



Infrastructure, environment, facilities

Ms. Brooke Sinclair  
Knoxville Utilities Board  
4505 Middlebrook Pike  
Knoxville, Tennessee 37921-5599

Subject:  
Limited Phase II Environmental Site Assessment  
Parcel 0951F011 – South Central Street / West Church Avenue  
Knoxville, Knox County, Tennessee

Dear Ms. Sinclair:

ARCADIS is pleased to present this report of findings for the above-referenced project to the Knoxville Utilities Board (KUB). All work was completed in accordance with our proposed scope of work. Sample locations are plotted on a site photograph taken by ARCADIS during the Phase I Investigation on this parcel (Attachment 1). A summary of laboratory analytical data and comparison to applicable screening values is presented on Attachment 2. The laboratory analysis reports and chain-of-custodies (COCs) are attached (Attachment 3).

### Summary of Work and Report of Findings

The Phase II investigation was performed specifically as requested by KUB to ascertain if petroleum soil contamination resulting from historical KUB use of the site has impacted the shallow subsurface soils. Five direct-push technology (DPT) soil borings (SB-1, SB-2, SB-3, SB-5 and SB-6) were installed to an approximate depth of 10 feet (ft) (Attachment 1). One boring, SB-4, was installed to 8 ft because the geoprobe met refusal at that depth. Three borings (SB-1 through SB-3) were installed on the lower terrace of the property and three borings (SB-4 through SB-6) were installed on the upper terrace. Observed site lithology consisted of an approximate 1-ft thick layer of pavement/concrete and gravel underlain by tight clay. No groundwater was encountered during the investigation. Soils were screened on approximately 2-ft intervals using a photoionization detection (PID) and head-space methods. Field screening did not indicate impact, thus a sample was collected from the 2-ft soil interval occurring immediately below pavement (e.g., 1.0 to 3.0 ft below grade) at five out of six soil borings. At one location, SB-3, a full sample quantity could not be collected from the 1.0 to 3.0 ft. interval due to a 30 percent recovery in the acetate liner from the 0.0-5.0 ft DPT interval. Thus, a sample was collected from the uppermost in-tact interval (5 to 6 ft.) Samples were

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ENVIRONMENT

Date:  
10 July 2008

Contact:  
Lee Walter

Phone:  
865.675.6700, ext. 3139

Email:  
[Lee.Walter@arcadis-us.com](mailto:Lee.Walter@arcadis-us.com)

Our ref:  
TNKUB081.CAP2

Imagine the result

submitted to TestAmerica Laboratories for total petroleum hydrocarbons (TPH) (OA-2 Method), Target Analyte List (TAL) metals, and polychlorinated biphenyls (PCBs) analysis. Samples were not analyzed for volatile organic compounds (VOCs) since headspace readings did not indicate the presence of VOCs. The results of the laboratory analyses, and a comparison to relevant screening values, are presented in Attachment 2. All sample results were below the Tennessee Department of Environment and Conservation (TDEC) – Risk-Based Screening Level (RBSL) concentrations for an on-site commercial worker for exposure via contact, with the exception of arsenic.

The maximum detected concentration of arsenic [17 milligrams per kilogram (mg/kg)] exceeds the Tennessee-specific background screening value of 10 mg/kg. However, the maximum detected concentration of arsenic falls well within the natural range of arsenic concentrations in Tennessee soils (0.1 to 120 mg/kg) encountered by TDEC and presented in *Hazardous Trace Elements in Tennessee Soils and Other Regolith* (Tennessee Department of Environment and Conservation 2001). Also, the mean and median on-site arsenic concentrations are 10.98 mg/kg and 9.92 mg/kg, respectively. Both of these values are very close to average background concentrations for the state.

Several organic and inorganic constituents were detected in the equipment rinsate blank including aluminum, calcium, iron, diesel (Method OA-2) and motor oil (Method OA-2). When constituents are detected in an equipment rinsate blank, it could indicate a quality failure associated with decontamination, laboratory containers or preservatives, or laboratory preparation/analysis. As indicated in the USEPA National Functional Guidelines for Inorganic Data Review (USEPA 2004) and the National Functional Guidelines for Organic Data Review (USEPA 1999), when concentrations of constituents of concern are detected in blanks, the blank concentrations are multiplied by a factor of ten for inorganics and common laboratory organic contaminants and five times for other organic constituents. Any organic compound detected in the sample (other than common laboratory contaminants), that was also detected in the associated blank, is qualified if the sample concentration is less than five times the blank contamination. Similarly, any inorganic compound detected in the sample, that was also detected in the associated blank, is qualified if the sample concentration is less than ten times the blank contamination. Organic and inorganic compounds detected in the sample at concentrations greater than five times or ten times the blank concentration (depending on the associated rule) do not require qualification. As stated on page 27 of the data package, B1 laboratory-applied flags indicated that the sample concentration was more than ten times greater than the concentration detected in the blank. Since this qualifier is not

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Ms. Brooke Sincla  
10 July 2008

required, and the data is considered acceptable without qualification, the B1 flags have been removed during the data validation process.

Spiked sample analysis is designed to provide laboratory quality assurance/quality control information about the effect of each sample matrix (e.g., soil) on the sample preparation procedures and the measurement methodology. Non-homogeneous samples can impact the apparent method recovery. It is common for soil samples submitted for analysis to be heterogeneous, and matrix spike and matrix spike duplicate recoveries were out of range for several inorganic constituents due to apparent matrix interference. When matrix spike sample recoveries are out of range, laboratory control samples are used to confirm data quality. The laboratory control samples were within range, and therefore indicate that compound recovery was sufficient to meet data quality objectives.

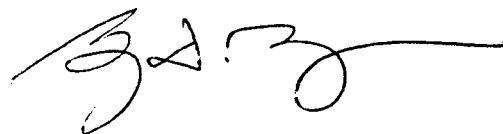
ARCADIS appreciates the opportunity to continue to provide KUB with engineering and environmental consulting services. If you have any questions, please do not hesitate to contact me.

Sincerely,

ARCADIS



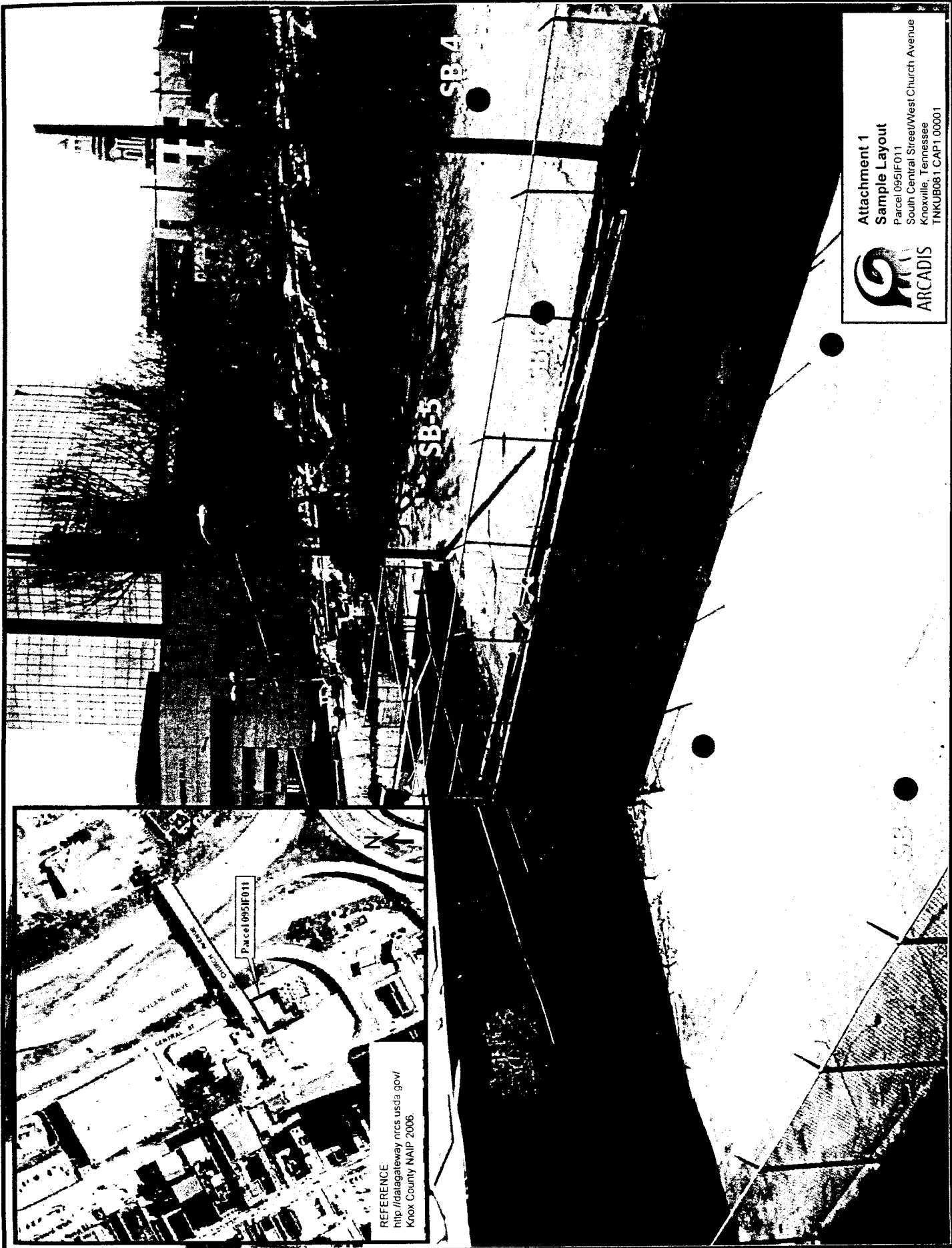
Lee A. Walter, PE  
Project Manager



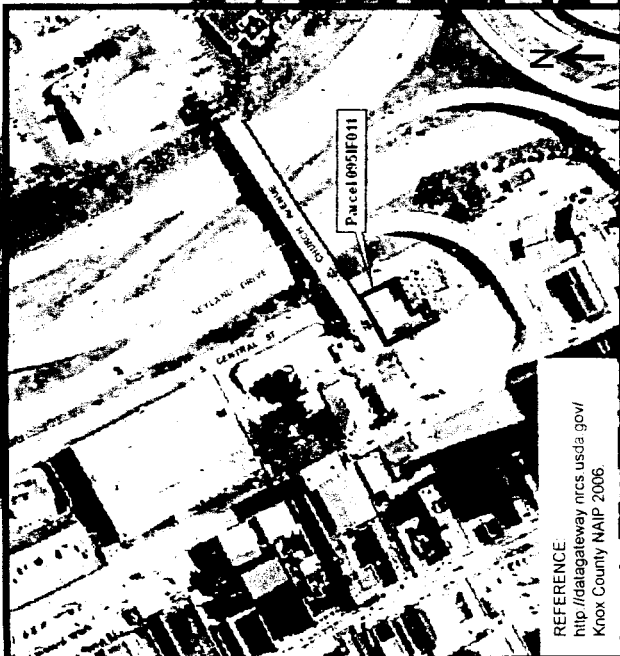
Berny D. Ilgner, PG  
Vice President

Copies:

Steven Forbes, ARCADIS  
Michael Rose, KUB



**Attachment 1**  
**Sample Layout**  
Parcel 095IF011  
South Central Street/West Church Avenue  
Knoxville, Tennessee  
TNKUB081 CAP1 00001



Parcel 095IF011

REFERENCE  
<http://dalagaleway.nrcs.usda.gov/>  
Knox County NAIP 2006

Attachment 2. Soil Analytical Data Summary, KUB - South Central Street Site, Knoxville, Tennessee

