

STS PROJECT NO.: **60095742** **6/8/2009**  
 PROJECT NAME: **Kingston Coal**  
 CLIENT NAME: **TVA**

**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-2  
 ELEVATION 817.69'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	65.8	72.1
WATER CONTENT (%)	31.2	42.6
DIAMETER (cm)	7.188	7.188
LENGTH (cm)	12.205	11.143
HYDRAULIC GRADIENT (MAXIMUM)	1.97	
PERCENT SATURATION	99.4	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	7.96E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-6  
 ELEVATION 816.54'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	69.4	78.2
WATER CONTENT (%)	33.2	36.2
DIAMETER (cm)	7.158	7.158
LENGTH (cm)	12.368	10.986
HYDRAULIC GRADIENT (MAXIMUM)	1.94	
PERCENT SATURATION	100.0	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	7.52E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-8  
 ELEVATION 815.28'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	72.7	73.8
WATER CONTENT (%)	33.0	41.0
DIAMETER (cm)	7.156	7.156
LENGTH (cm)	12.159	11.973
HYDRAULIC GRADIENT (MAXIMUM)	1.97	
PERCENT SATURATION	100.2	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.58E-04	

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-10  
 ELEVATION 814.79'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	75.1	79.5
WATER CONTENT (%)	30.5	34.6
DIAMETER (cm)	7.153	7.153
LENGTH (cm)	12.350	11.658
HYDRAULIC GRADIENT (MAXIMUM)	1.94	
PERCENT SATURATION	99.3	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.07E-04	

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-12  
 ELEVATION 815.71'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	70.8	76.6
WATER CONTENT (%)	28.0	37.8
DIAMETER (cm)	7.196	7.196
LENGTH (cm)	12.179	11.247
HYDRAULIC GRADIENT (MAXIMUM)	1.97	
PERCENT SATURATION	100.0	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	6.20E-05	

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-14  
 ELEVATION 812.59'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	86.7	88.3
WATER CONTENT (%)	26.8	27.0
DIAMETER (cm)	7.211	7.211
LENGTH (cm)	12.245	12.024

HYDRAULIC GRADIENT (MAXIMUM) 1.96

PERCENT SATURATION 99.8 (Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)

HYDRAULIC CONDUCTIVITY 1.16E-04  
 k (cm/sec)

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-16  
 ELEVATION 812.52'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	77.3	81.4
WATER CONTENT (%)	26.9	32.9
DIAMETER (cm)	7.154	7.154
LENGTH (cm)	11.993	11.392

HYDRAULIC GRADIENT (MAXIMUM) 2.00

PERCENT SATURATION 99.4 (Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)

HYDRAULIC CONDUCTIVITY 4.57E-05  
 k (cm/sec)

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### SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-18  
 ELEVATION 812.75'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	75.3	79.8
WATER CONTENT (%)	25.9	34.7
DIAMETER (cm)	7.220	7.220
LENGTH (cm)	12.195	11.506
HYDRAULIC GRADIENT (MAXIMUM)	1.97	
PERCENT SATURATION	100.4	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	4.88E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-20  
 ELEVATION 810.85'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	87.1	88.3
WATER CONTENT (%)	25.0	26.9
DIAMETER (cm)	7.172	7.172
LENGTH (cm)	12.319	12.148
HYDRAULIC GRADIENT (MAXIMUM)	1.95	
PERCENT SATURATION	99.6	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	4.40E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-22  
 ELEVATION 810.66'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	72.1	78.9
WATER CONTENT (%)	27.3	36.3
DIAMETER (cm)	7.228	7.228
LENGTH (cm)	12.427	11.357
HYDRAULIC GRADIENT (MAXIMUM)	1.93	
PERCENT SATURATION	100.8	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	6.45E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-24  
 ELEVATION 808.43'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	72.9	76.5
WATER CONTENT (%)	14.3	38.6
DIAMETER (cm)	7.210	7.210
LENGTH (cm)	11.944	11.386
HYDRAULIC GRADIENT (MAXIMUM)	2.01	
PERCENT SATURATION	100.3	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.33E-03	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-26  
 ELEVATION 808.65'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	71.6	78.8
WATER CONTENT (%)	34.5	36.0
DIAMETER (cm)	7.129	7.129
LENGTH (cm)	11.570	10.521
HYDRAULIC GRADIENT (MAXIMUM)	2.07	
PERCENT SATURATION	99.7	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	8.64E-05	

Deaired water was used as the liquid permeant.

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### SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-30  
 ELEVATION 805.15'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	78.8	80.3
WATER CONTENT (%)	36.6	34.5
DIAMETER (cm)	7.159	7.159
LENGTH (cm)	12.155	11.930

HYDRAULIC GRADIENT (MAXIMUM) 1.97

PERCENT SATURATION 99.8 (Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)

HYDRAULIC CONDUCTIVITY 4.14E-05  
 k (cm/sec)

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-32  
 ELEVATION 802.68'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	82.0	83.8
WATER CONTENT (%)	37.1	31.6
DIAMETER (cm)	7.145	7.145
LENGTH (cm)	12.185	11.932
HYDRAULIC GRADIENT (MAXIMUM)	1.97	
PERCENT SATURATION	100.6	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.87E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-34  
 SAMPLE DEPTH 802.93'  
 CLASSIFICATION ASH - DARK GRAY - COMPACTED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	88.2	87.9
WATER CONTENT (%)	26.4	28.0
DIAMETER (cm)	7.168	7.210
LENGTH (cm)	12.838	12.726
HYDRAULIC GRADIENT (MAXIMUM)	1.87	
PERCENT SATURATION	100.4	(Percent saturation calculation is based on final measurements and an estimated specific gravity.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	3.29E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-64  
 ELEVATION 816.39'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	72.3	72.3
WATER CONTENT (%)	29.5	43.4
DIAMETER (cm)	7.203	7.203
LENGTH (cm)	10.933	10.933
HYDRAULIC GRADIENT (MAXIMUM)	2.20	
PERCENT SATURATION	100.3	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	5.33E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-74  
 ELEVATION 808.79'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	71.4	68.4
WATER CONTENT (%)	33.1	48.2
DIAMETER (cm)	7.200	7.203
LENGTH (cm)	10.485	10.933
HYDRAULIC GRADIENT (MAXIMUM)	2.29	
PERCENT SATURATION	100.3	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	2.53E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-82  
 SAMPLE DEPTH 800.56'  
 CLASSIFICATION COAL FLY ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	75.0	75.0
WATER CONTENT (%)	37.4	40.1
DIAMETER (cm)	7.133	7.133
LENGTH (cm)	10.572	10.572
HYDRAULIC GRADIENT (MAXIMUM)	2.27	
PERCENT SATURATION	100.0	(Percent saturation calculation is based on final measurements and an estimated specific gravity.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	4.64E-05	

Deaired water was used as the liquid permeant.

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**SUMMARY OF TEST RESULTS**

BORING NO. TEST TRENCH #3  
 SAMPLE NO. ST-90  
 ELEVATION 792.61'  
 CLASSIFICATION ASH - DARK GRAY - SLUICED  
 PERFORMED AS IN-TUBE TEST  
 FLOW ORIENTATION HORIZONTAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	81.0	81.0
WATER CONTENT (%)	33.5	34.0
DIAMETER (cm)	7.228	7.228
LENGTH (cm)	11.212	11.212
HYDRAULIC GRADIENT (MAXIMUM)	2.14	
PERCENT SATURATION	100.0	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.80E-04	

Deaired water was used as the liquid permeant.