing Results

Stantec
1409 North Forbes Road • Lexington, Kentucky 40511
Phone: (859) 422-3000 • Fax: (859) 422-3100

Laboratory Testing Cover Sheet

Report Date: 2-27-09 Project Number: 171468117

Sample Receipt Date: 2-12-09 Date Testing Performed: 2-12-09 thru 2-26-09

Test Request Date: 2-12-09

Client/Engineer: April Barnes

This report's results relate only to the samples tested.

This report shall not be reproduced except in full.

Terry L. Kephart

Lab ID #

1-29

Stantec

Moisture Content of Soil

Dried @ 60°C ASTM D 2216

Project Name Kingston Fossil Plant Dike D Buttress

Project Number 171468117

Tested By CSM

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-2, 10.0'-11.5'	1	2/13/09	Hom	3/8"			No	20.71	63.01	57.41	15.3
B-2, 22.5'-24.0'	2	2/13/09	Hom	3/4"			No	21.40	71.11	61.48	24.0
B-2, 40.0'-41.5'	3	2/13/09	Hom	No. 10			Yes	21.03	56.74	45.51	45.9
B-2, 47.5'-49.0'	4	2/13/09	Hom	No. 10			Yes	21.15	109.47	94.38	20.6
B-2, 57.5'-59.0'	5	2/13/09	Hom	No. 10			Yes	19.29	81.45	69.48	23.8
B-2, 70.0'-71.5'	6	2/13/09	Hom	No. 10			Yes	18.43	87.95	74.99	22.9
B-4, 5.0'-6.5'	7	2/13/09	Hom	3/8"			No	23.69	127.00	106.83	24.3
B-4, 10.0'-11.5'	8	2/13/09	Hom	1 1/2"			No	20.33	77.09	69.06	16.5
B-4, 20.0'-21.5'	9	2/13/09	Hom	3/8"			No	21.07	105.37	86.26	29.3
B-4, 27.5'-29.0'	10	2/13/09	Hom	3/4"			No	21.13	100.36	87.19	19.9
B-4, 40.0'-41.5'	11	2/13/09	Hom	3/8"			No	21.10	131.41	113.92	18.8
PZ-1, 10.0'-11.5'	12	2/13/09	Hom	3/8"			No	20.75	94.44	79.59	25.2
PZ-1, 25.0'-26.5'	13	2/13/09	Hom	3/8"			No	21.40	116.14	95.36	28.1
PZ-3, 5.0'-6.5'	14	2/13/09	Hom	No. 10			Yes	21.00	84.63	69.51	31.2
PZ-4, 15.0'-16.5'	15	2/13/09	Hom	No. 10			Yes	19.95	108.09	85.03	35.4
PZ-5, 15.0'-16.5'	16	2/13/09	Hom	3/4"			No	19.04	86.55	77.25	16.0
PZ-5, 25.0'-26.5'	17	2/13/09	Hom	3/4"			No	20.35	81.54	72.81	16.6
Bull Run Bottom Ash 5000yd3	18	2/13/09	Hom	1 1/2"			No	70.48	528.70	494.19	8.1
Bull Run Bottom Ash 7000yd3	19	2/13/09	Hom	1 1/2"			No	69.22	535.50	491.83	10.3
Bull Run Bottom Ash 13000yd3	20	2/13/09	Hom	1 1/2"			No	70.62	564.30	505.63	13.5
Soil Cover over Dike D	21	2/13/09	Hom	3/4"			No	72.82	577.80	469.31	27.4
PZ7, 10.0'	22	2/13/09	Hom	3/4"			No	71.67	523.00	449.42	19.5
PZ-7, 15.0'-16.5'	23	2/13/09	Hom	1 1/2"			No	68.93	531.80	492.64	9.2
B-2, 37.5'-39.0'	24	2/13/09	Hom	No. 10			Yes	21.15	51.42	45.19	25.9
B-4, 7.5'-9.0'	25	2/13/09	Hom	1 1/2"			No	21.10	82.14	73.43	16.6
PZ-1, 15.0'-16.0'	26	2/13/09	Hom	3/8"			No	21.04	76.75	66.31	23.1

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-2, 10.0'-11.5'
Lab ID: 1

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	99.0
No. 4	91.5
No. 10	78.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

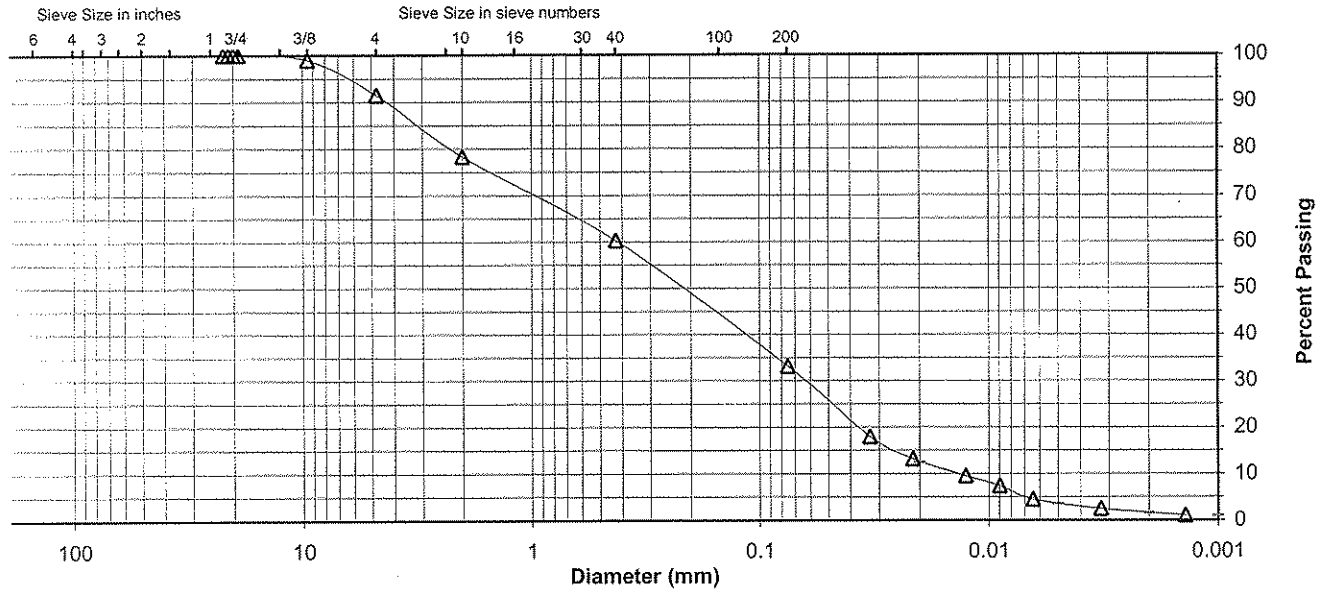
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	60.2
No. 200	33.1
0.02 mm	12.5
0.005 mm	3.6
0.002 mm	1.6
0.001 mm	1.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	8.5	13.2	18.1	27.1	29.5	3.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	21.7			18.1	27.1	31.5	1.6



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-2, 22.5'-24.0'
Lab ID: 2

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	98.8
No. 4	94.4
No. 10	85.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.7

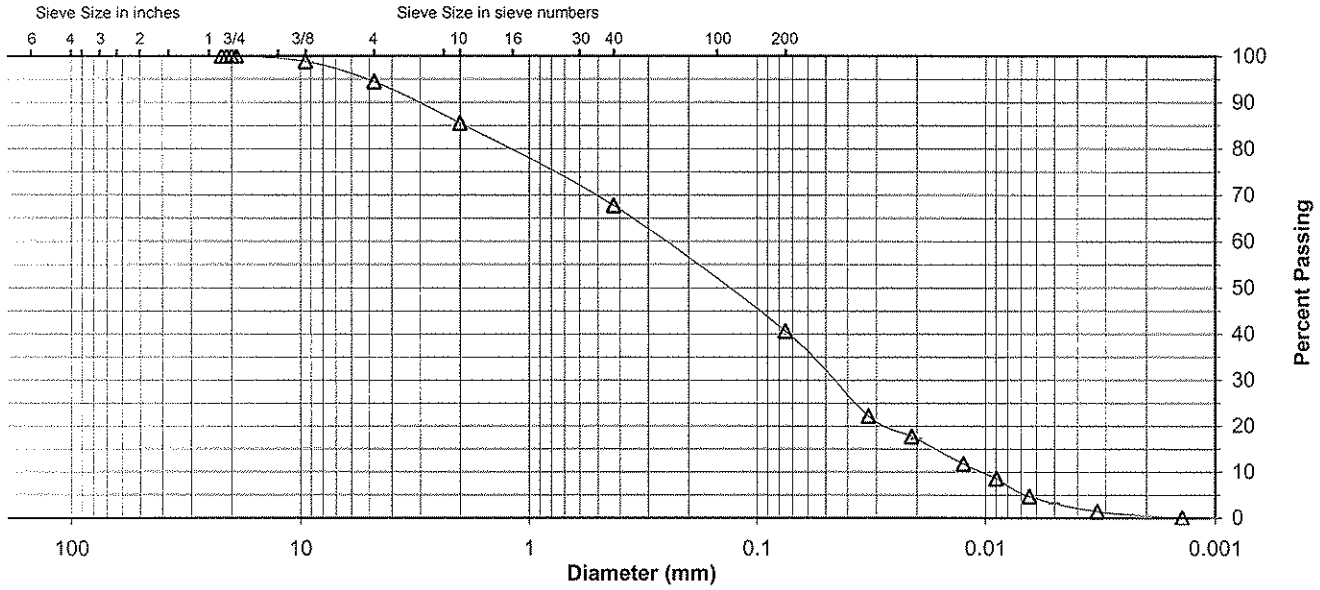
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	67.7
No. 200	40.6
0.02 mm	17.2
0.005 mm	3.2
0.002 mm	0.3
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	5.6	8.9	17.8	27.1	37.4	3.2

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	14.5	17.8	27.1	40.3	0.3



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	B-2, 47.5'-49.0'	Lab ID	4
County		Date Received	2-12-09
Sample Type	SPT	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	
3/4"	19	
3/8"	9.5	
No. 4	4.75	
No. 10	2	100.0
No. 40	0.425	100.0
No. 200	0.075	28.4
	0.02	14.0
	0.005	10.0
	0.002	8.5
estimated	0.001	7.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.0
Coarse Sand	0.0	0.0
Medium Sand	0.0	---
Fine Sand	71.6	71.6
Silt	18.4	19.9
Clay	10.0	8.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit: ---
Plastic Limit: Non Plastic
Plasticity Index: ---
Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A
Maximum Dry Density (kg/m^3): N/A
Optimum Moisture Content (%): N/A
Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A
Compacted Dry Density (lb/ft^3): N/A
Compacted Moisture Content (%): N/A

Specific Gravity

Estimated

Particle Size: No. 10
Specific Gravity at 20° Celsius: 2.70

Classification

Unified Group Symbol: SM
Group Name: Silty sand

AASHTO Classification: A-2-4 (0)

Comments:

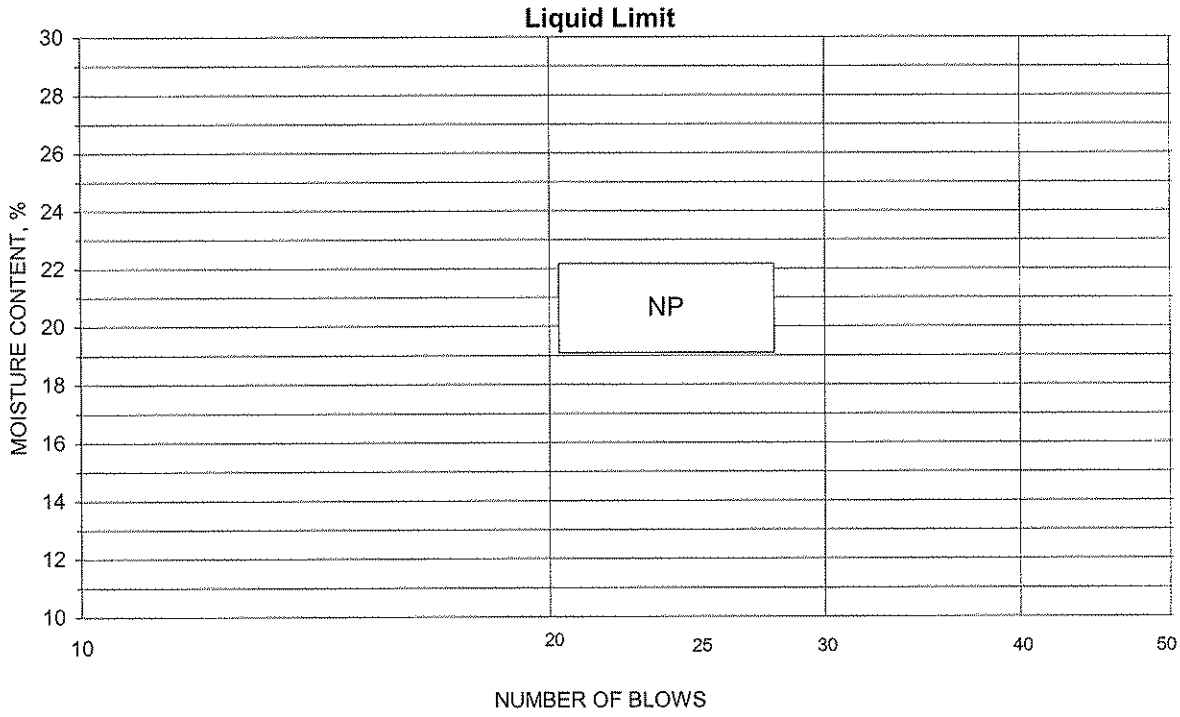
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	B-2, 47.5'-49.0'	Lab ID	4
		% + No. 40	0
Tested By	DRB	Test Method	ASTM D 4318 Method A
Test Date	02-20-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-2, 47.5'-49.0'
Lab ID: 4

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: N/A
Particle Hardness: N/A

Tested By: RC
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: No. 10 Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	
No. 4	
No. 10	100.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.7

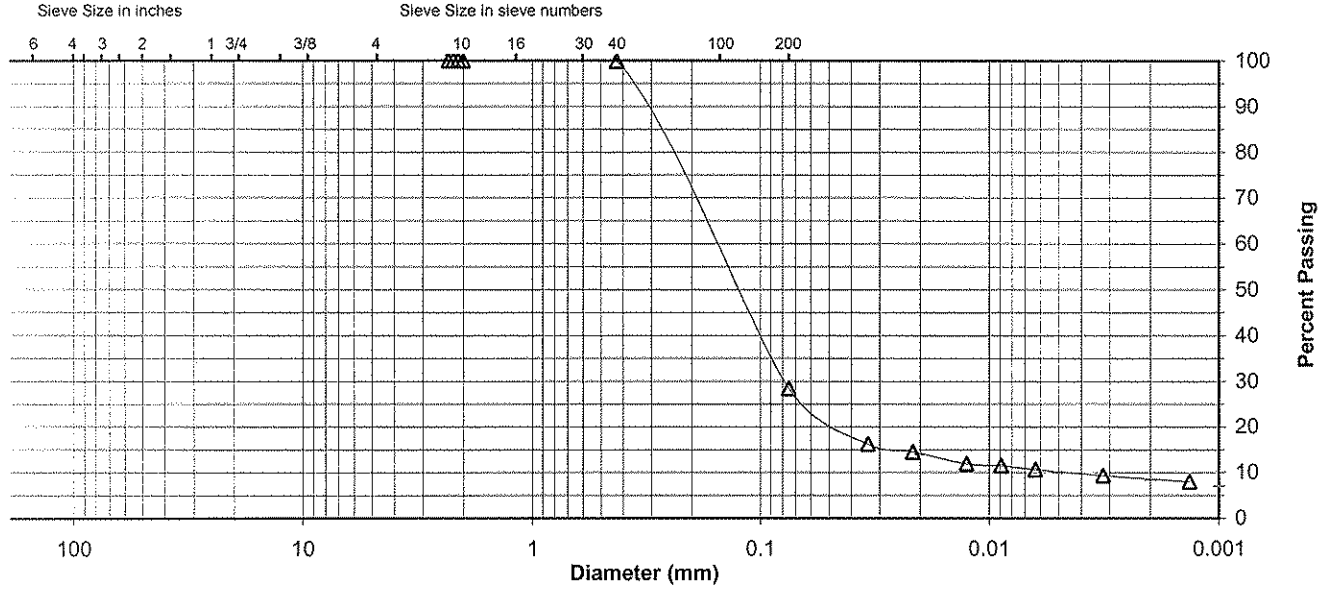
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	100.0
No. 200	28.4
0.02 mm	14.0
0.005 mm	10.0
0.002 mm	8.5
0.001 mm	7.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.0	0.0	71.6	18.4	10.0

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	0.0	0.0	71.6	19.9	8.5



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	B-2, 57.5'-59.0'	Lab ID	5
County		Date Received	2-12-09
Sample Type	SPT	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	
3/4"	19	
3/8"	9.5	
No. 4	4.75	100.0
No. 10	2	99.9
No. 40	0.425	99.5
No. 200	0.075	30.0
	0.02	16.2
	0.005	11.4
	0.002	9.2
estimated	0.001	8.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.1
Coarse Sand	0.1	0.4
Medium Sand	0.4	---
Fine Sand	69.5	69.5
Silt	18.6	20.8
Clay	11.4	9.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit: ---
Plastic Limit: Non Plastic
Plasticity Index: ---
Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A
Maximum Dry Density (kg/m^3): N/A
Optimum Moisture Content (%): N/A
Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A
Compacted Dry Density (lb/ft^3): N/A
Compacted Moisture Content (%): N/A

Specific Gravity

Estimated

Particle Size: No. 10
Specific Gravity at 20° Celsius: 2.70

Classification

Unified Group Symbol: SM
Group Name: Silty sand

AASHTO Classification: A-2-4 (0)

Comments: MC Dried @ 60° C

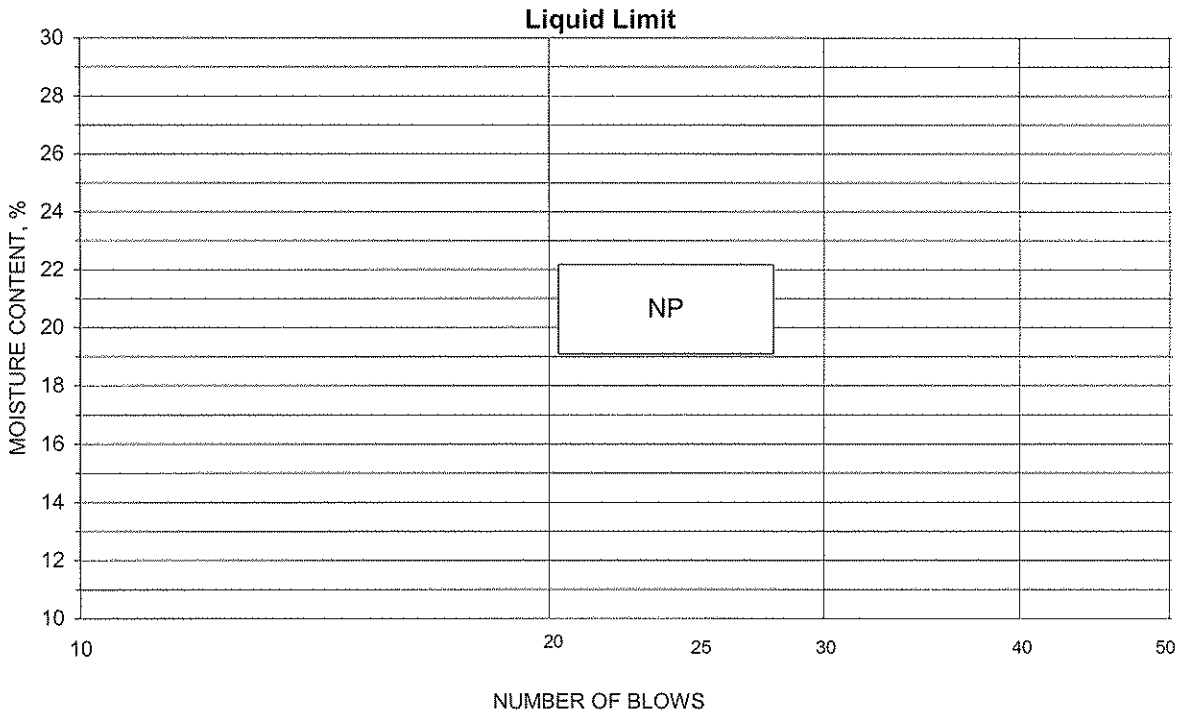
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	B-2, 57.5'-59.0'	Lab ID	5
		% + No. 40	1
Tested By	RC	Test Method	ASTM D 4318 Method A
Test Date	02-19-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-2, 57.5'-59.0'
Lab ID: 5

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: CSM
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	
No. 4	100.0
No. 10	99.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

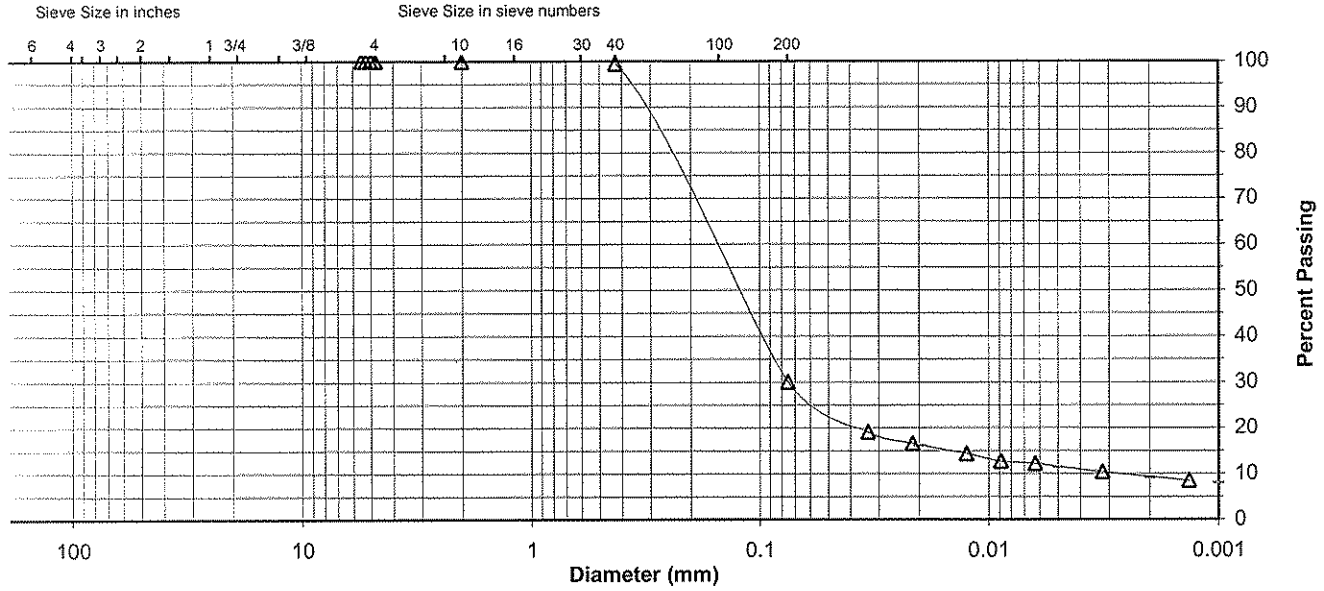
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	99.5
No. 200	30.0
0.02 mm	16.2
0.005 mm	11.4
0.002 mm	9.2
0.001 mm	8.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.1	0.4	69.5	18.6	11.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.1			0.4	69.5	20.8	9.2



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	B-2, 70.0'-71.5'	Lab ID	6
County		Date Received	2-12-09
Sample Type	SPT	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.9

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	
3/4"	19	
3/8"	9.5	
No. 4	4.75	
No. 10	2	100.0
No. 40	0.425	98.6
No. 200	0.075	17.1
	0.02	7.6
	0.005	5.2
	0.002	3.4
estimated	0.001	3.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.0
Coarse Sand	0.0	1.4
Medium Sand	1.4	---
Fine Sand	81.5	81.5
Silt	11.9	13.7
Clay	5.2	3.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit: ---
Plastic Limit: Non Plastic
Plasticity Index: ---
Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A
Maximum Dry Density (kg/m^3): N/A
Optimum Moisture Content (%): N/A
Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A
Compacted Dry Density (lb/ft^3): N/A
Compacted Moisture Content (%): N/A

Specific Gravity

Estimated

Particle Size: No. 10
Specific Gravity at 20° Celsius: 2.70

Classification

Unified Group Symbol: SM
Group Name: Silty sand

AASHTO Classification: A-2-4 (0)

Comments: MC Dried @ 60° C

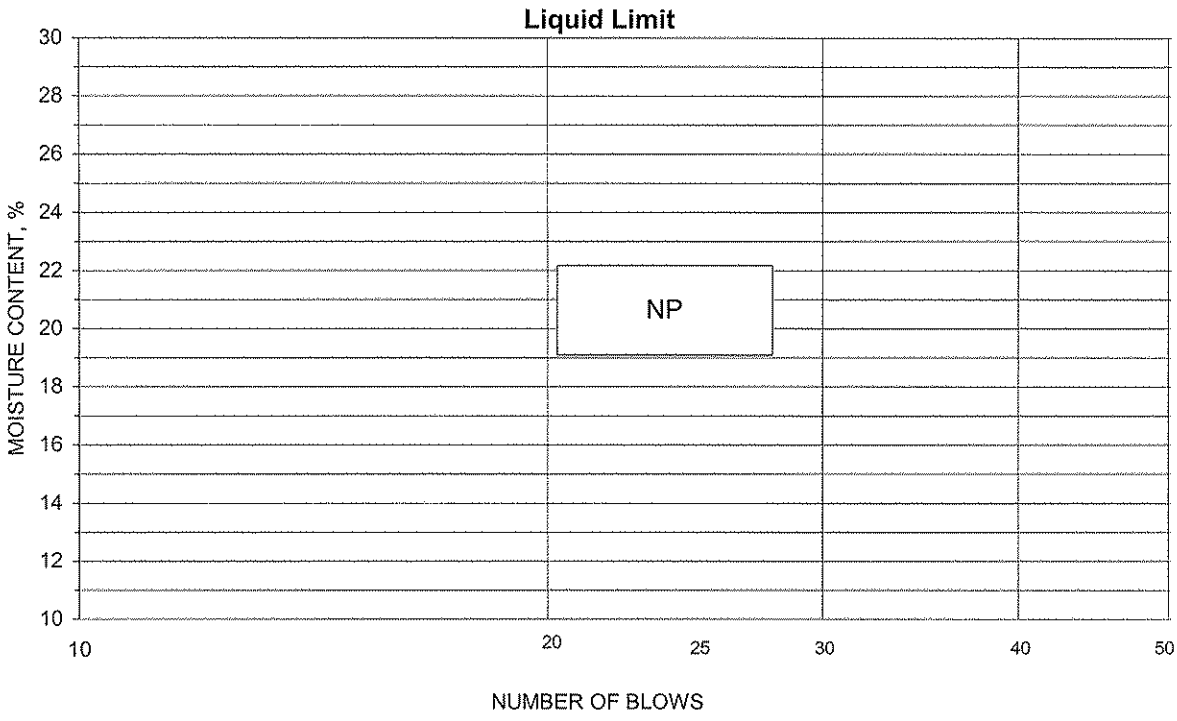
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	B-2, 70.0'-71.5'	Lab ID	6
		% + No. 40	1
Tested By	RC	Test Method	ASTM D 4318 Method A
Test Date	02-19-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

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Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-2, 70.0'-71.5'
Lab ID: 6

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: N/A
Particle Hardness: N/A

Tested By: RC
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: No. 10 Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	
No. 4	
No. 10	100.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.7

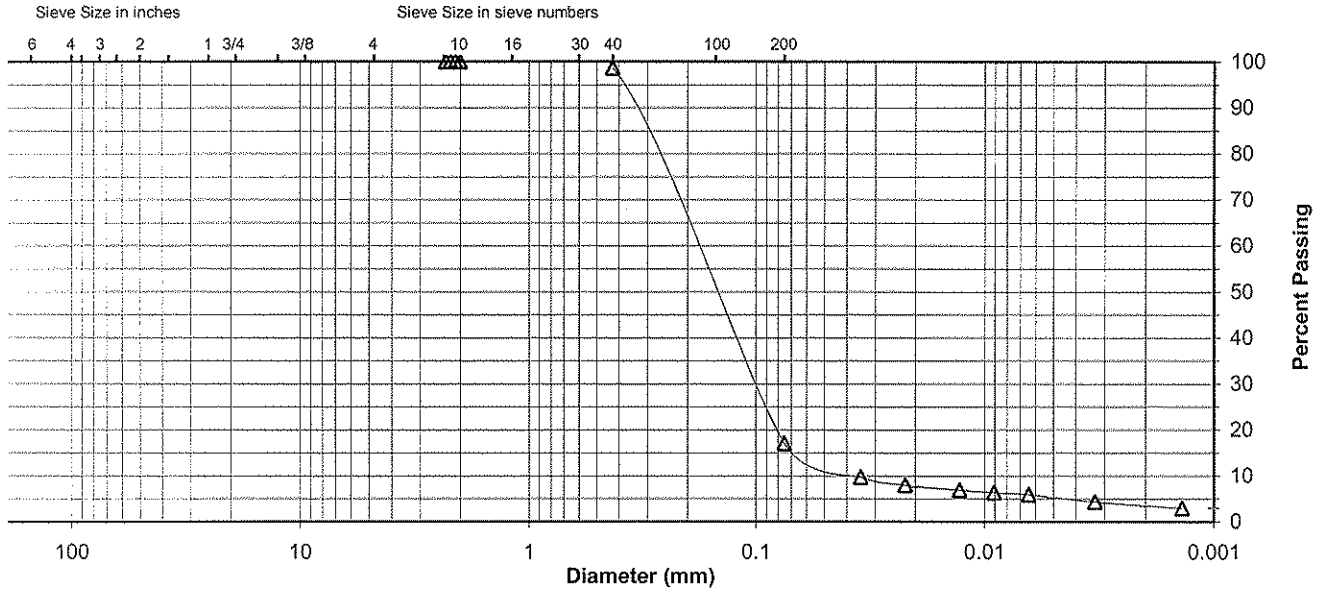
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	98.6
No. 200	17.1
0.02 mm	7.6
0.005 mm	5.2
0.002 mm	3.4
0.001 mm	3.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.0	1.4	81.5	11.9	5.2