Analyte Name	CAS Number	Sample ID: Sample Date: Sample Time:	SB-1 (1-3) 06/06/2008 10:00		SB-2 (1-3) 06/06/2008 10:05		SB-3 (5-6) 06/06/2008 10:20		SB-4 (1-3) 06/06/2008 10:50		SB-5 (1-3) 06/06/2008 11:05		SB-6 (1-3) 06/06/2008 11:20		
			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
		<b>Screening</b>													
		<b>Value</b> <sup>[a]</sup>	<b>Basis</b>												
<b>Metals (mg/kg)</b>															
Aluminum	7429-90-5	920000	C	27400		12400		15900		23200		46000		32100	
Antimony	7440-36-0	41	N	2.67	J	2.15	J	2.05	J	1.95	J	2.35	J	2.08	J
Arsenic	[b] 7440-38-2	10		9.54		10.3		12.3		8.31		17		8.4	
Barium	7440-39-3	6700	N	33.1		27.5		15.9		24.2		33.9		23.6	
Beryllium	7440-41-7	1900	C	0.902	J	0.737	J	0.582	J	0.805	J	0.984	J	0.83	J
Cadmium	7440-43-9	45	N	<1.00		<0.996		<1.00		<1.01		<1.00		<0.988	
Calcium	[c] 7440-70-2	—		1380		1800		980		346		6010		1830	
Chromium	7440-47-3	450	C	52		29.8		15		24.3		31.1		32.3	
Cobalt	7440-48-4	1300	N	4.73		5.62		2.31		9.9		5.46		3.68	
Copper	7440-50-8	4100	N	18.8		16.7		12.6		18		29.6		22.5	
Iron	[d] 7439-89-6	72000	N	46000		32000		24900		26300		33900		34000	
Lead	7439-92-1	800	**	17.4		13.2		11.2		22.5		15		19.5	
Magnesium	[c] 7439-95-4	—		1350		481		467		862		2550		1690	
Manganese	7439-96-5	1900	N	140		123		71.6		267		116		121	
Nickel	7440-02-0	2000	N	18		13.6		11.3		14.9		31.8		21.2	
Potassium	[c] 7440-09-7	—		2510		898		860		1450		5310		3390	
Selenium	7782-49-2	510	N	1.2	J	<1.99		1.77	J	1.49	J	1.61	J	2.21	
Silver	7440-22-4	510	N	<1.00		<0.996		<1.00		<1.01		<1.00		<0.988	
Sodium	[c] 7440-23-5	—		119	J	<199		114	J	104	J	183	J	151	J
Thallium	[e] 7440-28-0	6.7	N	<2.00		<1.99		<2.01		<2.01		<2.01		<1.98	
Vanadium	7440-62-2	100	N	58.3		46.2		31		46.9		46.7		48.2	
Zinc	7440-66-6	100000	M	36.2		27.8		23.3		30.8		36.6		38.4	
Mercury	[f] 7439-97-6	31	N	0.244		0.162		0.0801	J	0.117		0.141		0.168	
<b>PCBs (mg/kg)</b>															
PCB-1016	12674-11-2	21	C	<0.330		<0.0331		<0.0328		<0.0325		<0.0329		<0.0325	
PCB-1221	11104-28-2	0.74	C	<0.330		<0.0331		<0.0328		<0.0325		<0.0329		<0.0325	
PCB-1232	11141-16-5	0.74	C	<0.330		<0.0331		<0.0328		<0.0325		<0.0329		<0.0325	
PCB-1242	53469-21-9	0.74	C	<0.330		<0.0331		<0.0328		<0.0325		<0.0329		<0.0325	
PCB-1248	12672-29-6	0.74	C	<0.330		<0.0331		<0.0328		<0.0325		<0.0329		<0.0325	
PCB-1254	11097-69-1	0.74	C	<0.330		<0.0331		<0.0328		<0.0325		<0.0329		<0.0325	
PCB-1260	11096-82-5	0.74	C	<0.330		<0.0331		<0.0328		<0.0325		<0.0329		<0.0325	
<b>Petroleum Ranges (mg/kg)</b>															
Diesel	68334-30-5	—	—	3.45	J	<3.88		<3.90		<3.92		<3.87		<3.95	
Fuel Oil #4	68476-31-3	—	—	<3.91		<3.88		<3.90		<3.92		<3.87		<3.95	
Hydraulic Fluid	Hydfluid	—	—	<3.91		<3.88		<3.90		<3.92		<3.87		<3.95	
Kerosene	8008-20-6	—	—	<3.91		<3.88		<3.90		<3.92		<3.87		<3.95	
Mineral Spirits	68551-17-7	—	—	<3.91		<3.88		<3.90		<3.92		<3.87		<3.95	
Motor Oil	Motoroil	—	—	5.56		2.27	J	1.97	J	21.5		11.9		9.60	

[a] Screening value is Region 9 Industrial Soil Preliminary Remediation Goal (PRG) unless otherwise noted. Region 9 PRGs based on non-cancer endpoints have been adjusted by a factor of 0.1 to account for potential additive effects of multiple constituents.

[b] Tennessee Specific Background Screening Value. Mean value for Tennessee soils: Hazardous Trace Elements in Tennessee Soils and Other Regolith (TDEC 2001).

[c] Essential nutrient.

[d] ORNL Regional Screening Level (EPA 2008).

[e] Thallium and compounds used as a surrogate for the PRG screening level.

[f] Mercury and compounds (no cas #) PRG used as a surrogate for mercury (CAS - 7439-97-6) during screening.

\*\* - Special Calculation for lead, not based on cancer or non-cancer endpoints

— - not available

mg/kg - milligrams per kilogram

C - screening value based on carcinogenic risk

J - value detected at an estimated concentration less than the method reporting limit but greater than the method detection limit

N - screening value based on non-carcinogenic hazard quotient

PCB - polychlorinated biphenyls

BOLD - exceeds screening value

Laboratory Analytical Methods:

Metals by SW846 6010B

Mercury by SW846 7471A

PCBs by SW846 8082

Petroleum hydrocarbon fractions by OA-2

Organic, Inorganic, and General Chemistry Data Validation Checklist

Project # TH KW081. CAP2

Validated By: Chueh  
Date: 6/16/08  
Analytical Methods: OA-2, TAL Metals RBs

Data Package: NRF0560

Samples: See p. 1 of 2

ITEM	YES	NO	NA	Samples which failed QC Criteria / Data Qualifiers	Date Action Taken / Comments
4. Blanks					
a. Are blanks free of contaminants?	✓			see # 1	BI flags have been removed.
b. Are positive sample results > 5X (or 10X for metals or Acetone, MEK, methylene chloride, toluene, phthalate esters) the amount detected in the blank?	✓				
c. Are positive sample results < 5X (or 10X for metals or Acetone, MEK, methylene chloride, toluene, phthalate esters) the amount detected in the blank qualified "UB"?		✓			
5. Matrix Spike (MS) Recoveries and Duplicates					
a. Are recoveries (%R) for MS and/or MS duplicates calculated correctly and within control limits?	✓			see # 2	LCS within control limits. No action.
b. Are relative percent difference (RPD) within control limits reported by the lab or less than 20 if not specified?					
6. Duplicates					
a. Are duplicate RPDs calculated correctly?					
b. Are RPDs less than 20?					
7. Surrogates					
a. Are surrogate recoveries calculated correctly (organic)?	✓				
b. Are recoveries for at least 2 surrogates within control limits as specified by the lab or between 80-120% if not specified?	✓				
8. Laboratory Control Sample (LCS)					
a. Are LCS recoveries (%R) within control limits reported by the lab (60-140% for organics if not specified, and 80-120% for inorganics if not specified)?	✓				
b. For general chemistry, are LCS recoveries within control limits reported by the lab?	✓				
c. Has a LCS been analyzed once per lab sample data group?	✓				

1. The following were detected in the method blank (MB) or equipment rinse blank (ER-1) constituent Blank ID conc. Batch

zinc	MB	0.0154 mg/L	8061229	10x
calcium	MB	4.78	8061305	10x
calcium	MB	5.80	8061310	10x
manganese	MB	0.334	8061310	10x
motor oil	MB	27.2 ug/L	8061325	5x
Aluminum	ER-1	0.0399 mg/L	N/A	10x
calcium	ER-1	0.196 mg/L	N/A	10x
Iron	ER-1	0.0585 mg/L	N/A	10x
Diesel	ER-1	21.7 ug/L	N/A	5x
Motor Oil	ER-1	38.7 ug/L	N/A	5x

-BI flags have been removed because results are at least 5x > MB or Rinse concentrations, where applicable

Organic, Inorganic, and General Chemistry Data Validation Checklist

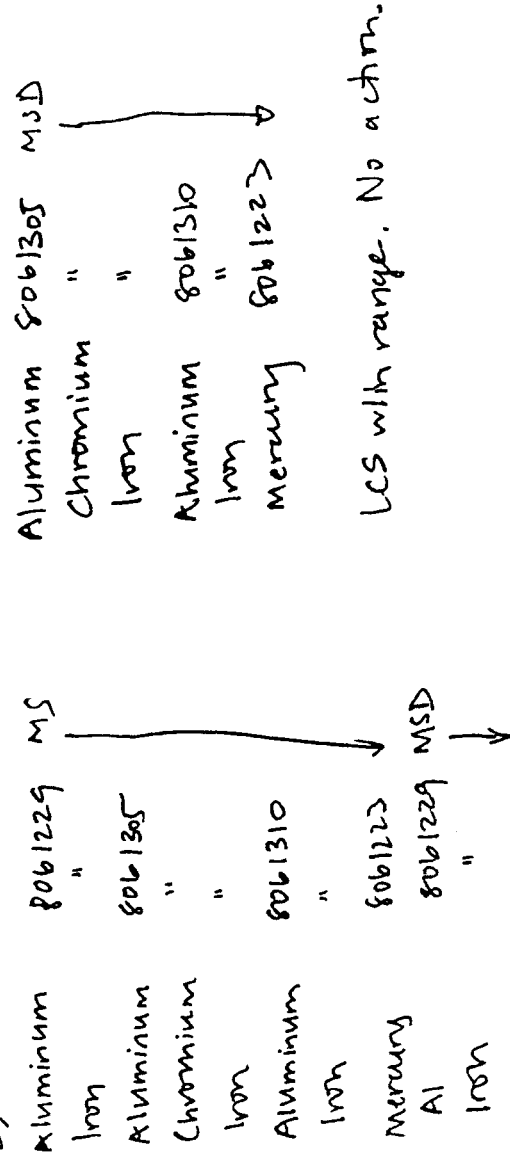
Validated By: CLW/MLL  
 Date: 6/16/08  
 Analytical Methods: DA-2, TAL Metals, PCBs

Data Package:  
NR F0560

Samples: SB-1(1-3), SB-2(1-3), SB-3(5-6), SB-4(1-3), SB-5(1-3), SB-6(1-3), EP-1

ITEM	YES	NO	NA	Samples which failed QC Criteria / Data Qualifiers	Date Action Taken / Comments
1. Requested versus Reported					
a. Were a Master tracking List and Data Narrative Present?	✓				
b. Were all requested analyses performed?	✓				
c. Are all data/information present?	✓				
2. Appropriateness of Data					
a. Are typographical or transcription errors absent?	✓				
b. Are all values below lab method detection limits (MDL), or Reporting limit (RL) if the MDL is not specified, qualified with "U"?	✓				
c. Are all values reported less than the reporting limit, but greater than the method detection limit qualified "J"?	✓				
d. Were all other lab assigned qualifiers reviewed and retained?	✓				
3. Holding Time					
a. Were aqueous samples analyzed within 14 days (VOCs) or extracted within 7 days (SVOCs) for organics?	✓				
b. Were EnCORE solid samples prepared within 48 hours (VOCs)?	✓				
c. Were other solid samples analyzed or prepared within 14 days (organic)?	✓				
d. Were samples analyzed within 6 months (or 28 days for Hg, or 24 hours for aqueous Hex Cr) for inorganics?	✓				
e. Were samples analyzed within required holding times for general chemistry? (see below)					
Alkalinity, Dissolved Gases	14 days	BOD-5, Nitrate (352.1), Nitrite (354.1), OrthoPO4	48 hours		
Ammonia, Chloride, DOC, Fluoride, Sulfate, TOC, Nitrate/Nitrite (all others), EPH	28 days	Sulfate, TDS, TSS	7 days		

#2) MS/MSD recovers out of range:



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2960 Foster Creighton Road Nashville, TN 37204 \* 800-765-0980 \* Fax 615-726-3404

June 16, 2008

1:10:26PM

Client: ARCADIS U.S., Inc. (5918)  
114 Lovell Road, Suite 202  
Knoxville, TN 37934  
Attn: Lee Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Nbr: TNKUB081.CAP2  
P/O Nbr:  
Date Received: 06/07/08

SAMPLE IDENTIFICATION	LAB NUMBER	COLLECTION DATE AND TIME
SB-1 (1-3)	NRF0560-01	06/06/08 10:00
SB-2 (1-3)	NRF0560-02	06/06/08 10:05
SB-3 (5-6)	NRF0560-03	06/06/08 10:20
SB-4 (1-3)	NRF0560-04	06/06/08 10:50
SB-5 (1-3)	NRF0560-05	06/06/08 11:05
SB-6 (1-3)	NRF0560-06	06/06/08 11:20
ER-1	NRF0560-07	06/06/08 13:05

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accreditation.

