June 11, 2018

Clemson University
310 Klugh Avenue
Clemson, South Carolina 29634

Attn: Mr. W. Robert Newberry, IV
E-mail: wnewber@clemson.edu

RE: Avian Pathogen Analysis Report
Clemson University – Hendix Center – 3rd Floor Media Center
Clemson, South Carolina
Terracon Project No. 86187072C

Dear Mr. Newberry:

Terracon Consultants, Inc. (Terracon) is pleased to present the results of the avian pathogen sampling and analysis performed on June 5, 2018 at the referenced site. We understand the purpose of this service is to conduct air sampling in the areas where bat droppings may be present in a freight elevator shaft. This service was conducted in general accordance with our Master Service Agreement with Clemson University.

PROJECT DESCRIPTION

Scope of Services

At the request of Clemson University, Terracon conducted ammonia and avian pathogen air testing in the Hendrix Student Center following the removal of bats from a freight elevator shaft by the University pest control contractor. The testing for ammonia and avian pathogens was conducted on June 5, 2018.

Standard of Care

This limited indoor environmental quality investigation was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. Terracon did not attempt to identify every potential exposure or hazard present in the subject building. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our sampling. Many factors, such as weather conditions, building occupancy, ventilation patterns and seasonal variations, can affect the conditions observed. The information contained in this report should not be relied upon to represent conditions that existed prior to or after this sampling. Terracon does not warrant the services of regulatory agencies, laboratories or other third parties supplying information that may have been used in the preparation of this report.

SAMPLE COLLECTION

Three air samples were collected indoors on a 37 mm 0.45µ polycarbonate membrane filter with a vacuum pump. A volume of greater than 3,000 liters of air was collected at each sample location. The pumps were calibrated prior to sampling with a TSI Model 4100 primary air flow calibrator to a flow rate of 10 liters/minute. The three samples along with a blank sample were sent to EMLab P&K for Avian Pathogen Screen analysis which identifies the presence of DNA for *histoplasma capsulatum*, *cryptococcus neoformans*, and c*hlamydophila psitacci* via polymerase chain reaction (PCR) analysis. Analysis for *histoplasma capsulatum* requires a two-stage PCR process and thus results are reported as either "present" or absent". Analysis for *cryptococcus neoformans* and c*hlamydophila psitacci* can be completed in one stage and are reported in "cell equivalents/unit".

EMLab P&K is accredited by the AIHA® Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP), Laboratory ID: 102297.

In addition to the avian pathogen screen, three samples were collected for ammonia analysis to further assist in confirming cleaning efforts. Air samples were collected on passive assay badges and submitted along with a blank to SGS Galson (Galson) for ammonia analysis in accordance with modified OSHA ID-188. Galson is accredited under the AIHA® Industrial Hygiene Laboratory Accreditation Program (IHLAP), Laboratory ID: 100324.

The samples were collected adjacent to the 3rd floor freight elevator (samples 304-1-A, 304-1-B), at the intersection of the hallway leading to the freight elevator and the main media center hallway on the 3rd floor (304-2-A, 304-2-B) and outside the Michelin Career Center across the atrium from the 3rd floor media center (304-3-A, 304-3-B). See the attached Figure 1 for a diagram of the 3rd floor at the Hendrix Center with sample locations.

RESULTS

On June 5, 2018, air samples were collected in the three previously described locations of the Hendrix Center 3rd floor media center and analyzed for ammonia and avian pathogens.

Analytical results for ammonia were below analytical detection limits in the samples collected. Analytical results for avian pathogens were "absent" for *histoplasma capsulatum* and below analytical detection limits for *cryptococcus neoformans*, and c*hlamydophila psitacci* in the samples collected.

Laboratory analytical results are attached.