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	0.0	1.4	81.5	13.7	3.4



Comments

Reviewed By

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Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	B-4, 5.0'-6.5'	Lab ID	7
County		Date Received	2-12-09
Sample Type	SPT	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 24.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	
3/4"	19	100.0
3/8"	9.5	99.6
No. 4	4.75	98.4
No. 10	2	87.4
No. 40	0.425	83.6
No. 200	0.075	65.6
	0.02	53.0
	0.005	43.7
	0.002	39.1
estimated	0.001	36.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.6	12.6
Coarse Sand	11.0	3.8
Medium Sand	3.8	---
Fine Sand	18.0	18.0
Silt	21.9	26.5
Clay	43.7	39.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	44
Plastic Limit:	18
Plasticity Index:	26
Activity Index:	0.67

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-7-6 (15)

Comments: MC Dried @ 60° C

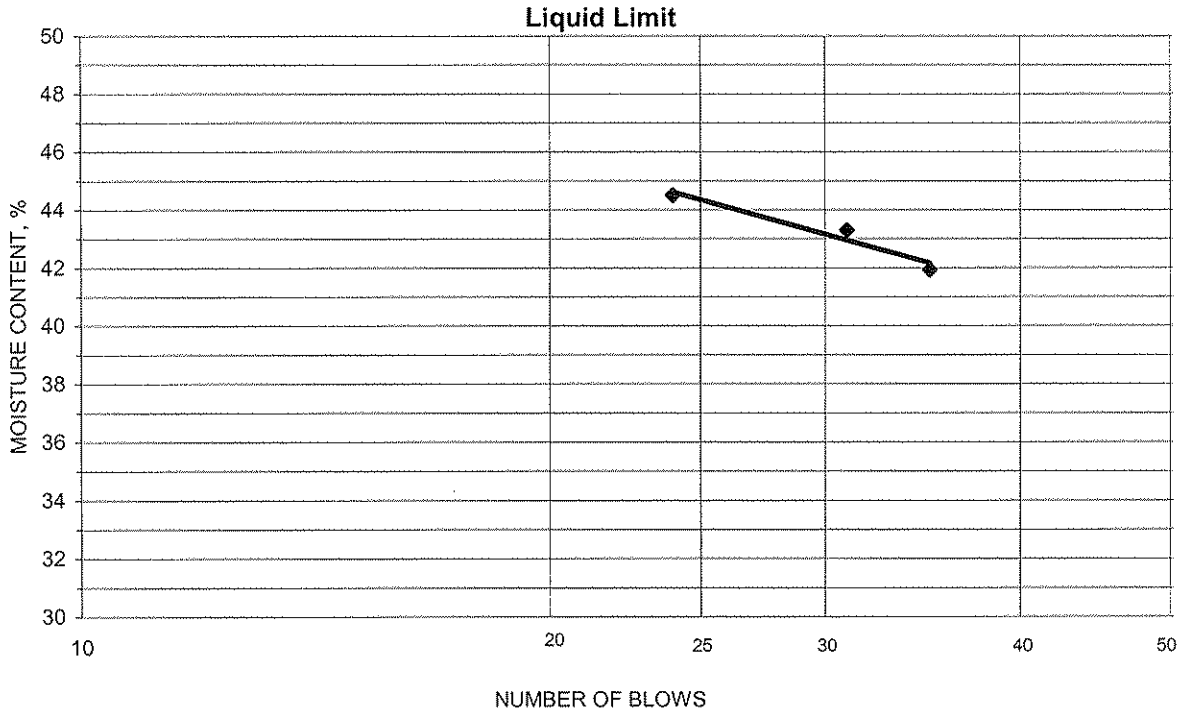
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	B-4, 5.0'-6.5'	Lab ID	7
		% + No. 40	16
Tested By	RC	Test Method	ASTM D 4318 Method A
Test Date	02-18-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
21.19	18.18	11.00	35	41.9	
22.36	18.97	11.14	31	43.3	
22.31	18.91	11.27	24	44.5	44



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
23.14	21.40	11.66	17.9	18	26
21.97	20.42	11.68	17.7		

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-4, 5.0'-6.5'
Lab ID: 7

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	99.6
No. 4	98.4
No. 10	87.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.7

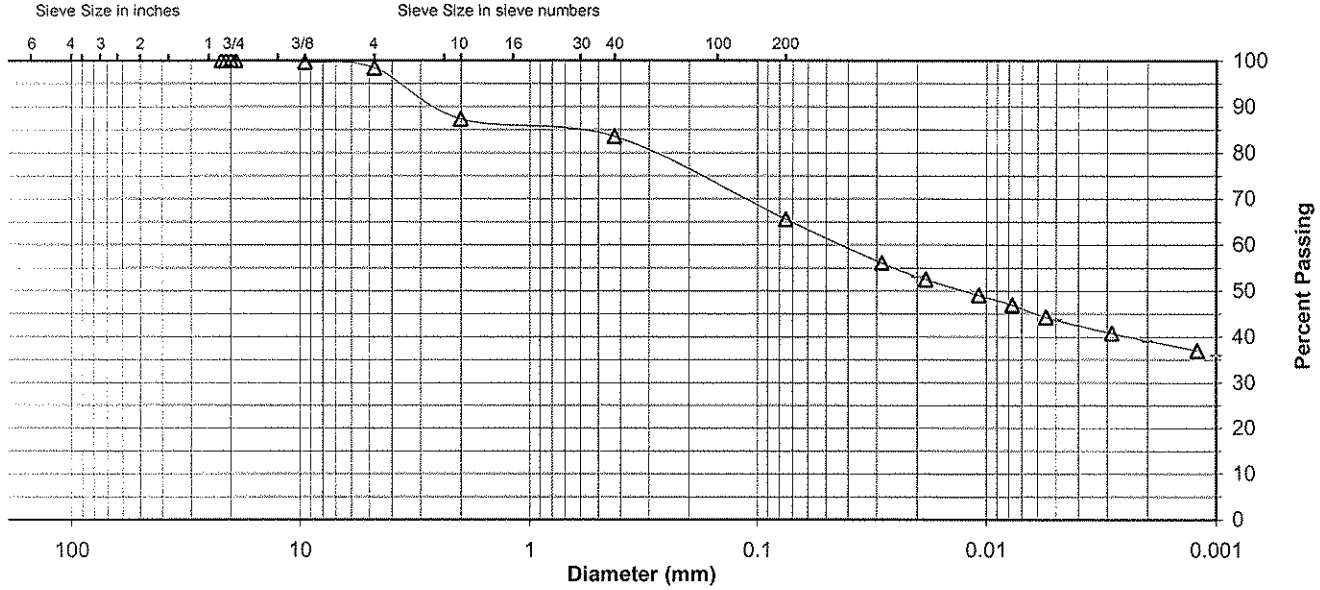
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	83.6
No. 200	65.6
0.02 mm	53.0
0.005 mm	43.7
0.002 mm	39.1
0.001 mm	36.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.6	11.0	3.8	18.0	21.9	43.7

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	12.6	3.8	18.0	26.5	39.1



Comments

Reviewed By

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Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	B-4, 20.0'-21.5'	Lab ID	9
County		Date Received	2-12-09
Sample Type	SPT	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 29.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	100.0
1"	25	---
3/4"	19	89.7
3/8"	9.5	89.7
No. 4	4.75	88.6
No. 10	2	86.4
No. 40	0.425	80.7
No. 200	0.075	60.9
	0.02	46.4
	0.005	37.4
	0.002	34.1
estimated	0.001	31.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	11.4	13.6
Coarse Sand	2.2	5.7
Medium Sand	5.7	---
Fine Sand	19.8	19.8
Silt	23.5	26.8
Clay	37.4	34.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	42
Plastic Limit:	17
Plasticity Index:	25
Activity Index:	0.74

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-7-6 (12)

Comments: MC Dried @ 60° C

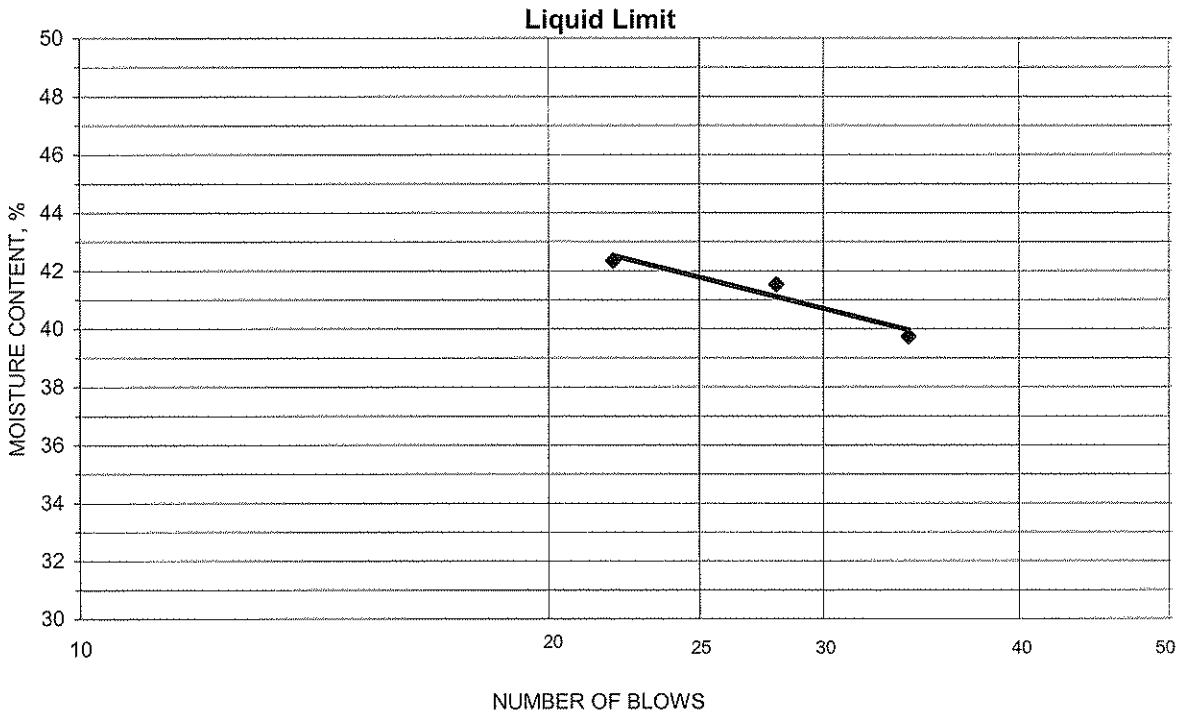
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress			Project No.	171468117
Source	B-4, 20.0'-21.5'			Lab ID	9
				% + No. 40	19
Tested By	RC	Test Method	ASTM D 4318 Method A	Date Received	02-12-2009
Test Date	02-18-2009	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
21.29	18.37	11.02	34	39.7	
22.09	18.86	11.08	28	41.5	
21.30	18.26	11.08	22	42.3	42



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.20	19.73	11.18	17.2	17	25
21.20	19.73	11.02	16.9		

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-4, 20.0'-21.5'
Lab ID: 9

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Rounded and Angular
Particle Hardness: Hard and Durable

Tested By: DG
Test Date: 02-17-2009
Date Received 02-12-2009

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	100.0
1"	---
3/4"	89.7
3/8"	89.7
No. 4	88.6
No. 10	86.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity 2.7

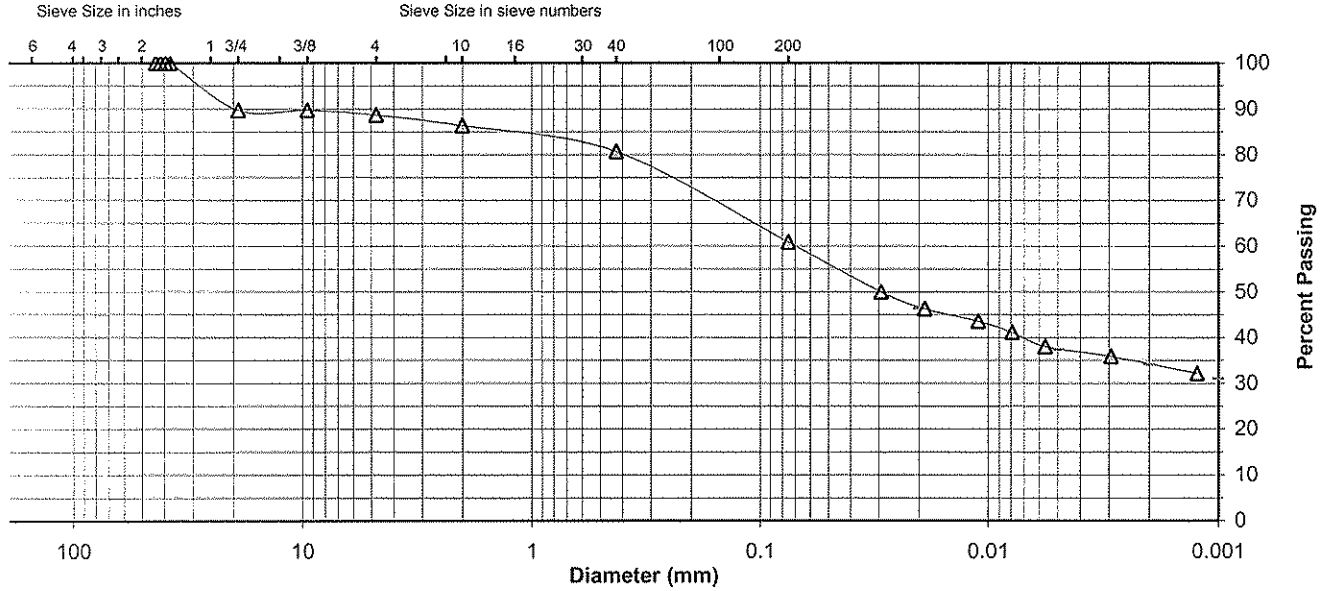
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	80.7
No. 200	60.9
0.02 mm	46.4
0.005 mm	37.4
0.002 mm	34.1
0.001 mm	31.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	10.3	1.1	2.2	5.7	19.8	23.5	37.4

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	13.6	5.7	19.8	26.8	34.1



Comments

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Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-4, 27.5'-29.0'
Lab ID: 10

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 1" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	100.0
3/4"	98.4
3/8"	93.4
No. 4	81.6
No. 10	64.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.7

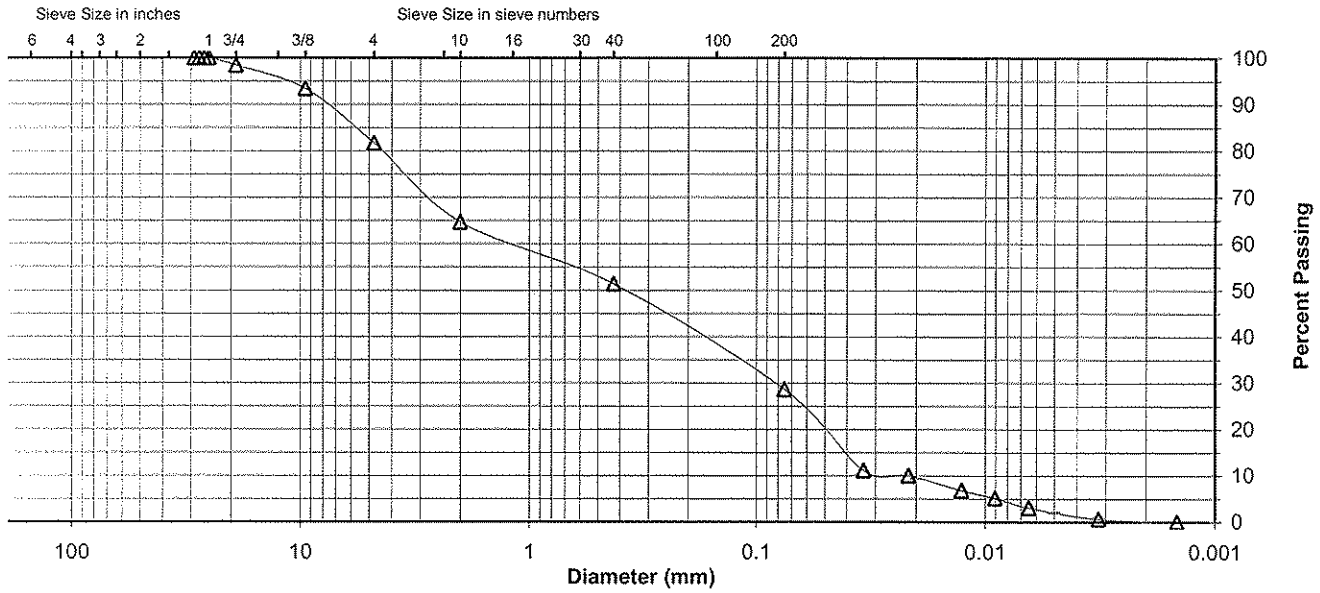
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	51.4
No. 200	28.6
0.02 mm	9.4
0.005 mm	2.0
0.002 mm	0.0
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	1.6	16.8	16.9	13.3	22.8	26.6	2.0

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	35.3	13.3	22.8	28.6	0.0



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	B-4, 40.0'-41.5'	Lab ID	11
County		Date Received	2-12-09
Sample Type	SPT	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	
3/4"	19	
3/8"	9.5	100.0
No. 4	4.75	100.0
No. 10	2	99.8
No. 40	0.425	99.1
No. 200	0.075	42.0
	0.02	18.1
	0.005	11.9
	0.002	8.3
estimated	0.001	7.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.2
Coarse Sand	0.2	0.7
Medium Sand	0.7	---
Fine Sand	57.1	57.1
Silt	30.1	33.7
Clay	11.9	8.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit: ---
Plastic Limit: Non Plastic
Plasticity Index: ---
Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A
Maximum Dry Density (kg/m^3): N/A
Optimum Moisture Content (%): N/A
Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A
Compacted Dry Density (lb/ft^3): N/A
Compacted Moisture Content (%): N/A

Specific Gravity

Estimated

Particle Size: No. 10
Specific Gravity at 20° Celsius: 2.70

Classification

Unified Group Symbol: SM
Group Name: Silty sand

AASHTO Classification: A-4 (0)

Comments: MC Dried @ 60° C

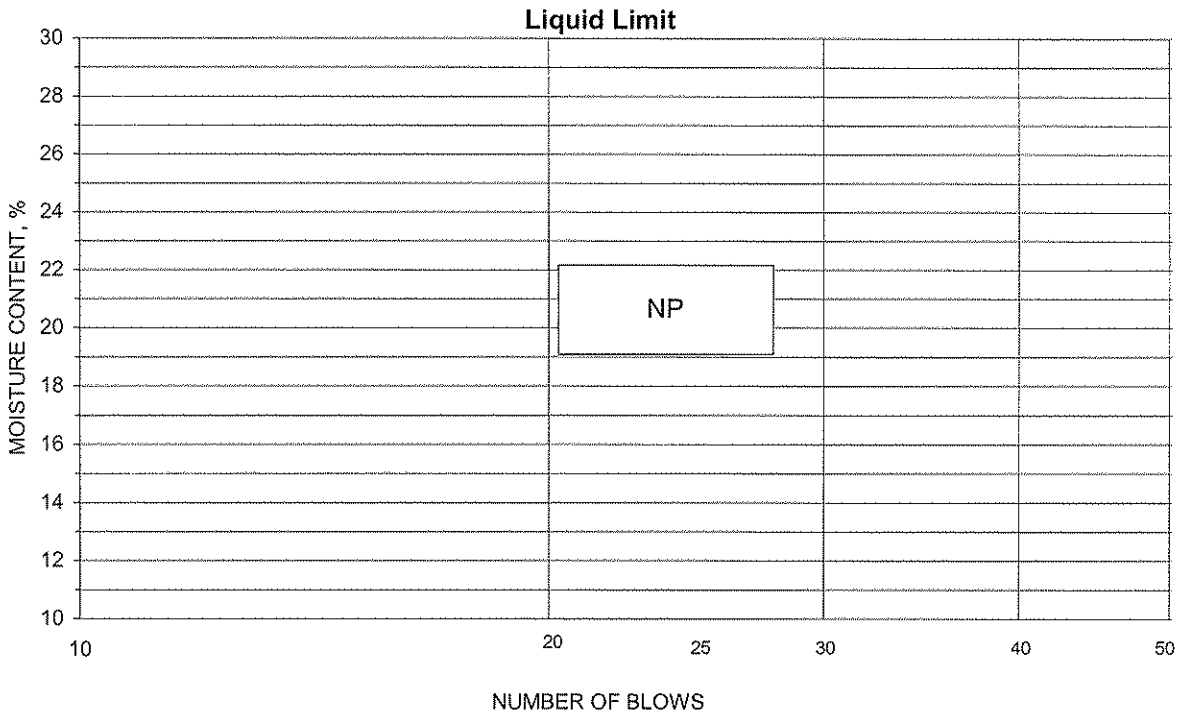
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	B-4, 40.0'-41.5'	Lab ID	11
		% + No. 40	1
Tested By	DRB	Test Method	ASTM D 4318 Method A
Test Date	02-20-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-4, 40.0'-41.5'
Lab ID: 11

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: CSM
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	100.0
No. 4	100.0
No. 10	99.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.7

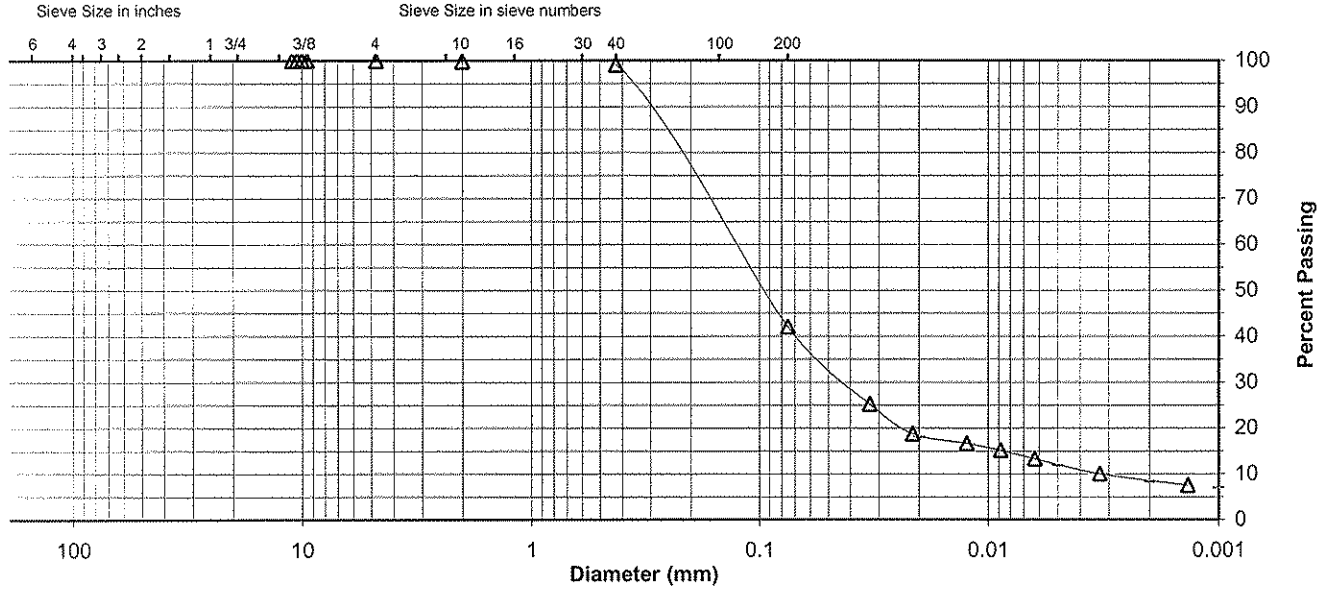
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	99.1
No. 200	42.0
0.02 mm	18.1
0.005 mm	11.9
0.002 mm	8.3
0.001 mm	7.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.2	0.7	57.1	30.1	11.9

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	0.2	0.7	57.1	33.7	8.3



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: PZ-1, 25.0'-26.5'
Lab ID: 13

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Soft

Tested By: DG
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	100.0
No. 4	98.8
No. 10	97.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.7

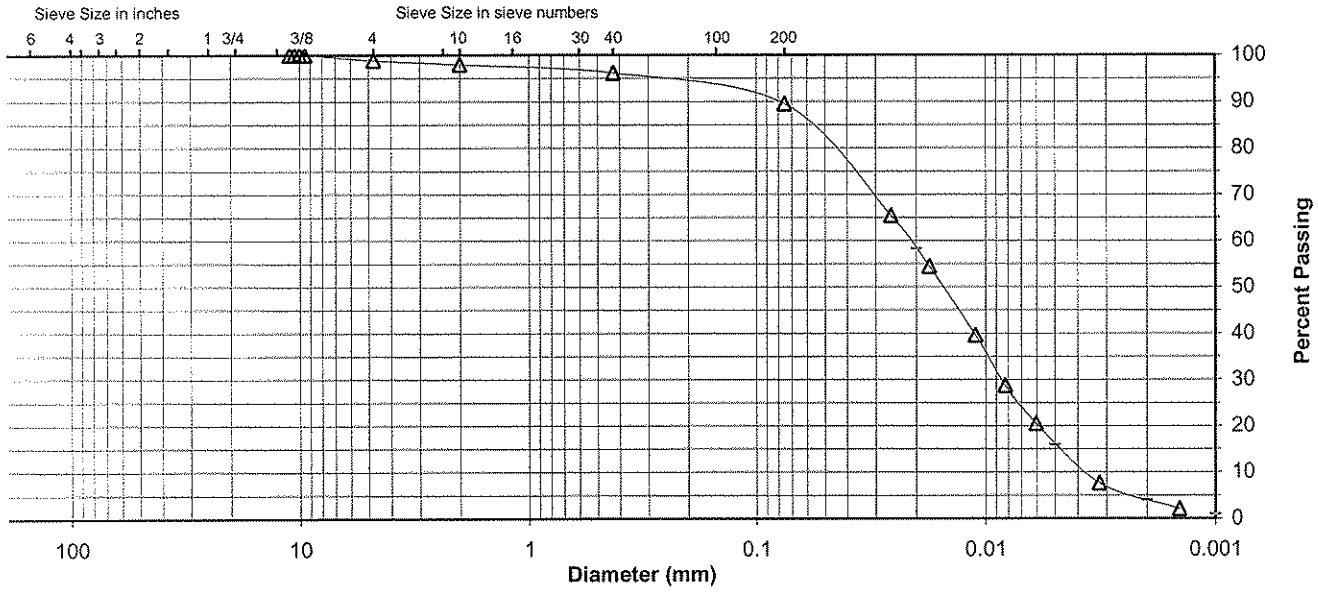
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	96.1
No. 200	89.5
0.02 mm	58.3
0.005 mm	15.9
0.002 mm	4.0
0.001 mm	1.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.2	0.9	1.8	6.6	73.6	15.9

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	2.1	1.8	6.6	85.5	4.0



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: PZ-3, 5.0'-6.5'
Lab ID: 14

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: CSM
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	
No. 4	100.0
No. 10	100.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

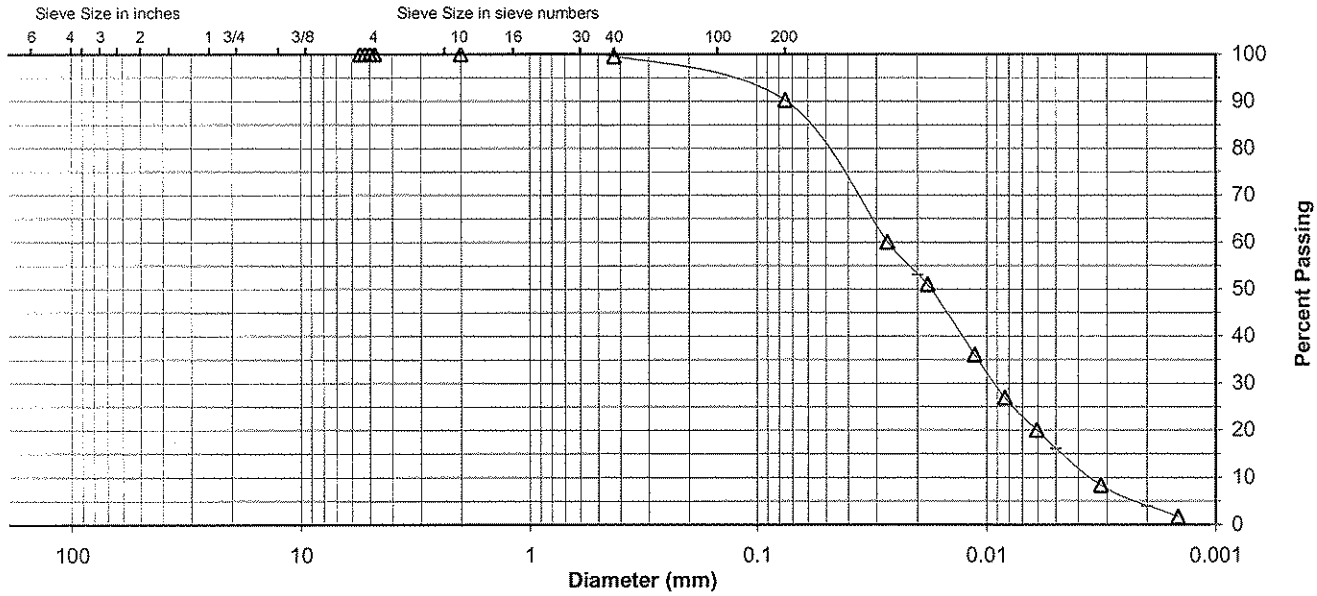
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	99.5
No. 200	90.2
0.02 mm	53.1
0.005 mm	16.1
0.002 mm	3.9
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.0	0.5	9.3	74.1	16.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.0			0.5	9.3	86.3	3.9