This material is intended only for the use of the individual(s) or entity to whom it is addressed, and may contain information that is privileged and confidential. If you are not the intended recipient, or the employee or agent responsible for delivering this material to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this material is strictly prohibited. If you have received this material in error, please notify us immediately at 615-726-0177.

Tennessee Certification Number: 02008

The Chain(s) of Custody, 3 pages, are included and are an integral part of this report.

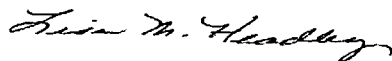
These results relate only to the items tested. This report shall not be reproduced except in full and with permission of the laboratory.

All solids results are reported in wet weight unless specifically stated.

Estimated uncertainty is available upon request.

This report has been electronically signed.

Report Approved By:



Lisa Headley

Senior Project Manager

Client ARCADIS U.S., Inc. (5918)  
 114 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 Attn Lee Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
<b>Sample ID: NRF0560-01 (SB-1 (1-3) - Soil) Sampled: 06/06/08 10:00</b>									
<b>Total Metals by EPA Method 6010B</b>									
Aluminum	27400		mg/kg	5.51	10.0	1	06/10/08 22:38	SW846 6010B	8061305
Antimony	2.67	J	mg/kg	1.40	10.0	1	06/10/08 22:38	SW846 6010B	8061305
Arsenic	9.54		mg/kg	0.902	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Barium	33.1		mg/kg	0.501	2.00	1	06/10/08 22:38	SW846 6010B	8061305
Beryllium	0.902	J	mg/kg	0.301	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Cadmium	ND		mg/kg	0.200	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Calcium	1380	DT	mg/kg	3.01	10.0	1	06/10/08 22:38	SW846 6010B	8061305
Chromium	52.0		mg/kg	0.401	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Cobalt	4.73		mg/kg	0.802	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Copper	18.8		mg/kg	0.701	2.00	1	06/10/08 22:38	SW846 6010B	8061305
Iron	46000		mg/kg	85.2	100	10	06/11/08 09:54	SW846 6010B	8061305
Lead	17.4		mg/kg	0.501	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Magnesium	1350		mg/kg	4.51	10.0	1	06/10/08 22:38	SW846 6010B	8061305
Manganese	140		mg/kg	0.301	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Nickel	18.0		mg/kg	0.501	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Potassium	2510		mg/kg	30.1	100	1	06/10/08 22:38	SW846 6010B	8061305
Selenium	1.20	J	mg/kg	1.10	2.00	1	06/10/08 22:38	SW846 6010B	8061305
Silver	ND		mg/kg	0.501	1.00	1	06/10/08 22:38	SW846 6010B	8061305
Sodium	119	J	mg/kg	100	200	1	06/10/08 22:38	SW846 6010B	8061305
Thallium	ND		mg/kg	1.90	2.00	1	06/10/08 22:38	SW846 6010B	8061305
Vanadium	58.3		mg/kg	1.10	10.0	1	06/10/08 22:38	SW846 6010B	8061305
Zinc	36.2		mg/kg	3.31	10.0	1	06/10/08 22:38	SW846 6010B	8061305
<b>Mercury by EPA Methods 7470A/7471A</b>									
Mercury	0.244		mg/kg	0.0289	0.0963	1	06/11/08 13:01	SW846 7471A	8061223
<b>Polychlorinated Biphenyls by EPA Method 8082</b>									
PCB-1016	ND		mg/kg	0.0188	0.0330	1	06/12/08 22:08	SW846 8082	8061519
PCB-1221	ND		mg/kg	0.0109	0.0330	1	06/12/08 22:08	SW846 8082	8061519
PCB-1232	ND		mg/kg	0.0198	0.0330	1	06/12/08 22:08	SW846 8082	8061519
PCB-1242	ND		mg/kg	0.0139	0.0330	1	06/12/08 22:08	SW846 8082	8061519
PCB-1248	ND		mg/kg	0.0109	0.0330	1	06/12/08 22:08	SW846 8082	8061519
PCB-1254	ND		mg/kg	0.0188	0.0330	1	06/12/08 22:08	SW846 8082	8061519
PCB-1260	ND		mg/kg	0.0139	0.0330	1	06/12/08 22:08	SW846 8082	8061519
Surr: Tetrachloro-meta-xylene (15-150%)	68 %					1	06/12/08 22:08	SW846 8082	8061519
Surr: Decachlorobiphenyl (10-150%)	74 %					1	06/12/08 22:08	SW846 8082	8061519
<b>Extractable Petroleum Hydrocarbons</b>									
Diesel	3.45	J	mg/kg	1.96	3.91	1	06/12/08 17:07	OA-2	8061522
Fuel Oil #4	ND		mg/kg	1.96	3.91	1	06/12/08 17:07	OA-2	8061522
Hydraulic Fluid	ND		mg/kg	1.96	3.91	1	06/12/08 17:07	OA-2	8061522
Kerosene	ND		mg/kg	1.96	3.91	1	06/12/08 17:07	OA-2	8061522
Mineral Spirits	ND		mg/kg	1.96	3.91	1	06/12/08 17:07	OA-2	8061522
Motor Oil	5.56		mg/kg	1.96	3.91	1	06/12/08 17:07	OA-2	8061522
Surr: o-Terphenyl (18-150%)	71 %					1	06/12/08 17:07	OA-2	8061522

CL  
6/16/08

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2980 Foster Creighton Road Nashville, TN 37204 \* 800-765-0980 \* Fax 615-726-3404

Client	ARCADIS U.S., Inc. (5918) 114 Lovell Road, Suite 202 Knoxville, TN 37934	Work Order:	NRF0560
Attn	Lee Walter	Project Name:	Knoxville Utility Board - South Central St.
		Project Number:	TNKUB081.CAP2
		Received:	06/07/08 08:30

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
<b>Sample ID: NRF0560-02 (SB-2 (1-3) - Soil) Sampled: 06/06/08 10:05</b>									
<b>Total Metals by EPA Method 6010B</b>									
Aluminum	12400		mg/kg	5.48	9.96	1	06/10/08 22:43	SW846 6010B	8061305
Antimony	2.15	J	mg/kg	1.39	9.96	1	06/10/08 22:43	SW846 6010B	8061305
Arsenic	10.3		mg/kg	0.896	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Barium	27.5		mg/kg	0.498	1.99	1	06/10/08 22:43	SW846 6010B	8061305
Beryllium	0.737	J	mg/kg	0.299	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Cadmium	ND		mg/kg	0.199	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Calcium	1800	DI	mg/kg	2.99	9.96	1	06/10/08 22:43	SW846 6010B	8061305
Chromium	29.8		mg/kg	0.398	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Cobalt	5.62		mg/kg	0.797	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Copper	16.7		mg/kg	0.697	1.99	1	06/10/08 22:43	SW846 6010B	8061305
Iron	32000		mg/kg	8.47	9.96	1	06/10/08 22:43	SW846 6010B	8061305
Lead	13.2		mg/kg	0.498	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Magnesium	481		mg/kg	4.48	9.96	1	06/10/08 22:43	SW846 6010B	8061305
Manganese	123		mg/kg	0.299	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Nickel	13.6		mg/kg	0.498	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Potassium	898		mg/kg	29.9	99.6	1	06/10/08 22:43	SW846 6010B	8061305
Selenium	ND		mg/kg	1.10	1.99	1	06/10/08 22:43	SW846 6010B	8061305
Silver	ND		mg/kg	0.498	0.996	1	06/10/08 22:43	SW846 6010B	8061305
Sodium	ND		mg/kg	99.6	199	1	06/10/08 22:43	SW846 6010B	8061305
Thallium	ND		mg/kg	1.89	1.99	1	06/10/08 22:43	SW846 6010B	8061305
Vanadium	46.2		mg/kg	1.10	9.96	1	06/10/08 22:43	SW846 6010B	8061305
Zinc	27.8		mg/kg	3.29	9.96	1	06/10/08 22:43	SW846 6010B	8061305
<b>Mercury by EPA Methods 7470A/7471A</b>									
Mercury	0.162		mg/kg	0.0293	0.0977	1	06/11/08 13:03	SW846 7471A	8061223
<b>Polychlorinated Biphenyls by EPA Method 8082</b>									
PCB-1016	ND		mg/kg	0.0189	0.0331	1	06/12/08 22:29	SW846 8082	8061519
PCB-1221	ND		mg/kg	0.0109	0.0331	1	06/12/08 22:29	SW846 8082	8061519
PCB-1232	ND		mg/kg	0.0199	0.0331	1	06/12/08 22:29	SW846 8082	8061519
PCB-1242	ND		mg/kg	0.0139	0.0331	1	06/12/08 22:29	SW846 8082	8061519
PCB-1248	ND		mg/kg	0.0109	0.0331	1	06/12/08 22:29	SW846 8082	8061519
PCB-1254	ND		mg/kg	0.0189	0.0331	1	06/12/08 22:29	SW846 8082	8061519
PCB-1260	ND		mg/kg	0.0139	0.0331	1	06/12/08 22:29	SW846 8082	8061519
Surr: Tetrachloro-meta-xylene (15-150%)	76 %					1	06/12/08 22:29	SW846 8082	8061519
Surr: Decachlorobiphenyl (10-150%)	76 %					1	06/12/08 22:29	SW846 8082	8061519
<b>Extractable Petroleum Hydrocarbons</b>									
Diesel	ND		mg/kg	1.94	3.88	1	06/12/08 17:24	OA-2	8061522
Fuel Oil #4	ND		mg/kg	1.94	3.88	1	06/12/08 17:24	OA-2	8061522
Hydraulic Fluid	ND		mg/kg	1.94	3.88	1	06/12/08 17:24	OA-2	8061522
Kerosene	ND		mg/kg	1.94	3.88	1	06/12/08 17:24	OA-2	8061522
Mineral Spirits	ND		mg/kg	1.94	3.88	1	06/12/08 17:24	OA-2	8061522
Motor Oil	2.27	J	mg/kg	1.94	3.88	1	06/12/08 17:24	OA-2	8061522
Surr: o-Terphenyl (18-150%)	84 %					1	06/12/08 17:24	OA-2	8061522