CLOSING

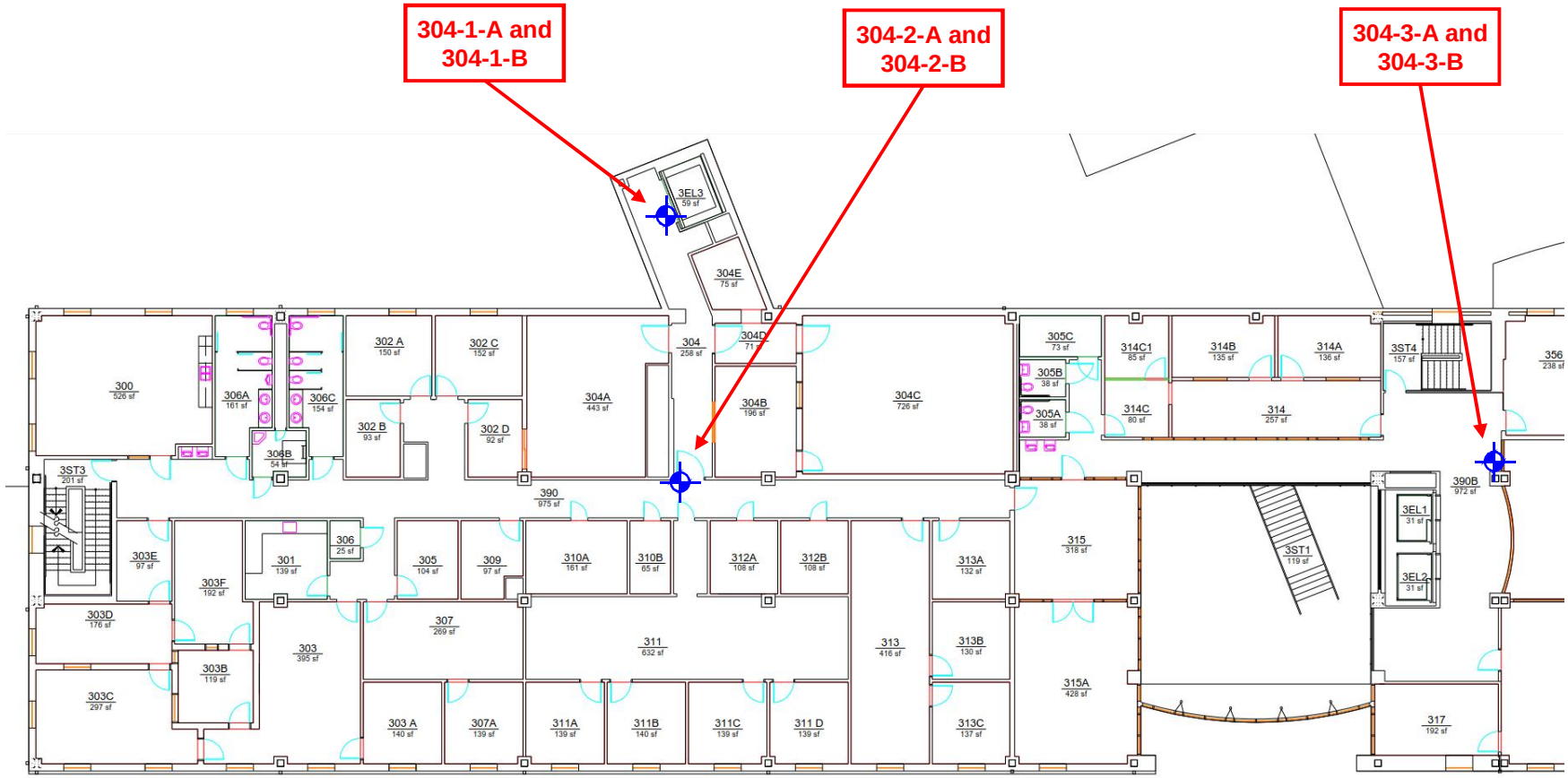
Terracon appreciates the opportunity to provide environmental consulting services to you on this project. If you should have any questions regarding this report please contact the undersigned at (864) 292-2901.

Sincerely,
Terracon Consultants, Inc.