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Source: PZ-4, 15.0'-16.5'

Project Number: 171468117
Lab ID: 15

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: CSM
Test Date: 02-17-2009
Date Received 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	99.7
No. 4	99.5
No. 10	99.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

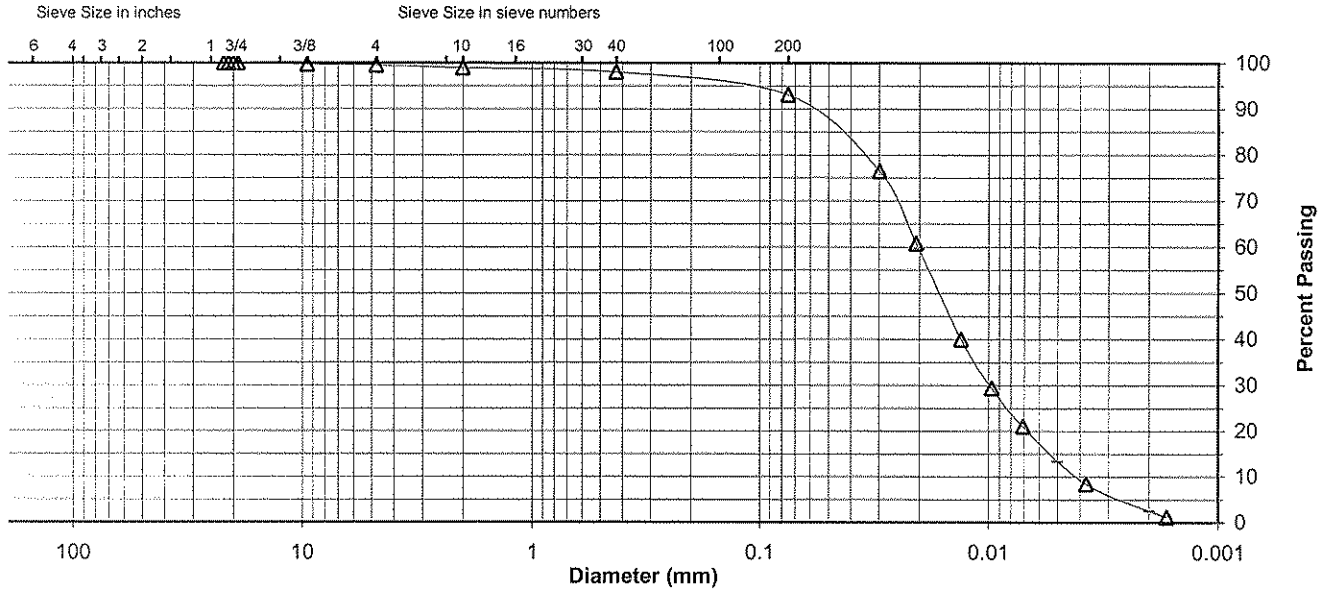
Specific Gravity 2.27

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	98.0
No. 200	93.0
0.02 mm	59.6
0.005 mm	13.4
0.002 mm	2.5
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.5	0.5	1.0	5.0	79.6	13.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.0			1.0	5.0	90.5	2.5



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Source: PZ-5, 15.0'-16.5'

Project Number: 171468117
Lab ID: 16

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: CSM
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	89.2
No. 4	71.1
No. 10	50.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.39

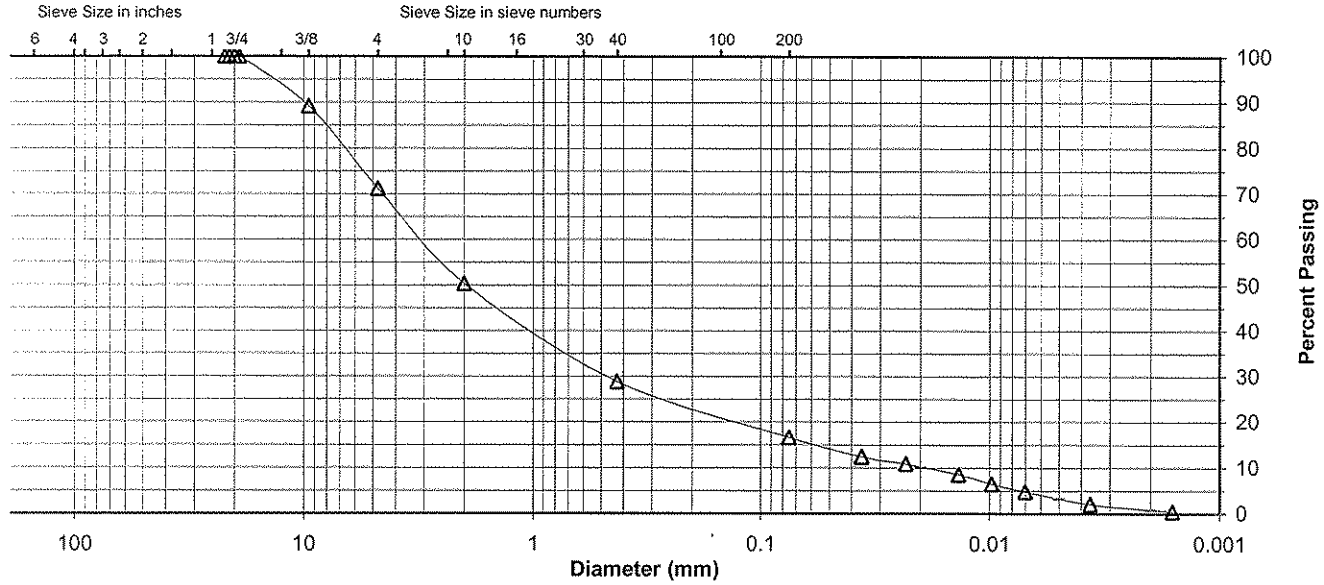
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	28.8
No. 200	16.6
0.02 mm	10.0
0.005 mm	3.2
0.002 mm	0.8
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	28.9	20.8	21.5	12.2	13.4	3.2

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	49.7	21.5	12.2	15.8	0.8



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: PZ-5, 25.0'-26.5'
Lab ID: 17

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: CSM
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	89.0
No. 4	77.3
No. 10	66.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

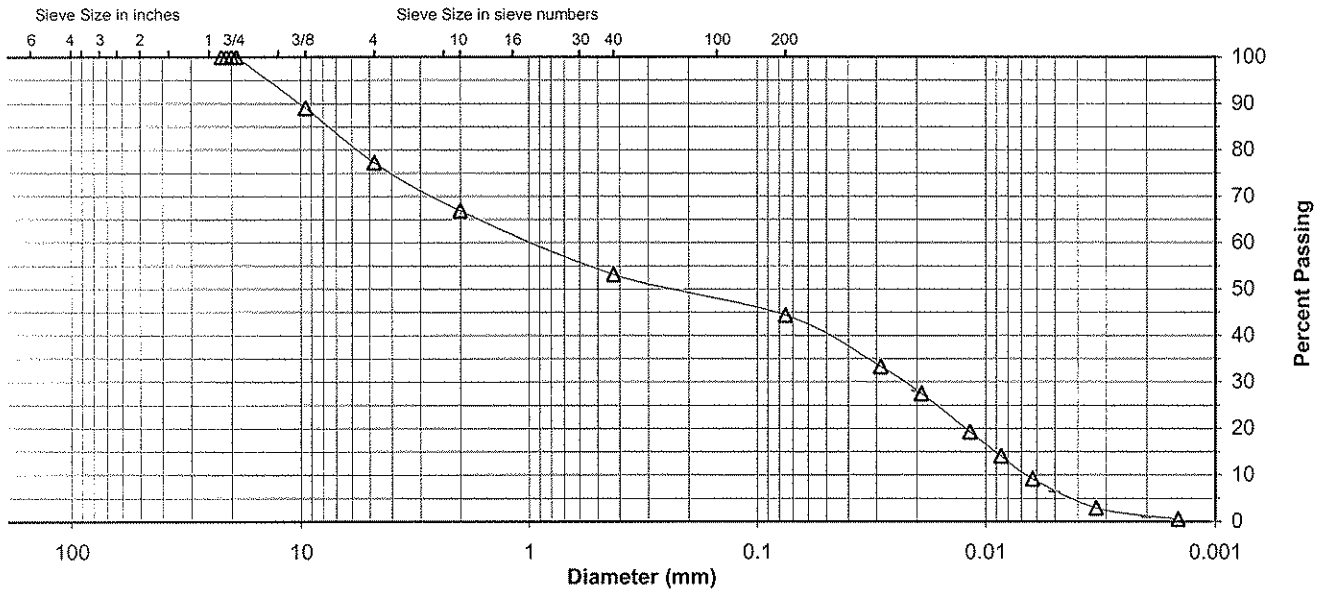
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	53.1
No. 200	44.3
0.02 mm	28.1
0.005 mm	6.4
0.002 mm	1.0
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	22.7	10.4	13.8	8.8	37.9	6.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	33.1			13.8	8.8	43.3	1.0



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	Bull Run Bottom Ash 5000yd3	Lab ID	18
County		Date Received	2-12-09
Sample Type	Bag	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 8.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	100.0
3/4"	19	99.0
3/8"	9.5	93.9
No. 4	4.75	80.5
No. 10	2	60.3
No. 40	0.425	40.9
No. 200	0.075	22.5
	0.02	7.8
	0.005	1.8
	0.002	0.1
estimated	0.001	0.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	19.5	39.7
Coarse Sand	20.2	19.4
Medium Sand	19.4	---
Fine Sand	18.4	18.4
Silt	20.7	22.4
Clay	1.8	0.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit: ---
Plastic Limit: Non Plastic
Plasticity Index: ---
Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A
Maximum Dry Density (kg/m^3): N/A
Optimum Moisture Content (%): N/A
Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A
Compacted Dry Density (lb/ft^3): N/A
Compacted Moisture Content (%): N/A

Specific Gravity

Estimated

Particle Size: No. 10
Specific Gravity at 20° Celsius: 2.39

Classification

Unified Group Symbol: SM
Group Name: Silty sand with gravel

AASHTO Classification: A-1-b (0)

Comments: MC Dried @ 60° C

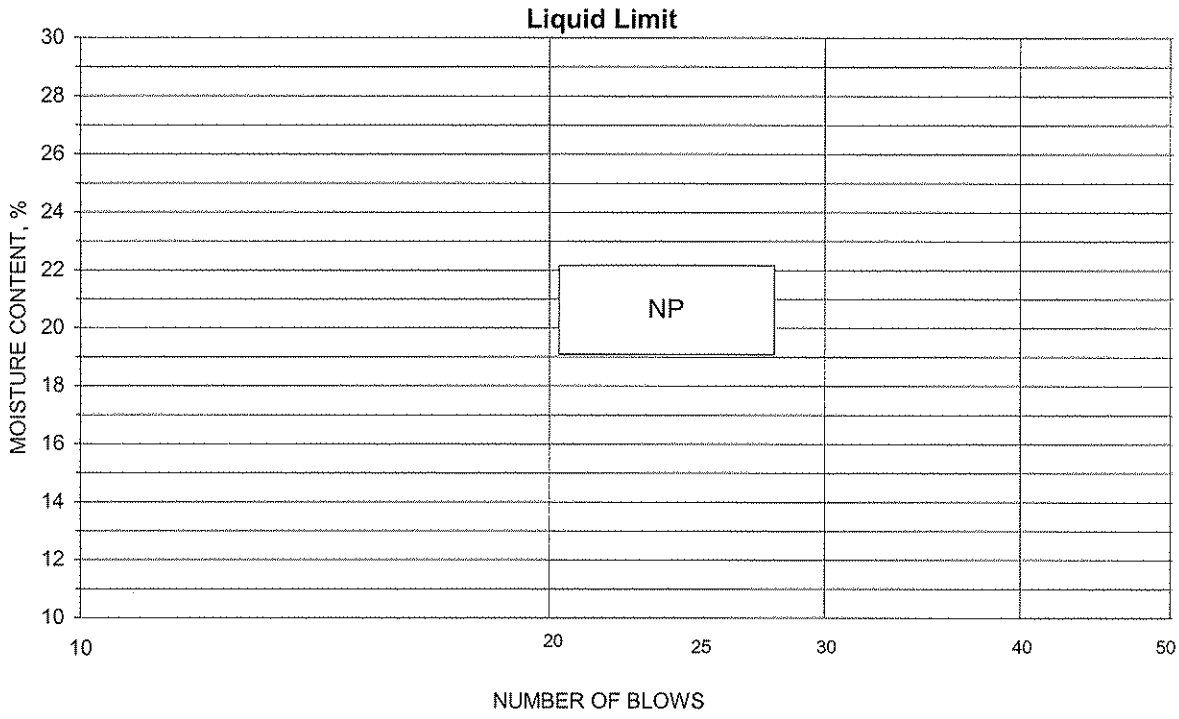
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress			Project No.	171468117
Source	Bull Run Bottom Ash 5000yd3			Lab ID	18
				% + No. 40	59
Tested By	RC	Test Method	ASTM D 4318 Method A	Date Received	02-12-2009
Test Date	02-19-2009	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: Bull Run Bottom Ash 5000yd3
Lab ID: 18

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received 02-12-2009

Maximum Particle size: 1" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	100.0
3/4"	99.0
3/8"	93.9
No. 4	80.5
No. 10	60.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity 2.39

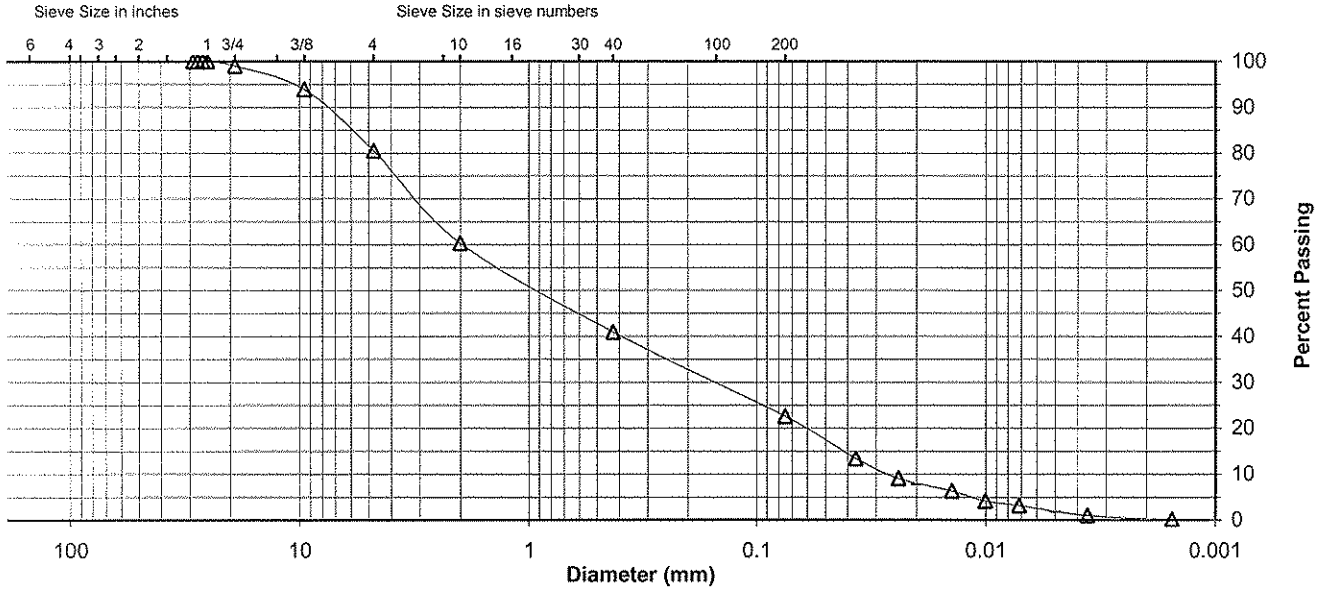
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	40.9
No. 200	22.5
0.02 mm	7.8
0.005 mm	1.8
0.002 mm	0.1
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	1.0	18.5	20.2	19.4	18.4	20.7	1.8

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	39.7	19.4	18.4	22.4	0.1



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	Bull Run Bottom Ash 7000yd3	Lab ID	19
County		Date Received	2-12-09
Sample Type	Bag	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 10.3

Particle Size Analysis

Preparation Method: ASTM D 421

Gradation Method: ASTM D 422

Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	100.0
3/4"	19	96.3
3/8"	9.5	90.4
No. 4	4.75	79.7
No. 10	2	59.5
No. 40	0.425	40.2
No. 200	0.075	22.3
	0.02	7.6
	0.005	1.3
	0.002	0.0
estimated	0.001	0.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	20.3	40.5
Coarse Sand	20.2	19.3
Medium Sand	19.3	---
Fine Sand	17.9	17.9
Silt	21.0	22.3
Clay	1.3	0.0

Atterberg Limits

Test Method: ASTM D 4318 Method A

Prepared: Dry

Liquid Limit: ---

Plastic Limit: Non Plastic

Plasticity Index: ---

Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A

Maximum Dry Density (kg/m^3): N/A

Optimum Moisture Content (%): N/A

Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A

Compacted Dry Density (lb/ft^3): N/A

Compacted Moisture Content (%): N/A

Specific Gravity

Test Method: ASTM D 854

Prepared: Dry

Particle Size: No. 10

Specific Gravity at 20° Celsius: 2.39

Classification

Unified Group Symbol: SM

Group Name: Silty sand with gravel

AASHTO Classification: A-1-b (0)

Comments: MC Dried @ 60° C

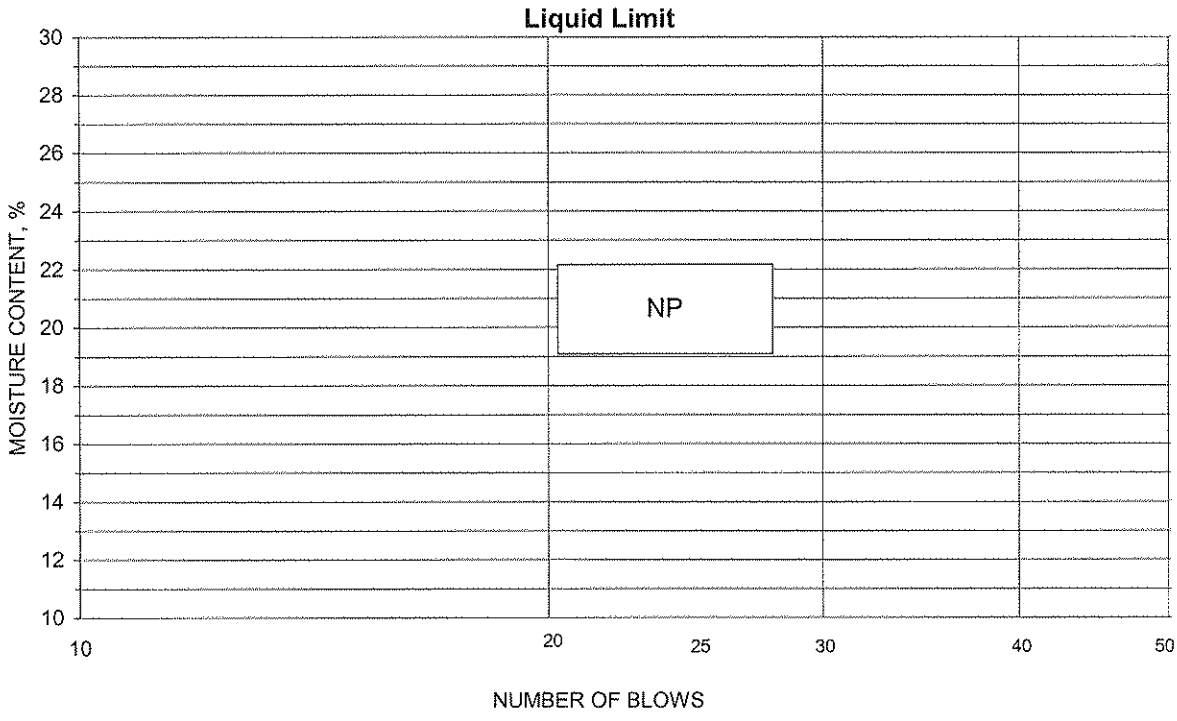
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	Bull Run Bottom Ash 7000yd3	Lab ID	19
		% + No. 40	60
Tested By	RC	Test Method	ASTM D 4318 Method A
Test Date	02-19-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: Bull Run Bottom Ash 7000yd3
Lab ID: 19

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 1" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	100.0
3/4"	96.3
3/8"	90.4
No. 4	79.7
No. 10	59.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.39

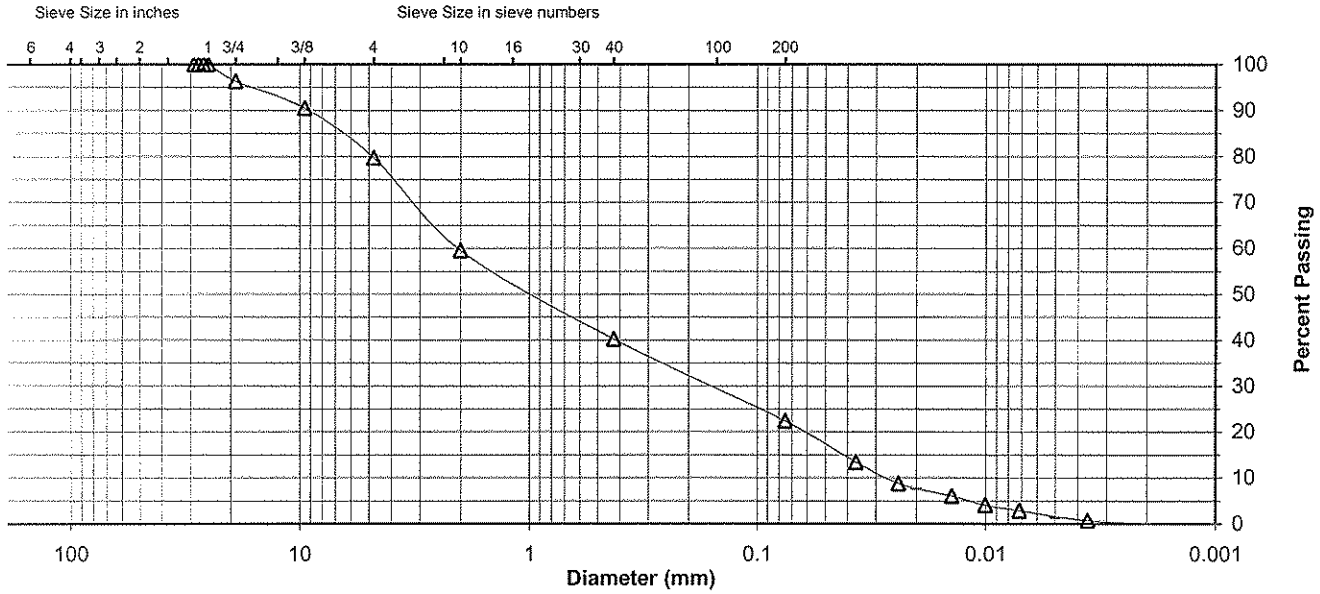
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	40.2
No. 200	22.3
0.02 mm	7.6
0.005 mm	1.3
0.002 mm	0.0
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	3.7	16.6	20.2	19.3	17.9	21.0	1.3

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	40.5	19.3	17.9	22.3	0.0



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	Bull Run Bottom Ash 13000yd3	Lab ID	20
County		Date Received	2-12-09
Sample Type	Bag	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 13.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	100.0
3/4"	19	94.8
3/8"	9.5	90.1
No. 4	4.75	78.9
No. 10	2	59.7
No. 40	0.425	42.5
No. 200	0.075	25.0
	0.02	9.0
	0.005	1.6
	0.002	0.4
estimated	0.001	0.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	21.1	40.3
Coarse Sand	19.2	17.2
Medium Sand	17.2	---
Fine Sand	17.5	17.5
Silt	23.4	24.6
Clay	1.6	0.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit: ---
Plastic Limit: Non Plastic
Plasticity Index: ---
Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A
Maximum Dry Density (kg/m^3): N/A
Optimum Moisture Content (%): N/A
Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A
Compacted Dry Density (lb/ft^3): N/A
Compacted Moisture Content (%): N/A

Specific Gravity

Estimated

Particle Size: No. 10
Specific Gravity at 20° Celsius: 2.39

Classification

Unified Group Symbol: SM
Group Name: Silty sand with gravel

AASHTO Classification: A-1-b (0)

Comments: MC Dried @ 60° C

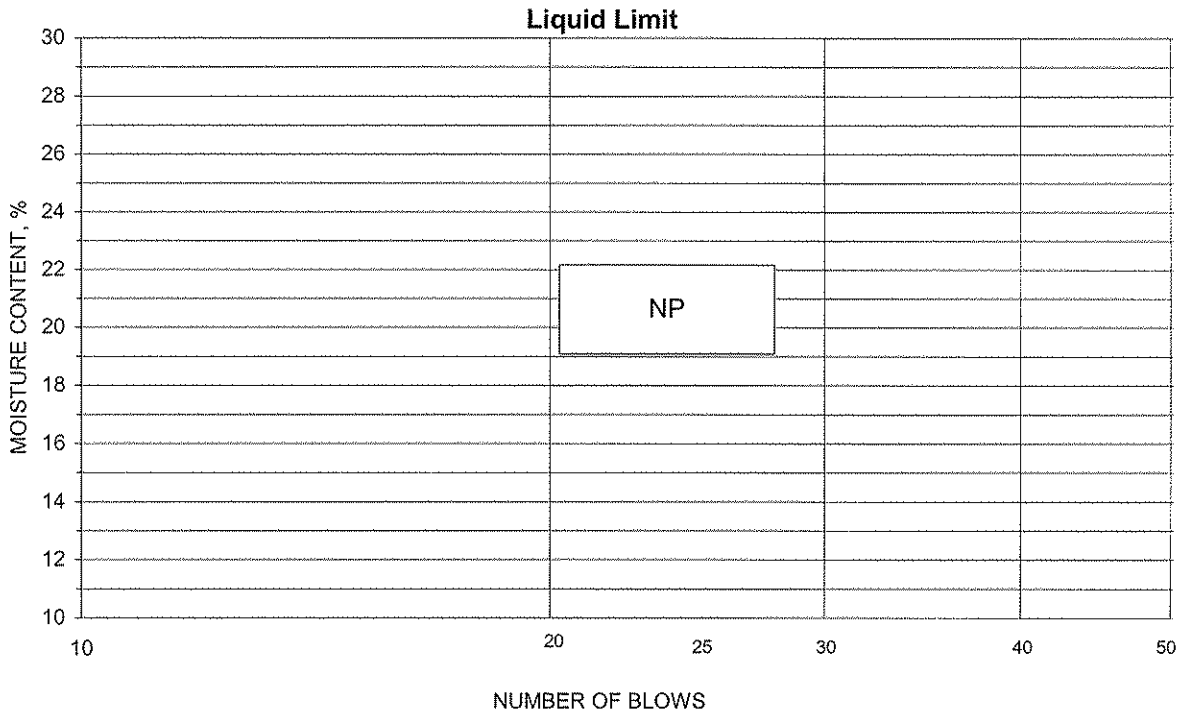
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	Bull Run Bottom Ash 13000yd3	Lab ID	20
		% + No. 40	58
Tested By	RC	Test Method	ASTM D 4318 Method A
Test Date	02-19-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: Bull Run Bottom Ash 13000yd3
Lab ID: 20

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 1" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	100.0
3/4"	94.8
3/8"	90.1
No. 4	78.9
No. 10	59.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