CL  
6/16/08

Client ARCADIS U.S. Inc (5918)  
 114 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 Attn Lee Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
<b>Sample ID: NRF0560-03 (SB-3 (5-6) - Soil) Sampled: 06/06/08 10:20</b>									
<b>Total Metals by EPA Method 6010B</b>									
Aluminum	15900		mg/kg	5.52	10.0	1	06/12/08 09:36	SW846 6010B	8061310
Antimony	2.05	J	mg/kg	1.41	10.0	1	06/12/08 09:36	SW846 6010B	8061310
Arsenic	12.3		mg/kg	0.904	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Barium	15.9		mg/kg	0.502	2.01	1	06/12/08 09:36	SW846 6010B	8061310
Beryllium	0.582	J	mg/kg	0.301	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Cadmium	ND		mg/kg	0.201	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Calcium	980	J	mg/kg	3.01	10.0	1	06/12/08 09:36	SW846 6010B	8061310
Chromium	15.0		mg/kg	0.402	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Cobalt	2.31		mg/kg	0.803	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Copper	12.6		mg/kg	0.703	2.01	1	06/12/08 09:36	SW846 6010B	8061310
Iron	24900		mg/kg	8.53	10.0	1	06/12/08 09:36	SW846 6010B	8061310
Lead	11.2		mg/kg	0.502	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Magnesium	467		mg/kg	4.52	10.0	1	06/12/08 09:36	SW846 6010B	8061310
Manganese	71.6	J	mg/kg	0.301	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Nickel	11.3		mg/kg	0.502	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Potassium	860		mg/kg	30.1	100	1	06/12/08 09:36	SW846 6010B	8061310
Selenium	1.77	J	mg/kg	1.10	2.01	1	06/12/08 09:36	SW846 6010B	8061310
Silver	ND		mg/kg	0.502	1.00	1	06/12/08 09:36	SW846 6010B	8061310
Sodium	114	J	mg/kg	100	201	1	06/12/08 09:36	SW846 6010B	8061310
Thallium	ND		mg/kg	1.91	2.01	1	06/12/08 09:36	SW846 6010B	8061310
Vanadium	31.0		mg/kg	1.10	10.0	1	06/12/08 09:36	SW846 6010B	8061310
Zinc	23.3		mg/kg	3.31	10.0	1	06/12/08 09:36	SW846 6010B	8061310
<b>Mercury by EPA Methods 7470A/7471A</b>									
Mercury	0.0801	J	mg/kg	0.0294	0.0979	1	06/11/08 13:05	SW846 7471A	8061223
<b>Polychlorinated Biphenyls by EPA Method 8082</b>									
PCB-1016	ND		mg/kg	0.0187	0.0328	1	06/12/08 22:49	SW846 8082	8061519
PCB-1221	ND		mg/kg	0.0108	0.0328	1	06/12/08 22:49	SW846 8082	8061519
PCB-1232	ND		mg/kg	0.0197	0.0328	1	06/12/08 22:49	SW846 8082	8061519
PCB-1242	ND		mg/kg	0.0138	0.0328	1	06/12/08 22:49	SW846 8082	8061519
PCB-1248	ND		mg/kg	0.0108	0.0328	1	06/12/08 22:49	SW846 8082	8061519
PCB-1254	ND		mg/kg	0.0187	0.0328	1	06/12/08 22:49	SW846 8082	8061519
PCB-1260	ND		mg/kg	0.0138	0.0328	1	06/12/08 22:49	SW846 8082	8061519
Surr: Tetrachloro-meta-xylene (15-150%)	48 %					1	06/12/08 22:49	SW846 8082	8061519
Surr: Decachlorobiphenyl (10-150%)	62 %					1	06/12/08 22:49	SW846 8082	8061519
<b>Extractable Petroleum Hydrocarbons</b>									
Diesel	ND		mg/kg	1.95	3.90	1	06/12/08 17:40	OA-2	8061522
Fuel Oil #4	ND		mg/kg	1.95	3.90	1	06/12/08 17:40	OA-2	8061522
Hydraulic Fluid	ND		mg/kg	1.95	3.90	1	06/12/08 17:40	OA-2	8061522
Kerosene	ND		mg/kg	1.95	3.90	1	06/12/08 17:40	OA-2	8061522
Mineral Spirits	ND		mg/kg	1.95	3.90	1	06/12/08 17:40	OA-2	8061522
Motor Oil	1.97	J	mg/kg	1.95	3.90	1	06/12/08 17:40	OA-2	8061522
Surr: o-Terphenyl (18-150%)	83 %					1	06/12/08 17:40	OA-2	8061522

AL 6/16/08

Client ARCADIS U.S., Inc. (5918)  
 114 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 Attn Lee Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

### ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
<b>Sample ID: NRF0560-04 (SB-4 (1-3) - Soil) Sampled: 06/06/08 10:50</b>									
<b>Total Metals by EPA Method 6010B</b>									
Aluminum	23200		mg/kg	5.53	10.1	1	06/12/08 09:41	SW846 6010B	8061310
Antimony	1.95	J	mg/kg	1.41	10.1	1	06/12/08 09:41	SW846 6010B	8061310
Arsenic	8.31		mg/kg	0.905	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Barium	24.2		mg/kg	0.503	2.01	1	06/12/08 09:41	SW846 6010B	8061310
Beryllium	0.805	J	mg/kg	0.302	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Cadmium	ND		mg/kg	0.201	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Calcium	346	J	mg/kg	3.02	10.1	1	06/12/08 09:41	SW846 6010B	8061310
Chromium	24.3		mg/kg	0.402	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Cobalt	9.90		mg/kg	0.805	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Copper	18.0		mg/kg	0.704	2.01	1	06/12/08 09:41	SW846 6010B	8061310
Iron	26300		mg/kg	8.55	10.1	1	06/12/08 09:41	SW846 6010B	8061310
Lead	22.5		mg/kg	0.503	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Magnesium	862		mg/kg	4.53	10.1	1	06/12/08 09:41	SW846 6010B	8061310
Manganese	267	J	mg/kg	0.302	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Nickel	14.9		mg/kg	0.503	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Potassium	1450		mg/kg	30.2	101	1	06/12/08 09:41	SW846 6010B	8061310
Selenium	1.49	J	mg/kg	1.11	2.01	1	06/12/08 09:41	SW846 6010B	8061310
Silver	ND		mg/kg	0.503	1.01	1	06/12/08 09:41	SW846 6010B	8061310
Sodium	104	J	mg/kg	101	201	1	06/12/08 09:41	SW846 6010B	8061310
Thallium	ND		mg/kg	1.91	2.01	1	06/12/08 09:41	SW846 6010B	8061310
Vanadium	46.9		mg/kg	1.11	10.1	1	06/12/08 09:41	SW846 6010B	8061310
Zinc	30.8		mg/kg	3.32	10.1	1	06/12/08 09:41	SW846 6010B	8061310
<b>Mercury by EPA Methods 7470A/7471A</b>									
Mercury	0.117		mg/kg	0.0298	0.0993	1	06/11/08 13:07	SW846 7471A	8061223
<b>Polychlorinated Biphenyls by EPA Method 8082</b>									
PCB-1016	ND		mg/kg	0.0185	0.0325	1	06/12/08 23:10	SW846 8082	8061519
PCB-1221	ND		mg/kg	0.0107	0.0325	1	06/12/08 23:10	SW846 8082	8061519
PCB-1232	ND		mg/kg	0.0195	0.0325	1	06/12/08 23:10	SW846 8082	8061519
PCB-1242	ND		mg/kg	0.0136	0.0325	1	06/12/08 23:10	SW846 8082	8061519
PCB-1248	ND		mg/kg	0.0107	0.0325	1	06/12/08 23:10	SW846 8082	8061519
PCB-1254	ND		mg/kg	0.0185	0.0325	1	06/12/08 23:10	SW846 8082	8061519
PCB-1260	ND		mg/kg	0.0136	0.0325	1	06/12/08 23:10	SW846 8082	8061519
Surr: Tetrachloro-meta-xylene (15-150%)	68 %					1	06/12/08 23:10	SW846 8082	8061519
Surr: Decachlorobiphenyl (10-150%)	74 %					1	06/12/08 23:10	SW846 8082	8061519
<b>Extractable Petroleum Hydrocarbons</b>									
Diesel	ND		mg/kg	1.96	3.92	1	06/12/08 17:56	OA-2	8061522
Fuel Oil #4	ND		mg/kg	1.96	3.92	1	06/12/08 17:56	OA-2	8061522
Hydraulic Fluid	ND		mg/kg	1.96	3.92	1	06/12/08 17:56	OA-2	8061522
Kerosene	ND		mg/kg	1.96	3.92	1	06/12/08 17:56	OA-2	8061522
Mineral Spirits	ND		mg/kg	1.96	3.92	1	06/12/08 17:56	OA-2	8061522
Motor Oil	21.5		mg/kg	1.96	3.92	1	06/12/08 17:56	OA-2	8061522
Surr: o-Terphenyl (18-150%)	69 %					1	06/12/08 17:56	OA-2	8061522

CL  
6/11/08

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2950 Foster Creighton Road Nashville, TN 37204 \* 800-765-0980 \* Fax 615-726-3404

Client ARCADIS U.S., Inc. (5918)  
114 Lovell Road, Suite 202  
Knoxville, TN 37934  
Attn Lee Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
<b>Sample ID: NRF0560-05 (SB-5 (1-3) - Soil) Sampled: 06/06/08 11:05</b>									
<b>Total Metals by EPA Method 6010B</b>									
Aluminum	46000		mg/kg	55.2	100	10	06/12/08 12:29	SW846 6010B	8061310
Antimony	2.35	J	mg/kg	1.41	10.0	1	06/12/08 09:59	SW846 6010B	8061310
Arsenic	17.0		mg/kg	0.904	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Barium	33.9		mg/kg	0.502	2.01	1	06/12/08 09:59	SW846 6010B	8061310
Beryllium	0.984	J	mg/kg	0.301	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Cadmium	ND		mg/kg	0.201	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Calcium	6010	DI	mg/kg	3.01	10.0	1	06/12/08 09:59	SW846 6010B	8061310
Chromium	31.1		mg/kg	0.402	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Cobalt	5.46		mg/kg	0.803	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Copper	29.6		mg/kg	0.703	2.01	1	06/12/08 09:59	SW846 6010B	8061310
Iron	33900		mg/kg	8.53	10.0	1	06/12/08 09:59	SW846 6010B	8061310
Lead	15.0		mg/kg	0.502	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Magnesium	2550		mg/kg	4.52	10.0	1	06/12/08 09:59	SW846 6010B	8061310
Manganese	116	DI	mg/kg	0.301	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Nickel	31.8		mg/kg	0.502	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Potassium	5310		mg/kg	30.1	100	1	06/12/08 09:59	SW846 6010B	8061310
Selenium	1.61	J	mg/kg	1.10	2.01	1	06/12/08 09:59	SW846 6010B	8061310
Silver	ND		mg/kg	0.502	1.00	1	06/12/08 09:59	SW846 6010B	8061310
Sodium	183	J	mg/kg	100	201	1	06/12/08 09:59	SW846 6010B	8061310
Thallium	ND		mg/kg	1.91	2.01	1	06/12/08 09:59	SW846 6010B	8061310
Vanadium	46.7		mg/kg	1.10	10.0	1	06/12/08 09:59	SW846 6010B	8061310
Zinc	36.6		mg/kg	3.31	10.0	1	06/12/08 09:59	SW846 6010B	8061310
<b>Mercury by EPA Methods 7470A/7471A</b>									
Mercury	0.141		mg/kg	0.0288	0.0962	1	06/11/08 13:09	SW846 7471A	8061223
<b>Polychlorinated Biphenyls by EPA Method 8082</b>									
PCB-1016	ND		mg/kg	0.0188	0.0329	1	06/12/08 23:30	SW846 8082	8061519
PCB-1221	ND		mg/kg	0.0109	0.0329	1	06/12/08 23:30	SW846 8082	8061519
PCB-1232	ND		mg/kg	0.0198	0.0329	1	06/12/08 23:30	SW846 8082	8061519
PCB-1242	ND		mg/kg	0.0138	0.0329	1	06/12/08 23:30	SW846 8082	8061519
PCB-1248	ND		mg/kg	0.0109	0.0329	1	06/12/08 23:30	SW846 8082	8061519
PCB-1254	ND		mg/kg	0.0188	0.0329	1	06/12/08 23:30	SW846 8082	8061519
PCB-1260	ND		mg/kg	0.0138	0.0329	1	06/12/08 23:30	SW846 8082	8061519
Surr: Tetrachloro-meta-xylene (15-150%)	56 %					1	06/12/08 23:30	SW846 8082	8061519
Surr: Decachlorobiphenyl (10-150%)	62 %					1	06/12/08 23:30	SW846 8082	8061519
<b>Extractable Petroleum Hydrocarbons</b>									
Diesel	ND		mg/kg	1.94	3.87	1	06/12/08 18:44	OA-2	8061522
Fuel Oil #4	ND		mg/kg	1.94	3.87	1	06/12/08 18:44	OA-2	8061522
Hydraulic Fluid	ND		mg/kg	1.94	3.87	1	06/12/08 18:44	OA-2	8061522
Kerosene	ND		mg/kg	1.94	3.87	1	06/12/08 18:44	OA-2	8061522
Mineral Spirits	ND		mg/kg	1.94	3.87	1	06/12/08 18:44	OA-2	8061522
Motor Oil	11.9		mg/kg	1.94	3.87	1	06/12/08 18:44	OA-2	8061522
Surr: o-Terphenyl (18-150%)	74 %					1	06/12/08 18:44	OA-2	8061522