Benjamin Hestir, P.E.
Project Industrial Hygienist

FOR:
Jeffrey A. Gurrie
Senior Industrial Hygienist

Attachments: Figure 1 - Sample Locations
Laboratory Results



N

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: BDH	Project No. 86187072C
Drawn by: BDH	Scale: N.T.S.
Checked by: JAG	File Name:
Approved by: JAG	Date: 6/11/2018

Terracon
Consulting Engineers & Scientists
72 Pointe Circle Greenville, South Carolina 29615
PH. (864) 292-2901 FAX. (864) 292-6301

SAMPLE LOCATION DIAGRAM

Hendrix Center – 3rd floor
Clemson University
Clemson, South Carolina

Figure 1

EMLab P&K
A TestAmerica Company

Report for:

Ben Hestir
Terracon Consultants, Inc. - Greenville
72 Pointe Circle
Greenville, SC 29615

Regarding: Project: 86187072C; Hendrix Center - 3rd Floor
EML ID: 1940251

Approved by:



Operations Manager
Joshua Cox

Dates of Analysis:
PCR screen: Avian Pathogen: 06-08-2018

Service SOPs: PCR screen: Avian Pathogen (EM-BC-S-1097, EM-BS-S-1199 & EM-BC-S1206)

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the items tested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

EMLab P&K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695 www.emlab.com

Client: Terracon Consultants, Inc. - Greenville
C/O: Ben Hestir
Re: 86187072C; Hendrix Center - 3rd Floor

Date of Sampling: 06-05-2018
Date of Receipt: 06-07-2018
Date of Report: 06-08-2018

AVIAN PATHOGEN SCREEN: PCR METHODOLOGY

Location:	304-1-B: At Freight Elevator		304-2-B: Adjacent Hallway		304-3-B: Career Center		304-B-B: Blank	
Comments (see below)	None		None		None		None	
Sample Type:	Polycarbonate Air Filter Cassette		Polycarbonate Air Filter Cassette		Polycarbonate Air Filter Cassette		Polycarbonate Air Filter Cassette	
Lab ID-Version‡:	9129802-1		9129803-1		9129804-1		9129805-1	
Sample Size:	3		3		3		1	
Unit:	m3		m3		m3		sample	
	CE*	CE*/Unit	CE*	CE*/Unit	CE*	CE*/Unit	CE*	CE*/Unit
Chlamydophila psittaci	ND	<33	ND	<33	ND	<33	ND	<100
Cryptococcus neoformans	ND	<33	ND	<33	ND	<33	ND	<100
Histoplasma capsulatum §	Absent		Absent		Absent		Absent	

*Cell equivalents ND = Not Detected

Comments:

Method Reference: *Chlamydophila psittaci*- Madico, G., Quinn T.C., Boman, J., and Gaydos C.A. 2000. Touchdown enzyme time release-PCR for detection and identification of *Chlamydia trachomatis, C. pneumoniae,* and *C. psittaci* using the 16S and 16S-23S spacer rRNA genes. J. Clin. Microbiol. Vol. 38. 1085-1093
Method Reference: *Cryptococcus neoformans*- Bialek, R., Weiss, M., Bekure-Nemariam, K., Najvar, L.K., Alberdi, M.B., Graybill, J.R., and U. Reischl. 2002. Detection of *Cryptococcus neoformans* DNA in tissue samples by nested and real-time PCR assays. Clin Diagn Lab Immunol. 9:461-469
Method Reference: *Histoplasma capsulatum*- Reid, T.M. and Schafer, M.P., 1999. Direct detection of *Histoplasma capsulatum* in soil suspensions by two-stage PCR. Mol Cell Probes. 13(4):269-73.

§This organism requires a two-stage PCR method of analysis. As a result, detection can only be reported as "Present" or "Absent".

‡A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

CHAIN OF CUSTODY

www.EMLabPK.com

EMLab P&K
A TestAmerica Company

New Jersey: 3000 Lincoln Drive East, Suite A, Marlton, NJ 08053 * (856) 871-1984
Phoenix, AZ: 1501 West Knudsen drive, Phoenix, AZ 85027 * (800) 651-4802
SSF, CA: 6000 Shoreline Court, Suite 205, South San Francisco, CA 94080 * (866) 388-6653

Weather		Fog	Rain	Snow	Wind	Clear
Level	None	☐	☐	☐	☐	☑
	Light	☐	☐	☐	☑	
	Moderate	☐	☐	☐	☐	
	Heavy	☐	☐	☐	☐	

REC (U

001940251

CONTACT INFORMATION

Company:	Terracon	Address:	72 Pointe Circle, Greenville, SC 29615
Contact:	Ben Hestir	Special Instructions:	
Phone:	864-293-7348		ben.hestir@terracon.com

PROJECT INFORMATION

Project ID:	86187072C		
Project Description:	Hendrix Center - 3rd Floor		
Project Zip Code:	29634	Sampling Date & Time:	6/5/18
PO Number:		Sampled By:	Ben Hestir

TURN AROUND TIME CODES (TAT)

STD – Standard (DEFAULT)
ND – Next Business Day
SD – Same Business Day Rush
WH – Weekend / Holiday

Rushes received after 2 pm or on weekends, will be considered received the next business day. Please alert us in advance of weekend analysis needs.