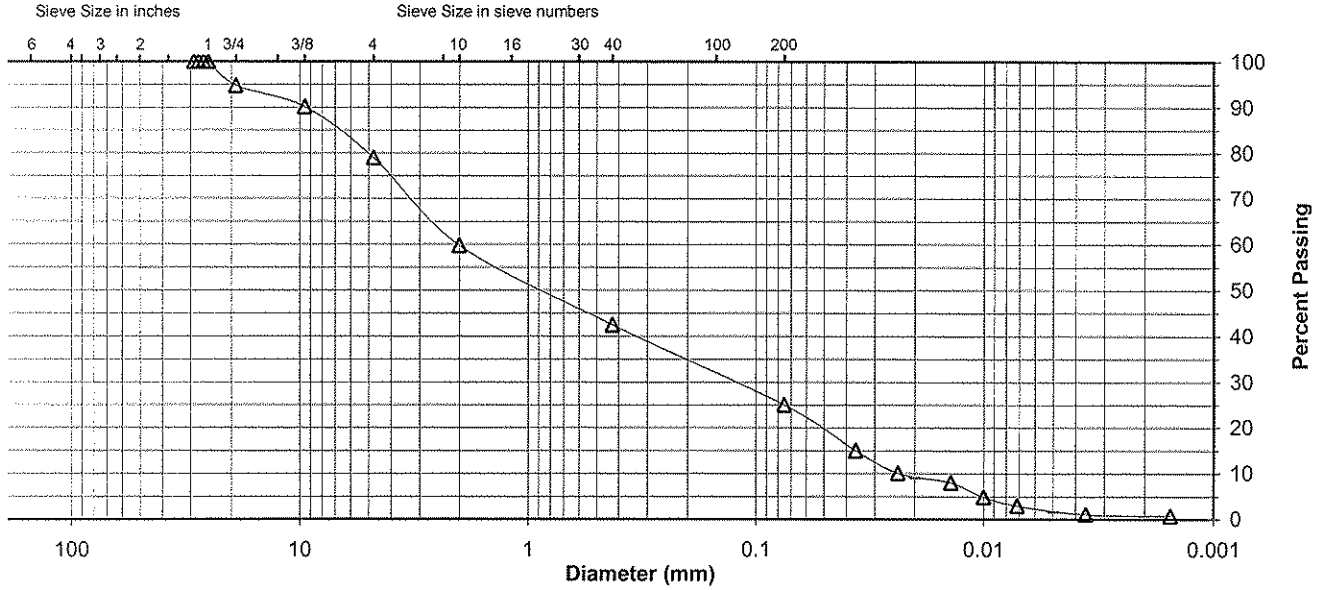
Specific Gravity: 2.39

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	42.5
No. 200	25.0
0.02 mm	9.0
0.005 mm	1.6
0.002 mm	0.4
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	5.2	15.9	19.2	17.2	17.5	23.4	1.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	40.3			17.2	17.5	24.6	0.4



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	Soil Cover over Dike D	Lab ID	21
County		Date Received	2-12-09
Sample Type	Bag	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 27.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	
3/4"	19	100.0
3/8"	9.5	99.0
No. 4	4.75	98.2
No. 10	2	82.2
No. 40	0.425	78.9
No. 200	0.075	62.9
	0.02	53.7
	0.005	41.4
	0.002	36.0
estimated	0.001	32.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.8	17.8
Coarse Sand	16.0	3.3
Medium Sand	3.3	---
Fine Sand	16.0	16.0
Silt	21.5	26.9
Clay	41.4	36.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	50
Plastic Limit:	24
Plasticity Index:	26
Activity Index:	0.72

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CH/CL

Group Name: Sandy fat clay

AASHTO Classification: A-7-6 (15)

Comments: MC Dried @ 60° C

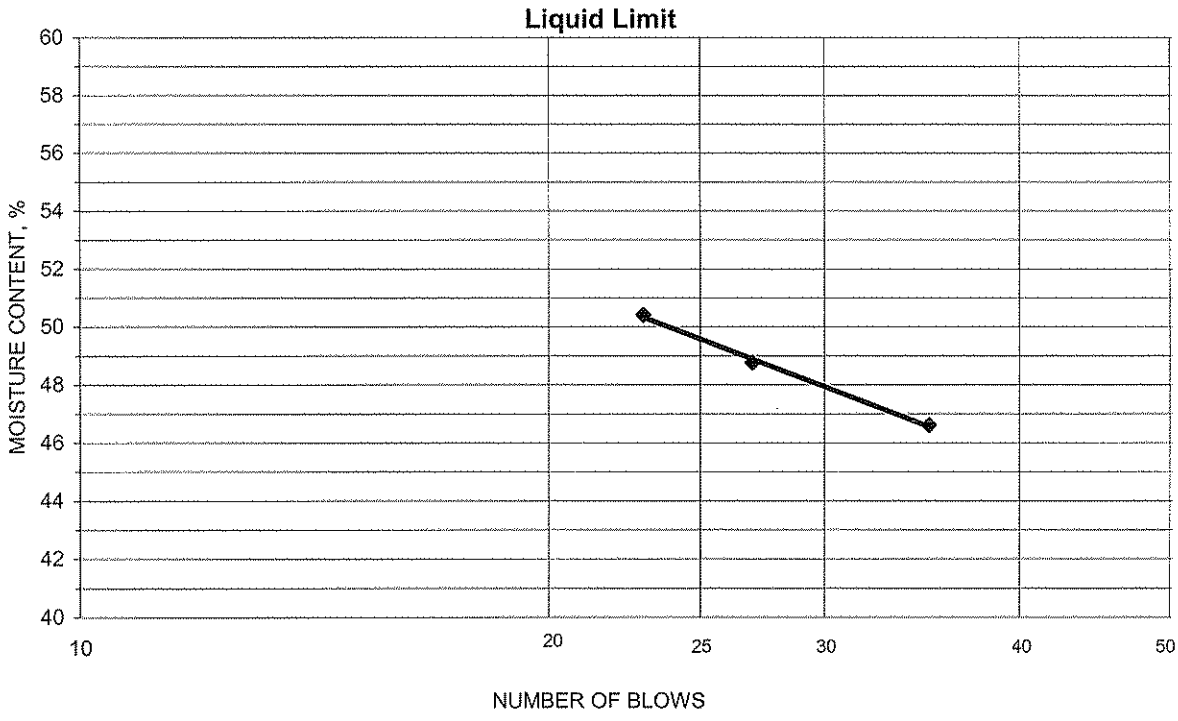
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress			Project No.	171468117
Source	Soil Cover over Dike D			Lab ID	21
				% + No. 40	21
Tested By	RC	Test Method	ASTM D 4318 Method A	Date Received	02-12-2009
Test Date	02-18-2009	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
21.16	17.94	11.03	35	46.6	
21.30	17.98	11.17	27	48.8	
22.35	18.58	11.10	23	50.4	50



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
22.73	20.55	11.62	24.4	24	26
23.26	20.95	11.46	24.3		

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: Soil Cover over Dike D
Lab ID: 21

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	99.0
No. 4	98.2
No. 10	82.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

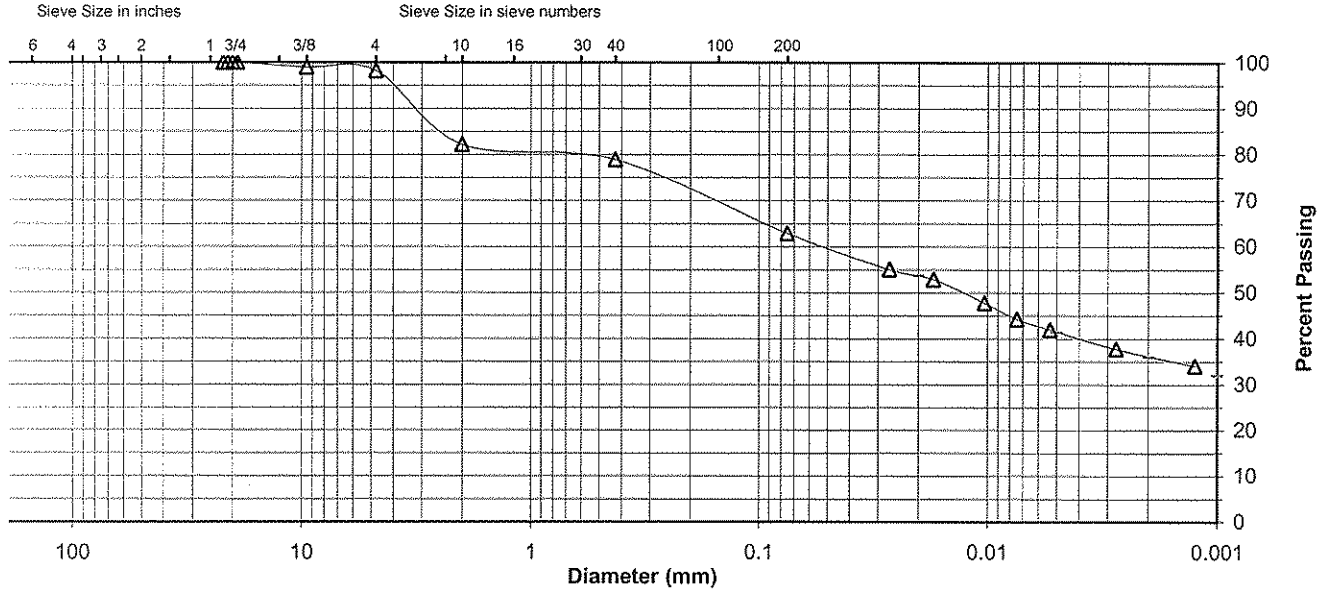
Specific Gravity 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	78.9
No. 200	62.9
0.02 mm	53.7
0.005 mm	41.4
0.002 mm	36.0
0.001 mm	32.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.8	16.0	3.3	16.0	21.5	41.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	17.8			3.3	16.0	26.9	36.0



Comments

Reviewed By

Stantec

Summary of Soil Tests

Project Name	Kingston Fossil Plant Dike D Buttress	Project Number	171468117
Source	PZ7, 10.0'	Lab ID	22
County		Date Received	2-12-09
Sample Type	Bag	Date Reported	2-26-09

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.5

Particle Size Analysis

Preparation Method: ASTM D 421

Gradation Method: ASTM D 422

Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
3"	75	
2"	50	
1 1/2"	37.5	
1"	25	
3/4"	19	100.0
3/8"	9.5	98.1
No. 4	4.75	95.5
No. 10	2	89.5
No. 40	0.425	84.4
No. 200	0.075	76.9
	0.02	59.6
	0.005	18.2
	0.002	4.2
estimated	0.001	0.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.5	10.5
Coarse Sand	6.0	5.1
Medium Sand	5.1	---
Fine Sand	7.5	7.5
Silt	58.7	72.7
Clay	18.2	4.2

Atterberg Limits

Test Method: ASTM D 4318 Method A

Prepared: Dry

Liquid Limit: ---

Plastic Limit: Non Plastic

Plasticity Index: ---

Activity Index: N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3): N/A

Maximum Dry Density (kg/m^3): N/A

Optimum Moisture Content (%): N/A

Over Size Correction %: N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A

Compacted Dry Density (lb/ft^3): N/A

Compacted Moisture Content (%): N/A

Specific Gravity

Test Method: ASTM D 854

Prepared: Dry

Particle Size: No. 10

Specific Gravity at 20° Celsius: 2.31

Classification

Unified Group Symbol: ML

Group Name: Silt with sand

AASHTO Classification: A-4 (0)

Comments: MC Dried @ 60° C

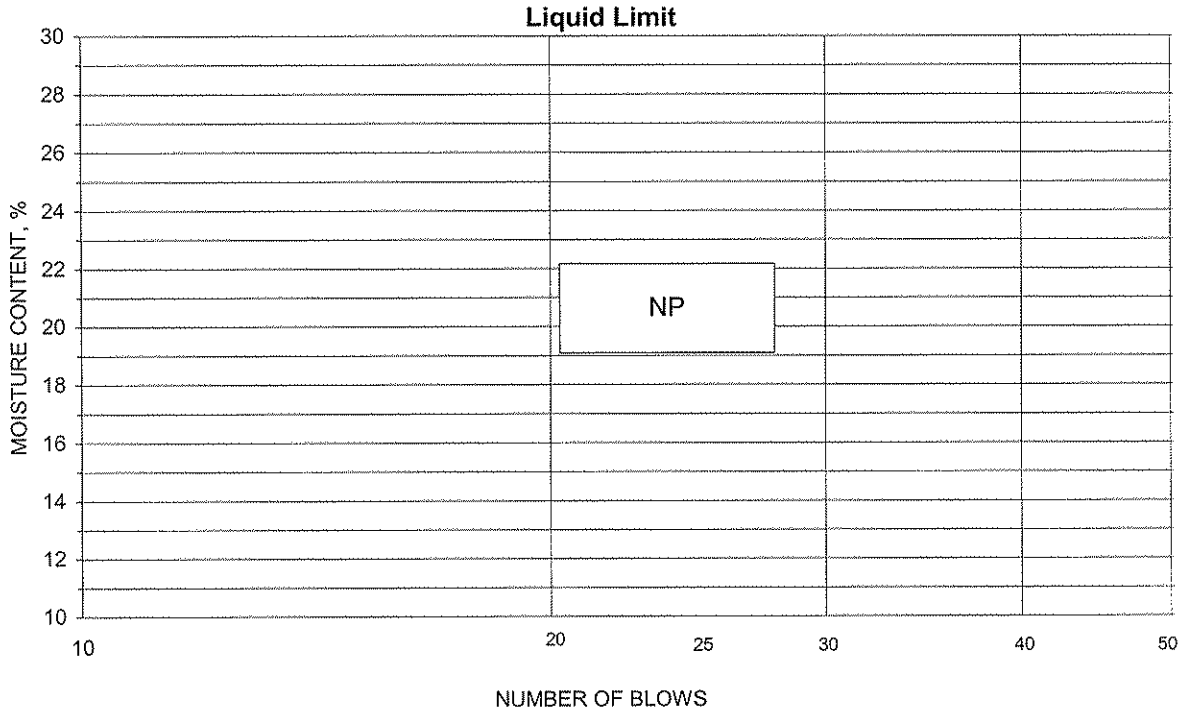
Reviewed by:

Stantec

ATTERBERG LIMITS

Project	Kingston Fossil Plant Dike D Buttress	Project No.	171468117
Source	PZ7, 10.0'	Lab ID	22
		% + No. 40	16
Tested By	DRB	Test Method	ASTM D 4318 Method A
Test Date	02-20-2009	Prepared	Dry
		Date Received	02-12-2009

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By _____

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: PZ7, 10.0'
Lab ID: 22

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	98.1
No. 4	95.5
No. 10	89.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

Specific Gravity: 2.31

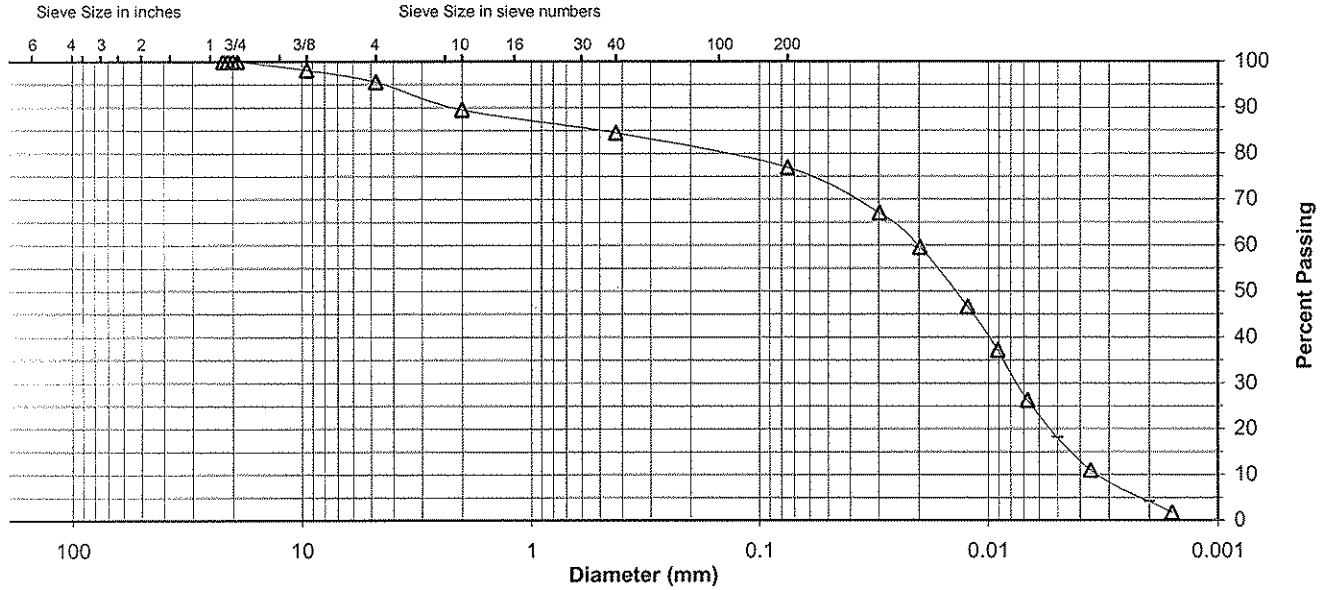
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	84.4
No. 200	76.9
0.02 mm	59.6
0.005 mm	18.2
0.002 mm	4.2
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.5	6.0	5.1	7.5	58.7	18.2

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	10.5	5.1	7.5	72.7	4.2



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: PZ-7, 15.0'-16.5'
Lab ID: 23

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: CSM
Test Date: 02-17-2009
Date Received: 02-12-2009

Maximum Particle size: 1" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	100.0
3/4"	99.2
3/8"	96.9
No. 4	94.1
No. 10	87.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

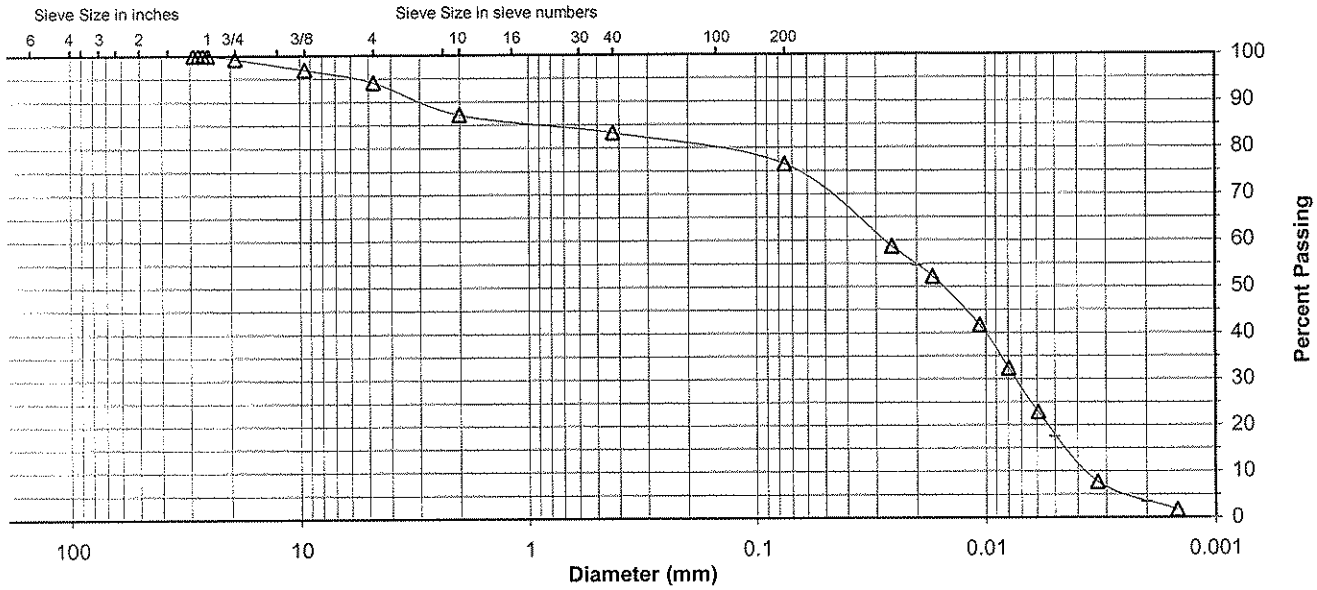
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	83.2
No. 200	76.4
0.02 mm	54.7
0.005 mm	17.6
0.002 mm	3.4
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.8	5.1	7.0	3.9	6.8	58.8	17.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	12.9			3.9	6.8	73.0	3.4



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-2, 37.5'-39.0', 40.0'-41.5'
Lab ID: 27

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	
No. 4	100.0
No. 10	99.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

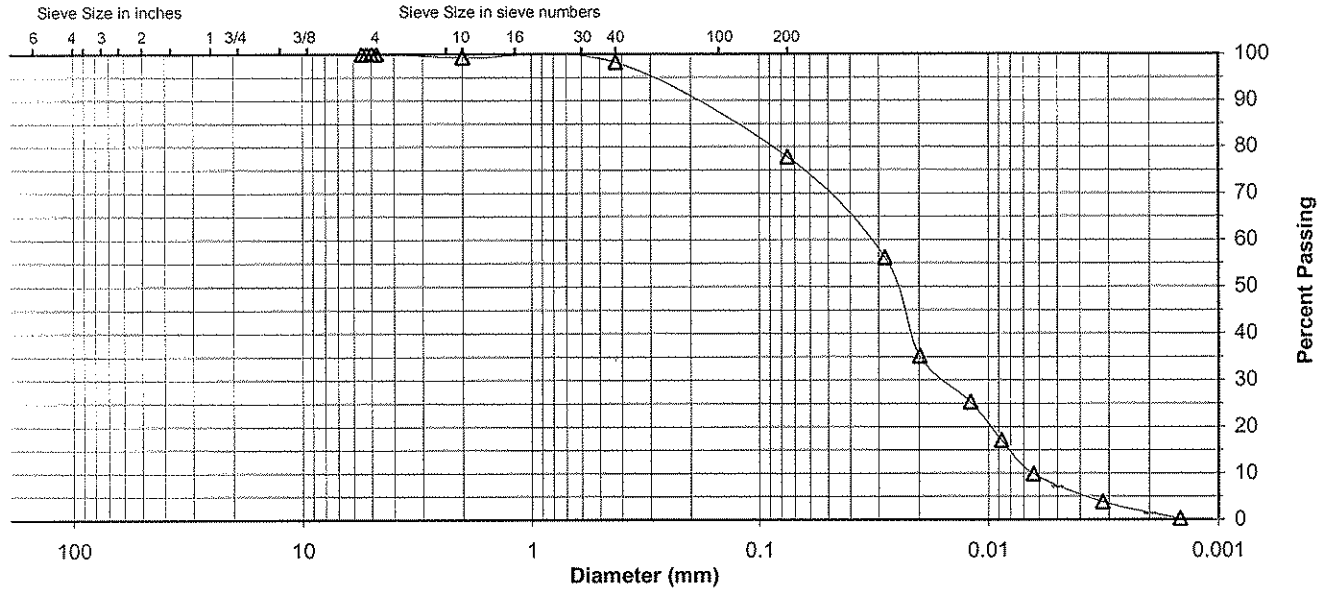
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	98.2
No. 200	77.7
0.02 mm	34.7
0.005 mm	7.1
0.002 mm	1.4
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.8	1.0	20.5	70.6	7.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.8			1.0	20.5	76.3	1.4



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: B-4, 7.5'-9.0', 10.0'-11.5'
Lab ID: 28

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	100.0
1"	92.2
3/4"	92.2
3/8"	85.7
No. 4	74.3
No. 10	56.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

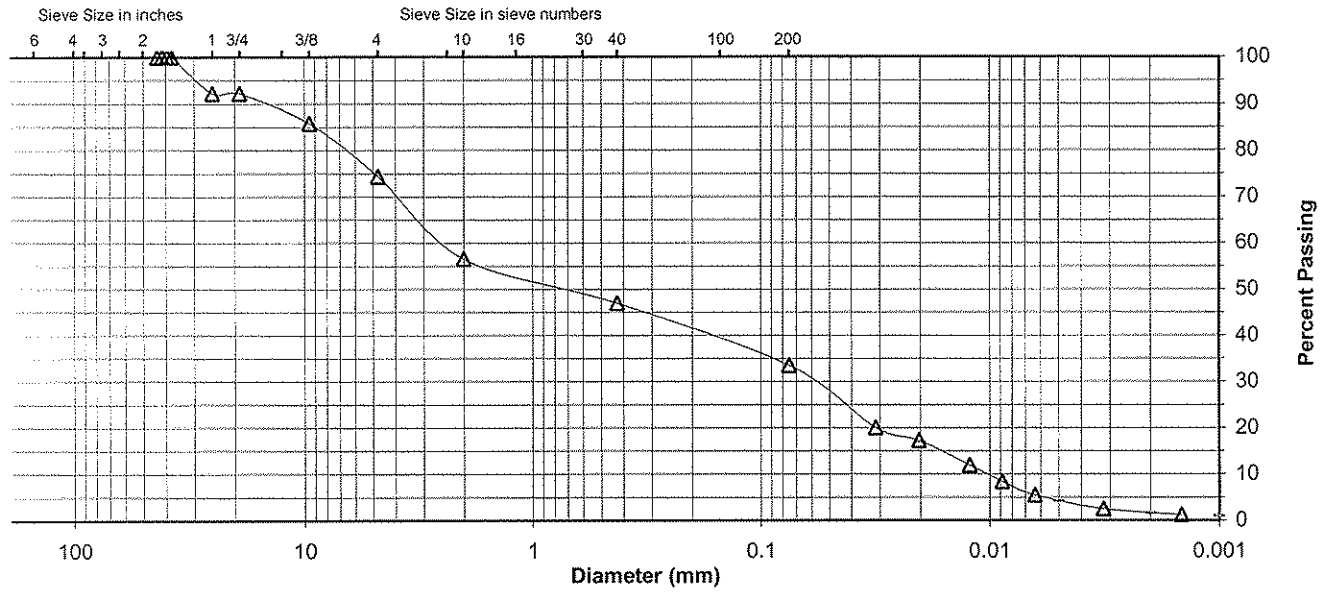
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	47.0
No. 200	33.4
0.02 mm	17.0
0.005 mm	4.2
0.002 mm	1.6
0.001 mm	1.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	7.8	17.9	17.8	9.5	13.6	29.2	4.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	43.5			9.5	13.6	31.8	1.6



Comments

Reviewed By

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Kingston Fossil Plant Dike D Buttress
Project Number: 171468117
Source: PZ-1, 10.0'-11.5', 15.0'-16.0'
Lab ID: 29

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: RC
Test Date: 02-13-2009
Date Received: 02-12-2009

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	91.9
No. 4	84.5
No. 10	67.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on: Total Sample

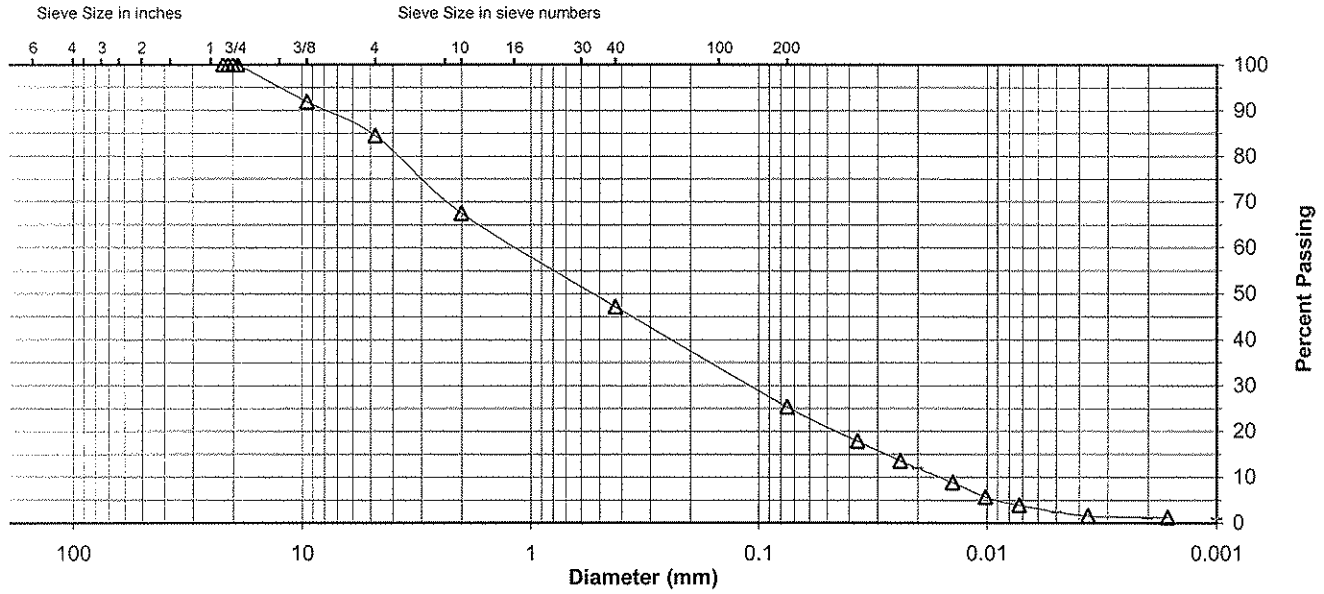
Specific Gravity: 2.35

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	47.1
No. 200	25.4
0.02 mm	12.0
0.005 mm	2.4
0.002 mm	1.1
0.001 mm	1.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	15.5	17.0	20.4	21.7	23.0	2.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	32.5			20.4	21.7	24.3	1.1



Comments

Reviewed By

Appendix H

As-Built Drawings and Survey Data

Dingrando, Jeff

From:	Cade, Mark [MSCADE@mactec.com]
Sent:	Monday, January 19, 2009 3:12 PM
To:	Andrew, Jim; Dingrando, Jeff
Cc:	jrobinson@tva.gov; Workman, William B II; mwstrunk@tva.gov; Campbell, Kelvin; Tockstein, Carl; Gary Melton; jeffery.paris@worleyparsons.com; rachel.combs@worleyparsons.com; Mason, John
Subject:	Drainage Blanket As-Built Data for Dike "D" Buttress Area with Other Survey Information
Importance:	High
Attachments:	2009-01-19 Dike D as-built points of drainage blanket, pizometers, pipe.doc

Jeff/Jim:

Attached is the as-built data for Dike “D” Buttress area’s drainage blanket, piezometers (location and ground shot elevation on the drainage blanket), cross drain pipe between Cell 3 and the Dredge Pond, and water level data in the Dredge Pond to the east and Watts Bar Lake area directly north of the buttress area. The data was collected 14 & 19 January 2009 by Brent Smith, HED on-site surveyor.

I have highlighted the specific as-built data, and included the Worley-Parsons’ baseline Stationing for the area with corresponding coordinates.