Client ARCADIS U.S., Inc. (5918)  
114 Lovell Road, Suite 202  
Knoxville, TN 37934  
Attn Lee Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
<b>Sample ID: NRF0560-06 (SB-6 (1-3) - Soil) Sampled: 06/06/08 11:20</b>									
Total Metals by EPA Method 6010B									
Aluminum	32100		mg/kg	5.43	9.88	1	06/12/08 10:04	SW846 6010B	8061310
Antimony	2.08	J	mg/kg	1.38	9.88	1	06/12/08 10:04	SW846 6010B	8061310
Arsenic	8.40		mg/kg	0.389	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Barium	23.6		mg/kg	0.494	1.98	1	06/12/08 10:04	SW846 6010B	8061310
Beryllium	0.830	J	mg/kg	0.296	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Cadmium	ND		mg/kg	0.198	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Calcium	1830	BT	mg/kg	2.96	9.88	1	06/12/08 10:04	SW846 6010B	8061310
Chromium	32.3		mg/kg	0.395	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Cobalt	3.68		mg/kg	0.791	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Copper	22.5		mg/kg	0.692	1.98	1	06/12/08 10:04	SW846 6010B	8061310
Iron	34000		mg/kg	8.40	9.88	1	06/12/08 10:04	SW846 6010B	8061310
Lead	19.5		mg/kg	0.494	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Magnesium	1690		mg/kg	4.45	9.88	1	06/12/08 10:04	SW846 6010B	8061310
Manganese	121	BT	mg/kg	0.296	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Nickel	21.2		mg/kg	0.494	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Potassium	3390		mg/kg	29.6	98.8	1	06/12/08 10:04	SW846 6010B	8061310
Selenium	2.21		mg/kg	1.09	1.98	1	06/12/08 10:04	SW846 6010B	8061310
Silver	ND		mg/kg	0.494	0.988	1	06/12/08 10:04	SW846 6010B	8061310
Sodium	151	J	mg/kg	98.8	198	1	06/12/08 10:04	SW846 6010B	8061310
Thallium	ND		mg/kg	1.88	1.98	1	06/12/08 10:04	SW846 6010B	8061310
Vanadium	48.2		mg/kg	1.09	9.88	1	06/12/08 10:04	SW846 6010B	8061310
Zinc	38.4		mg/kg	3.26	9.88	1	06/12/08 10:04	SW846 6010B	8061310
Mercury by EPA Methods 7470A/7471A									
Mercury	0.168		mg/kg	0.0290	0.0968	1	06/11/08 13:12	SW846 7471A	8061223
Polychlorinated Biphenyls by EPA Method 8082									
PCB-1016	ND		mg/kg	0.0185	0.0325	1	06/12/08 23:50	SW846 8082	8061519
PCB-1221	ND		mg/kg	0.0107	0.0325	1	06/12/08 23:50	SW846 8082	8061519
PCB-1232	ND		mg/kg	0.0195	0.0325	1	06/12/08 23:50	SW846 8082	8061519
PCB-1242	ND		mg/kg	0.0137	0.0325	1	06/12/08 23:50	SW846 8082	8061519
PCB-1248	ND		mg/kg	0.0107	0.0325	1	06/12/08 23:50	SW846 8082	8061519
PCB-1254	ND		mg/kg	0.0185	0.0325	1	06/12/08 23:50	SW846 8082	8061519
PCB-1260	ND		mg/kg	0.0137	0.0325	1	06/12/08 23:50	SW846 8082	8061519
Surr: Tetrachloro-meta-xylene (15-150%)	80 %					1	06/12/08 23:50	SW846 8082	8061519
Surr: Decachlorobiphenyl (10-150%)	80 %					1	06/12/08 23:50	SW846 8082	8061519
Extractable Petroleum Hydrocarbons									
Diesel	ND		mg/kg	1.97	3.95	1	06/12/08 19:00	OA-2	8061522
Fuel Oil #4	ND		mg/kg	1.97	3.95	1	06/12/08 19:00	OA-2	8061522
Hydraulic Fluid	ND		mg/kg	1.97	3.95	1	06/12/08 19:00	OA-2	8061522
Kerosene	ND		mg/kg	1.97	3.95	1	06/12/08 19:00	OA-2	8061522
Mineral Spirits	ND		mg/kg	1.97	3.95	1	06/12/08 19:00	OA-2	8061522
Motor Oil	9.60		mg/kg	1.97	3.95	1	06/12/08 19:00	OA-2	8061522
Surr: o-Terphenyl (18-150%)	70 %					1	06/12/08 19:00	OA-2	8061522

Client ARCADIS U.S., Inc. (5918)  
114 Lovell Road, Suite 202  
Knoxville, TN 37934  
Attn Lee Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
<b>Sample ID: NRF0560-07 (ER-1 - Water) Sampled: 06/06/08 13:05</b>									
Total Metals by EPA Method 6010B									
Aluminum	0.0399	J	mg/L	0.0300	0.100	1	06/09/08 19:41	SW846 6010B	8061229
Antimony	ND		mg/L	0.00700	0.0100	1	06/09/08 19:41	SW846 6010B	8061229
Arsenic	ND		mg/L	0.00500	0.0100	1	06/09/08 19:41	SW846 6010B	8061229
Barium	ND		mg/L	0.00300	0.0100	1	06/09/08 19:41	SW846 6010B	8061229
Beryllium	ND		mg/L	0.00200	0.00400	1	06/09/08 19:41	SW846 6010B	8061229
Cadmium	ND		mg/L	0.000800	0.00100	1	06/09/08 19:41	SW846 6010B	8061229
Calcium	0.196	J	mg/L	0.100	1.00	1	06/09/08 19:41	SW846 6010B	8061229
Chromium	ND		mg/L	0.00200	0.00500	1	06/09/08 19:41	SW846 6010B	8061229
Cobalt	ND		mg/L	0.00500	0.0200	1	06/09/08 19:41	SW846 6010B	8061229
Copper	ND		mg/L	0.00400	0.0100	1	06/09/08 19:41	SW846 6010B	8061229
Iron	0.0585		mg/L	0.0420	0.0500	1	06/09/08 19:41	SW846 6010B	8061229
Lead	ND		mg/L	0.00250	0.00500	1	06/09/08 19:41	SW846 6010B	8061229
Magnesium	ND		mg/L	0.100	1.00	1	06/09/08 19:41	SW846 6010B	8061229
Manganese	ND		mg/L	0.00200	0.0150	1	06/09/08 19:41	SW846 6010B	8061229
Nickel	ND		mg/L	0.00300	0.0100	1	06/09/08 19:41	SW846 6010B	8061229
Potassium	ND		mg/L	0.200	1.00	1	06/09/08 19:41	SW846 6010B	8061229
Selenium	ND		mg/L	0.00950	0.0100	1	06/09/08 19:41	SW846 6010B	8061229
Silver	ND		mg/L	0.00300	0.00500	1	06/09/08 19:41	SW846 6010B	8061229
Sodium	ND		mg/L	0.500	1.00	1	06/09/08 19:41	SW846 6010B	8061229
Thallium	ND		mg/L	0.00960	0.0100	1	06/09/08 19:41	SW846 6010B	8061229
Vanadium	ND		mg/L	0.00500	0.0200	1	06/09/08 19:41	SW846 6010B	8061229
Zinc	ND		mg/L	0.0100	0.0500	1	06/09/08 19:41	SW846 6010B	8061229
Mercury by EPA Methods 7470A/7471A									
Mercury	ND		mg/L	0.000100	0.000200	1	06/10/08 16:45	SW846 7470A	8061221
Polychlorinated Biphenyls by EPA Method 8082									
PCB-1016	ND		ug/L	0.250	0.500	1	06/09/08 16:07	SW846 8082	8061138
PCB-1221	ND		ug/L	0.450	0.500	1	06/09/08 16:07	SW846 8082	8061138
PCB-1232	ND		ug/L	0.440	0.500	1	06/09/08 16:07	SW846 8082	8061138
PCB-1242	ND		ug/L	0.330	0.500	1	06/09/08 16:07	SW846 8082	8061138
PCB-1248	ND		ug/L	0.450	0.500	1	06/09/08 16:07	SW846 8082	8061138
PCB-1254	ND		ug/L	0.460	0.500	1	06/09/08 16:07	SW846 8082	8061138
PCB-1260	ND		ug/L	0.220	0.500	1	06/09/08 16:07	SW846 8082	8061138
Surr: Tetrachloro-meta-xylene (29-137%)	94 %					1	06/09/08 16:07	SW846 8082	8061138
Surr: Decachlorobiphenyl (10-146%)	94 %					1	06/09/08 16:07	SW846 8082	8061138
Extractable Petroleum Hydrocarbons									
Diesel	21.7	J	ug/L	20.0	100	1	06/11/08 02:40	OA-2	8061325
Fuel Oil #4	ND		ug/L	20.0	100	1	06/11/08 02:40	OA-2	8061325
Hydraulic Fluid	ND		ug/L	20.0	100	1	06/11/08 02:40	OA-2	8061325
Kerosene	ND		ug/L	20.0	100	1	06/11/08 02:40	OA-2	8061325
Mineral Spirits	ND		ug/L	20.0	100	1	06/11/08 02:40	OA-2	8061325
Motor Oil	38.7	J	ug/L	20.0	100	1	06/11/08 02:40	OA-2	8061325
Surr: o-Terphenyl (18-150%)	86 %					1	06/11/08 02:40	OA-2	8061325







Client ARCADIS U.S., Inc. (5918)  
 114 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 Attn Lee Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**Blank**

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
<b>Total Metals by EPA Method 6010B</b>						
<b>8061229-BLK1</b>						
Aluminum	<0.0300		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Antimony	<0.00700		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Arsenic	<0.00500		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Barium	<0.00300		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Beryllium	<0.00200		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Cadmium	<0.000800		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Calcium	<0.100		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Chromium	<0.00200		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Cobalt	<0.00500		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Copper	<0.00400		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Iron	<0.0420		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Lead	<0.00250		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Magnesium	<0.100		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Manganese	<0.00200		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Nickel	<0.00300		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Potassium	<0.200		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Selenium	<0.00950		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Silver	<0.00300		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Sodium	<0.500		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Thallium	<0.00960		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Vanadium	<0.00500		mg/L	8061229	8061229-BLK1	06/09/08 17:27
Zinc	0.0154	J	mg/L	8061229	8061229-BLK1	06/09/08 17:27
<b>8061305-BLK1</b>						
Aluminum	<5.43		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Antimony	<1.38		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Arsenic	<0.889		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Barium	<0.494		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Beryllium	<0.296		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Cadmium	<0.198		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Calcium	4.78	J	mg/kg	8061305	8061305-BLK1	06/11/08 09:40
Chromium	<0.395		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Cobalt	<0.791		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Copper	<0.692		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Iron	<8.40		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Lead	<0.494		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Magnesium	<4.45		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Manganese	<0.296		mg/kg	8061305	8061305-BLK1	06/11/08 09:40
Nickel	<0.494		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Potassium	<29.6		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Selenium	<1.09		mg/kg	8061305	8061305-BLK1	06/10/08 20:23

Client ARCADIS U.S., Inc. (5918)  
 114 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 Attn Lee Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**Blank - Cont.**

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
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**Total Metals by EPA Method 6010B**

**8061305-BLK1**

Silver	<0.494		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Sodium	<98.8		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Thallium	<1.88		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Vanadium	<1.09		mg/kg	8061305	8061305-BLK1	06/10/08 20:23
Zinc	<3.26		mg/kg	8061305	8061305-BLK1	06/10/08 20:23

**8061310-BLK1**

Aluminum	<5.40		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Antimony	<1.38		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Arsenic	<0.884		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Barium	<0.491		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Beryllium	<0.295		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Cadmium	<0.196		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Calcium	5.80	J	mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Chromium	<0.393		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Cobalt	<0.786		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Copper	<0.688		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Iron	<8.35		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Lead	<0.491		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Magnesium	<4.42		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Manganese	0.334	J	mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Nickel	<0.491		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Potassium	<29.5		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Selenium	<1.08		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Silver	<0.491		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Sodium	<98.2		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Thallium	<1.87		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Vanadium	<1.08		mg/kg	8061310	8061310-BLK1	06/12/08 09:11
Zinc	<3.24		mg/kg	8061310	8061310-BLK1	06/12/08 09:11