Sample ID	Description	Sample Type (Below)	TAT (Above)	Total Volume / Area (as applicable)	Notes (Time of day, Temp, RH, etc.)
304-1-B	At freight elevator	O	ND	3000 L	(Temp = 77.3°
304-2-B	Adjacent hallway	O	ND	3000 L	(RH = 40%
304-3-B	Career Center	O	ND	3000 L	(Temp = 73.2°
304-B-B	Blank	O	ND	~	(RH = 41.4%
↑	Sample Cassettes are labeled				
	1, 2, 3 and B			BH	

Non-Culturable

Spore Trap		Tape Swab Bulk		BioCassette™, Andersen, SAS, Swab, Water, Bulk, Dust, Soil, Contact Plates										Other Requests			
Fungi – Spore Trap Analysis	Spore Trap Analysis – Other particles	Direct Microscopic Exam (Qualitative)	Quantitative Spore Count Direct Exam	1-Media Surface Fungi (Genus ID + Asp. spp.)	2-Media Surface Fungi (Genus ID + Asp. spp.)	3-Media Surface Fungi (Genus ID + Asp. spp.)	Culturable Air Fungi (Genus ID + Asp. spp.)	Gram Stain & Counts (Culturable Air & Surface Bacteria)	Legionella culture	Total Coliform, E. coli (Presence/Absence)	Membrane Filtration (specify organism):	MPN Bacteria (specify organism):	QuantiTray – Sewage Screen	Asbestos Analysis – PCM Airborne Fiber Count (NIOSH 7400)	Asbestos Analysis – PLM (EPA method 600/R-93-116)	PCR (specify test):	Avian Pathogens
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SAMPLE TYPE CODES				RELINQUISHED BY	DATE & TIME	RECEIVED BY	DATE & TIME
BC – BioCassette™	ST – Spore Trap: Zefon, Allergenco, Burkard ...	T – Tape	D – Dust	Ben Hestir	6/6/18		
AIS – Andersen		SW – Swab	SO – Soil				
SAS – Surface Air Sampler	P – Potable Water	B – Bulk					
CP – Contact Plate	NP – Non-Potable Water	O – Other:	PCR cassette	Fedex 950	1200	6/7/18 KG	

By submitting this Chain of Custody, you agree to be bound by the terms and conditions set forth at http://www.emlab.com/s/main/serviceterms.html

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SGS GALSON

Mr. Ben Hestir
Terracon
72 Pointe Circle
Greenville, SC 29615

June 08, 2018

DOH ELAP #11626
AIHA-LAP #100324

Account# 31066

Login# L445505

Dear Mr. Hestir:

Enclosed are the analytical results for the samples received by our laboratory on June 07, 2018. All test results meet the quality control requirements of AIHA-LAP and NELAC unless otherwise stated in this report. All samples on the chain of custody were received in good condition unless otherwise noted.

Results in this report are based on the sampling data provided by the client and refer only to the samples as they were received at the laboratory. When possible, non-IOM samples will be retained for 14 days following the date of this report (unless an extension is specifically requested). IOM samples are retained for 7 days.

Current Scopes of Accreditation can be viewed at www.sgsgalson.com in the accreditations section of the "About" page.

Please contact Caroline Hudson at (888) 432-5227, if you would like any additional information regarding this report. Thank you for using SGS Galson.