If you have any questions, let me know. MARK

<<2009-01-19 Dike D as-built points of drainage blanket, pizometers, pipe.doc>>

Dike “D” Buttress As-Built Survey of Drainage Blanket, Piezometers, Cross Drain Pipe Between Cell 3 and The Dredge Pond, and Water Level Data
Data collected 14 & 19 January 2009

```
Header      Version     6
Header      Distance Unit     US Survey Feet
Header      Angle Unit  Degrees
Header      Coordinate Order  P, N, E, Z, D
Header      Stationing  0+00.00
Header      Grid Coordinate   North and East

Record Type Sub Type    Point Name  Line Name   Point Code  Measured N  Measured
E     Measured Elv      Precision H Precision V Design N    Design E    Design
Elv   Cut/Fill (+/-)    Horz Deviation    Design Station    Design Offset
      Measured Station  Measured Offset   Tolerance in/high/low   High Tolerance
      Low Tolerance     Antenna Target Height   Local Time  Precision Type    HA
/ Lat VA / Long   SD / WGSHt  Date  Unused      Unused      Unused      Unused
      Unused      Unused      Unused      Unused      Custom1     Custom2
      Custom3     Custom4     Custom5     Custom6     Custom7     Custom8
      Custom9
```

Dike “D” Buttress Stations (from Worley-Parsons’s design drawings of 2 January 2009) with Northing and Easting Coordinates

point	Station	northing	easting
1	0+00	557,228.90	2,441,972.18
2	0+50	557,186.10	2,441,946.33
3	1+00	557,143.31	2,441,920.47
4	1+50	557,100.51	2,441,894.61
5	2+00	557,057.72	2,441,868.76
6	2+50	557,014.92	2,441,842.90
7	3+00	556,972.13	2,441,817.04
8	3+50	556,929.33	2,441,791.19
9	4+00	556,886.54	2,441,765.33
10	4+50	556,843.74	2,441,739.47
11	5+00	556,800.95	2,441,713.62
12	5+50	556,758.15	2,441,687.76
13	6+00	556,715.36	2,441,661.90
14	6+50	556,672.56	2,441,636.05
15	7+00	556,629.77	2,441,610.19
16	7+50	556,586.97	2,441,584.33
17	8+00	556,544.18	2,441,558.48

Water Elevation in the Dike “D” Buttress Area
Data collected 19 January 2009, 0900 to 1100-hours EST

Dredge pond water elevation just east of Dike “D” buttress area: **761.6**

Water elevation in Watts Bar Lake area just of Dike “D” buttress area: **741.7**

Exiting cross drain pipes in Dike “D” buttress area

Data collected 19 January 2009

Topo east of pipe 1
(ground shot of pipe 1 east end location, no invert elevation collected)
556863.09 2441823.96 761.17 0.02 0.03
6.56 08:32:52.2 RTK 35.544555098
-84.302842395 662.05 01/19/2009

Topo west invert of pipe 1 556933.82 2441718.53 761.54 0.02
0.03
6.56 08:37:18.0 RTK 35.544626615 -84.302969262 662.43
01/19/2009

Topo east of pipe 2
(ground shot of pipe 2 east end location, no invert elevation collected)
556560.09 2441620.82 765.16 0.03 0.03
6.56 09:55:09.4 RTK 35.544258525
-84.303094891 666.05 01/19/2009

Topo west invert of pipe 2 556627.62 2441510.99 765.85 0.02
0.03
6.56 08:40:48.4 RTK 35.544326939 -84.303227152 666.74
01/19/2009

As-built survey of Dike “D” buttress’ piezometers

Data collected 19 January 2009

Topo	Point	pz1		drill points		556636.98	2441500.52	766.87
	0.02	0.03						
		6.56	08:52:02.6	RTK		35.544336348	-84.303239704	667.76
	01/19/2009							
Topo	Point	pz2		drill points		556650.99	2441468.02	765.32
	0.02	0.03						
		6.56	08:54:15.8	RTK		35.544350690	-84.303278957	666.2
	01/19/2009							
Topo	Point	pz3		drill points		556822.89	2441588.49	766.26
	0.02	0.03						
		6.56	09:07:54.2	RTK		35.544518872	-84.303129368	667.14
	01/19/2009							
Topo	Point	pz4		drill points		556814.11	2441602.33	765.96
	0.02	0.03						
		6.56	09:08:26.0	RTK		35.544509983	-84.303112696	666.85
	01/19/2009							
Topo	Point	pz5		drill points		556944.6	2441707.83	763.71
	0.02	0.03						
		6.56	09:24:45.0	RTK		35.544637439	-84.302982060	664.6
	01/19/2009							
Topo	Point	pz6		drill points		556958.41	2441690.9	763.74
	0.02	0.03						
		6.56	09:25:13.2	RTK		35.544651345	-84.303002389	664.62
	01/19/2009							
Topo	Point	pz7		drill points		557088.57	2441818.68	760.05
	0.02	0.03						
		6.56	09:32:44.4	RTK		35.544778145	-84.302844674	660.93
	01/19/2009							
Topo	Point	pz8		drill points		557105.47	2441791.06	759.98
	0.02	0.03						
		6.56	09:33:07.0	RTK		35.544795271	-84.302877944	660.87
	01/19/2009							

As-built survey of Dike “D” buttress drainage blanket

Data collected 14 January 2009

```
Topo  Point topo10            as built    556627.62   2441532.33  774.49
      0.02  0.03
            6.56  10:40:38.6  RTK   35.544326623      -84.303201211     675.37
      01/14/2009

Topo  Point topo11            as built    556667.96   2441550.61  771.94
      0.03  0.04
            6.56  10:41:40.6  RTK   35.544366239      -84.303178251     672.82
      01/14/2009

Topo  Point topo18            as built    556711.94   2441576.04  772.31
      0.03  0.04
            6.56  10:44:48.2  RTK   35.544409344      -84.303146530     673.19
      01/14/2009

Topo  Point topo19            as built    556749.76   2441599.04  771.29
      0.02  0.03
            6.56  10:45:16.8  RTK   35.544446396      -84.303117886     672.18
      01/14/2009

Topo  Point topo26            as built    556803.82   2441615.93  770.3 0.03
      0.04
      6.56  10:48:21.8  RTK   35.544499608      -84.303096356     671.19
      01/14/2009

Topo  Point topo27            as built    556833.89   2441664.91  771.63
      0.02  0.03
            6.56  10:49:07.0  RTK   35.544528601      -84.303036267     672.51
      01/14/2009

Topo  Point topo36            as built    556875.72   2441688.59  772.35
      0.02  0.04
            6.56  10:53:37.0  RTK   35.544569619      -84.303006712     673.24
      01/14/2009

Topo  Point topo37            as built    556915.09   2441724.52  771.88
      0.02  0.04
            6.56  10:54:03.6  RTK   35.544608009      -84.302962321     672.76
      01/14/2009

Topo  Point topo44            as built    556953.82   2441748.06  771.0 0.03
      0.04
      6.56  10:57:29.0  RTK   35.544645955      -84.302932995     671.88
      01/14/2009

Topo  Point topo45            as built    556985.76   2441796.25  774.14
      0.03  0.04
            6.56  10:58:04.2  RTK   35.544676815      -84.302873825     675.03
      01/14/2009
```

Topo Point topo46 as built 556991.1 2441790.05 770.48
0.02 0.04
6.56 10:58:22.8 RTK 35.544682186 -84.302881274 671.37
01/14/2009

Topo Point topo47 as built 557002.54 2441774.4 769.54
0.02 0.04
6.56 10:58:40.6 RTK 35.544693740 -84.302900081 670.42
01/14/2009

Topo Point topo54 as built 557029.8 2441817.99 772.86
0.03 0.05
6.56 11:03:10.0 RTK 35.544720037 -84.302846591 673.74
01/14/2009

Topo Point topo55 as built 557073.82 2441836.86 771.71
0.02 0.04
6.56 11:04:03.0 RTK 35.544763288 -84.302822842 672.6
01/14/2009

Topo Point topo62 as built 557125.42 2441854.62 763.91
0.02 0.03
6.56 11:08:53.0 RTK 35.544814045 -84.302800310 664.8
01/14/2009

Data collected 19 January 2009

Stakeout Point topo2 556574.21 2441501.59 775.98 0.02
0.03 556574.23 2441501.66 775.98 0.0 0.07
In 0.1 6.56 08:42:54.4 RTK 35.544274269 -84.303239564
676.86 01/19/2009

Stakeout Point topo3 556578.67 2441492.07 771.1 0.02 0.04
556578.66 2441492.03 771.0 0.11 0.04 In
0.1 6.56 08:44:23.4 RTK 35.544278814 -84.303251053
671.99 01/19/2009

Stakeout Point topo4 556591.42 2441467.52 770.01 0.02
0.03 556591.37 2441467.48 770.04 -0.03 0.06
In 0.1 6.56 08:45:17.4 RTK 35.544291797 -84.303280661
670.9 01/19/2009

Stakeout Point topo5 556593.07 2441459.12 766.32 0.02
0.03 556593.06 2441459.14 766.27 0.05 0.02
In 0.1 6.56 08:46:16.2 RTK 35.544293553 -84.303290833
667.2 01/19/2009

Stakeout Point topo6 556609.91 2441431.72 765.89 0.02
0.03 556609.87 2441431.66 765.98 -0.1 0.07
In 0.1 6.56 08:47:39.2 RTK 35.544310607 -84.303323830
666.77 01/19/2009

Stakeout Point topo7 556660.62 2441462.47 764.29 0.02
0.03 556660.63 2441462.47 763.41 0.89 0.0
In 0.1 6.56 08:48:28.6 RTK 35.544360298 -84.303285528
665.18 01/19/2009

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Stakeout    Point topo8              556657.32   2441468.05  765.6 0.02  0.04
      556657.32   2441467.94  765.38      0.22  0.11
      Out   0.1         6.56  08:49:15.0  RTK   35.544356948      -84.303278804
      666.48      01/19/2009

Stakeout    Point topo9              556629.59   2441512.59  766.39      0.02
      0.03  556629.61   2441512.6   766.19      0.2   0.02
      In    0.1         6.56  08:50:50.8  RTK   35.544328860      -84.303225173
      667.27      01/19/2009

Stakeout    Point topo12                 556676.08   2441537.63  766.78
      0.02  0.03  556676.06   2441537.62  766.79      -0.01 0.03
            In    0.1         6.56  08:58:04.4  RTK   35.544374462      -
84.303193878      667.67      01/19/2009

Stakeout    Point topo13                 556703.18   2441496.89  765.24
      0.02  0.03  556703.18   2441496.87  765.45      -0.21 0.02
            In    0.1         6.56  08:59:08.4  RTK   35.544401869      -
84.303242908      666.13      01/19/2009

Stakeout    Point topo14                 556707.7    2441490.69  763.05
      0.02  0.03  556707.7    2441490.7   762.45      0.6   0.01
            In    0.1         6.56  09:00:17.0  RTK   35.544406429      -
84.303250354      663.94      01/19/2009

Stakeout    Point topo15                 556744.95   2441510.27  762.26
      0.02  0.03  556744.88   2441510.25  761.51      0.75  0.08
            In    0.1         6.56  09:01:09.4  RTK   35.544442973      -
84.303225876      663.14      01/19/2009

Stakeout    Point topo16                 556735.56   2441518.42  765.69
      0.02  0.03  556735.53   2441518.4   765.87      -0.18 0.03
            In    0.1         6.56  09:01:49.0  RTK   35.544433558      -
84.303216145      666.57      01/19/2009

Stakeout    Point topo17                 556719.91   2441560.05  766.89
      0.02  0.03  556719.94   2441560.03  766.43      0.46  0.04
            In    0.1         6.56  09:02:50.2  RTK   35.544417465      -
84.303165821      667.78      01/19/2009

Stakeout    Point topo20                 556762.68   2441583.21  766.33
      0.03  0.04  556762.63   2441583.21  766.54      -0.21 0.04
            In    0.1         6.56  09:03:45.6  RTK   35.544459410      -
84.303136883      667.21      01/19/2009

Stakeout    Point topo21                 556784.05   2441549.99  765.49
      0.02  0.03  556784.02   2441550.05  766.03      -0.54 0.06
            In    0.1         6.56  09:04:32.6  RTK   35.544481039      -
84.303176876      666.38      01/19/2009

Stakeout    Point topo22                 556792.13   2441537.96  762.37
      0.02  0.03  556792.11   2441537.97  760.99      1.39  0.03
            In    0.1         6.56  09:05:06.2  RTK   35.544489213      -
84.303191347      663.26      01/19/2009
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Stakeout    Point topo23                556834.34   2441561.48  761.75
      0.02  0.03  556834.37   2441561.45  760.99      0.76  0.05
            In    0.1         6.56  09:06:15.6  RTK   35.544530594      -
84.303161985      662.63      01/19/2009

Stakeout    Point topo24                556831.7    2441571.98  765.32
      0.02  0.03  556831.67   2441571.96  765.09      0.22  0.03
            In    0.1         6.56  09:07:15.8  RTK   35.544527827      -
84.303149266      666.2 01/19/2009

Stakeout    Point topo25                556811.45   2441603.24  765.87
      0.02  0.03  556811.41   2441603.33  765.79      0.09  0.1
            Out   0.1         6.56  09:09:33.0  RTK   35.544507336      -
84.303111650      666.76      01/19/2009

Stakeout    Point topo28                556843.91   2441647.64  766.49
      0.02  0.03  556843.92   2441647.59  766.46      0.03  0.05
            In    0.1         6.56  09:11:19.8  RTK   35.544538772      -
84.303057073      667.38      01/19/2009

Stakeout    Point topo29                556853.52   2441634.42  766.23
      0.02  0.03  556853.48   2441634.36  766.21      0.02  0.07
            In    0.1         6.56  09:11:49.4  RTK   35.544548472      -
84.303072966      667.12      01/19/2009

Stakeout    Point topo30                556855.6    2441630.23  765.02
      0.02  0.03  556855.56   2441630.25  764.66      0.35  0.04
            In    0.1         6.56  09:12:17.8  RTK   35.544550590      -
84.303078022      665.9 01/19/2009

Stakeout    Point topo31                556876.14   2441610.82  765.19
      0.02  0.03  556876.09   2441610.81  764.16      1.03  0.05
            In    0.1         6.56  09:13:23.8  RTK   35.544571195      -
84.303101238      666.07      01/19/2009

Stakeout    Point topo32                556881.48   2441594.03  760.23
      0.02  0.03  556881.53   2441594.06  759.85      0.38  0.06
            In    0.1         6.56  09:14:17.4  RTK   35.544576722      -
84.303121553      661.12      01/19/2009

Stakeout    Point topo33                556921.71   2441617.0   759.92
      0.02  0.03  556921.75   2441617.01  759.66      0.26  0.04
            In    0.1         6.56  09:15:05.4  RTK   35.544616161      -
84.303092890      660.81      01/19/2009

Stakeout    Point topo34                556914.71   2441629.06  763.38
      0.02  0.03  556914.66   2441629.04  762.9 0.47  0.06
      In    0.1         6.56  09:15:39.6  RTK   35.544609063      -84.303078364
      664.26      01/19/2009

Stakeout    Point topo35                556890.3    2441665.39  764.29
      0.02  0.03  556890.29   2441665.42  764.31      -0.02 0.04
            In    0.1         6.56  09:16:31.2  RTK   35.544584382      -
84.303034652      665.18      01/19/2009
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Stakeout    Point topo38                  556931.47   2441702.55  764.76
      0.02  0.03  556931.47   2441702.57  763.71      1.05  0.02
            In    0.1         6.56  09:18:23.8  RTK   35.544624531      -
84.302988724      665.65      01/19/2009

Stakeout    Point topo39                  556959.62   2441663.8   762.18
      0.02  0.03  556959.63   2441663.74  762.32      -0.14 0.06
            In    0.1         6.56  09:19:44.4  RTK   35.544652951      -
84.303035309      663.06      01/19/2009

Stakeout    Point topo40                  556968.69   2441651.38  758.56
      0.02  0.03  556968.67   2441651.36  757.97      0.59  0.03
            In    0.1         6.56  09:20:29.6  RTK   35.544662107      -
84.303050237      659.45      01/19/2009

Stakeout    Point topo41                  557000.84   2441678.34  758.78
      0.02  0.03  557000.85   2441678.32  758.16      0.62  0.02
            In    0.1         6.56  09:21:28.4  RTK   35.544693495      -
84.303016873      659.67      01/19/2009

Stakeout    Point topo42                  556994.24   2441688.64  761.97
      0.02  0.03  556994.23   2441688.69  762.36      -0.39 0.06
            In    0.1         6.56  09:22:29.2  RTK   35.544686808      -
84.303004484      662.86      01/19/2009

Stakeout    Point topo43                  556961.42   2441736.25  763.74
      0.02  0.03  556961.4    2441736.24  762.98      0.76  0.02
            In    0.1         6.56  09:23:41.0  RTK   35.544653647      -
84.302947214      664.63      01/19/2009

Stakeout    Point topo48                  557009.94   2441763.88  762.63
      0.02  0.03  557009.96   2441763.88  761.44      1.19  0.02
            In    0.1         6.56  09:27:16.8  RTK   35.544701211      -
84.302912731      663.51      01/19/2009

Stakeout    Point topo49                  557045.6    2441712.27  760.37
      0.02  0.03  557045.63   2441712.28  760.61      -0.24 0.04
            In    0.1         6.56  09:28:21.4  RTK   35.544737242      -
84.302974813      661.26      01/19/2009

Stakeout    Point topo50                  557051.07   2441704.65  758.27
      0.02  0.03  557051.1    2441704.64  758.17      0.1   0.04
            In    0.1         6.56  09:28:58.6  RTK   35.544742766      -
84.302983974      659.15      01/19/2009

Stakeout    Point topo51                  557086.98   2441729.51  758.15
      0.02  0.03  557086.95   2441729.49  757.89      0.27  0.04
            In    0.1         6.56  09:29:44.2  RTK   35.544777910      -
84.302953099      659.04      01/19/2009

Stakeout    Point topo52                  557081.26   2441737.76  759.94
      0.02  0.03  557081.28   2441737.74  760.02      -0.08 0.04
            In    0.1         6.56  09:30:15.0  RTK   35.544772122      -
84.302943173      660.82      01/19/2009
```

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Stakeout    Point topo53                  557040.38   2441802.46  760.77
      0.02  0.03  557040.35   2441802.43  760.1 0.67  0.04
      In    0.1         6.56  09:31:10.6  RTK   35.544730738      -84.302865283
      661.66      01/19/2009

Stakeout    Point topo56                  557081.83   2441827.02  760.11
      0.02  0.03  557081.82   2441827.03  759.21      0.9   0.02
            In    0.1         6.56  09:32:06.0  RTK   35.544771352      -
84.302834666      661.0 01/19/2009

Stakeout    Point topo57                  557121.15   2441771.88  759.12
      0.02  0.03  557121.12   2441771.9   758.9 0.21  0.04
      In    0.1         6.56  09:34:00.4  RTK   35.544811060      -84.302900970
      660.0 01/19/2009

Stakeout    Point topo58                  557126.64   2441762.73  756.93
      0.02  0.03  557126.7    2441762.71  756.59      0.33  0.06
            In    0.1         6.56  09:35:39.6  RTK   35.544816628      -
84.302911993      657.81      01/19/2009

Stakeout    Point topo59                  557167.53   2441789.35  755.02
      0.02  0.03  557167.58   2441789.31  755.4 -0.37 0.06
      In    0.1         6.56  09:36:53.2  RTK   35.544856659      -84.302878883
      655.91      01/19/2009

Stakeout    Point topo60                  557164.27   2441794.7   755.04
      0.03  0.05  557164.2    2441794.72  756.74      -1.7  0.08
            In    0.1         6.56  09:38:11.2  RTK   35.544853361      -
84.302872437      655.92      01/19/2009

Topo  Point topo66              as built    557127.79   2441847.9   758.87
      0.02  0.03
            6.56  09:39:52.0  RTK   35.544816488      -84.302808438     659.76
      01/19/2009

Stakeout    Point topo63                  557177.75   2441868.14  756.72
      0.02  0.03  557177.7    2441868.15  754.02      2.71  0.05
            In    0.1         6.56  09:42:10.8  RTK   35.544865593      -
84.302782914      657.61      01/19/2009

Topo  Point topo65              as built    557197.26   2441822.46  757.08
      0.02  0.03
            6.56  09:44:19.0  RTK   35.544885568      -84.302838084     657.97
      01/19/2009

Topo  Point topo64              as built    557187.42   2441840.5   752.92
      0.02  0.03
            6.56  09:44:53.8  RTK   35.544875560      -84.302816339     653.8
      01/19/2009

Topo  Point topo67              as built    557191.84   2441856.18  750.68
      0.02  0.03
            6.56  09:45:46.2  RTK   35.544879705      -84.302797195     651.56
      01/19/2009
```

Topo Point topo68 as built 557195.91 2441875.76 748.9 0.02
0.03
6.56 09:46:13.8 RTK 35.544883432 -84.302773314 649.79
01/19/2009

Topo Point topo69 as built 557188.23 2441891.24 748.39
0.02 0.03
6.56 09:46:54.2 RTK 35.544875606 -84.302754640 649.27
01/19/2009

Topo Point topo70 as built 557186.09 2441909.51 745.01
0.02 0.03
6.56 09:47:27.6 RTK 35.544873221 -84.302732479 645.89
01/19/2009

Topo Point topo71 as built 557155.31 2441952.93 745.07
0.02 0.03
6.56 09:48:15.0 RTK 35.544842134 -84.302680259 645.96
01/19/2009

Topo Point topo72 as built 557152.72 2441931.54 754.62
0.02 0.02
6.56 09:50:37.4 RTK 35.544839888 -84.302706304 655.5
01/19/2009

Topo Point topo73 as built 557169.57 2441905.76 755.63
0.02 0.03
6.56 09:50:54.4 RTK 35.544856941 -84.302737339 656.51
01/19/2009

Dingrando, Jeff

From: Sluss, Dallas P [dpsluss@tva.gov]
Sent: Tuesday, February 17, 2009 1:19 PM
To: Andrew, Jim; Dingrando, Jeff
Cc: Dotson, Vernon J Jr
Subject: FW: KINGSTON FP - BY-PRODUCTS DISPOSAL - DREDGE CELL FAILURE - JANUARY 2009 PROJECT: TBK776
Attachments: TBK776AB.XYZ; TBK776_PLOTS.PDF

Attached is a .xyz (ASCII) file of the referenced survey. A GRZ code is just a ground fill in topo shot. For other codes connect like names in numeric sequence.

If you have any questions, give me a call.

'Confidential and Pre-decisional Deliberative Document'

Dallas
Dallas Sluss
Team Leader, Surveying Services
PSO - Surveying & Project Services
1101 Market St. MR 4B-C
Chattanooga, TN 37402-2801
Phone: (423)751-2255 - Mobile: (423)718-3880 - MR4 Fax (423)751-6083 e-mail:dpsluss@tva.gov
Survey Control Interactive Map - http://chapgisint.cha.tva.gov/website/TVA_NGS_Control_PID/
Quick BSL Drawing/Project Lookup - http://chaptpsnet.cha.tva.gov:8043/MapsAndSurveys/Search.asp

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From: Phillips, Edward G Jr
Sent: Friday, February 13, 2009 3:36 PM
To: 'Combs, Rachel (Chattanooga)'; 'Posey, Rick (Chattanooga)'; Evans, Kelly E; Bates, John Andrew
Cc: Sluss, Dallas P; Monsees, A.j.; Branam, Chad E
Subject: KINGSTON FP - BY-PRODUCTS DISPOSAL - DREDGE CELL FAILURE - JANUARY 2009 PROJECT: TBK776

See the attached files for the results of the 01/24/2009 topographic survey of the as built interim stabilization berm (Dike D) as part of the Dredge Cell Failure Project at Kingston Fossil Plant.

TBK776AB.XYZ - As built interim stabilization berm (Dike D) topographic data (01/24/2009)

Format: Comma delimited ASCII (Pt#,Easting,Northing,Elevation,Code) - The first two rows are project/job title header
Projection: Tennessee Lambert
Horizontal Datum: NAD 27
Horizontal Coordinate Type: Ground
Vertical Datum: NGVD 29
Units: US Survey Feet

TBK776_PLOTS.PDF - *Draft* plot (11x17) of points in TBK776AB.XYZ and file statistics

For A. Bates:

Per R. Quarles instruction, a topo of this data is to be sent to Jim Andrew @ Stantec (jeff.dingrando@stantec.com)

'Confidential and Pre-decisional Deliberative Document'

Ed Phillips

Edward G. Phillips, Jr.

Tennessee Valley Authority
Power System Operations
Electric System Projects
Transmission Line Projects - Surveying & Project Services
1101 Market St. MR 4B-C
Chattanooga, TN 37402

Phone: (423)-751-8416
Fax : (423)-751-9430
e-Mail : egphillips@tva.gov

Link To Survey Control Interactive Map: http://chapgisint.cha.tva.gov/website/TVA_NGS_Control_PID/

Link To Quick BSL Drawing/Project Lookup: http://chaptpsnet.cha.tva.gov:8043/MapsAndSurveys/Search.asp

Kingston Fossil Plant - By-Products Disposal - December 2008 Dredge Cell Failure
Project: TBK776 Date: 24 January 2009
As Built Interim Stabilization Berm (Dike D) - Topography
3275,2441460.92,556656.38,764.54,CLDITCH1
3276,2441467.10,556651.90,765.96,TOE1
3277,2441468.00,556651.16,766.42,PZ1
3278,2441476.10,556648.24,767.52,GRZ
3279,2441487.35,556642.61,772.05,CREST1
3280,2441500.12,556637.72,773.02,PZ2
3281,2441524.92,556624.11,773.24,GRZ
3282,2441551.70,556605.73,773.68,TOP DIKE D
3283,2441564.83,556838.79,761.51,CLDITCH1
3284,2441571.79,556833.51,765.80,TOE1
3285,2441588.62,556823.78,768.48,PZ3
3286,2441586.79,556825.22,767.83,GRZ
3287,2441601.86,556814.20,772.24,PZ4
3288,2441603.42,556812.16,773.16,CREST1
3289,2441632.09,556794.40,773.57,GRZ
3290,2441663.25,556770.64,773.55,TOP DIKE D
3291,2441660.29,556983.87,758.44,CLDITCH1
3292,2441666.48,556978.03,759.71,GRZ
3293,2441670.89,556976.86,762.24,TOE1
3294,2441684.15,556966.07,764.92,GRZ
3295,2441691.46,556958.89,768.36,PZ5
3296,2441702.99,556949.53,772.65,CREST1
3297,2441709.42,556942.21,772.90,PZ6
3298,2441738.56,556927.02,773.05,GRZ
3299,2441766.79,556909.20,773.41,TOP DIKE D
3300,2441758.47,557125.46,756.59,CLDITCH1
3301,2441761.28,557123.54,756.97,GRZ
3302,2441764.81,557121.44,759.74,TOE1
3303,2441782.21,557113.33,762.52,GRZ
3304,2441791.22,557107.06,765.53,PZ7
3305,2441806.36,557099.61,770.88,CREST1
3306,2441819.82,557092.56,770.90,PZ8
3307,2441836.14,557073.65,770.93,GRZ
3308,2441870.62,557045.00,771.56,TOP DIKE D
3309,2441814.27,557176.07,753.90,CLDITCH1
3310,2441815.64,557175.29,754.50,GRZ
3311,2441816.00,557174.93,754.58,GRZ
3312,2441817.50,557168.57,758.34,TOE1
3313,2441822.95,557154.22,760.16,GRZ
3314,2441830.03,557124.11,769.44,CREST1
3315,2441845.28,557141.06,765.90,CREST1
3316,2441867.50,557141.26,764.77,CREST1
3317,2441889.18,557127.49,764.96,CREST1
3318,2442004.93,557035.69,765.08,CREST1
3319,2442055.27,556996.60,764.95,CREST1
3320,2441830.96,557159.33,759.55,GRZ
3321,2441872.60,557160.02,758.10,GRZ
3322,2441839.03,557174.31,757.48,TOE1
3323,2441868.94,557179.97,756.39,TOE1
3324,2441838.92,557181.30,753.54,GRZ
3325,2441837.88,557187.98,753.02,CLDITCH1
3326,2441848.96,557190.54,752.39,CLDITCH1
3327,2441850.11,557184.79,753.20,GRZ
3328,2441862.52,557134.29,764.99,GRZ
3329,2441866.33,557109.08,765.00,GRZ
3330,2441945.50,557051.71,764.26,GRZ
3331,2442006.56,557006.96,763.91,GRZ
3332,2442050.30,556977.51,765.24,GRZ
3333,2442050.31,556977.48,765.21,BEGTP2
3334,2442000.46,556995.49,765.96,TP2

```
3335,2441942.66,557030.71,767.81,TP2
3336,2441903.69,557049.38,769.70,TP2
3337,2441867.49,557071.77,770.98,ENDTP2
```

MAIN ASH
POND

KINGSTON FOSSIL PLANT

DECEMBER 2008 DREDGE CELL FAILURE
AS BUILT INTERIM STABILIZATION BERM (DIKE D)
TOPOGRAPHY
24 JANUARY 2009 PROJECT: TBK776

FILE: TBK776AB.XYZ

200 100 0 200 400 Feet

N

Last Updated: Feb 13, 2009

This Is A DRAFT Plot For Visual Representation Only

SHEET 1 OF 1

LEGEND

- Topographic Data

Date Of Photography: 02/06/2009

Tennessee Valley Authority

Power System Operations
Surveying & Project Services

Project: Kingston Fossil Plant
By-Products Disposal
December 2008 Dredge Cell Failure
- **As Built Interim Stabilization Berm (Dike D)**

Topography
January 2009
Data File Statistics

Project NO.: TBK776
Survey Date: 24 January 2009

Projection: Tennessee Lambert
Note: Coordinates Are Based On Newer (1971) Basic Control And Will Not Be Compatible With The Original Plant Datum.
Horizontal Datum: NAD 27
Coordinate Type: Ground
Vertical Datum: NGVD 29

Printing Date: 02-13-2009

Statistics For Data File
TBK776AB.XYZ

Number Of Points In File: 63

Minimum Northing (Y) Value: 556,605.73
Value Found At Point Number: 3282

Maximum Northing (Y) Value: 557,190.54
Value Found At Point Number: 3326

Minimum Easting (X) Value: 2,441,460.92
Value Found At Point Number: 3275

Maximum Easting (X) Value: 2,442,055.27
Value Found At Point Number: 3319

Minimum Elevation (Z) Value: 752.39
Value Found At Point Number: 3326

Maximum Elevation (Z) Value: 773.68
Value Found At Point Number: 3282

Dingrando, Jeff

From:	Cade, Mark [MSCADE@mactec.com]
Sent:	Saturday, January 31, 2009 11:46 AM
To:	Andrew, Jim; Dingrando, Jeff
Cc:	jrobinson@tva.gov; Workman, William B II; mwstrunk@tva.gov; Campbell, Kelvin; Tockstein, Carl; Gary Melton; jeffery.paris@worleyparsons.com; rachel.combs@worleyparsons.com; Mason, John
Subject:	Top of Bottom Ash As-Built Data for Dike "D" Buttress Area
Attachments:	2009-01-26 Dike D as-built points of bottom ash.pdf

Jeff/Jim:

Attached is the as-built data for Dike “D” Buttress area’s top of bottom ash. The data was collected 26 January 2009 by Brent Smith, HED on-site surveyor.

