

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-1
 ELEVATION 818.84'
 CLASSIFICATION ASH -- DARK GRAY- COMPACTED
 PERFORMED AS IN-TUBE TEST
 VERTICAL
 FLOW ORIENTATION: VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	70.0	70.0
WATER CONTENT (%)	31.2	45.5
DIAMETER (cm)	7.167	7.167
LENGTH (cm)	13.533	13.533
HYDRAULIC GRADIENT (MAXIMUM)	1.77	
PERCENT SATURATION	99.9	(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-3
 ELEVATION 816.94'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION: VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	59.0	59.0
WATER CONTENT (%)	41.1	61.6
DIAMETER (cm)	7.143	7.143
LENGTH (cm)	15.125	15.125
HYDRAULIC GRADIENT (MAXIMUM)	1.59	
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)	5.00E-05	

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SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3
 SAMPLE NO. ST-4
 ELEVATION 818.32'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	83.4	83.4
WATER CONTENT (%)	31.9	31.2
DIAMETER (cm)	7.047	7.047
LENGTH (cm)	10.412	10.412

HYDRAULIC GRADIENT (MAXIMUM) 2.30

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

HYDRAULIC CONDUCTIVITY 8.02E-04
 k (cm/sec)

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SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3
 SAMPLE NO. ST-5
 ELEVATION 817.33'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	73.6	73.6
WATER CONTENT (%)	29.2	41.0
DIAMETER (cm)	7.160	7.160
LENGTH (cm)	12.455	12.455

HYDRAULIC GRADIENT (MAXIMUM) 1.93

PERCENT SATURATION 99.7 (Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)

HYDRAULIC CONDUCTIVITY 1.52E-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-7
 ELEVATION 814.71'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	83.1	83.1
WATER CONTENT (%)	26.4	31.4
DIAMETER (cm)	7.159	7.159
LENGTH (cm)	12.571	12.571
HYDRAULIC GRADIENT (MAXIMUM)	1.91	
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)	1.94E-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-9
 ELEVATION 813.88'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	73.3	73.3
WATER CONTENT (%)	40.4	41.4
DIAMETER (cm)	7.154	7.154
LENGTH (cm)	12.671	12.671
HYDRAULIC GRADIENT (MAXIMUM)	1.89	
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)	7.23E-04	

Deaired water was used as the liquid permeant.

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SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3
 SAMPLE NO. ST-11
 ELEVATION 814.72'
 CLASSIFICATION ASH -- DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 VERTICAL
 FLOW ORIENTATION: VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	77.9	77.9
WATER CONTENT (%)	25.8	35.7
DIAMETER (cm)	7.198	7.198
LENGTH (cm)	12.403	12.403
HYDRAULIC GRADIENT (MAXIMUM)	1.93	
PERCENT SATURATION	97.9	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	4.75E-05	

Deaired water was used as the liquid permeant.

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SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3
 ELEVATION ST-13
 SAMPLE DEPTH 812.01'
 CLASSIFICATION ASH -- DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 VERTICAL
 FLOW ORIENTATION: VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	86.3	86.3
WATER CONTENT (%)	25.3	27.6
DIAMETER (cm)	7.219	7.219
LENGTH (cm)	12.184	12.184
HYDRAULIC GRADIENT (MAXIMUM)	1.97	
PERCENT SATURATION	96.2	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.28E-04	

Deaired water was used as the liquid permeant.