**Mercury by EPA Methods 7470A/7471A**

**8061221-BLK1**

Mercury	<0.000100		mg/L	8061221	8061221-BLK1	06/10/08 16:17
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**8061223-BLK1**

Mercury	<0.0300		mg/kg	8061223	8061223-BLK1	06/11/08 12:49
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**Polychlorinated Biphenyls by EPA Method 8082**

**8061138-BLK1**

PCB-1016	<0.250		ug/L	8061138	8061138-BLK1	06/09/08 14:45
PCB-1221	<0.450		ug/L	8061138	8061138-BLK1	06/09/08 14:45

Client ARCADIS U.S., Inc. (5918)  
 114 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 Attn Lee Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**Blank - Cont.**

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
<b>Polychlorinated Biphenyls by EPA Method 8082</b>						
<b>8061138-BLK1</b>						
PCB-1232	<0.440		ug/L	8061138	8061138-BLK1	06/09/08 14:45
PCB-1242	<0.330		ug/L	8061138	8061138-BLK1	06/09/08 14:45
PCB-1248	<0.450		ug/L	8061138	8061138-BLK1	06/09/08 14:45
PCB-1254	<0.460		ug/L	8061138	8061138-BLK1	06/09/08 14:45
PCB-1260	<0.220		ug/L	8061138	8061138-BLK1	06/09/08 14:45
PCB-1262	<0.220		ug/L	8061138	8061138-BLK1	06/09/08 14:45
PCB-1268	<0.190		ug/L	8061138	8061138-BLK1	06/09/08 14:45
Surrogate: Tetrachloro-meta-xylene	98%			8061138	8061138-BLK1	06/09/08 14:45
Surrogate: Decachlorobiphenyl	94%			8061138	8061138-BLK1	06/09/08 14:45
<b>8061519-BLK1</b>						
PCB-1016	<0.0190		mg/kg	8061519	8061519-BLK1	06/12/08 21:28
PCB-1221	<0.0110		mg/kg	8061519	8061519-BLK1	06/12/08 21:28
PCB-1232	<0.0200		mg/kg	8061519	8061519-BLK1	06/12/08 21:28
PCB-1242	<0.0140		mg/kg	8061519	8061519-BLK1	06/12/08 21:28
PCB-1248	<0.0110		mg/kg	8061519	8061519-BLK1	06/12/08 21:28
PCB-1254	<0.0190		mg/kg	8061519	8061519-BLK1	06/12/08 21:28
PCB-1260	<0.0140		mg/kg	8061519	8061519-BLK1	06/12/08 21:28
Surrogate: Tetrachloro-meta-xylene	72%			8061519	8061519-BLK1	06/12/08 21:28
Surrogate: Decachlorobiphenyl	86%			8061519	8061519-BLK1	06/12/08 21:28
<b>Extractable Petroleum Hydrocarbons</b>						
<b>8061325-BLK1</b>						
Diesel	<20.0		ug/L	8061325	8061325-BLK1	06/11/08 02:09
Fuel Oil #4	<20.0		ug/L	8061325	8061325-BLK1	06/11/08 02:09
Hydraulic Fluid	<20.0		ug/L	8061325	8061325-BLK1	06/11/08 02:09
Kerosene	<20.0		ug/L	8061325	8061325-BLK1	06/11/08 02:09
Mineral Spirits	<20.0		ug/L	8061325	8061325-BLK1	06/11/08 02:09
Motor Oil	27.2	J	ug/L	8061325	8061325-BLK1	06/11/08 02:09
Surrogate: o-Terphenyl	96%			8061325	8061325-BLK1	06/11/08 02:09
<b>8061522-BLK1</b>						
Diesel	<2.00		mg/kg	8061522	8061522-BLK1	06/12/08 14:27
Fuel Oil #4	<2.00		mg/kg	8061522	8061522-BLK1	06/12/08 14:27
Hydraulic Fluid	<2.00		mg/kg	8061522	8061522-BLK1	06/12/08 14:27
Kerosene	<2.00		mg/kg	8061522	8061522-BLK1	06/12/08 14:27
Mineral Spirits	<2.00		mg/kg	8061522	8061522-BLK1	06/12/08 14:27
Motor Oil	<2.00		mg/kg	8061522	8061522-BLK1	06/12/08 14:27
Surrogate: o-Terphenyl	85%			8061522	8061522-BLK1	06/12/08 14:27

Client ARCADIS U.S., Inc. (5918)  
 114 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 Attn Lee Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**LCS**

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
<b>Total Metals by EPA Method 6010B</b>								
<b>8061229-BS1</b>								
Aluminum	2.00	2.08		mg/L	104%	80 - 120	8061229	06/09/08 17:47
Antimony	0.100	0.106		mg/L	106%	80 - 120	8061229	06/09/08 17:47
Arsenic	0.0500	0.0527		mg/L	105%	80 - 120	8061229	06/09/08 17:47
Barium	2.00	2.17		mg/L	108%	80 - 120	8061229	06/09/08 17:47
Beryllium	0.0500	0.0519		mg/L	104%	80 - 120	8061229	06/09/08 17:47
Cadmium	0.0500	0.0513		mg/L	103%	80 - 120	8061229	06/09/08 17:47
Calcium	5.00	5.02		mg/L	100%	80 - 120	8061229	06/09/08 17:47
Chromium	0.200	0.212		mg/L	106%	80 - 120	8061229	06/09/08 17:47
Cobalt	0.500	0.562		mg/L	112%	80 - 120	8061229	06/09/08 17:47
Copper	0.250	0.268		mg/L	107%	80 - 120	8061229	06/09/08 17:47
Iron	1.00	1.07		mg/L	107%	80 - 120	8061229	06/09/08 17:47
Lead	0.0500	0.0501		mg/L	100%	80 - 120	8061229	06/09/08 17:47
Magnesium	5.00	5.04		mg/L	101%	80 - 120	8061229	06/09/08 17:47
Manganese	0.500	0.526		mg/L	105%	80 - 120	8061229	06/09/08 17:47
Nickel	0.500	0.535		mg/L	107%	80 - 120	8061229	06/09/08 17:47
Potassium	5.00	4.41		mg/L	88%	80 - 120	8061229	06/09/08 17:47
Selenium	0.0500	0.0524		mg/L	105%	80 - 120	8061229	06/09/08 17:47
Silver	0.0500	0.0493		mg/L	99%	80 - 120	8061229	06/09/08 17:47
Sodium	5.00	4.79		mg/L	96%	80 - 120	8061229	06/09/08 17:47
Thallium	0.0500	0.0512		mg/L	102%	80 - 120	8061229	06/09/08 17:47
Vanadium	0.500	0.522		mg/L	104%	80 - 120	8061229	06/09/08 17:47
Zinc	0.500	0.541		mg/L	108%	80 - 120	8061229	06/09/08 17:47
<b>8061305-BS1</b>								
Aluminum	400	373		mg/kg	93%	80 - 120	8061305	06/10/08 20:50
Antimony	100	101		mg/kg	101%	80 - 120	8061305	06/10/08 20:50
Arsenic	20.0	18.9		mg/kg	94%	80 - 120	8061305	06/10/08 20:50
Barium	400	399		mg/kg	100%	80 - 120	8061305	06/10/08 20:50
Beryllium	10.0	10.0		mg/kg	100%	80 - 120	8061305	06/10/08 20:50
Cadmium	20.0	19.5		mg/kg	97%	80 - 120	8061305	06/10/08 20:50
Calcium	1000	976		mg/kg	98%	80 - 120	8061305	06/10/08 20:50
Chromium	40.0	41.0		mg/kg	102%	80 - 120	8061305	06/10/08 20:50
Cobalt	100	109		mg/kg	109%	80 - 120	8061305	06/10/08 20:50
Copper	50.0	48.9		mg/kg	98%	80 - 120	8061305	06/10/08 20:50
Iron	200	222		mg/kg	111%	80 - 120	8061305	06/10/08 20:50
Lead	100	96.5		mg/kg	96%	80 - 120	8061305	06/10/08 20:50
Magnesium	1000	960		mg/kg	96%	80 - 120	8061305	06/10/08 20:50
Manganese	100	99.7		mg/kg	100%	80 - 120	8061305	06/10/08 20:50
Nickel	100	102		mg/kg	102%	80 - 120	8061305	06/10/08 20:50
Potassium	1000	844		mg/kg	84%	80 - 120	8061305	06/10/08 20:50
Selenium	20.0	18.3		mg/kg	92%	80 - 120	8061305	06/10/08 20:50

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2960 Foster Creighton Road Nashville, TN 37204 \* 800-765-0980 \* Fax 615-726-3404

Client ARCADIS U.S., Inc. (5918)  
114 Lovell Road, Suite 202  
Knoxville, TN 37934  
Attn Lee Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

## PROJECT QUALITY CONTROL DATA LCS - Cont.

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
<b>Total Metals by EPA Method 6010B</b>								
<b>3061305-BS1</b>								
Silver	10.0	9.40						
Sodium	1000	913		mg/kg	94%	75 - 125	8061305	06/10/08 20:50
Thallium	100	92.9		mg/kg	91%	80 - 120	8061305	06/10/08 20:50
Vanadium	100	99.2		mg/kg	93%	80 - 120	8061305	06/10/08 20:50
Zinc	100	99.2		mg/kg	99%	80 - 120	8061305	06/10/08 20:50
<b>061310-BS1</b>								
Aluminum	400	381						
Antimony	100	97.6		mg/kg	95%	80 - 120	8061310	06/12/08 09:28
Arsenic	20.0	19.4		mg/kg	98%	80 - 120	8061310	06/12/08 09:28
Barium	400	405		mg/kg	97%	80 - 120	8061310	06/12/08 09:28
Beryllium	10.0	10.3		mg/kg	101%	80 - 120	8061310	06/12/08 09:28
Cadmium	20.0	19.9		mg/kg	103%	80 - 120	8061310	06/12/08 09:28
Calcium	1000	959		mg/kg	99%	80 - 120	8061310	06/12/08 09:28
Chromium	40.0	41.3		mg/kg	96%	80 - 120	8061310	06/12/08 09:28
Cobalt	100	109		mg/kg	103%	80 - 120	8061310	06/12/08 09:28
Copper	50.0	48.9		mg/kg	109%	80 - 120	8061310	06/12/08 09:28
Iron	200	194		mg/kg	98%	80 - 120	8061310	06/12/08 09:28
Lithium	100	96.9		mg/kg	97%	80 - 120	8061310	06/12/08 09:28
Manganese	1000	957		mg/kg	97%	80 - 120	8061310	06/12/08 09:28
Nickel	100	101		mg/kg	96%	80 - 120	8061310	06/12/08 09:28
Potassium	100	100		mg/kg	101%	80 - 120	8061310	06/12/08 09:28
Selenium	1000	804		mg/kg	100%	80 - 120	8061310	06/12/08 09:28
Silver	20.0	19.1		mg/kg	80%	80 - 120	8061310	06/12/08 09:28
Sulfur	10.0	9.56		mg/kg	95%	80 - 120	8061310	06/12/08 09:28
Tin	1000	888		mg/kg	96%	75 - 125	8061310	06/12/08 09:28
Tungsten	100	93.1		mg/kg	89%	80 - 120	8061310	06/12/08 09:28
Zinc	100	102		mg/kg	93%	80 - 120	8061310	06/12/08 09:28
Zinc	100	101		mg/kg	102%	80 - 120	8061310	06/12/08 09:28
Zinc	100	101		mg/kg	101%	80 - 120	8061310	06/12/08 09:28
<b>Mercury by EPA Methods 7470A/7471A</b>								
<b>221-BS1</b>								
Mercury	0.00100	0.00101		mg/L	101%	78 - 124	8061221	06/10/08 16:19
<b>223-BS1</b>								
Mercury	0.167	0.185		mg/kg	111%	78 - 120	8061223	06/11/08 12:51
<b>Polychlorinated Biphenyls by EPA Method 8082</b>								
<b>38-BS1</b>								
PCB 254	10.0	9.54		ug/L	95%	26 - 135	8061138	06/09/08 15:06
PCB 254	1.00	0.932		ug/L	93%	29 - 137	8061138	06/09/08 15:06
<i>Note: Tetrachloro-meta-xylene</i>								