I have included the Worley-Parsons’ baseline Stationing information for the area with corresponding coordinates to relate the as-built ground shot off-sets points.

If you have any questions, let me know. MARK

<<2009-01-26 Dike D as-built points of bottom ash.pdf>>

Dike "D" Buttress As-Built Survey of Bottom Ash
Data collected 26 January 2009

Dike "D" Buttress Stations (from Worley-Parsons's design drawings of 2 January 2009) with Northing and Easting Coordinates

point	Station	northing	easting
1	0+00	557,228.90	2,441,972.18
2	0+50	557,186.10	2,441,946.33
3	1+00	557,143.31	2,441,920.47
4	1+50	557,100.51	2,441,894.61
5	2+00	557,057.72	2,441,868.76
6	2+50	557,014.92	2,441,842.90
7	3+00	556,972.13	2,441,817.04
8	3+50	556,929.33	2,441,791.19
9	4+00	556,886.54	2,441,765.33
10	4+50	556,843.74	2,441,739.47
11	5+00	556,800.95	2,441,713.62
12	5+50	556,758.15	2,441,687.76
13	6+00	556,715.36	2,441,661.90
14	6+50	556,672.56	2,441,636.05
15	7+00	556,629.77	2,441,610.19
16	7+50	556,586.97	2,441,584.33
17	8+00	556,544.18	2,441,558.48

As-built survey of Dike "D" buttress top of Bottom Ash

Data collected 26 January 2009

Station 2+00

Right 25.07 ft, Elv 764.59 usft
Right 67.15 ft, Elv 767.00 usft
Right 108.31 ft, Elv 759.12 usft

Station 2+50

Right 40.19 ft, Elv 771.15 usft
Right 75.05 ft, Elv 770.97 usft
Right 121.19 ft, Elv 759.68 usft

Station 3+00
Right 36.00 ft, Elv 771.79 usft
Right 78.86 ft, Elv 771.29 usft
Right 126.14 ft, Elv 760.46 usft

Station 3+50
Right 35.07 ft, Elv 772.26 usft
Right 80.85 ft, Elv 771.96 usft
Right 127.10 ft, Elv 761.54 usft

Station 4+00
Right 34.36 ft, Elv 773.06 usft
Right 84.01 ft, Elv 772.74 usft
Right 126.58 ft, Elv 762.11 usft

Station 4+50
Right 37.14 ft, Elv 773.32 usft
Right 88.16 ft, Elv 772.71 usft
Right 127.46 ft, Elv 762.67 usft

Station 5+00
Right 47.42 ft, Elv 772.99 usft
Right 92.72 ft, Elv 772.62 usft
Right 134.57 ft, Elv 763.06 usft

Station 5+50
Right 40.74 ft, Elv 773.08 usft
Right 96.73 ft, Elv 772.74 usft
Right 136.49 ft, Elv 763.26 usft

Station 6+00
Right 40.73 ft, Elv 773.55 usft
Right 102.85 ft, Elv 772.98 usft
Right 138.97 ft, Elv 765.59 usft

Station 6+50
Right 50.69 ft, Elv 773.54 usft
Right 101.86 ft, Elv 773.04 usft
Right 136.65 ft, Elv 765.89 usft

Station 7+00

Right 50.37 ft, Elv 773.40 usft
Right 103.18 ft, Elv 773.25 usft
Right 135.95 ft, Elv 765.89 usft

Station 7+50

Right 53.07 ft, Elv 773.56 usft
Right 105.08 ft, Elv 773.01 usft
Right 134.31 ft, Elv 765.61 usft

Station 8+00

Right 46.00 ft, Elv 773.75 usft
Right 109.49 ft, Elv 772.43 usft
Right 132.62 ft, Elv 766.62 usft

Additional As-built TOPO survey of Dike "D" Buttress Top of Bottom Ash

Data collected 26 January 2009

Topo	Point	topo1	N556574.20	E2441501.54	Elv.773.32
Topo	Point	topo3	N556578.70	E2441492.05	Elv.773.14
Topo	Point	topo4	N556591.47	E2441467.46	Elv.770.44
Topo	Point	topo5	N556593.04	E2441459.15	Elv.767.92
Topo	Point	topo6	N556609.99	E2441431.68	Elv.765.86

Dingrando, Jeff

From: Cade, Mark [MSCADE@mactec.com]
Sent: Tuesday, February 10, 2009 9:26 AM
To: Andrew, Jim; Dingrando, Jeff
Subject: FW: Top of Soil As-Built Data for Dike "D" Buttress Area
Importance: High
Attachments: 2009-02-05 Dike D final as-built points.txt; Drainage Blanket As-Built Data for Dike "D" Buttress Area with Other Survey Information; 2009-01-26 Dike D Temporary Stabilization Berm r1.txt; 2009-01-19 Dike D as-built points of drainage blanket, pizometers, pipe.doc; 2009-01-26 Dike D as-built points of bottom ash.doc; 2009-01-26 Dike D as-built points of bottom ash.pdf

FYI
MARK

From: Evans, Kelly E [mailto:keevans@tva.gov]
Sent: Monday, February 09, 2009 7:21 PM
To: RBachus@Geosyntec.com; JSpeed@Geosyntec.com
Cc: Parris, Jeffrey (Chattanooga); don.fuller@stantec.com; Cade, Mark
Subject: FW: Top of Soil As-Built Data for Dike "D" Buttress Area
Importance: High

Bob,

Parsons recieved soem as-built elevations along station points from Mactec that revealed the 770.0 elevation to tie-in. This is the info that was used to tie-in the new Dike #2 alignment.

Donnie,

Please forward this to Scott Peyton. Scott has a CSD drawing that shows the Dike Tie-in. Based on our call with you and Scott on 2/2/09 you did not have a problem with the tie-in point. Please confirm.

To all,

I don't believe a detailed topo of this area has been done.

Kelly E. Evans
423-751-4653

'Confidential and Pre-decisional Deliberative Document'

From: Bennett, Shannon (Chattanooga) [mailto:Shannon.Bennett@WorleyParsons.com]
Sent: Monday, February 09, 2009 6:54 PM
To: Evans, Kelly E
Subject: FW: Top of Soil As-Built Data for Dike "D" Buttress Area

Importance: High

FYI

Shannon Bennett, E.I.T.
Civil Department
WorleyParsons Group, Inc.
Tel: (423) 755-5079
Fax: (423) 757-5869
633 Chestnut Street, Suite 400
Chattanooga, TN 37450

Save a tree...please only print this e-mail and attachment if necessary.

From: Combs, Rachel (Chattanooga)
Sent: Friday, February 06, 2009 8:12 AM
To: Carver, Bradley (Chattanooga); Posey, Rick (Chattanooga)
Cc: Taylor, William P (Roxboro); Bennett, Shannon (Chattanooga); Black, Aubrey (Chattanooga)
Subject: FW: Top of Soil As-Built Data for Dike "D" Buttress Area
Importance: High

Rachel B. Combs

From: Cade, Mark [mailto:MSCADE@mactec.com]
Sent: Friday, February 06, 2009 8:04 AM
To: Combs, Rachel (Chattanooga)
Cc: jrobinson@tva.gov; Melton, Gary (Chattanooga)
Subject: Top of Soil As-Built Data for Dike "D" Buttress Area
Importance: High

Rachel:

Gary ask me to send the final as-built survey information on Dike “D” buttress. Attached is the as-built raw survey data for top of soil. I have not reviewed or formatted as before. The data collected on 5 February 2009 is top of soil, the earlier data is for top of drainage layer and top of bottom ash.

When I get to review this data, I will forward that formatted information.

MARK

<<2009-02-05 Dike D final as-built points.txt>>

From: Cade, Mark
Sent: Thursday, February 05, 2009 8:09 AM
To: 'Rachel Burnette Combs'
Subject: FW: Top of Bottom Ash As-Built Data for Dike “D” Buttress Area
Importance: High

Rachel:

I have attached the original Dike “D” buttress survey information I sent out, the in information in PDF format and Word file and the surveyor’s data file.

I hope this get what you need in the format you were looking for.

If you have any questions, let me know. MARK

<<Drainage Blanket As-Built Data for Dike “D” Buttress Area with Other Survey Information>> <<2009-01-26 Dike D Temporary Stabilization Berm r1.txt>> <<2009-01-19 Dike D as-built points of drainage blanket, pizometers, pipe.doc>> <<2009-01-26 Dike D as-built points of bottom ash.doc>>

Mark S. Cade, P.E.

Principal and Division Chief Engineer

MACTEC Development Corp.

Demolition & Remediation Services

105 Fordham Road

Oak Ridge, TN 37830

865.483.1280 main

865.483.6945 main fax

865.483.7117 direct

865.717.2352 KIF Emergency Response Field Office

865.806.0617 cell

mscade@mactec.com

From: Cade, Mark
Sent: Saturday, January 31, 2009 11:46 AM
To: 'Andrew, Jim'; 'Dingrando, Jeff'
Cc: 'jrobinson@tva.gov'; 'Workman, William B II'; 'mwstrunk@tva.gov'; Campbell, Kelvin; Tockstein, Carl; 'Gary Melton'; 'jeffery.paris@worleyparsons.com'; 'rachel.combs@worleyparsons.com'; Mason, John
Subject: Top of Bottom Ash As-Built Data for Dike “D” Buttress Area

Jeff/Jim:

Attached is the as-built data for Dike “D” Buttress area’s top of bottom ash. The data was collected 26 January 2009 by Brent Smith, HED on-site surveyor.

I have included the Worley-Parsons’ baseline Stationing information for the area with corresponding coordinates to relate the as-built ground shot off-sets points.

If you have any questions, let me know. MARK

<<2009-01-26 Dike D as-built points of bottom ash.pdf>>

*** WORLEYPARSONS GROUP NOTICE ***
"This email is confidential. If you are not the intended recipient, you must not di

2009-02-05 Dike D final as-built points.txt

```
Header  Version 6
Header  Distance Unit   US Survey Feet
Header  Angle Unit      Degrees
Header  Coordinate Order        P, N, E, Z, D
Header  Stationing      0+00.00
Header  Grid Coordinate North and East

Record Type     Sub Type        Point Name      Line Name       Point Code
Measured N      Measured E      Measured Elv    Precision H     Precision V
Design N        Design E        Design Elv      Cut/Fill (+/-)  Horz Deviation
Design Station  Design Offset   Measured Station        Measured Offset Tolerance
in/high/low     High Tolerance  Low Tolerance   Antenna Target Height   Local Time
Precision Type  HA / Lat        VA / Long       SD / WGSHt      Date    Unused
Unused  Unused  Unused  Unused  Unused  Unused  Unused  Custom1 Custom2 Custom3
Custom4 Custom5 Custom6 Custom7 Custom8 Custom9
Stakeout        Point   dike d bl3                      557143.28       2441920.42
754.24  0.02    0.03    557143.31       2441920.47                      0.06
                        In      0.1             6.56    09:34:58.4      RTK
35.544830725    -84.302719997   655.12  01/14/2009


Stakeout        Point   119                     557156.3        2441899.01
752.74  0.02    0.03    557156.24       2441899.07                      0.08
                        In      0.1             6.56    09:47:02.4      RTK
35.544843918    -84.302745784   653.62  01/14/2009


Stakeout        Point   146                     557169.18       2441877.65
753.32  0.02    0.03    557169.17       2441877.67                      0.02
                        In      0.1             6.56    09:54:12.8      RTK
35.544856972    -84.302771509   654.21  01/14/2009


Stakeout        Point   163                     557182.15       2441856.22
751.53  0.02    0.03    557182.1        2441856.27                      0.07
                        In      0.1             6.56    09:55:18.2      RTK
35.544870114    -84.302797322   652.42  01/14/2009


Stakeout        Point   180                     557195.05       2441834.82
752.88  0.02    0.03    557195.02       2441834.87                      0.05
                        In      0.1             6.56    09:56:17.2      RTK
35.544883192    -84.302823096   653.76  01/14/2009


Stakeout        Point   197                     557207.95       2441813.51
753.7   0.02    0.03    557207.95       2441813.48                      0.03
                        In      0.1             6.56    09:59:35.8      RTK
35.544896266    -84.302848764   654.59  01/14/2009


Stakeout        Point   198                     557165.16       2441787.64
755.59  0.02    0.03    557165.16       2441787.62                      0.02
                        In      0.1             6.56    10:01:03.2      RTK
35.544854341    -84.302881005   656.48  01/14/2009


Stakeout        Point   181                     557152.18       2441808.98
758.02  0.02    0.03    557152.23       2441809.02                      0.06
                        In      0.1             6.56    10:02:04.4      RTK
35.544841192    -84.302855296   658.91  01/14/2009
```

```
Stakeout        Point   164                     557139.23       2441830.45
758.31  0.02    0.03    557139.3        2441830.42                      0.07
                        In      0.1             6.56    10:04:09.2      RTK
35.544828065    -84.302829439   659.2   01/14/2009


Stakeout        Point   137                     557126.33       2441851.86
762.91  0.02    0.03    557126.37       2441851.81                      0.06
                        In      0.1             6.56    10:06:23.4      RTK
35.544814984    -84.302803652   663.8   01/14/2009


Stakeout        Point   120                     557113.46       2441873.16
764.31  0.02    0.03    557113.44       2441873.21                      0.05
                        In      0.1             6.56    10:07:48.6      RTK
35.544801939    -84.302777992   665.2   01/14/2009


Stakeout        Point   dike d bl4                      557100.48       2441894.61
764.76  0.02    0.03    557100.51       2441894.61                      0.03
                        In      0.1             6.56    10:08:42.2      RTK
35.544788787    -84.302752165   665.64  01/14/2009


Stakeout        Point   dike d bl5                      557057.75       2441868.74
771.33  0.02    0.03    557057.72       2441868.76                      0.04
                        In      0.1             6.56    10:14:33.8      RTK
35.544746920    -84.302784396   672.22  01/14/2009


Stakeout        Point   dike d bl6                      557014.93       2441842.87
772.95  0.02    0.03    557014.92       2441842.9                       0.03
                        In      0.1             6.56    10:17:38.6      RTK
35.544704966    -84.302816625   673.84  01/14/2009


Stakeout        Point   dike d bl7                      556972.14       2441817.09
772.79  0.02    0.03    556972.13       2441817.04                      0.05
                        In      0.1             6.56    10:19:29.4      RTK
35.544663040    -84.302848751   673.68  01/14/2009


Stakeout        Point   dike d bl8                      556929.33       2441791.2
773.41  0.02    0.03    556929.33       2441791.19                      0.01
                        In      0.1             6.56    10:21:14.0      RTK
35.544621094    -84.302881009   674.3   01/14/2009


Stakeout        Point   dike d bl9                      556886.51       2441765.3
773.79  0.02    0.03    556886.54       2441765.33                      0.04
                        In      0.1             6.56    10:22:44.8      RTK
35.544579143    -84.302913270   674.67  01/14/2009


Stakeout        Point   dike d bl10                     556843.74       2441739.42
773.75  0.02    0.03    556843.74       2441739.47                      0.05
                        In      0.1             6.56    10:24:15.4      RTK
35.544537229    -84.302945521   674.64  01/14/2009


Stakeout        Point   dike d bl11                     556800.98       2441713.6
773.69  0.02    0.03    556800.95       2441713.62                      0.03
                        In      0.1             6.56    10:25:30.4      RTK
```

35.544495334 -84.302977688 674.58 01/14/2009

Stakeout Point dike d bl12 556758.18 2441687.69
773.12 0.02 0.03 556758.15 2441687.76 0.07
In 0.1 6.56 10:26:26.2 RTK
35.544453400 -84.303009969 674.01 01/14/2009

Stakeout Point dike d bl13 556715.38 2441661.94
773.09 0.02 0.03 556715.36 2441661.9 0.05
In 0.1 6.56 10:27:09.2 RTK
35.544411466 -84.303042056 673.97 01/14/2009

Stakeout Point dike d bl14 556672.6 2441636.02
772.91 0.02 0.03 556672.56 2441636.05 0.06
In 0.1 6.56 10:28:19.8 RTK
35.544369552 -84.303074355 673.8 01/14/2009

Stakeout Point dike d bl15 556629.76 2441610.15
773.31 0.02 0.03 556629.77 2441610.19 0.04
In 0.1 6.56 10:29:08.8 RTK
35.544327573 -84.303106578 674.2 01/14/2009

Stakeout Point dike d bl16 556586.98 2441584.27
773.14 0.02 0.03 556586.97 2441584.33 0.06
In 0.1 6.56 10:30:11.8 RTK
35.544285661 -84.303138828 674.02 01/14/2009

Stakeout Point dike d bl17 556544.09 2441558.45
773.33 0.02 0.03 556544.18 2441558.48 0.09
In 0.1 6.56 10:30:56.8 RTK
35.544243635 -84.303171003 674.22 01/14/2009

Topo Point topo1 as built 556574.18 2441501.55
776.03 0.02 0.03
6.56 10:34:45.6 RTK 35.544274238
-84.303239605 676.92 01/14/2009

Topo Point topo2 as built 556574.23 2441501.66
775.98 0.02 0.03
6.56 10:36:18.6 RTK 35.544274283
-84.303239476 676.86 01/14/2009

Topo Point topo3 as built 556578.66 2441492.03
771.0 0.03 0.04
6.56 10:36:53.6 RTK 35.544278805
-84.303251096 671.88 01/14/2009

Topo Point topo4 as built 556591.37 2441467.48
770.04 0.04 0.06
6.56 10:37:19.4 RTK 35.544291743
-84.303280703 670.93 01/14/2009

Topo Point topo5 as built 556593.06 2441459.14
766.27 0.02 0.03
6.56 10:37:39.8 RTK 35.544293541
-84.303290813 667.15 01/14/2009

Topo Point topo6 as built 556609.87 2441431.66
765.98 0.02 0.03
6.56 10:38:02.0 RTK 35.544310568
-84.303323906 666.87 01/14/2009

Topo Point topo7 as built 556660.63 2441462.47
763.41 0.02 0.03
6.56 10:39:07.2 RTK 35.544360300
-84.303285523 664.29 01/14/2009

Topo Point topo8 as built 556657.32 2441467.94
765.38 0.02 0.03
6.56 10:39:22.8 RTK 35.544356945
-84.303278933 666.26 01/14/2009

Topo Point topo9 as built 556629.61 2441512.6
766.19 0.02 0.03
6.56 10:39:59.2 RTK 35.544328878
-84.303225158 667.08 01/14/2009

Topo Point topo10 as built 556627.62 2441532.33
774.49 0.02 0.03
6.56 10:40:38.6 RTK 35.544326623
-84.303201211 675.37 01/14/2009

Topo Point topo11 as built 556667.96 2441550.61
771.94 0.03 0.04
6.56 10:41:40.6 RTK 35.544366239
-84.303178251 672.82 01/14/2009

Topo Point topo12 as built 556676.06 2441537.62
766.79 0.02 0.03
6.56 10:42:15.8 RTK 35.544374443
-84.303193900 667.67 01/14/2009

Topo Point topo13 as built 556703.18 2441496.87
765.45 0.03 0.04
6.56 10:42:35.2 RTK 35.544401861
-84.303242931 666.33 01/14/2009

Topo Point topo14 as built 556707.7 2441490.7
762.45 0.02 0.03
6.56 10:42:49.4 RTK 35.544406423
-84.303250345 663.34 01/14/2009

Topo Point topo15 as built 556744.88 2441510.25
761.51 0.02 0.03
6.56 10:43:44.8 RTK 35.544442899
-84.303225894 662.4 01/14/2009

Topo Point topo16 as built 556735.53 2441518.4
765.87 0.03 0.04
6.56 10:44:08.6 RTK 35.544433538
-84.303216167 666.75 01/14/2009

Topo Point topo17 as built 556719.94 2441560.03
766.43 0.02 0.03
6.56 10:44:30.6 RTK 35.544417495
-84.303165853 667.31 01/14/2009

Topo Point topo18 as built 556711.94 2441576.04
772.31 0.03 0.04

6.56 10:44:48.2 RTK 35.544409344 -84.303146530 673.19 01/14/2009

Topo Point topo19 as built 556749.76 2441599.04 771.29 0.02 0.03

6.56 10:45:16.8 RTK 35.544446396 -84.303117886 672.18 01/14/2009

Topo Point topo20 as built 556762.63 2441583.21 766.54 0.02 0.03

6.56 10:45:41.4 RTK 35.544459365 -84.303136886 667.42 01/14/2009

Topo Point topo21 as built 556784.02 2441550.05 766.03 0.02 0.03

6.56 10:46:05.6 RTK 35.544481013 -84.303176808 666.92 01/14/2009

Topo Point topo22 as built 556792.11 2441537.97 760.99 0.02 0.03

6.56 10:46:28.8 RTK 35.544489185 -84.303191344 661.87 01/14/2009

Topo Point topo23 as built 556834.37 2441561.45 760.99 0.02 0.03

6.56 10:47:19.0 RTK 35.544530631 -84.303162024 661.88 01/14/2009

Topo Point topo24 as built 556831.67 2441571.96 765.09 0.02 0.04

6.56 10:47:39.6 RTK 35.544527803 -84.303149296 665.98 01/14/2009

Topo Point topo25 as built 556811.41 2441603.33 765.79 0.02 0.03

6.56 10:48:05.6 RTK 35.544507299 -84.303111534 666.67 01/14/2009

Topo Point topo26 as built 556803.82 2441615.93 770.3 0.03 0.04

6.56 10:48:21.8 RTK 35.544499608 -84.303096356 671.19 01/14/2009

Topo Point topo27 as built 556833.89 2441664.91 771.63 0.02 0.03

6.56 10:49:07.0 RTK 35.544528601 -84.303036267 672.51 01/14/2009

Topo Point topo28 as built 556843.92 2441647.59 766.46 0.04 0.05

6.56 10:49:27.4 RTK 35.544538782 -84.303057137 667.35 01/14/2009

Topo Point topo29 as built 556853.48 2441634.36 766.21 0.02 0.03

6.56 10:50:09.4 RTK 35.544548439 -84.303073047 667.09 01/14/2009

Topo Point topo30 as built 556855.56 2441630.25 764.66 0.02 0.03

6.56 10:50:21.0 RTK 35.544550556 -84.303078006 665.55 01/14/2009

Topo Point topo31 as built 556876.09 2441610.81
764.16 0.02 0.03
6.56 10:50:45.0 RTK 35.544571147
-84.303101254 665.05 01/14/2009

Topo Point topo32 as built 556881.53 2441594.06
759.85 0.02 0.03
6.56 10:51:03.8 RTK 35.544576777
-84.303121516 660.73 01/14/2009

Topo Point topo33 as built 556921.75 2441617.01
759.66 0.05 0.08
6.56 10:52:16.6 RTK 35.544616198
-84.303092879 660.55 01/14/2009

Topo Point topo34 as built 556914.66 2441629.04
762.9 0.02 0.03
6.56 10:52:33.6 RTK 35.544609007
-84.303078392 663.79 01/14/2009

Topo Point topo35 as built 556890.29 2441665.42
764.31 0.05 0.08
6.56 10:53:16.2 RTK 35.544584368
-84.303034610 665.19 01/14/2009

Topo Point topo36 as built 556875.72 2441688.59
772.35 0.02 0.04
6.56 10:53:37.0 RTK 35.544569619
-84.303006712 673.24 01/14/2009

Topo Point topo37 as built 556915.09 2441724.52
771.88 0.02 0.04
6.56 10:54:03.6 RTK 35.544608009
-84.302962321 672.76 01/14/2009

Topo Point topo38 as built 556931.47 2441702.57
763.71 0.02 0.04
6.56 10:55:03.4 RTK 35.544624533
-84.302988699 664.6 01/14/2009

Topo Point topo39 as built 556959.63 2441663.74
762.32 0.03 0.06
6.56 10:55:22.8 RTK 35.544652958
-84.303035382 663.2 01/14/2009

Topo Point topo40 as built 556968.67 2441651.36
757.97 0.03 0.05
6.56 10:55:41.8 RTK 35.544662087
-84.303050264 658.86 01/14/2009

Topo Point topo41 as built 557000.85 2441678.32
758.16 0.02 0.04
6.56 10:56:37.6 RTK 35.544693504
-84.303016898 659.05 01/14/2009

Topo Point topo42 as built 556994.23 2441688.69
762.36 0.02 0.04
6.56 10:56:50.0 RTK 35.544686798
-84.303004418 663.25 01/14/2009

Topo Point topo43 as built 556961.4 2441736.24
762.98 0.05 0.08
6.56 10:57:09.4 RTK 35.544653627

-84.302947225 663.87 01/14/2009

Topo Point topo44 as built 556953.82 2441748.06
771.0 0.03 0.04
6.56 10:57:29.0 RTK 35.544645955
-84.302932995 671.88 01/14/2009

Topo Point topo45 as built 556985.76 2441796.25
774.14 0.03 0.04
6.56 10:58:04.2 RTK 35.544676815
-84.302873825 675.03 01/14/2009

Topo Point topo46 as built 556991.1 2441790.05
770.48 0.02 0.04
6.56 10:58:22.8 RTK 35.544682186
-84.302881274 671.37 01/14/2009

Topo Point topo47 as built 557002.54 2441774.4
769.54 0.02 0.04
6.56 10:58:40.6 RTK 35.544693740
-84.302900081 670.42 01/14/2009

Topo Point topo48 as built 557009.96 2441763.88
761.44 0.04 0.07
6.56 10:59:00.6 RTK 35.544701228
-84.302912729 662.33 01/14/2009

Topo Point topo49 as built 557045.63 2441712.28
760.61 0.02 0.04
6.56 10:59:29.0 RTK 35.544737279
-84.302974798 661.5 01/14/2009

Topo Point topo50 as built 557051.1 2441704.64
758.17 0.02 0.04
6.56 10:59:46.4 RTK 35.544742800
-84.302983988 659.05 01/14/2009

Topo Point topo51 as built 557086.95 2441729.49
757.89 0.06 0.08
6.56 11:00:24.8 RTK 35.544777878
-84.302953116 658.77 01/14/2009

Topo Point topo52 as built 557081.28 2441737.74
760.02 0.02 0.03
6.56 11:00:40.4 RTK 35.544772149
-84.302943200 660.9 01/14/2009

Topo Point topo53 as built 557040.35 2441802.43
760.1 0.04 0.07
6.56 11:01:15.2 RTK 35.544730708
-84.302865319 660.99 01/14/2009

Topo Point topo54 as built 557029.8 2441817.99
772.86 0.03 0.05
6.56 11:03:10.0 RTK 35.544720037
-84.302846591 673.74 01/14/2009

Topo Point topo55 as built 557073.82 2441836.86
771.71 0.02 0.04
6.56 11:04:03.0 RTK 35.544763288
-84.302822842 672.6 01/14/2009

Topo Point topo56 as built 557081.82 2441827.03

759.21 0.02   0.03
                                6.56   11:04:43.8   RTK   35.544771341
-84.302834653   660.1   01/14/2009

Topo   Point   topo57   as built   557121.12   2441771.9
758.9   0.02   0.04
                                6.56   11:05:28.6   RTK   35.544811029
-84.302900946   659.79 01/14/2009

Topo   Point   topo58   as built   557126.7   2441762.71
756.59 0.02   0.04
                                6.56   11:05:46.2   RTK   35.544816682
-84.302912010   657.48 01/14/2009

Topo   Point   topo59   as built   557167.58   2441789.31
755.4   0.02   0.04
                                6.56   11:06:50.2   RTK   35.544856707
-84.302878920   656.28 01/14/2009

Topo   Point   topo60   as built   557164.2   2441794.72
756.74 0.05   0.07
                                6.56   11:07:02.2   RTK   35.544853291
-84.302872407   657.63 01/14/2009

Topo   Point   topo61   as built   557129.55   2441848.9
757.92 0.02   0.04
                                6.56   11:08:30.8   RTK   35.544818211
-84.302807183   658.81 01/14/2009

Topo   Point   topo62   as built   557125.42   2441854.62
763.91 0.02   0.03
                                6.56   11:08:53.0   RTK   35.544814045
-84.302800310   664.8   01/14/2009

Topo   Point   topo63   as built   557177.7   2441868.15
754.02 0.02   0.03
                                6.56   11:10:00.6   RTK   35.544865545
-84.302782900   654.9   01/14/2009