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SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3
 SAMPLE NO. ST-15
 ELEVATION 812.12'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 VERTICAL
 FLOW ORIENTATION: VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	71.9	71.9
WATER CONTENT (%)	26.3	43.2
DIAMETER (cm)	7.214	7.214
LENGTH (cm)	12.492	12.492
HYDRAULIC GRADIENT (MAXIMUM)	1.92	
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)	7.75E-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-17
 ELEVATION 812.03'
 CLASSIFICATION ASH - DARK GRAY - SLUICED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	70.5	80.8
WATER CONTENT (%)	27.6	33.6
DIAMETER (cm)	7.158	7.220
LENGTH (cm)	12.123	10.389
HYDRAULIC GRADIENT (MAXIMUM)	1.98	
PERCENT SATURATION	100.1	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	3.44E-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-19
 ELEVATION 810.28'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	83.9	83.9
WATER CONTENT (%)	13.4	30.9
DIAMETER (cm)	7.224	7.224
LENGTH (cm)	12.064	12.064
HYDRAULIC GRADIENT (MAXIMUM)	1.99	
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)	9.13E-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-21
 ELEVATION 810.36'
 CLASSIFICATION ASH - DARK GRAY - SLUICED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	70.6	70.6
WATER CONTENT (%)	28.5	44.1
DIAMETER (cm)	7.174	7.174
LENGTH (cm)	12.477	12.477
HYDRAULIC GRADIENT (MAXIMUM)	1.92	
PERCENT SATURATION	98.7	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30)
HYDRAULIC CONDUCTIVITY k (cm/sec)	5.41E-05	

Deaired water was used as the liquid permeant.

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SUMMARY OF TEST RESULTS

BORING NO. TEST #3
 SAMPLE NO. ST-29
 ELEVATION 804.52'
 CLASSIFICATION ASH - DARK GRAY - SLUICED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	90.0	90.0
WATER CONTENT (%)	18.8	25.8
DIAMETER (cm)	7.174	7.174
LENGTH (cm)	12.630	12.630
HYDRAULIC GRADIENT (MAXIMUM)	1.90	
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)	3.99E-04	

Deaired water was used as the liquid permeant.

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SUMMARY OF TEST RESULTS

BORING NO. TEST TRENCH #3
 SAMPLE NO. ST-31
 ELEVATION 801.94'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	62.9	64.0
WATER CONTENT (%)	42.5	54.8
DIAMETER (cm)	7.209	7.209
LENGTH (cm)	11.882	11.665
HYDRAULIC GRADIENT (MAXIMUM)	2.02	
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)	3.07E-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-33
 ELEVATION 802.50'
 CLASSIFICATION ASH - DARK GRAY - COMPACTED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	86.9	86.9
WATER CONTENT (%)	27.7	28.2
DIAMETER (cm)	7.158	7.158
LENGTH (cm)	12.651	12.651
HYDRAULIC GRADIENT (MAXIMUM)	1.90	
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)	2.79E-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-63
 ELEVATION 815.48'
 CLASSIFICATION ASH - DARK GRAY - SLUICED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	88.2	88.2
WATER CONTENT (%)	16.3	27.6
DIAMETER (cm)	7.076	7.076
LENGTH (cm)	12.696	12.696

HYDRAULIC GRADIENT (MAXIMUM) 1.89

PERCENT SATURATION 99.7 (Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)

HYDRAULIC CONDUCTIVITY 5.37E-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-73
 ELEVATION 807.91'
 CLASSIFICATION ASH -- DARK GRAY - SLUICED
 PERFORMED AS IN-TUBE TEST
 VERTICAL
 FLOW ORIENTATION: VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	75.0	75.0
WATER CONTENT (%)	20.0	39.5
DIAMETER (cm)	7.174	7.174
LENGTH (cm)	11.534	11.534
HYDRAULIC GRADIENT (MAXIMUM)	2.08	
PERCENT SATURATION	100.1	(Percent saturation calculation is based on final measurements and an estimated specific gravity of 2.30.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.60E-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-81
 ELEVATION 799.94'
 CLASSIFICATION ASH - DARK GRAY - SLUICED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	78.8	78.8
WATER CONTENT (%)	33.5	36.0
DIAMETER (cm)	7.122	7.122
LENGTH (cm)	10.332	10.328
HYDRAULIC GRADIENT (MAXIMUM)	2.32	
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)	1.80E-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-89
 ELEVATION 792.01'
 CLASSIFICATION ASH - DARK GRAY - SLUICED
 PERFORMED AS IN-TUBE TEST
 FLOW ORIENTATION VERTICAL

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	85.0	85.0
WATER CONTENT (%)	28.7	30.5
DIAMETER (cm)	7.033	7.033
LENGTH (cm)	8.410	8.415
HYDRAULIC GRADIENT (MAXIMUM)	2.85	
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)	4.75E-06	

Deaired water was used as the liquid permeant.