Sincerely,

SGS Galson

Lisa Swab
Laboratory Director

Enclosure(s)

LABORATORY ANALYSIS REPORT

SGS GALSON

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.galsonlabs.com

Client : Terracon
Site : Hendrix Center-3rd Floor
Project No. : 86187072C
Date Sampled : 05-JUN-18
Date Received : 07-JUN-18

Account No.: 31066
Login No. : L445505

Date Analyzed : 08-JUN-18
Report ID : 1070075

Ammonia

Sample ID	Lab ID	Time minutes	Total ug	Conc mg/m3	ppm
304-1-A	L445505-1	300	<4.7	<0.55	<0.78
304-2-A	L445505-2	300	<4.7	<0.55	<0.78
304-3-A	L445505-3	300	<4.7	<0.55	<0.78
304-B-A	L445505-4	NA	<4.7	NA	NA

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of quantitation: 5.0 ug
Analytical Method : mod. OSHA ID-188/ID-164; ISE
OSHA PEL : 50 ppm (TWA)
Collection Media : AN584

Submitted by: JDM
Approved by : JGC
Date : 08-JUN-18
Supervisor: JGC

NYS DOH # : 11626
QC by: CRD

< -Less Than mg -Milligrams m3 -Cubic Meters kg -Kilograms NA -Not Applicable ND -Not Detected
> -Greater Than ug -Micrograms l -Liters NS -Not Specified ppm -Parts per Million

GALSON

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.galsonlabs.com

LABORATORY FOOTNOTE REPORT

Client Name : Terracon
Site : Hendrix Center-3rd Floor
Project No. : 86187072C

Date Sampled : 05-JUN-18 Account No.: 31066
Date Received: 07-JUN-18 Login No. : L445505
Date Analyzed: 08-JUN-18

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.
Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise noted below, all quality control results associated with the samples were within established control limits or did not impact reported results.

Note: The findings recorded within this report were drawn from analysis of the sample(s) provided to the laboratory by the Client (or a third party acting at the Client's direction). The laboratory does not have control over the sampling process. The findings herein constitute no warranty of the samples' representativeness of any sampled environment and strictly relate to the samples as they were presented to the laboratory.

Unrounded results are carried through the calculations that yield the final result and the final result is rounded to the number of significant figures appropriate to the accuracy of the analytical method. Please note that results appearing in the columns preceeding the final result column may have been rounded and therefore, if carried through the calculations, may not yield an identical final result to the one reported.

The stated LOQs for each analyte represent the demonstrated LOQ concentrations prior to correction for desorption efficiency (if applicable).

Unless otherwise noted below, reported results have not been blank corrected for any field blank or method blank.

L445505 (Report ID: 1070075):
SOPs: ic-assay(18)
Total ug corrected for a desorption efficiency of 106%.

L445505 (Report ID: 1070075):
Accuracy and mean recovery data presented below is based on a 95% confidence interval (k=2). The estimated accuracy applies to the media, technology, and SOP referenced in this report and does not account for the uncertainty associated with the sampling process. The accuracy is based solely on spike recovery data from internal quality control samples. Where N/A appears below, insufficient data is available to provide statistical accuracy and mean recovery values for the associated analyte.

Parameter	Accuracy	Mean Recovery
Ammonia	+/-32%	102%

< -Less Than mg -Milligrams m3 -Cubic Meters kg -Kilograms ppm -Parts per Million
> -Greater Than ug -Micrograms l -Liters NS -Not Specified ND -Not Detected NA -Not Applicable

670739895552
Date:06/07/18
Shipper:FEDEX
Initials:MAK
Prep:UNKNOWN
L445505

R64

GALSON CHAIN OF CUSTODY

Turn Around Time (TAT):	(surcharge)
☐ Standard	0%
☐ 4 Business Days	35%
☐ 3 Business Days	50%
☐ 2 Business Days	75%
☑ Next Day by 6pm	100%
☐ Next Day by Noon	150%
☐ Same Day	200%

☐ Samples submitted using the FreePumpLoan™ Program

☐ Samples submitted using the FreeSamplingBadges™ Program

You may edit and complete this COC electronically by logging in to your Client Portal account at https://portal.galsonlabs.com/

Client Acct No.: 31066

Original Prep No.: PSY481774

CS Rep: PGREGORICH

Online COC No.: 155111

Report To: Mr. Ben Hestir
Company Name: Terracon
Address 1: 72 Pointe Circle
Address 2:
City, State Zip: Greenville, SC 29615
Phone No.: 864 - 293 - 7348
Cell No.: 864 - 275 - 9962
Email reports to: ben.hestir@terracon.com
Email EDD to: ben.hestir@terracon.com
Comments:

Invoice To: Mr. Ben Hestir
Company Name: Terracon
Address 1: 72 Pointe Circle
Address 2:
City, State Zip: Greenville, SC 29615
Phone No.: 864 - 293 - 7348
Email Address: ben.hestir@terracon.com, ~~courtney.alexander@terracon.com~~
Comments:
P.O. No.:
Payment info.: ☐ I will call SGS Galson to provide credit card info
☐ Card on File (enter the last five digits on the line below)

Comments:

State Sampled: SC

Please indicate which OEL(s) this data will be used for:
☑ OSHA PEL ☐ ACGIH TLV ☐ MSHA ☐ Cal OSHA
☐ IAQ: _____ (Specify Limit(s)) ☐ Other: _____ (Specify Other)

Site Name: Hendrix Center - 3rd Floor
Project: 86187072C
Sampled By: Ben Hestir
List description of industry or Process/interferences present in sampling area:

Sample ID * (Maximum of 20 Characters)	Date Sampled *	Collection Medium	Sample Volume Sample Time Sample Area *	Liters Minutes in², cm², ft² *	Analysis Requested	Method Reference ^	Hexavalent Chromium Process (e.g., welding, plating, painting, etc.)
304-1-A	6/5/18	Assay N584 Ammonia Badge	12:48	300 MIN.	Ammonia	mod. OSHA ID-188/ID-164; ISE	
304-2-A	6/5/18	Assay N584 Ammonia Badge	12:52	300 MIN.	Ammonia	mod. OSHA ID-188/ID-164; ISE	

☐ ^ If the method(s) indicated on the COC are not our routine/preferred method(s), we will substitute our routine/preferred methods. If this is not acceptable, check here to have us contact you.

Chain of Custody	Print Name / Signature		Date	Time		Print Name / Signature		Date	Time
Relinquished By:	Ben Hestir	Ben Hestir	6/6/18	1200	Received By:				
Relinquished By:					Received By:	Michelle Krause	Michelle Krause	6/7/18	1002

*** You must fill in these columns for any samples which you are submitting.**

Samples received after 3pm will be considered as next day's business.

~~Galson~~ COC No.: 155111
Prep No.: PSY481774
Account No.: 31066
Draft: 6/4/2018 2:51:54 PM

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via: http://www.sgs.com/en/Terms-and-Conditions.aspx

SGS North America Inc. | 6601 Kirkville Road E. Syracuse, NY 13057, USA t +1 888 432 5227 | +1 315 432 5227 www.galsonlabs.com | www.sgs.com

Member of the SGS Group (SGS SA)

SGS GALSON CHAIN OF CUSTODY

Comments :

Sample ID * (Maximum of 20 Characters)	Date Sampled *	Collection Medium	Sample Volume Sample Time Sample Area *	Liters Minutes in², cm², ft² *	Analysis Requested	Method Reference ^	Hexavalent Chromium Process (e.g., welding, plating, painting, etc.)
304-3-A	6/5/18	Assay N584 Ammonia Badge	13:02	360 MIN.	Ammonia	mod. OSHA ID-188/ID-164; ISE	
304-B-A	6/5/18	Assay N584 Ammonia Badge	NA	NA	Ammonia	mod. OSHA ID-188/ID-164; ISE	
		Assay N584 Ammonia Badge			Ammonia	mod. OSHA ID-188/ID-164; ISE	

☐ ^ If the method(s) indicated on the COC are not our routine/preferred method(s), we will substitute our routine/preferred methods. If this is not acceptable, check here to have us contact you.

Chain of Custody	Print Name / Signature		Date	Time		Print Name / Signature		Date	Time
Relinquished By :					Received By :		✓		
Relinquished By :					Received By :	Michelle Krause	Michelle Krause	6/7/18	1002

*** You must fill in these columns for any samples which you are submitting.**

Samples received after 3pm will be considered as next day's business.

Online COC No. : 155111
Prep No. : PSY481774
Account No. : 31066
Draft : 6/4/2018 2:51:54 PM

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via: http://www.sgs.com/en/Terms-and-Conditions.aspx

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