Topo   Point   topo64   as built   557204.22   2441817.87
754.32 0.02   0.03
                                6.56   11:11:00.6   RTK   35.544892511
-84.302843531   655.21 01/14/2009

Topo   Point   topo65   as built   557208.41   2441812.49
753.3   0.03   0.05
                                6.56   11:11:15.2   RTK   35.544896739
-84.302850003   654.18 01/14/2009

Topo   Point   ground shot   drainage pipei 556863.09   2441823.96
761.17 0.02   0.03
                                6.56   08:32:52.2   RTK   35.544555098
-84.302842395   662.05 01/19/2009

Topo   Point   invert   drainage pipe1 556933.82   2441718.53
761.54 0.02   0.03
                                6.56   08:37:18.0   RTK   35.544626615
-84.302969262   662.43 01/19/2009

Topo   Point   invert2   drainage pipe2 556627.62   2441510.99
765.85 0.02   0.03
                                6.56   08:40:48.4   RTK   35.544326939
-84.303227152   666.74 01/19/2009

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Stakeout        Point   topo2                   556574.21       2441501.59
775.98  0.02    0.03    556574.23       2441501.66      775.98  0.0     0.07
                In      0.1             6.56    08:42:54.4      RTK
35.544274269    -84.303239564   676.86  01/19/2009


Stakeout        Point   topo3                   556578.67       2441492.07
771.1   0.02    0.04    556578.66       2441492.03      771.0   0.11    0.04
                In      0.1             6.56    08:44:23.4      RTK
35.544278814    -84.303251053   671.99  01/19/2009


Stakeout        Point   topo4                   556591.42       2441467.52
770.01  0.02    0.03    556591.37       2441467.48      770.04  -0.03   0.06
                In      0.1             6.56    08:45:17.4      RTK
35.544291797    -84.303280661   670.9   01/19/2009


Stakeout        Point   topo5                   556593.07       2441459.12
766.32  0.02    0.03    556593.06       2441459.14      766.27  0.05    0.02
                In      0.1             6.56    08:46:16.2      RTK
35.544293553    -84.303290833   667.2   01/19/2009


Stakeout        Point   topo6                   556609.91       2441431.72
765.89  0.02    0.03    556609.87       2441431.66      765.98  -0.1    0.07
                In      0.1             6.56    08:47:39.2      RTK
35.544310607    -84.303323830   666.77  01/19/2009


Stakeout        Point   topo7                   556660.62       2441462.47
764.29  0.02    0.03    556660.63       2441462.47      763.41  0.89    0.0
                In      0.1             6.56    08:48:28.6      RTK
35.544360298    -84.303285528   665.18  01/19/2009


Stakeout        Point   topo8                   556657.32       2441468.05
765.6   0.02    0.04    556657.32       2441467.94      765.38  0.22    0.11
                Out     0.1             6.56    08:49:15.0      RTK
35.544356948    -84.303278804   666.48  01/19/2009


Stakeout        Point   topo9                   556629.59       2441512.59
766.39  0.02    0.03    556629.61       2441512.6       766.19  0.2     0.02
                In      0.1             6.56    08:50:50.8      RTK
35.544328860    -84.303225173   667.27  01/19/2009


Topo    Point   pz1             drill points    556636.98       2441500.52
766.87  0.02    0.03
                                6.56    08:52:02.6      RTK     35.544336348
-84.303239704   667.76  01/19/2009

Topo    Point   pz2             drill points    556650.99       2441468.02
765.32  0.02    0.03
                                6.56    08:54:15.8      RTK     35.544350690
-84.303278957   666.2   01/19/2009

Stakeout        Point   topo12                  556676.08       2441537.63
766.78  0.02    0.03    556676.06       2441537.62      766.79  -0.01   0.03
                In      0.1             6.56    08:58:04.4      RTK
35.544374462    -84.303193878   667.67  01/19/2009
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Stakeout        Point   topo13                  556703.18       2441496.89
765.24  0.02    0.03    556703.18       2441496.87      765.45  -0.21   0.02
                        In      0.1             6.56    08:59:08.4      RTK
35.544401869    -84.303242908   666.13  01/19/2009


Stakeout        Point   topo14                  556707.7        2441490.69
763.05  0.02    0.03    556707.7        2441490.7       762.45  0.6     0.01
                        In      0.1             6.56    09:00:17.0      RTK
35.544406429    -84.303250354   663.94  01/19/2009


Stakeout        Point   topo15                  556744.95       2441510.27
762.26  0.02    0.03    556744.88       2441510.25      761.51  0.75    0.08
                        In      0.1             6.56    09:01:09.4      RTK
35.544442973    -84.303225876   663.14  01/19/2009


Stakeout        Point   topo16                  556735.56       2441518.42
765.69  0.02    0.03    556735.53       2441518.4       765.87  -0.18   0.03
                        In      0.1             6.56    09:01:49.0      RTK
35.544433558    -84.303216145   666.57  01/19/2009


Stakeout        Point   topo17                  556719.91       2441560.05
766.89  0.02    0.03    556719.94       2441560.03      766.43  0.46    0.04
                        In      0.1             6.56    09:02:50.2      RTK
35.544417465    -84.303165821   667.78  01/19/2009


Stakeout        Point   topo20                  556762.68       2441583.21
766.33  0.03    0.04    556762.63       2441583.21      766.54  -0.21   0.04
                        In      0.1             6.56    09:03:45.6      RTK
35.544459410    -84.303136883   667.21  01/19/2009


Stakeout        Point   topo21                  556784.05       2441549.99
765.49  0.02    0.03    556784.02       2441550.05      766.03  -0.54   0.06
                        In      0.1             6.56    09:04:32.6      RTK
35.544481039    -84.303176876   666.38  01/19/2009


Stakeout        Point   topo22                  556792.13       2441537.96
762.37  0.02    0.03    556792.11       2441537.97      760.99  1.39    0.03
                        In      0.1             6.56    09:05:06.2      RTK
35.544489213    -84.303191347   663.26  01/19/2009


Stakeout        Point   topo23                  556834.34       2441561.48
761.75  0.02    0.03    556834.37       2441561.45      760.99  0.76    0.05
                        In      0.1             6.56    09:06:15.6      RTK
35.544530594    -84.303161985   662.63  01/19/2009


Stakeout        Point   topo24                  556831.7        2441571.98
765.32  0.02    0.03    556831.67       2441571.96      765.09  0.22    0.03
                        In      0.1             6.56    09:07:15.8      RTK
35.544527827    -84.303149266   666.2   01/19/2009


Topo    Point   pz3             drill points    556822.89       2441588.49
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766.26 0.02 0.03
6.56 09:07:54.2 RTK 35.544518872
-84.303129368 667.14 01/19/2009

Topo Point pz4 drill points 556814.11 2441602.33
765.96 0.02 0.03
6.56 09:08:26.0 RTK 35.544509983
-84.303112696 666.85 01/19/2009

Stakeout Point topo25 556811.45 2441603.24
765.87 0.02 0.03 556811.41 2441603.33 765.79 0.09 0.1
Out 0.1 6.56 09:09:33.0 RTK
35.544507336 -84.303111650 666.76 01/19/2009

Stakeout Point topo28 556843.91 2441647.64
766.49 0.02 0.03 556843.92 2441647.59 766.46 0.03 0.05
In 0.1 6.56 09:11:19.8 RTK
35.544538772 -84.303057073 667.38 01/19/2009

Stakeout Point topo29 556853.52 2441634.42
766.23 0.02 0.03 556853.48 2441634.36 766.21 0.02 0.07
In 0.1 6.56 09:11:49.4 RTK
35.544548472 -84.303072966 667.12 01/19/2009

Stakeout Point topo30 556855.6 2441630.23
765.02 0.02 0.03 556855.56 2441630.25 764.66 0.35 0.04
In 0.1 6.56 09:12:17.8 RTK
35.544550590 -84.303078022 665.9 01/19/2009

Stakeout Point topo31 556876.14 2441610.82
765.19 0.02 0.03 556876.09 2441610.81 764.16 1.03 0.05
In 0.1 6.56 09:13:23.8 RTK
35.544571195 -84.303101238 666.07 01/19/2009

Stakeout Point topo32 556881.48 2441594.03
760.23 0.02 0.03 556881.53 2441594.06 759.85 0.38 0.06
In 0.1 6.56 09:14:17.4 RTK
35.544576722 -84.303121553 661.12 01/19/2009

Stakeout Point topo33 556921.71 2441617.0
759.92 0.02 0.03 556921.75 2441617.01 759.66 0.26 0.04
In 0.1 6.56 09:15:05.4 RTK
35.544616161 -84.303092890 660.81 01/19/2009

Stakeout Point topo34 556914.71 2441629.06
763.38 0.02 0.03 556914.66 2441629.04 762.9 0.47 0.06
In 0.1 6.56 09:15:39.6 RTK
35.544609063 -84.303078364 664.26 01/19/2009

Stakeout Point topo35 556890.3 2441665.39
764.29 0.02 0.03 556890.29 2441665.42 764.31 -0.02 0.04
In 0.1 6.56 09:16:31.2 RTK
35.544584382 -84.303034652 665.18 01/19/2009

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Stakeout        Point   topo38                  556931.47       2441702.55
764.76  0.02    0.03    556931.47       2441702.57      763.71  1.05    0.02
                        In      0.1             6.56    09:18:23.8      RTK
35.544624531    -84.302988724   665.65  01/19/2009


Stakeout        Point   topo39                  556959.62       2441663.8
762.18  0.02    0.03    556959.63       2441663.74      762.32  -0.14   0.06
                        In      0.1             6.56    09:19:44.4      RTK
35.544652951    -84.303035309   663.06  01/19/2009


Stakeout        Point   topo40                  556968.69       2441651.38
758.56  0.02    0.03    556968.67       2441651.36      757.97  0.59    0.03
                        In      0.1             6.56    09:20:29.6      RTK
35.544662107    -84.303050237   659.45  01/19/2009


Stakeout        Point   topo41                  557000.84       2441678.34
758.78  0.02    0.03    557000.85       2441678.32      758.16  0.62    0.02
                        In      0.1             6.56    09:21:28.4      RTK
35.544693495    -84.303016873   659.67  01/19/2009


Stakeout        Point   topo42                  556994.24       2441688.64
761.97  0.02    0.03    556994.23       2441688.69      762.36  -0.39   0.06
                        In      0.1             6.56    09:22:29.2      RTK
35.544686808    -84.303004484   662.86  01/19/2009


Stakeout        Point   topo43                  556961.42       2441736.25
763.74  0.02    0.03    556961.4        2441736.24      762.98  0.76    0.02
                        In      0.1             6.56    09:23:41.0      RTK
35.544653647    -84.302947214   664.63  01/19/2009


Topo    Point   pz5             drill points    556944.6        2441707.83
763.71  0.02    0.03
                        6.56    09:24:45.0      RTK     35.544637439
-84.302982060   664.6   01/19/2009

Topo    Point   pz6             drill points    556958.41       2441690.9
763.74  0.02    0.03
                        6.56    09:25:13.2      RTK     35.544651345
-84.303002389   664.62  01/19/2009

Stakeout        Point   topo48                  557009.94       2441763.88
762.63  0.02    0.03    557009.96       2441763.88      761.44  1.19    0.02
                        In      0.1             6.56    09:27:16.8      RTK
35.544701211    -84.302912731   663.51  01/19/2009


Stakeout        Point   topo49                  557045.6        2441712.27
760.37  0.02    0.03    557045.63       2441712.28      760.61  -0.24   0.04
                        In      0.1             6.56    09:28:21.4      RTK
35.544737242    -84.302974813   661.26  01/19/2009


Stakeout        Point   topo50                  557051.07       2441704.65
758.27  0.02    0.03    557051.1        2441704.64      758.17  0.1     0.04
                        In      0.1             6.56    09:28:58.6      RTK
35.544742766    -84.302983974   659.15  01/19/2009
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Stakeout        Point   topo51                  557086.98       2441729.51
758.15  0.02    0.03    557086.95       2441729.49      757.89  0.27    0.04
                        In      0.1             6.56    09:29:44.2      RTK
35.544777910    -84.302953099   659.04  01/19/2009


Stakeout        Point   topo52                  557081.26       2441737.76
759.94  0.02    0.03    557081.28       2441737.74      760.02  -0.08   0.04
                        In      0.1             6.56    09:30:15.0      RTK
35.544772122    -84.302943173   660.82  01/19/2009


Stakeout        Point   topo53                  557040.38       2441802.46
760.77  0.02    0.03    557040.35       2441802.43      760.1   0.67    0.04
                        In      0.1             6.56    09:31:10.6      RTK
35.544730738    -84.302865283   661.66  01/19/2009


Stakeout        Point   topo56                  557081.83       2441827.02
760.11  0.02    0.03    557081.82       2441827.03      759.21  0.9     0.02
                        In      0.1             6.56    09:32:06.0      RTK
35.544771352    -84.302834666   661.0   01/19/2009


Topo    Point   pz7             drill points    557088.57       2441818.68
760.05  0.02    0.03
                                6.56    09:32:44.4      RTK     35.544778145
-84.302844674   660.93  01/19/2009

Topo    Point   pz8             drill points    557105.47       2441791.06
759.98  0.02    0.03
                                6.56    09:33:07.0      RTK     35.544795271
-84.302877944   660.87  01/19/2009

Stakeout        Point   topo57                  557121.15       2441771.88
759.12  0.02    0.03    557121.12       2441771.9       758.9   0.21    0.04
                        In      0.1             6.56    09:34:00.4      RTK
35.544811060    -84.302900970   660.0   01/19/2009


Stakeout        Point   topo58                  557126.64       2441762.73
756.93  0.02    0.03    557126.7        2441762.71      756.59  0.33    0.06
                        In      0.1             6.56    09:35:39.6      RTK
35.544816628    -84.302911993   657.81  01/19/2009


Stakeout        Point   topo59                  557167.53       2441789.35
755.02  0.02    0.03    557167.58       2441789.31      755.4   -0.37   0.06
                        In      0.1             6.56    09:36:53.2      RTK
35.544856659    -84.302878883   655.91  01/19/2009


Stakeout        Point   topo60                  557164.27       2441794.7
755.04  0.03    0.05    557164.2        2441794.72      756.74  -1.7    0.08
                        In      0.1             6.56    09:38:11.2      RTK
35.544853361    -84.302872437   655.92  01/19/2009


Topo    Point   topo66          as built        557127.79       2441847.9
758.87  0.02    0.03
                                6.56    09:39:52.0      RTK     35.544816488
-84.302808438   659.76  01/19/2009
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Stakeout        Point   topo63                  557177.75       2441868.14
756.72  0.02    0.03    557177.7        2441868.15      754.02  2.71    0.05
                In      0.1             6.56    09:42:10.8      RTK
35.544865593    -84.302782914   657.61  01/19/2009


Topo    Point   topo65          as built        557197.26       2441822.46
757.08  0.02    0.03
                                6.56    09:44:19.0      RTK     35.544885568
-84.302838084   657.97  01/19/2009

Topo    Point   topo64          as built        557187.42       2441840.5
752.92  0.02    0.03
                                6.56    09:44:53.8      RTK     35.544875560
-84.302816339   653.8   01/19/2009

Topo    Point   topo67          as built        557191.84       2441856.18
750.68  0.02    0.03
                                6.56    09:45:46.2      RTK     35.544879705
-84.302797195   651.56  01/19/2009

Topo    Point   topo68          as built        557195.91       2441875.76
748.9   0.02    0.03
                                6.56    09:46:13.8      RTK     35.544883432
-84.302773314   649.79  01/19/2009

Topo    Point   topo69          as built        557188.23       2441891.24
748.39  0.02    0.03
                                6.56    09:46:54.2      RTK     35.544875606
-84.302754640   649.27  01/19/2009

Topo    Point   topo70          as built        557186.09       2441909.51
745.01  0.02    0.03
                                6.56    09:47:27.6      RTK     35.544873221
-84.302732479   645.89  01/19/2009

Topo    Point   topo71          as built        557155.31       2441952.93
745.07  0.02    0.03
                                6.56    09:48:15.0      RTK     35.544842134
-84.302680259   645.96  01/19/2009

Topo    Point   topo72          as built        557152.72       2441931.54
754.62  0.02    0.02
                                6.56    09:50:37.4      RTK     35.544839888
-84.302706304   655.5   01/19/2009

Topo    Point   topo73          as built        557169.57       2441905.76
755.63  0.02    0.03
                                6.56    09:50:54.4      RTK     35.544856941
-84.302737339   656.51  01/19/2009

Topo    Point   ground shot2            drainage pipe2  556560.09       2441620.82
765.16  0.03    0.03
                                6.56    09:55:09.4      RTK     35.544258525
-84.303094891   666.05  01/19/2009

Stakeout        Point   topo1                   556574.2        2441501.54
773.32  0.02    0.04    556574.18       2441501.55      776.03  -2.72   0.02
                In      0.1             6.56    12:12:01.0      RTK
35.544274251    -84.303239627   674.21  01/26/2009
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Stakeout        Point   topo3                   556578.7        2441492.05
773.14  0.02    0.03    556578.66       2441492.03      771.0   2.15    0.04
                        In      0.1             6.56    12:12:53.0      RTK
35.544278843    -84.303251072   674.03  01/26/2009


Stakeout        Point   topo4                   556591.47       2441467.46
770.44  0.02    0.04    556591.37       2441467.48      770.04  0.39    0.11
                        Out     0.1             6.56    12:13:31.0      RTK
35.544291846    -84.303280727   671.32  01/26/2009


Stakeout        Point   topo5                   556593.04       2441459.15
767.92  0.02    0.04    556593.06       2441459.14      766.27  1.65    0.03
                        In      0.1             6.56    12:14:05.8      RTK
35.544293519    -84.303290798   668.8   01/26/2009


Stakeout        Point   topo6                   556609.99       2441431.68
765.86  0.02    0.03    556609.87       2441431.66      765.98  -0.12   0.13
                        Out     0.1             6.56    12:14:35.4      RTK
35.544310691    -84.303323884   666.75  01/26/2009


Stakeout        Locate Line     StakedPt1                       556610.93
2441545.06      773.75  0.02    0.03
        46.0    0.19                            6.56    12:23:49.2      RTK
35.544309928    -84.303186045   674.63  01/26/2009


Stakeout        Locate Line     StakedPt2                       556643.79
2441490.74      772.43  0.02    0.03
        109.49  0.22                            6.56    12:24:32.8      RTK
35.544343235    -84.303251473   673.32  01/26/2009


Stakeout        Locate Line     StakedPt3                       556655.53
2441470.79      766.62  0.02    0.03
        132.63  -0.06                           6.56    12:24:57.6      RTK
35.544355138    -84.303275501   667.5   01/26/2009


Stakeout        Locate Line     StakedPt4                       556658.76
2441565.74      773.56  0.02    0.05
        53.07   0.0                             6.56    12:58:10.6      RTK
35.544356914    -84.303160033   674.45  01/26/2009


Stakeout        Locate Line     StakedPt5                       556687.21
2441522.2       773.01  0.03    0.05
        105.08  0.05                            6.56    12:58:46.2      RTK
35.544385700    -84.303212437   673.9   01/26/2009


Stakeout        Locate Line     StakedPt6                       556703.18
2441497.71      765.61  0.04    0.08
        134.31  0.04                            6.56    12:59:11.2      RTK
35.544401850    -84.303241909   666.5   01/26/2009


Stakeout        Locate Line     StakedPt7                       556736.68
2441516.17      765.98  0.03    0.05
        135.95  -0.04                           6.56    13:00:03.6      RTK
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35.544434701 -84.303218853 666.87 01/26/2009

Stakeout Locate Line StakedPt8 556721.24
2441545.08 773.25 0.02 0.04
103.18 -0.01 6.56 13:00:36.8 RTK
35.544419005 -84.303184002 674.14 01/26/2009

Stakeout Locate Line StakedPt9 556696.35
2441591.65 773.4 0.02 0.05
50.37 0.02 6.56 13:01:16.6 RTK
35.544393695 -84.303127852 674.28 01/26/2009

Stakeout Locate Line StakedPt10 556741.99
2441618.77 773.54 0.02 0.04
50.69 -0.06 6.56 13:02:11.6 RTK
35.544438425 -84.303094041 674.43 01/26/2009

Stakeout Locate Line StakedPt11 556769.01
2441575.32 773.04 0.03 0.05
101.86 0.03 6.56 13:02:35.8 RTK
35.544465790 -84.303146363 673.92 01/26/2009

Stakeout Locate Line StakedPt12 556787.24
2441545.68 765.89 0.02 0.04
136.65 -0.07 6.56 13:03:08.0 RTK
35.544484259 -84.303182053 666.78 01/26/2009

Stakeout Locate Line StakedPt13 556829.87
2441568.73 765.59 0.03 0.05
138.97 -0.09 6.56 13:03:56.4 RTK
35.544526067 -84.303153253 666.48 01/26/2009

Stakeout Locate Line StakedPt14 556811.3
2441599.71 772.98 0.02 0.05
102.85 0.01 6.56 13:04:29.4 RTK
35.544507238 -84.303115938 673.86 01/26/2009

Stakeout Locate Line StakedPt15 556779.15
2441652.86 773.55 0.02 0.04
40.73 -0.05 6.56 13:05:05.0 RTK
35.544474662 -84.303051920 674.43 01/26/2009

Stakeout Locate Line StakedPt16 556823.76
2441679.87 773.08 0.03 0.05
40.74 0.05 6.56 13:06:04.4 RTK
35.544518369 -84.303018276 673.96 01/26/2009

Stakeout Locate Line StakedPt17 556855.03
2441633.42 772.74 0.03 0.05
96.73 0.02 6.56 13:06:25.2 RTK
35.544549981 -84.303074162 673.63 01/26/2009

Stakeout Locate Line StakedPt18 556877.22
2441600.43 763.26 0.03 0.04
136.49 -0.02 6.56 13:06:51.2 RTK
35.544572415 -84.303113848 664.15 01/26/2009

Stakeout Locate Line StakedPt19 556916.02
2441625.96 763.06 0.02 0.04
134.57 -0.03 6.56 13:07:42.6 RTK
35.544610397 -84.303082109 663.94 01/26/2009

Stakeout Locate Line StakedPt20 556893.58
2441661.28 772.62 0.03 0.05
92.72 0.02 6.56 13:08:09.2 RTK
35.544587680 -84.303039590 673.51 01/26/2009

Stakeout Locate Line StakedPt21 556869.17
2441699.45 772.99 0.02 0.04
47.42 -0.05 6.56 13:12:32.2 RTK
35.544562978 -84.302993635 673.88 01/26/2009

Stakeout Locate Line StakedPt22 556908.3
2441735.23 773.32 0.02 0.04
37.14 0.06 6.56 13:13:38.0 RTK
35.544601134 -84.302949425 674.2 01/26/2009

Stakeout Locate Line StakedPt23 556938.04
2441693.77 772.71 0.03 0.05
88.16 -0.06 6.56 13:14:16.2 RTK
35.544631160 -84.302999271 673.6 01/26/2009

Stakeout Locate Line StakedPt24 556961.01
2441661.9 762.67 0.02 0.04
127.46 -0.06 6.56 13:14:40.0 RTK
35.544654355 -84.303037599 663.56 01/26/2009

Stakeout Locate Line StakedPt25 556997.11
2441684.28 762.11 0.02 0.04
126.58 0.02 6.56 13:15:41.0 RTK
35.544689710 -84.303009723 663.0 01/26/2009

Stakeout Locate Line StakedPt26 556974.27
2441720.2 772.74 0.02 0.04
84.01 -0.04 6.56 13:16:29.0 RTK
35.544666592 -84.302966478 673.62 01/26/2009

Stakeout Locate Line StakedPt27 556947.65
2441762.12 773.06 0.02 0.04
34.36 -0.08 6.56 13:17:13.6 RTK
35.544639645 -84.302916014 673.95 01/26/2009

Stakeout Locate Line StakedPt28 556992.24
2441788.31 772.26 0.02 0.04
35.07 -0.06 6.56 13:18:06.6 RTK

35.544683341 -84.302883360 673.15 01/26/2009

Stakeout Locate Line StakedPt29 557018.57
2441750.86 771.96 0.02 0.04
80.85 -0.05 6.56 13:18:27.6 RTK
35.544709939 -84.302928398 672.84 01/26/2009

Stakeout Locate Line StakedPt30 557045.13
2441713.0 761.54 0.02 0.04
127.1 -0.08 6.56 13:18:55.0 RTK
35.544736769 -84.302973934 662.42 01/26/2009

Stakeout Locate Line StakedPt31 557082.57
2441736.43 760.46 0.02 0.04
126.14 0.02 6.56 13:19:47.8 RTK
35.544773437 -84.302944764 661.34 01/26/2009

Stakeout Locate Line StakedPt32 557057.21
2441776.35 771.29 0.02 0.04
78.86 0.01 6.56 13:20:18.6 RTK
35.544747769 -84.302896712 672.18 01/26/2009

Stakeout Locate Line StakedPt33 557034.27
2441812.55 771.79 0.02 0.04
36.0 0.06 6.56 13:20:42.0 RTK
35.544724545 -84.302853130 672.68 01/26/2009

Stakeout Locate Line StakedPt34 557079.65
2441835.08 771.15 0.02 0.05
40.19 0.02 6.56 13:21:25.6 RTK
35.544769080 -84.302824908 672.03 01/26/2009

Stakeout Locate Line StakedPt35 557098.68
2441805.87 770.97 0.02 0.04
75.05 0.05 6.56 13:21:52.4 RTK
35.544788336 -84.302860059 671.86 01/26/2009

Stakeout Locate Line StakedPt36 557123.71
2441767.11 759.68 0.02 0.04
121.19 -0.1 6.56 13:22:26.0 RTK
35.544813668 -84.302906714 660.57 01/26/2009

Stakeout Locate Line StakedPt37 557158.7
2441803.27 759.12 0.04 0.07
108.31 0.01 6.56 13:23:09.6 RTK
35.544847727 -84.302862124 660.01 01/26/2009

Stakeout Locate Line StakedPt38 557136.64
2441838.0 767.0 0.02 0.04
67.15 0.06 6.56 13:23:53.6 RTK
35.544825384 -84.302820308 667.89 01/26/2009

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Stakeout        Locate Line     StakedPt39                      557113.94
2441873.45      764.59  0.02    0.04
        25.07   -0.04                           6.56    13:24:47.6      RTK
35.544802416    -84.302777639   665.48  01/26/2009


Stakeout        Point   invert2                 556627.6        2441510.99
773.81  0.01    0.02    556627.62       2441510.99      765.85  7.96    0.02
                In      0.1             6.56    15:50:04.6      RTK
35.544326920    -84.303227157   674.7   02/04/2009


Topo    Point   finish g1               as built dike d         556571.37
2441506.08      774.16  0.02    0.03
        59.04   0.04                            6.56    07:20:23.6      RTK
35.544271390    -84.303234161   675.04  02/05/2009


Topo    Point   finish g2               as built dike d         556586.89
2441476.17      773.03  0.02    0.03
        92.73   0.07                            6.56    07:25:24.2      RTK
35.544287183    -84.303270229   673.92  02/05/2009


Topo    Point   finish g3               as built dike d         556599.36
2441452.09      766.5   0.02    0.03
        119.85  0.07                            6.56    07:27:08.8      RTK
35.544299874    -84.303299265   667.38  02/05/2009


Topo    Point   finish g4               as built dike d         556656.0
2441470.17      766.57  0.02    0.03
        133.41  0.02                            6.56    07:29:48.0      RTK
35.544355611    -84.303276254   667.46  02/05/2009


Topo    Point   finish g5               as built dike d         556642.65
2441492.33      773.15  0.02    0.03
        107.53  0.06                            6.56    07:31:30.6      RTK
35.544342075    -84.303249558   674.04  02/05/2009


Topo    Point   finish g6               as built dike d         556615.41
2441537.26      774.37  0.02    0.03
        55.0    -0.01                           6.56    07:33:07.2      RTK
35.544314477    -84.303195451   675.26  02/05/2009


Topo    Point   finish g7               as built dike d         556657.44
2441567.67      774.54  0.02    0.03
        50.73   -0.05                           6.56    07:36:03.4      RTK
35.544355578    -84.303157714   675.43  02/05/2009


Topo    Point   finish g8               as built dike d         556687.52
2441521.52      773.48  0.02    0.03
        105.81  -0.07                           6.56    07:37:45.2      RTK
35.544386009    -84.303213250   674.37  02/05/2009


Topo    Point   finish g9               as built dike d         556703.2
2441497.57      766.17  0.02    0.03
        134.44  -0.01                           6.56    07:38:43.4      RTK
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35.544401877 -84.303242077 667.05 02/05/2009

Topo Point finish g10 as built dike d 556739.12
2441520.0 766.58 0.02 0.03
133.78 -0.13 6.56 07:43:11.0 RTK
35.544437062 -84.303214154 667.47 02/05/2009

Topo Point finish g11 as built dike d 556739.14
2441520.04 766.59 0.02 0.03
133.76 -0.1 6.56 07:43:54.8 RTK
35.544437076 -84.303214111 667.48 02/05/2009

Topo Point finish g12 as built dike d 556724.05
2441546.82 773.81 0.02 0.03
103.02 0.16 6.56 07:45:10.4 RTK
35.544421753 -84.303181829 674.7 02/05/2009

Topo Point finish g13 as built dike d 556697.64
2441592.46 774.76 0.02 0.03
50.28 0.02 6.56 07:46:50.6 RTK
35.544394957 -84.303126833 675.65 02/05/2009

Topo Point finish g14 as built dike d 556742.15
2441618.95 774.8 0.02 0.03
50.62 0.16 6.56 07:51:49.8 RTK
35.544438574 -84.303093826 675.69 02/05/2009

Topo Point finish g15 as built dike d 556769.03
2441575.36 773.9 0.02 0.03
101.83 0.07 6.56 07:52:55.2 RTK
35.544465812 -84.303146307 674.78 02/05/2009

