



KNOXVILLE DIVISION
 505 EAST BROADWAY AVE.
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STATE CERT ID.
 TN 02017

CHEMISTRY · MICROBIOLOGY · FOOD SAFETY · CONSUMER PRODUCTS
 WATER · AIR · WASTES · FOOD · PHARMACEUTICALS · NUTRACEUTICALS

CERTIFICATE OF ANALYSIS

CITY OF KINGSTON
 CHUCK MOORE
 125 W. CUMBERLAND ST.
 KINGSTON, TN 37763

Date Reported 1/8/2010
 Date Received 1/1/2010
 Cust P.O.
 Invoice No. 77244
 Cust # C120
 Sample Date 1/1/2010
 Permit No.

Work Order Number: 0912-01287

Subject: KINGSTON WTP RAW AND FINISHED WATER SAMPLES

Test	Method	Result	Qual	Date	Time	Tech
001 RAW 1/01/2010 0630						
[TAL METALS]				01/07/2010	12:39	SRR
ALUMINUM	EPA 200.7	0.170 MG/L		01/05/2010	11:37	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		01/07/2010	12:39	MCD
ARSENIC	EPA 200.8	<0.005 MG/L		01/07/2010	12:39	MCD
BARIUM	EPA 200.7	0.0217 MG/L		01/05/2010	11:37	SRR
BERYLLIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:37	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:37	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:37	SRR
COBALT	EPA 200.7	<0.0010 MG/L		01/05/2010	11:37	SRR
COPPER	EPA 200.7	0.0011 MG/L		01/05/2010	11:37	SRR
IRON	EPA 200.7	0.250 MG/L		01/05/2010	11:37	SRR
LEAD	EPA 200.8	<0.005 MG/L		01/07/2010	12:39	MCD
MAGNESIUM	EPA 200.7	4.33 MG/L	J+,*	01/04/2010	15:52	SRR
MANGANESE	EPA 200.7	0.0339 MG/L		01/05/2010	11:37	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:37	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		01/04/2010	15:24	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		01/05/2010	11:37	SRR
SELENIUM	EPA 200.8	<0.005 MG/L		01/07/2010	12:39	MCD
SILVER	EPA 200.7	<0.0010 MG/L	J+	01/05/2010	11:37	SRR
TIN	EPA 200.7	<0.0010 MG/L		01/05/2010	11:37	SRR
TITANIUM	EPA 200.7	0.0035 MG/L		01/05/2010	11:37	SRR
THALLIUM	EPA 200.8	<0.001 MG/L		01/07/2010	12:39	MCD
ZINC	EPA 200.7	0.0210 MG/L		01/05/2010	11:37	SRR
BORON	EPA 200.7	0.0084 MG/L		01/05/2010	11:37	SRR
SOLIDS, TOTAL SUSPENDED	SM 2540,D.	5.69 MG/L		01/04/2010	09:00	KDW
HARDNESS, TOTAL AS CaCO3	EPA 200.7;2340,B.	50.6 MG/L	J+,*	01/04/2010	15:52	SRR

002 RAW 1/1/2010 0630 DISSOLVED METALS



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002 RAW 1/1/2010 0630 DISSOLVED METALS						
.....continued						
[TAL METALS]				01/08/2010	10:35	SRR
ALUMINUM	EPA 200.7	0.0255 MG/L		01/05/2010	12:04	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		01/08/2010	10:35	MCD
ARSENIC	EPA 200.8	<0.005 MG/L		01/08/2010	10:35	MCD
BARIUM	EPA 200.7	0.0198 MG/L		01/05/2010	12:04	SRR
BERYLLIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
COBALT	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
COPPER	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
IRON	EPA 200.7	0.0363 MG/L		01/05/2010	12:04	SRR
LEAD	EPA 200.8	<0.005 MG/L		01/08/2010	10:35	MCD
MAGNESIUM	EPA 200.7	3.77 MG/L	*	01/04/2010	16:06	SRR
MANGANESE	EPA 200.7	0.0051 MG/L		01/05/2010	12:04	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		01/04/2010	15:40	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
SELENIUM	EPA 200.8	<0.005 MG/L		01/08/2010	10:35	MCD
SILVER	EPA 200.7	<0.0010 MG/L	J+	01/05/2010	12:04	SRR
TIN	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
TITANIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	12:04	SRR
THALLIUM	EPA 200.8	<0.001 MG/L		01/08/2010	10:35	MCD
ZINC	EPA 200.7	0.0192 MG/L		01/05/2010	12:04	SRR
BORON	EPA 200.7	0.0204 MG/L		01/05/2010	12:04	SRR
SILICA (SiO2)	EPA 200.7	5.98 MG/L		01/04/2010	16:06	SRR