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 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**LCS - Cont.**

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
<b>Polychlorinated Biphenyls by EPA Method 8082</b>								
<b>8061138-BS1</b>								
Surrogate: Decachlorobiphenyl	1.00	0.896			90%	10 - 146	8061138	06/09/08 15:06
<b>8061519-BS1</b>								
PCB-1254	0.167	0.153		mg/kg	92%	52 - 117	8061519	06/12/08 21:48
Surrogate: Tetrachloro-meta-xylene	0.0167	0.0133			80%	15 - 150	8061519	06/12/08 21:48
Surrogate: Decachlorobiphenyl	0.0167	0.0147			88%	10 - 150	8061519	06/12/08 21:48
<b>Extractable Petroleum Hydrocarbons</b>								
<b>8061325-BS1</b>								
Diesel	1000	978	MNRI	ug/L	98%	43 - 120	8061325	06/11/08 02:25
Surrogate: o-Terphenyl	20.0	22.0			110%	18 - 150	8061325	06/11/08 02:25
<b>8061522-BS1</b>								
Diesel	40.0	39.1		mg/kg	98%	53 - 131	8061522	06/12/08 14:43
Surrogate: o-Terphenyl	0.800	0.815			102%	18 - 150	8061522	06/12/08 14:43

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## PROJECT QUALITY CONTROL DATA

### LCS Dup

Analyte	Orig. Val.	Duplicate	Q	Units	Spike Conc	% Rec.	Target Range	RPD	Limit	Batch	Sample Duplicated	Analyzed Date/Time
<b>Total Metals by EPA Method 6010B</b>												
<b>8061229-BSD1</b>												
Aluminum		2.06		mg/L	2.00	103%	80 - 120	1	20	8061229		06/09/08 17:51
Antimony		0.104		mg/L	0.100	104%	80 - 120	2	20	8061229		06/09/08 17:51
Arsenic		0.0552		mg/L	0.0500	110%	80 - 120	5	20	8061229		06/09/08 17:51
Barium		2.16		mg/L	2.00	108%	80 - 120	0.7	20	8061229		06/09/08 17:51
Beryllium		0.0516		mg/L	0.0500	103%	80 - 120	0.6	20	8061229		06/09/08 17:51
Cadmium		0.0512		mg/L	0.0500	102%	80 - 120	0.2	20	8061229		06/09/08 17:51
Calcium		5.02		mg/L	5.00	100%	80 - 120	0.04	20	8061229		06/09/08 17:51
Chromium		0.211		mg/L	0.200	106%	80 - 120	0.3	20	8061229		06/09/08 17:51
Cobalt		0.560		mg/L	0.500	112%	80 - 120	0.4	20	8061229		06/09/08 17:51
Copper		0.266		mg/L	0.250	107%	80 - 120	0.5	20	8061229		06/09/08 17:51
Iron		1.07		mg/L	1.00	107%	80 - 120	0.2	20	8061229		06/09/08 17:51
Lead		0.0501		mg/L	0.0500	100%	80 - 120	0.02	20	8061229		06/09/08 17:51
Magnesium		5.03		mg/L	5.00	101%	80 - 120	0.2	20	8061229		06/09/08 17:51
Manganese		0.530		mg/L	0.500	106%	80 - 120	0.7	20	8061229		06/09/08 17:51
Nickel		0.533		mg/L	0.500	107%	80 - 120	0.4	20	8061229		06/09/08 17:51
Potassium		4.44		mg/L	5.00	89%	80 - 120	0.6	20	8061229		06/09/08 17:51
Selenium		0.0562		mg/L	0.0500	112%	80 - 120	7	20	8061229		06/09/08 17:51
Silver		0.0493		mg/L	0.0500	99%	80 - 120	0	20	8061229		06/09/08 17:51
Sodium		4.81		mg/L	5.00	96%	80 - 120	0.4	20	8061229		06/09/08 17:51
Thallium		0.0528		mg/L	0.0500	106%	80 - 120	3	20	8061229		06/09/08 17:51
Vanadium		0.519		mg/L	0.500	104%	80 - 120	0.4	20	8061229		06/09/08 17:51
Zinc		0.539		mg/L	0.500	108%	80 - 120	0.4	20	8061229		06/09/08 17:51

### 8061305-BSD1

Aluminum		373		mg/kg	400	93%	80 - 120	0.2	20	8061305		06/10/08 20:55
Antimony		100		mg/kg	100	100%	80 - 120	0.3	20	8061305		06/10/08 20:55
Arsenic		19.2		mg/kg	20.0	96%	80 - 120	2	20	8061305		06/10/08 20:55
Barium		398		mg/kg	400	99%	80 - 120	0.4	20	8061305		06/10/08 20:55
Beryllium		9.98		mg/kg	10.0	100%	80 - 120	0.2	20	8061305		06/10/08 20:55
Cadmium		19.4		mg/kg	20.0	97%	80 - 120	0.3	20	8061305		06/10/08 20:55
Calcium		981		mg/kg	1000	98%	80 - 120	0.5	20	8061305		06/10/08 20:55
Chromium		41.0		mg/kg	40.0	103%	80 - 120	0.1	20	8061305		06/10/08 20:55
Cobalt		109		mg/kg	100	109%	80 - 120	0.3	20	8061305		06/10/08 20:55
Copper		48.7		mg/kg	50.0	97%	80 - 120	0.3	20	8061305		06/10/08 20:55
Iron		222		mg/kg	200	111%	80 - 120	0.3	20	8061305		06/10/08 20:55
Lead		96.6		mg/kg	100	97%	80 - 120	0.08	20	8061305		06/10/08 20:55
Magnesium		959		mg/kg	1000	96%	80 - 120	0.2	20	8061305		06/10/08 20:55
Manganese		99.8		mg/kg	100	100%	80 - 120	0.1	20	8061305		06/10/08 20:55
Nickel		102		mg/kg	100	102%	80 - 120	0.2	20	8061305		06/10/08 20:55
Potassium		843		mg/kg	1000	84%	80 - 120	0.2	20	8061305		06/10/08 20:55
Selenium		18.8		mg/kg	20.0	94%	80 - 120	2	20	8061305		06/10/08 20:55

Client ARCADIS U.S., Inc. (5918)  
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Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**LCS Dup - Cont.**

Analyte	Orig. Val.	Duplicate	Q	Units	Spike Conc	% Rec.	Target Range	RPD	Limit	Batch	Sample Duplicated	Analyzed Date/Time
<b>Total Metals by EPA Method 6010B</b>												
<b>8061305-BSD1</b>												
Silver		9.40		mg/kg	10.0	94%	75 - 125	0	20	8061305		06/10/08 20:55
Sodium		903		mg/kg	1000	90%	80 - 120	1	20	8061305		06/10/08 20:55
Thallium		92.7		mg/kg	100	93%	80 - 120	0.2	20	8061305		06/10/08 20:55
Vanadium		99.1		mg/kg	100	99%	80 - 120	0.2	20	8061305		06/10/08 20:55
Zinc		99.3		mg/kg	100	99%	80 - 120	0.1	20	8061305		06/10/08 20:55
<b>Mercury by EPA Methods 7470A/7471A</b>												
<b>8061221-BSD1</b>												
Mercury		0.00107		mg/L	0.00100	107%	78 - 124	6	22	8061221		06/10/08 16:22

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Work Order: NRF0560  
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 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**Matrix Spike**

Analyte	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
<b>Total Metals by EPA Method 6010B</b>										
<b>8061229-MS1</b>										
Aluminum	183	187	MHA	mg/L	2.00	180%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Antimony	ND	0.108		mg/L	0.100	108%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Arsenic	ND	0.0502		mg/L	0.0500	100%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Barium	0.0391	2.20		mg/L	2.00	108%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Beryllium	0.00430	0.0567		mg/L	0.0500	105%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Cadmium	ND	0.0458		mg/L	0.0500	92%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Chromium	0.00870	0.219		mg/L	0.200	105%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Cobalt	0.454	1.01		mg/L	0.500	112%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Copper	ND	0.285		mg/L	0.250	114%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Iron	177	179	MHA	mg/L	1.00	150%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Lead	ND	0.0413		mg/L	0.0500	83%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Manganese	0.803	1.32		mg/L	0.500	104%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Nickel	0.444	0.977		mg/L	0.500	107%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Selenium	ND	0.0446		mg/L	0.0500	89%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Silver	0.00340	0.0545		mg/L	0.0500	102%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Thallium	ND	0.0526		mg/L	0.0500	105%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Vanadium	0.0203	0.538		mg/L	0.500	103%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
Zinc	0.133	0.678		mg/L	0.500	109%	75 - 125	8061229	NRF0510-02	06/09/08 18:01
<b>8061305-MS1</b>										
Aluminum	27500	24200	MHA	mg/kg	402	-802%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Antimony	1.57	101		mg/kg	100	99%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Arsenic	1.04	21.3		mg/kg	20.1	101%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Barium	33.6	420		mg/kg	402	96%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Beryllium	ND	10.4		mg/kg	10.0	104%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Cadmium	ND	18.1		mg/kg	20.1	90%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Chromium	28.4	86.5	MI	mg/kg	40.2	144%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Cobalt	27.0	139		mg/kg	100	112%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Copper	13.7	61.3		mg/kg	50.2	95%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Iron	21900	29100	MHA	mg/kg	201	3550%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Lead	23.7	127		mg/kg	100	102%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Manganese	37.9	147		mg/kg	100	109%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Nickel	17.7	120		mg/kg	100	102%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Selenium	1.62	19.8		mg/kg	20.1	91%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Silver	ND	9.02		mg/kg	10.0	90%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Thallium	ND	93.6		mg/kg	100	93%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
Vanadium	47.3	154		mg/kg	100	107%	75 - 125	8061305	NRF0442-09	06/10/08 22:10

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Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**Matrix Spike - Cont.**

Analyte	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
<b>Total Metals by EPA Method 6010B</b>										
<b>8061305-MS1</b>										
Zinc	20.2	120		mg/kg	100	100%	75 - 125	8061305	NRF0442-09	06/10/08 22:10
<b>8061310-MS1</b>										
Aluminum	17200	20600	MHA	mg/kg	391	861%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Antimony	1.41	91.7		mg/kg	97.7	92%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Arsenic	4.64	24.4		mg/kg	19.5	101%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Barium	293	688		mg/kg	391	101%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Beryllium	0.920	10.9		mg/kg	9.77	103%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Cadmium	ND	18.8		mg/kg	19.5	96%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Chromium	17.1	58.5		mg/kg	39.1	106%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Cobalt	6.50	111		mg/kg	97.7	107%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Copper	13.0	62.7		mg/kg	48.8	102%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Iron	17300	18800	MHA	mg/kg	195	748%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Lead	12.7	109		mg/kg	97.7	99%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Manganese	338	449		mg/kg	97.7	114%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Nickel	14.0	110		mg/kg	97.7	99%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Selenium	1.10	19.7		mg/kg	19.5	95%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Silver	ND	9.06		mg/kg	9.77	93%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Thallium	ND	93.3		mg/kg	97.7	96%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Vanadium	32.2	136		mg/kg	97.7	106%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
Zinc	50.9	153		mg/kg	97.7	105%	75 - 125	8061310	NRF0588-39	06/12/08 11:36
<b>Mercury by EPA Methods 7470A/7471A</b>										
<b>8061221-MS1</b>										
Mercury	ND	0.00101		mg/L	0.00100	101%	63 - 138	8061221	NRF0560-07	06/10/08 16:47
<b>8061223-MS1</b>										
Mercury	0.0881	0.382	M1	mg/kg	0.163	181%	60 - 149	8061223	NRF0588-07	06/11/08 13:24
<b>Polychlorinated Biphenyls by EPA Method 8082</b>										
<b>8061519-MS1</b>										
PCB-1254	ND	0.123		mg/kg	0.167	74%	26 - 136	8061519	NRF0588-43	06/13/08 08:42
Surrogate: Tetrachloro-meta-xylene		0.0157		mg/kg	0.0167	94%	15 - 150	8061519	NRF0588-43	06/13/08 08:42
Surrogate: Decachlorobiphenyl		0.0186		mg/kg	0.0167	112%	10 - 150	8061519	NRF0588-43	06/13/08 08:42
<b>Extractable Petroleum Hydrocarbons</b>										
<b>8061522-MS1</b>										
Diesel	ND	36.4		mg/kg	38.7	94%	13 - 156	8061522	NRF0520-03	06/12/08 14:59
Surrogate: o-Terphenyl		0.664		mg/kg	0.773	86%	18 - 150	8061522	NRF0520-03	06/12/08 14:59