Topo Point finish g16 as built dike d 556785.91
2441547.95 766.82 0.02 0.03
134.02 -0.02 6.56 07:54:09.6 RTK
35.544482904 -84.303179326 667.71 02/05/2009

Topo Point finish g17 as built dike d 556785.89
2441547.93 766.82 0.02 0.03
134.03 -0.04 6.56 07:55:18.8 RTK
35.544482888 -84.303179350 667.7 02/05/2009

Topo Point finish g18 as built dike d 556829.11
2441570.08 766.27 0.02 0.03
137.42 -0.04 6.56 07:56:43.4 RTK
35.544525301 -84.303151628 667.15 02/05/2009

Topo Point finish g19 as built dike d 556811.75
2441598.98 773.29 0.02 0.03
103.71 0.02 6.56 07:57:33.2 RTK
35.544507695 -84.303116820 674.18 02/05/2009

Topo Point finish g20 as built dike d 556784.1
2441644.83 774.86 0.02 0.03
50.17 0.04 6.56 07:58:20.8 RTK
35.544479676 -84.303061596 675.74 02/05/2009

Topo Point finish g21 as built dike d 556829.91
2441670.77 774.6 0.02 0.03
51.72 0.07 6.56 07:59:31.8 RTK
35.544524581 -84.303029217 675.48 02/05/2009

Topo Point finish g22 as built dike d 556856.37
2441631.36 773.14 0.02 0.03
99.19 -0.02 6.56 07:59:59.8 RTK
35.544551332 -84.303076642 674.02 02/05/2009

Topo Point finish g23 as built dike d 556876.24
2441602.51 764.43 0.02 0.03
134.22 0.33 6.56 08:00:27.0 RTK
35.544571417 -84.303111343 665.31 02/05/2009

Topo Point finish g24 as built dike d 556914.6
2441628.24 764.13 0.02 0.03
131.88 0.0 6.56 08:01:29.8 RTK
35.544608960 -84.303079364 665.02 02/05/2009

Topo Point finish g25 as built dike d 556893.83
2441661.03 773.2 0.02 0.03
93.07 0.11 6.56 08:02:02.8 RTK
35.544587937 -84.303039885 674.08 02/05/2009

Topo Point finish g26 as built dike d 556871.35
2441696.48 774.32 0.02 0.03
51.09 0.19 6.56 08:02:29.4 RTK
35.544565174 -84.302997205 675.21 02/05/2009

Topo Point finish g27 as built dike d 556915.65
2441725.08 773.87 0.02 0.03
49.67 0.08 6.56 08:03:41.6 RTK
35.544608551 -84.302961629 674.76 02/05/2009

Topo Point finish g28 as built dike d 556938.18
2441693.61 773.11 0.02 0.03
88.37 -0.04 6.56 08:04:17.4 RTK
35.544631299 -84.302999462 674.0 02/05/2009

Topo Point finish g29 as built dike d 556960.77
2441662.38 763.29 0.02 0.03
126.92 0.03 6.56 08:04:44.0 RTK
35.544654110 -84.303037019 664.18 02/05/2009

Topo Point finish g30 as built dike d 556996.84
2441685.09 762.68 0.02 0.03
125.75 0.23 6.56 08:07:18.8 RTK

35.544689434 -84.303008741 663.57 02/05/2009

Topo Point finish g31 as built dike d 556974.62
2441719.71 773.27 0.02 0.03
84.62 -0.01 6.56 08:07:56.2 RTK
35.544666944 -84.302967079 674.16 02/05/2009

Topo Point finish g32 as built dike d 556956.98
2441747.8 773.73 0.02 0.03
51.45 0.13 6.56 08:08:35.2 RTK
35.544649085 -84.302933254 674.62 02/05/2009

Topo Point finish g33 as built dike d 556995.78
2441783.28 773.56 0.02 0.03
41.22 -0.06 6.56 08:10:48.8 RTK
35.544686918 -84.302889414 674.45 02/05/2009

Topo Point finish g34 as built dike d 557019.35
2441749.82 772.39 0.02 0.03
82.14 -0.01 6.56 08:11:19.8 RTK
35.544710722 -84.302929648 673.27 02/05/2009

Topo Point finish g35 as built dike d 557044.66
2441714.01 762.21 0.02 0.03
126.0 0.12 6.56 08:11:50.0 RTK
35.544736292 -84.302972720 663.1 02/05/2009

Topo Point finish g36 as built dike d 557081.3
2441738.47 761.6 0.02 0.03
123.75 0.04 6.56 08:13:03.0 RTK
35.544772157 -84.302942314 662.48 02/05/2009

Topo Point finish g37 as built dike d 557057.95
2441775.12 771.64 0.02 0.03
80.29 -0.02 6.56 08:13:43.8 RTK
35.544748518 -84.302898191 672.52 02/05/2009

Topo Point finish g38 as built dike d 557030.75
2441818.04 773.25 0.02 0.03
29.48 0.03 6.56 08:14:15.8 RTK
35.544720982 -84.302846521 674.13 02/05/2009

Topo Point finish g39 as built dike d 557061.11
2441863.46 772.78 0.02 0.03
6.29 -0.05 6.56 08:16:15.0 RTK
35.544750320 -84.302790753 673.67 02/05/2009

Topo Point finish g40 as built dike d 557099.72
2441804.24 771.07 0.02 0.03
76.98 0.03 6.56 08:16:50.8 RTK
35.544789382 -84.302862019 671.96 02/05/2009

```
Topo    Point   finish g41              as built dike d         557122.26
2441769.33      760.74  0.02    0.03
        118.54  -0.11                           6.56    08:17:19.6      RTK
35.544812199    -84.302904044   661.62  02/05/2009


Topo    Point   finish g42              as built dike d         557157.78
2441804.81      759.88  0.02    0.03
        106.5   0.06                            6.56    08:18:01.8      RTK
35.544846787    -84.302860262   660.77  02/05/2009


Topo    Point   finish g43              as built dike d         557133.19
2441843.18      768.38  0.02    0.03
        60.93   -0.07                           6.56    08:19:00.2      RTK
35.544821897    -84.302814074   669.26  02/05/2009


Topo    Point   finish g44              as built dike d         557110.29
2441879.38      766.63  0.02    0.03
        18.1    0.07                            6.56    08:19:22.2      RTK
35.544798719    -84.302770488   667.52  02/05/2009
```

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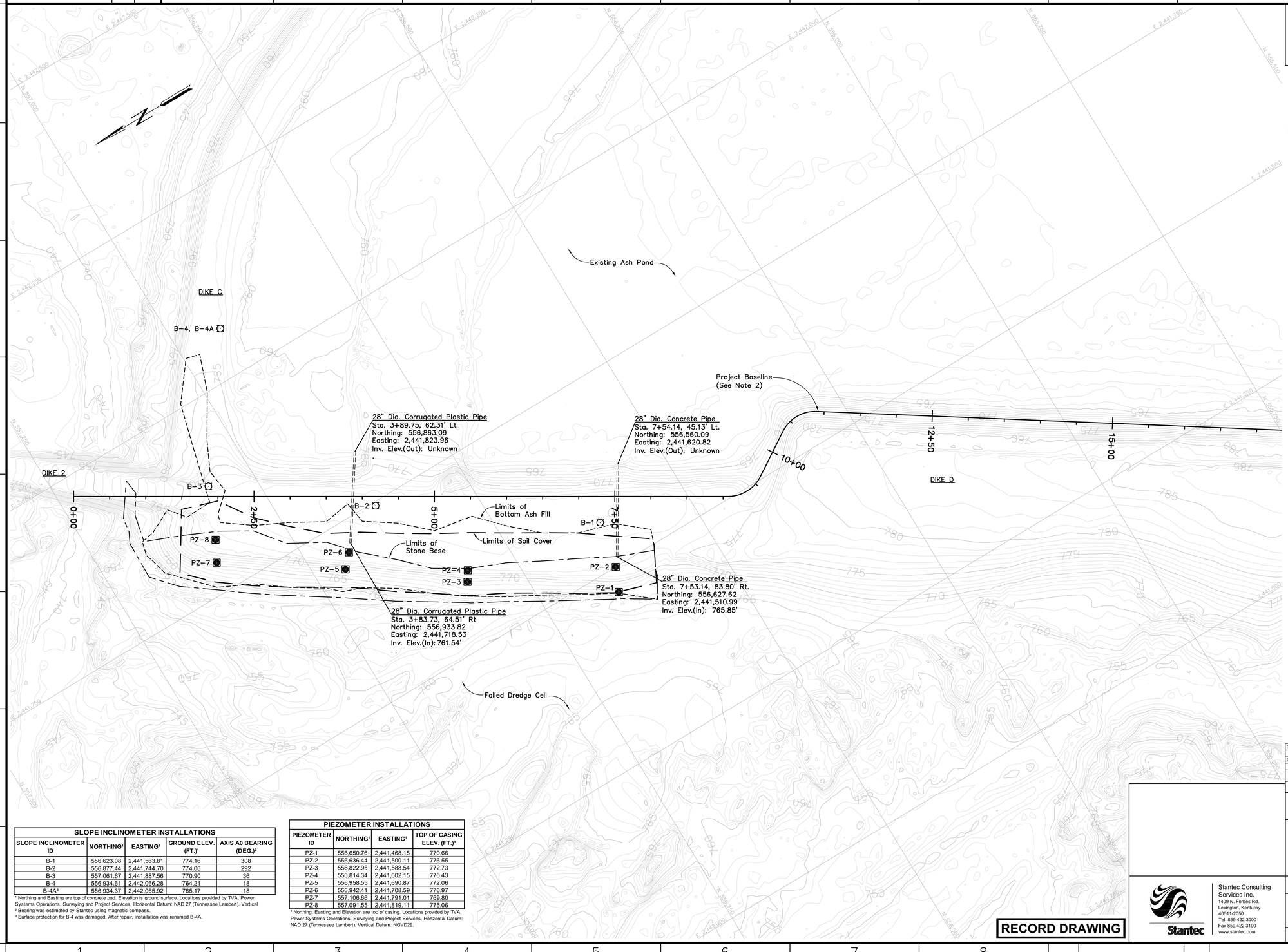
NOTES:

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress and pipe backfilling are intended to improve the interim stability of Dikes C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.
2. The baseline shown for Dike D was provided to Stantec by Worley Parsons on a drawing dated January 2, 2009. Baseline reference stakes were set in the field by Tennessee Valley Authority (TVA) surveyors.
3. Dike D as–built survey information was provided to Stantec by TVA and MACTEC Development Corp. This information included survey data recorded from January 14, 2009 to February 5, 2009. Due to the emergency nature of the construction, the extent and frequency of as–built surveying was limited. As–built features shown hereon are based on the available information, but may not fully portray actual constructed features.
4. Due to rapidly evolving construction activities in the vicinity of Dike D, the as–built survey data presented hereon only represents the conditions at the time of survey, and may vary from later surveys or mapping. Topographic mapping shown hereon was provided to Stantec by TVA and was collected on April 9, 2009. Changes to topography after April 9, 2009 are possible.
5. Dike 2 was completed after Dike D Buttress and now conceals portions of as–built features shown hereon.



LEGEND
PZ–1 Existing Piezometer
B–1 Existing Slope Inclinometer

GRAPHIC SCALE: 25 0 50 100 FEET

PLOT DATE: 06/23/2009 USER: JOHNSON, TRACY
V:\TVA\ACTIVE\TVA146817\DIV\KINGSTON_DIV\GRAPHICS\DIKE_D\RECORD\10W427IC-427-101-G01.DWG

SLOPE INCLINOMETER INSTALLATIONS

SLOPE INCLINOMETER ID	NORTHING[1]	EASTING[1]	GROUND ELEV. (FT.)[1]	AXIS A0 BEARING (DEG.)[2]
B-1	556,623.08	2,441,563.81	774.16	308
B-2	556,877.44	2,441,744.70	774.06	292
B-3	557,061.67	2,441,887.56	770.90	36
B-4	556,934.61	2,442,066.28	764.21	18
B-4A[3]	556,934.37	2,442,065.92	765.17	18

[1] Northing and Easting are top of concrete pad. Elevation is ground surface. Locations provided by TVA, Power Systems Operations, Surveying and Project Services. Horizontal Datum: NAD 27 (Tennessee Lambert). Vertical
[2] Bearing was estimated by Stantec using magnetic compass.
[3] Surface protection for B-4 was damaged. After repair, installation was renamed B-4A.

PIEZOMETER INSTALLATIONS

PIEZOMETER ID	NORTHING[1]	EASTING[1]	TOP OF CASING ELEV. (FT.)[1]
PZ-1	556,650.76	2,441,468.15	770.66
PZ-2	556,636.44	2,441,500.11	776.55
PZ-3	556,822.95	2,441,588.54	772.73
PZ-4	556,814.34	2,441,602.15	776.43
PZ-5	556,958.55	2,441,690.87	772.06
PZ-6	556,942.41	2,441,708.59	776.97
PZ-7	557,106.66	2,441,791.01	769.80
PZ-8	557,091.55	2,441,819.11	775.06

[1] Northing, Easting and Elevation are top of casing. Locations provided by TVA, Power Systems Operations, Surveying and Project Services. Horizontal Datum: NAD 27 (Tennessee Lambert). Vertical Datum: NGVD29.

RECORD DRAWING

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST
–	–	–	–	–	–	–	–	–	–	–
R 0	06/09	–	ACC	OKR	JSD	JWA	–	–	–	–
INITIAL ISSUE										

DISCIPLINE: INTERFACE

SCALE: 1"= 50' EXCEPT AS NOTED

YARD
–

KINGSTON FOSSIL PLANT
DIKE D BUTTRESS
PLAN VIEW

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
–	A. CLINKENBEARD	O. ROUTT	J. DINGRANDO	J. ANDREW		

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
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40511-2050
Tel. 859.422.3000
Fax 859.422.3100
www.stantec.com

AUTOCAD R 2008 | DATE 06/09 | 41 | C | 10W427–01 | R 0

TASK COMPLETED BY: – | REV NO. –

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

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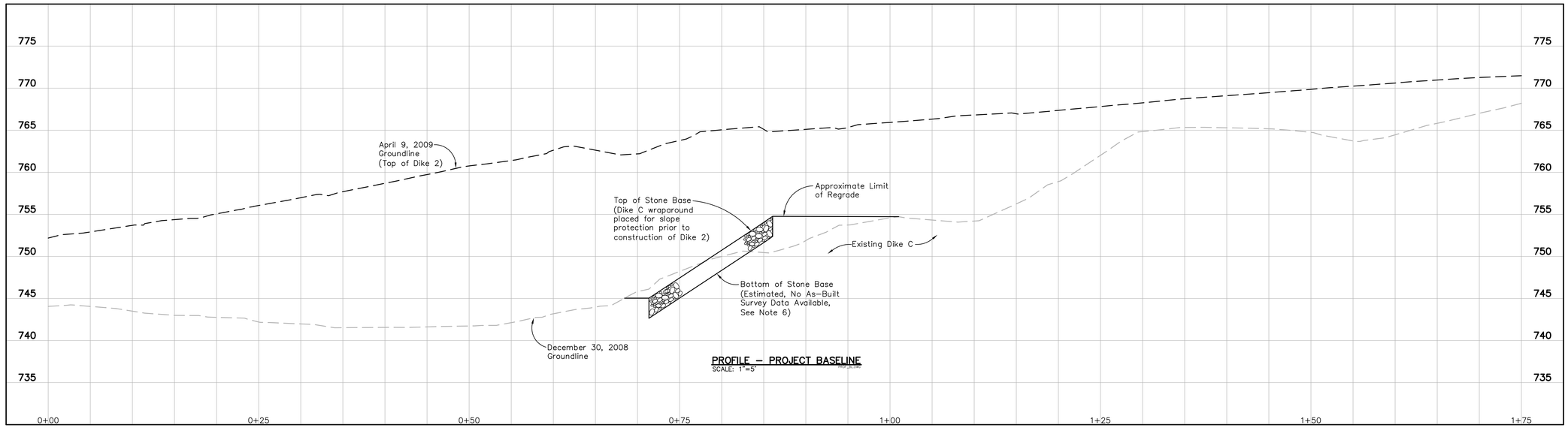

PROFILE – PROJECT BASELINE
SCALE: 1"=5'

NOTES:

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress and pipe backfilling are intended to improve the interim stability of Dikes C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.
2. Dike D as-built survey information was provided to Stantec by Tennessee Valley Authority (TVA) and MACTEC Development Corp. This information included survey data recorded from January 14, 2009 to February 5, 2009. Due to the emergency nature of the construction, the extent and frequency of as-built surveying was limited. As-built features shown hereon are based on the available information, but may not fully portray actual constructed features.
3. Due to rapidly evolving construction activities in the vicinity of Dike D, the as-built survey data presented hereon only represents the conditions at the time of survey, and may vary from later surveys or mapping. Topographic mapping shown hereon was provided to Stantec by TVA and was collected on April 9, 2009. Changes to topography after April 9, 2009 are possible.
4. Dike 2 was completed after Dike D Buttress and now conceals portions of as-built features shown hereon.
5. December 30, 2008 groundline is based on topographic mapping provided to Stantec by TVA. This topography is representative of the existing conditions at the beginning of Dike D Buttress construction.
6. Stone Base (i.e., rip rap and/or shotrock) was placed on the slope for armoring. Due to uncertainty of constructed thickness, the thickness shown is based on design data.

RECORD DRAWING

REV NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST
R –	–	–	–	–	–	–	–	–	–	–
–										
R 0	06/09	–	DMG	OKR	JSD	JWA	–	–	–	–
INITIAL ISSUE										

DISCIPLINE INTERFACE
REV ON
1
2
3
4

SCALE: AS SHOWN EXCEPT AS NOTED

YARD
–

KINGSTON FOSSIL PLANT
DIKE D BUTTRESS
PROFILE – PROJECT BASELINE

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
–	D. GRAHAM	O. ROUTT	J. DINGRANDO	J. ANDREW		

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

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Tel. 859.422.3000
Fax 859.422.3100
www.stantec.com

AUTOCAD R 2008	DATE 06/09	41	C	10W427-02	R 0

–	–
TASK COMPLETED BY:	REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

PLOT DATE: 06/23/2009 USER: JOHNSON, TRACY
K:\TVA\ACTIVE\174468171\ENVIRONMENTAL\DRAWINGS\WP\DIKE_D\ECORD\GB1171C-WP-301-WP1.DWG

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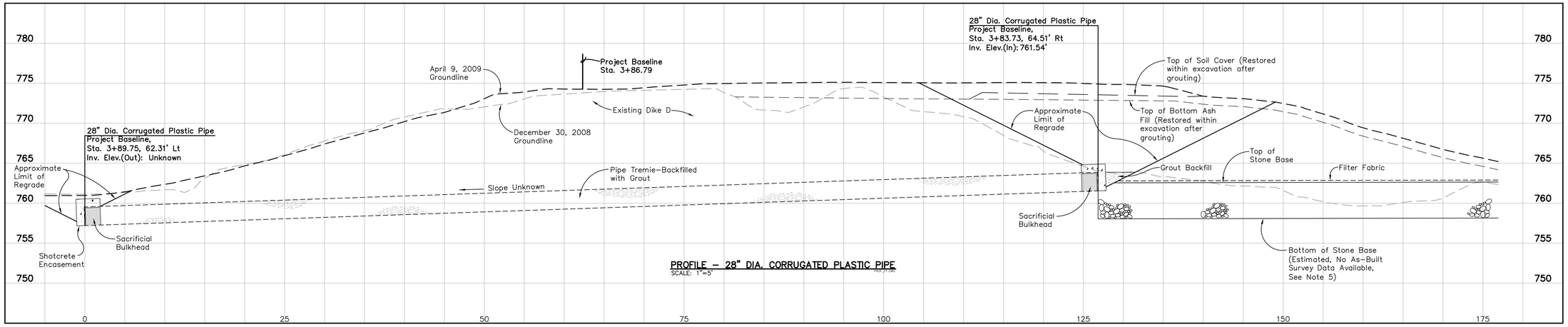
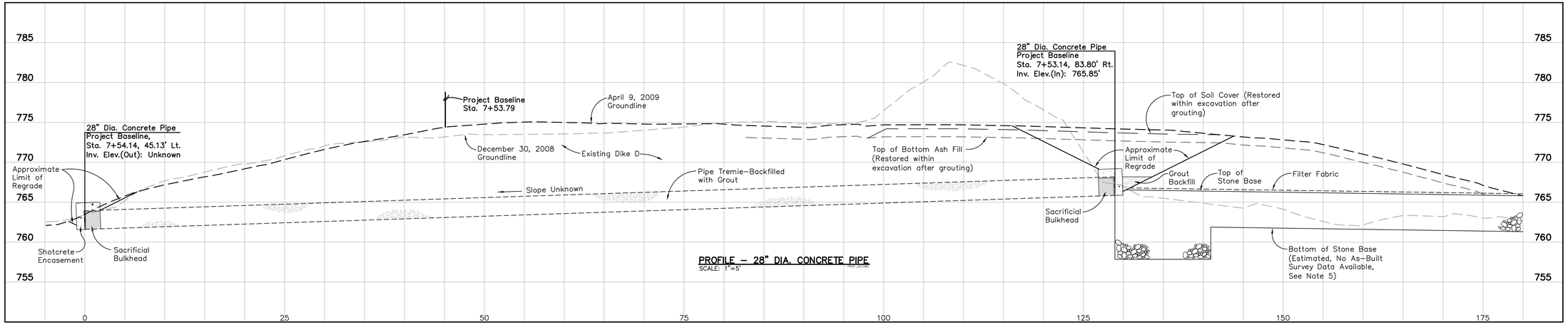


PROFILE – 28" DIA. CORRUGATED PLASTIC PIPE
SCALE: 1"=5'



PROFILE – 28" DIA. CONCRETE PIPE
SCALE: 1"=5'

NOTES:

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress and pipe backfilling are intended to improve the interim stability of Dikes C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.
2. Dike D as–built survey information was provided to Stantec by Tennessee Valley Authority (TVA) and MACTEC Development Corp. This information included survey data recorded from January 14, 2009 to February 5, 2009. Due to the emergency nature of the construction, the extent and frequency of as–built surveying was limited. As–built features shown hereon are based on the available information, but may not fully portray actual constructed features.
3. Due to rapidly evolving construction activities in the vicinity of Dike D, the as–built survey data presented hereon only represents the conditions at the time of survey, and may vary from later surveys or mapping. Topographic mapping shown hereon was provided to Stantec by TVA and was collected on April 9, 2009. Changes to topography after April 9, 2009 are possible.
4. December 30, 2008 groundline is based on topographic mapping provided to Stantec by TVA. This topography is representative of the existing conditions at the beginning of Dike D Buttress construction.
5. Stone base (i.e., rip rap and/or shot rock) was placed over soft foundation ash by blading out and "walking" rip rap into the soft material with heavy equipment. An eight–inch layer of No. 57 crushed stone was placed over the rip rap to choke the surface prior to placing the filter fabric. Due to uncertainty of constructed thickness, the thickness shown is based on design data.

RECORD DRAWING

REV NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R –	–	–	–	–	–	–	–	–	–	–	–
–											
R 0	06/09	–	DMG	OKR	JSD	JWA	–	–	–	–	–
INITIAL ISSUE											DISCIPLINE INTERFACE

SCALE: AS SHOWN EXCEPT AS NOTED

YARD
–

KINGSTON FOSSIL PLAN
DIKE D BUTTRESS
PROFILES – 28" DIA. PIPES

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
–	D. GRAHAM	O. ROUTT	J. DINGRANDO	J. ANDREW		

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2008 | DATE 06/09 | 41 | C | 10W427–03 | R 0

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www.stantec.com

–	–
TASK COMPLETED BY:	REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

PLOT DATE: 08/21/2009 USER: JOHNSON, TRACY
V:\0714\ACTIVE\10W427-03\ENVIRONMENTAL\DRAWINGS\MXD\DIKE_D\RECORD\10W427C-MF-332-PF2.DWG

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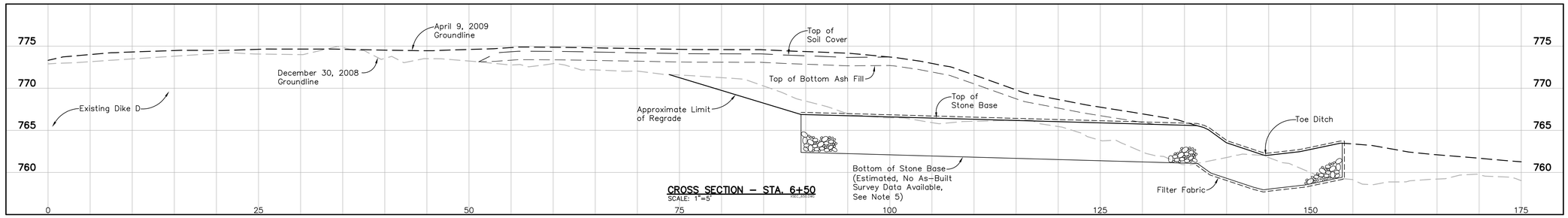
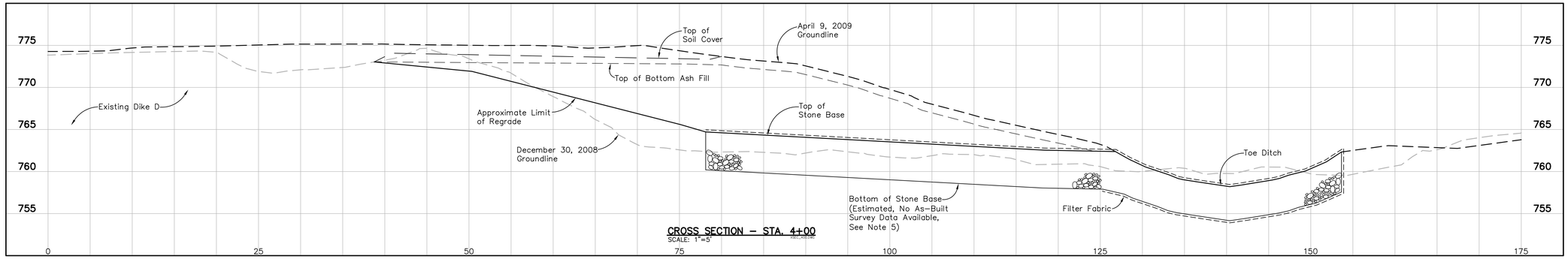
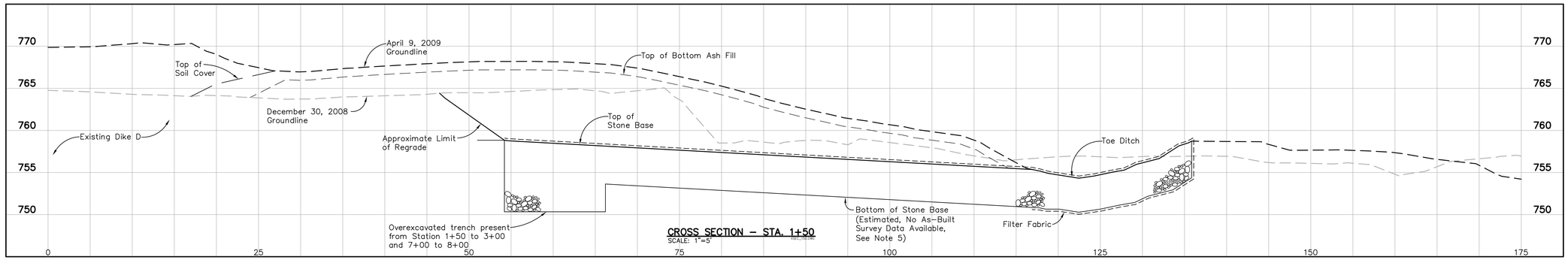


CROSS SECTION – STA. 6+50
SCALE: 1"=5'



CROSS SECTION – STA. 4+00
SCALE: 1"=5'



CROSS SECTION – STA. 1+50
SCALE: 1"=5'

NOTES:

1. These drawings do not represent an engineered design meeting current criteria for dam or levee safety. This buttress and pipe backfilling are intended to improve the interim stability of Dikes C and D, prior to long term site modifications. Additional engineering analyses are needed to evaluate the long term performance of this emergency repair.

2. Dike D as-built survey information was provided to Stantec by Tennessee Valley Authority (TVA) and MACTEC Development Corp. This information included survey data recorded from January 14, 2009 to February 5, 2009. Due to the emergency nature of the construction, the extent and frequency of as-built surveying was limited. As-built features shown hereon are based on the available information, but may not fully portray actual constructed features.

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4. December 30, 2008 groundline is based on topographic mapping provided to Stantec by TVA. This topography is representative of the existing conditions at the beginning of Dike D Buttress construction.

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RECORD DRAWING

REV												
–	–	–	–	–	–	–	–	–	–	–	–	–
R 0	06/09	–	DMG	OKR	JSD	JWA	–	–	–	–	–	–
INITIAL ISSUE												
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV (1)	DISCIPLINE INTERFACE

SCALE: AS SHOWN EXCEPT AS NOTED

YARD
–

KINGSTON FOSSIL PLANT
DIKE D BUTTRESS
CROSS SECTIONS

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
–	D. GRAHAM	M. STEELE	J. DINGRANDO	J. ANDREW		

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KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2008	DATE 06/09	41	C	10W427-04	R 0

PLOT FACTOR: XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

–	–
TASK COMPLETED BY:	REV NO.

PLOT DATE: 06/23/2009 USER: JOHNSON, TRACY
V:\1714\ACTIVE\171416817\DWG\MOD\MOD1\TA_DRAWINGS\KP\DWG_DVIECG60\V8817TC-KF-301-X01.DWG