003 FINISHED 1/1/2010 0630





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Test	Method	Result	Qual	Date	Time	Tech
003 FINISHED 1/1/2010 0630						
.....continued						
[TAL METALS]						
ALUMINUM	EPA 200.7	0.0158 MG/L		01/08/2010	10:39	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		01/05/2010	11:44	SRR
ARSENIC	EPA 200.8	<0.005 MG/L		01/08/2010	10:39	MCD
BARIUM	EPA 200.7	0.0186 MG/L		01/08/2010	10:39	MCD
BERYLLIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:44	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:44	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:44	SRR
COBALT	EPA 200.7	<0.0010 MG/L		01/05/2010	11:44	SRR
COPPER	EPA 200.7	0.0017 MG/L		01/05/2010	11:44	SRR
IRON	EPA 200.7	<0.0060 MG/L		01/05/2010	11:44	SRR
LEAD	EPA 200.8	<0.005 MG/L		01/05/2010	11:44	SRR
MAGNESIUM	EPA 200.7	4.10 MG/L	J+,*	01/08/2010	10:39	MCD
MANGANESE	EPA 200.7	<0.0050 MG/L		01/04/2010	15:59	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:44	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		01/05/2010	11:44	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		01/04/2010	15:36	SRR
SELENIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:44	SRR
SILVER	EPA 200.8	<0.005 MG/L		01/05/2010	11:44	SRR
TIN	EPA 200.7	<0.0010 MG/L	J+	01/05/2010	11:44	SRR
TITANIUM	EPA 200.7	<0.0010 MG/L		01/05/2010	11:44	SRR
THALLIUM	EPA 200.8	<0.001 MG/L		01/05/2010	11:44	SRR
ZINC	EPA 200.7	<0.0010 MG/L		01/08/2010	10:39	MCD
BORON	EPA 200.7	0.0035 MG/L		01/05/2010	11:44	SRR
SOLIDS, TOTAL SUSPENDED	EPA 200.7	0.0083 MG/L		01/05/2010	11:44	SRR
HARDNESS, TOTAL AS CaCO3	SM 2540,D.	<4.00 MG/L		01/05/2010	11:44	SRR
	EPA 200.7;2340,B.	47.7 MG/L	J+,*	01/04/2010	09:00	KDW
				01/04/2010	15:59	SRR

004 FINISHED 1/1/2010 0630 DISSOLVED METALS





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Table with 7 columns: Test, Method, Result, Qual, Date, Time, Tech. Row 1: 004 FINISHED 1/1/2010 0630 DISSOLVED METALS. Rows 2-31: TAL METALS, ALUMINUM, ANTIMONY, ARSENIC, BARIUM, BERYLLIUM, CADMIUM, CHROMIUM, COBALT, COPPER, IRON, LEAD, MAGNESIUM, MANGANESE, MOLYBDENUM, MERCURY, NICKEL, SELENIUM, SILVER, TIN, TITANIUM, THALLIUM, ZINC, BORON, SILICA (SiO2).

REVISED REPORT TO CONTAIN BACK-UP STATE CERTIFIED DATA FOR SB, AS, PB, SE AND TL. ANALYSIS SUBCONTRACTED TO MICROBAC LABORATORIES CHICAGOLAND DIVISION (TN LAB ID#04017). LL 01-08-10.





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RESPECTFULLY SUBMITTED:

MICROBAC LABORATORIES, INC.

Thank you for your business. We invite your feedback on our level of service to you. Please contact the Laboratory Director, James Nokes, at 865-977-1200, the COO, Robert Morgan, at rmorgan@microbac.com or the President, James Nokes, at jnokes@microbac.com with any comments or suggestions.





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As regulatory limits change frequently, Microbac advises the recipient of this report to confirm such limits with the appropriate Federal, state, or local authorities before acting in reliance on the regulatory limits provided.

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QUALIFIER DEFINITIONS:

- B = Detected in the associated Method Blank
C = As Tons CaCO3, equivalent per 1,000 tons material
D = Surrogate recoveries not calculated due to matrix interference and resulting sample dilution
E1 = Elevated detection limits due to sample matrix interference
E2 = Elevated detection limits due to high analyte concentration
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Spike recovery outside control limits due to sample matrix interference or high analyte concentration
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity, but the result may be biased high
J- = The result is an estimated quantity, but the result may be biased low
UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise
K = Inter-element correction applied due to high concentration of non-target analyte
L1 = Liquid portion of dual phase sample analyzed only
L2 = Solid portion of dual phase sample analyzed only
M = Miscellaneous (see entry below analytical results)
N = Analyte acceptable but matrix spike/matrix spike duplicate outside accepted recovery criteria
* = Matrix Spike/Matrix Spike Duplicate RPD is outside acceptable limits
P = Sample received improperly preserved
R = Relative Percent Duplicate (RPD) outside accepted recovery limits
S1 = Spike recovery outside recovery limits
S2 = Surrogate recovery outside of control limits. The data was accepted based on the valid recovery of remaining surrogate.
U = Undetected
V = Elevated reporting limits due to insufficient sample volume
W = Results reports on dry weight basis
Z = The parameter is considered a field analysis with an immediate to 15 minute holding time. Laboratory analysis is confirmatory in nature and is performed outside the preferred holding time window.

ABBREVIATIONS:

- TNTC = Too Numerous To Count
MG/KG = Milligrams per Kilogram (PPM)
UG/L = Micrograms per Liter (PPB)
CFU = Colony Forming Unit