SCADIS U.S., Inc. (5918)  
4 Lovell Road, Suite 202  
Knoxville, TN 37934  
John E. Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**Matrix Spike - Cont.**

	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
<b>Petroleum Hydrocarbons</b>										

3139

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CADIS U.S., Inc. (5918)  
 1 Lovell Road, Suite 202  
 Knoxville, TN 37934  
 : Walter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

### PROJECT QUALITY CONTROL DATA

#### Matrix Spike Dup

Orig. Val.	Duplicate	Q	Units	Spike Conc	% Rec.	Target Range	RPD	Limit	Batch	Sample Duplicated	Analyzed Date/Time
<b>by EPA Method 6010B</b>											
<b>D1</b>											
183	184	MHA	mg/L	2.00	25%	75 - 125	2	20	8061229	NRF0510-02	06/09/08 18:06
ND	0.103		mg/L	0.100	103%	75 - 125	5	20	8061229	NRF0510-02	06/09/08 18:06
ND	0.0510		mg/L	0.0500	102%	75 - 125	2	20	8061229	NRF0510-02	06/09/08 18:06
0.0391	2.17		mg/L	2.00	107%	75 - 125	1	20	8061229	NRF0510-02	06/09/08 18:06
0.00430	0.0568		mg/L	0.0500	105%	75 - 125	0.2	20	8061229	NRF0510-02	06/09/08 18:06
ND	0.0465		mg/L	0.0500	93%	75 - 125	2	20	8061229	NRF0510-02	06/09/08 18:06
0.00870	0.220		mg/L	0.200	106%	75 - 125	0.6	20	8061229	NRF0510-02	06/09/08 18:06
0.454	1.01		mg/L	0.500	112%	75 - 125	0.2	20	8061229	NRF0510-02	06/09/08 18:06
ND	0.283		mg/L	0.250	113%	75 - 125	0.7	20	8061229	NRF0510-02	06/09/08 18:06
177	177	MHA	mg/L	1.00	-20%	75 - 125	1	20	8061229	NRF0510-02	06/09/08 18:06
ND	0.0414		mg/L	0.0500	83%	75 - 125	0.3	20	8061229	NRF0510-02	06/09/08 18:06
0.803	1.31		mg/L	0.500	102%	75 - 125	0.8	20	8061229	NRF0510-02	06/09/08 18:06
0.444	0.975		mg/L	0.500	106%	75 - 125	0.2	20	8061229	NRF0510-02	06/09/08 18:06
ND	0.0426		mg/L	0.0500	85%	75 - 125	5	20	8061229	NRF0510-02	06/09/08 18:06
0.00340	0.0559		mg/L	0.0500	105%	75 - 125	3	20	8061229	NRF0510-02	06/09/08 18:06
ND	0.0626		mg/L	0.0500	125%	75 - 125	17	20	8061229	NRF0510-02	06/09/08 18:06
0.0203	0.538		mg/L	0.500	103%	75 - 125	0.02	20	8061229	NRF0510-02	06/09/08 18:06
0.133	0.674		mg/L	0.500	108%	75 - 125	0.6	20	8061229	NRF0510-02	06/09/08 18:06
<b>D1</b>											
27500	26200	MHA	mg/kg	390	-322%	75 - 125	8	20	8061305	NRF0442-09	06/10/08 22:15
1.57	97.4		mg/kg	97.5	98%	75 - 125	3	20	8061305	NRF0442-09	06/10/08 22:15
1.04	19.1		mg/kg	19.5	93%	75 - 125	11	20	8061305	NRF0442-09	06/10/08 22:15
33.6	413		mg/kg	390	97%	75 - 125	1	20	8061305	NRF0442-09	06/10/08 22:15
ND	10.2		mg/kg	9.75	105%	75 - 125	2	20	8061305	NRF0442-09	06/10/08 22:15
ND	18.3		mg/kg	19.5	94%	75 - 125	1	20	8061305	NRF0442-09	06/10/08 22:15
28.4	66.3	R3	mg/kg	39.0	97%	75 - 125	26	20	8061305	NRF0442-09	06/10/08 22:15
27.0	132		mg/kg	97.5	108%	75 - 125	5	20	8061305	NRF0442-09	06/10/08 22:15
13.7	60.7		mg/kg	48.7	97%	75 - 125	1	20	8061305	NRF0442-09	06/10/08 22:15
21900	16100	MHA,	mg/kg	195	-2990%	75 - 125	57	20	8061305	NRF0442-09	06/10/08 22:15
23.7	122		mg/kg	97.5	101%	75 - 125	4	20	8061305	NRF0442-09	06/10/08 22:15
37.9	130		mg/kg	97.5	94%	75 - 125	12	20	8061305	NRF0442-09	06/10/08 22:15
17.7	118		mg/kg	97.5	103%	75 - 125	2	20	8061305	NRF0442-09	06/10/08 22:15
1.62	19.4		mg/kg	19.5	91%	75 - 125	2	20	8061305	NRF0442-09	06/10/08 22:15
ND	9.03		mg/kg	9.75	93%	75 - 125	0.1	20	8061305	NRF0442-09	06/10/08 22:15
ND	90.8		mg/kg	97.5	93%	75 - 125	3	20	8061305	NRF0442-09	06/10/08 22:15
47.3	131		mg/kg	97.5	86%	75 - 125	16	20	8061305	NRF0442-09	06/10/08 22:15
20.2	118		mg/kg	97.5	101%	75 - 125	2	20	8061305	NRF0442-09	06/10/08 22:15
<b>D1</b>											
17200	22500	MHA	mg/kg	400	1310%	75 - 125	9	20	8061310	NRF0588-39	06/12/08 11:41

3139

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ADIS U.S., Inc. (5918)  
 Lovell Road, Suite 202  
 Nashville, TN 37934  
 Valter

Work Order: NRF0560  
 Project Name: Knoxville Utility Board - South Central St.  
 Project Number: TNKUB081.CAP2  
 Received: 06/07/08 08:30

**PROJECT QUALITY CONTROL DATA**  
**Matrix Spike Dup - Cont.**

Orig. Val.	Duplicate	Q	Units	Spike Conc	% Rec.	Target Range	RPD	Limit	Batch	Sample Duplicated	Analyzed Date/Time
<b>by EPA Method 6010B</b>											
1.41	92.9		mg/kg	100	91%	75 - 125	1	20	8061310	NRF0588-39	06/12/08 11:41
4.64	25.2		mg/kg	20.0	103%	75 - 125	3	20	8061310	NRF0588-39	06/12/08 11:41
293	603		mg/kg	400	77%	75 - 125	13	20	8061310	NRF0588-39	06/12/08 11:41
0.920	11.1		mg/kg	10.0	102%	75 - 125	2	20	8061310	NRF0588-39	06/12/08 11:41
ND	19.1		mg/kg	20.0	96%	75 - 125	1	20	8061310	NRF0588-39	06/12/08 11:41
17.1	60.8		mg/kg	40.0	109%	75 - 125	4	20	8061310	NRF0588-39	06/12/08 11:41
6.50	113		mg/kg	100	106%	75 - 125	1	20	8061310	NRF0588-39	06/12/08 11:41
13.0	63.6		mg/kg	50.0	101%	75 - 125	2	20	8061310	NRF0588-39	06/12/08 11:41
17300	19000	MHA	mg/kg	200	862%	75 - 125	1	20	8061310	NRF0588-39	06/12/08 11:41
12.7	111		mg/kg	100	98%	75 - 125	1	20	8061310	NRF0588-39	06/12/08 11:41
338	443		mg/kg	100	105%	75 - 125	1	20	8061310	NRF0588-39	06/12/08 11:41
14.0	112		mg/kg	100	98%	75 - 125	1	20	8061310	NRF0588-39	06/12/08 11:41
1.10	19.4		mg/kg	20.0	91%	75 - 125	2	20	8061310	NRF0588-39	06/12/08 11:41
ND	9.20		mg/kg	10.0	92%	75 - 125	2	20	8061310	NRF0588-39	06/12/08 11:41
ND	96.1		mg/kg	100	96%	75 - 125	3	20	8061310	NRF0588-39	06/12/08 11:41
32.2	142		mg/kg	100	109%	75 - 125	4	20	8061310	NRF0588-39	06/12/08 11:41
50.9	154		mg/kg	100	104%	75 - 125	0.9	20	8061310	NRF0588-39	06/12/08 11:41
<b>A Methods 7470A/7471A</b>											
ND	0.000809		mg/L	0.00100	81%	63 - 138	22	22	8061221	NRF0560-07	06/10/08 16:49
0.0881	0.364	M1	mg/kg	0.166	167%	60 - 149	5	26	8061223	NRF0588-07	06/11/08 13:27
<b>Biphenyls by EPA Method 8082</b>											
ND	0.113		mg/kg	0.162	70%	26 - 136	8	50	8061519	NRF0588-43	06/13/08 09:02
<i>o</i> -meta-xylene	0.0136		mg/kg	0.0162	84%	15 - 150			8061519	NRF0588-43	06/13/08 09:02
<i>o</i> biphenyl	0.0162		mg/kg	0.0162	100%	10 - 150			8061519	NRF0588-43	06/13/08 09:02
<b>oleum Hydrocarbons</b>											
ND	36.5		mg/kg	39.0	94%	13 - 156	0.1	50	8061522	NRF0520-03	06/12/08 15:15
ND	0.736		mg/kg	0.779	94%	18 - 150			8061522	NRF0520-03	06/12/08 15:15

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adis-

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CADIS U.S., Inc. (5918)  
· Lovell Road, Suite 202  
· Knoxville, TN 37934  
· Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

### CERTIFICATION SUMMARY

#### a Nashville

iod	Matrix	AIHA	Nelac	Tennessee
2	Soil	N/A	X	
2	Water		X	
010B	Soil	N/A	X	N/A
010B	Water	N/A	X	N/A
470A	Water	N/A	X	N/A
471A	Soil		X	
3082	Soil	N/A	X	N/A
3082	Water	N/A	X	N/A

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ADIS U.S., Inc. (5918)  
Lovell Road, Suite 202  
Nashville, TN 37934  
Walter

Work Order: NRF0560  
Project Name: Knoxville Utility Board - South Central St.  
Project Number: TNKUB081.CAP2  
Received: 06/07/08 08:30

## DATA QUALIFIERS AND DEFINITIONS

Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.

Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). Concentrations within this range are estimated.

The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).

There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike.

The RPD exceeded the acceptance limit due to sample matrix effects.

Not detected at the reporting limit (or method detection limit if shown)

## METHOD MODIFICATION NOTES

, ext. 3139

ircadis-

AP2

COOLER REC



IRF0560

Cooler Received/Opened On 06/07/08 @ 08:30

1. Tracking # 5618 (last 4 digits, FedEx)

Courier: FED-EX IR Gun ID A01124

2. Temperature of rep. sample or temp blank when opened: 1.7 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 2 - FRONT BACK

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

certify that I opened the cooler and answered questions 1-6 (initial) TG

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry Ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES (NO) NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # NA

certify that I unloaded the cooler and answered questions 7-14 (initial) MY

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

If preservation in-house was needed, record standard ID of preservative used here

16. Was residual chlorine present? YES (NO) NA

certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) MY

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

certify that I entered this project into LIMS and answered questions 17-20 (initial) MY

certify that I attached a label with the unique LIMS number to each container (initial) MY

21. Were there Non-Conformance issues at login? YES...NO Was a PIPE generated? YES...NO..#

= Broken in shipment or Receipt Form.doc



