BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF APEX MATERIAL	)	
TECHNOLOGIES, LLC FOR AN	)	AS 2015-002
ADJUSTED STANDARD FROM	)	(Adjusted Standard – Land)
PORTIONS OF 35 ILL. ADM. CODE	)	
807.104 and 810.103, OR, IN THE	)	
ALTERNATIVE, A FINDING OF	)	
INAPPLICABILITY.	)	

NOTICE OF FILING

TO: Mr. John Therriault
Clerk of the Board
Illinois Pollution Control Board
James R. Thomson Center
100 W. Randolph Street
Suite 11-500
Chicago, Illinois 60601-3218

Mr. Bradley P. Halloran
Hearing Officer
Illinois Pollution Control Board
James R. Thomson Center
100 W. Randolph Street
Suite 11-500
Chicago, Illinois 60601-3218

Michelle Ryan
Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62974-9276

PLEASE TAKE NOTICE that on this 2nd day of February 2015, I have filed with the Office of the Clerk of the Illinois Pollution Control Board the following documents entitled **APEX Material Technologies, LLC's Post-Hearing Brief** and **Trade Secret Claim Letter** which are attached and herewith served upon you.

Respectfully Submitted,

Apex Material Technologies, LLC

By: /s/ Joseph L. Pellis II
Joseph L. Pellis II

Dated: February 2, 2015

Joseph L. Pellis II
PELLIS LAW GROUP, LLP
901 Warrenville Road, Suite 205
Lisle, IL 60532
t: (630) 442-5500
f: (630) 442-5519

CERTIFICATE OF SERVICE

I, Michael J. Tenuto, the undersigned, an attorney, certify that I have served the attached **APEX Material Technologies, LLC's Post-Hearing Brief** and **Trade Secret Claim Letter**, upon:

Mr. John Therriault
Clerk of the Board
Illinois Pollution Control Board
James R. Thomson Center
100 W. Randolph Street
Suite 11-500
Chicago, Illinois 60601-3218

via Electronic Filing and via FedEx Express on February 2, 2015; and upon:

Mr. Bradley P. Halloran
Hearing Officer
Illinois Pollution Control Board
James R. Thomson Center
100 W. Randolph Street
Suite 11-500
Chicago, Illinois 60601-3218

via FedEx Express on February 2, 2015; and upon:

Michelle Ryan
Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62974-9276

via FedEx Express on February 2, 2015.

/s/ Michael J. Tenuto
Michael J. Tenuto

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December 29, 2014

Joseph L. Pellis II
Daniel R. Lavoie*
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*Not admitted in Illinois

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VIA FEDEX EXPRESS

Mr. John Therriault
Clerk of the Board
Illinois Pollution Control Board
James R. Thompson Center, Suite 11-500
100 West Randolph Street
Chicago, Illinois 60601

Re: Petition of APEX Material Technologies, LLC
AS 2015-002
Trade Secret Claim Letter

Dear Mr. Therriault,

On August 8, 2014, APEX Material Technologies, LLC ("APEX") filed its *Petition of APEX Material Technologies, LLC for an Adjusted Standard from Portions of 35 Ill. Adm. Code 807.104 and 810.103, or, in the Alternative, a Finding of Inapplicability*, PCB No. AS 2015-002 (the "Petition") with the Illinois Pollution Control Board (the "Board"). On January 7, 2015, APEX participated in a Hearing before the Board. The Hearing was conducted in two phases – an open, public phase, and a closed, trade secret phase. On February 2, 2015, APEX filed its post-hearing brief.

In order to fully and accurately respond to various questions raised during the Hearing and to give the Board a complete understanding of its contemplated process, APEX has provided certain trade secret information to the Board. Therefore, pursuant to the provisions of Sections 7 and 7.1 of the Environmental Protection Act (the "Act"), 415 ILCS 5/7, 7.1, and 35 Ill. Adm. Code Part 130 ("Part 130"), Petitioner APEX hereby makes a claim for trade secret protection of the entirety of its responses to questions raised during the trade secret phase of the Hearing, and the entirety of Exhibits B, C, D, E, F, G, and H. All trade secret information has been marked and filed separately pursuant to the provisions of Part 130.

The above-referenced responses and exhibits are "trade secrets," as defined in 415 ILCS 5/3.490 and 35 Ill. Adm. Code 101.202. This letter serves as the claim letter required by 35 Ill. Adm. Code 130.200(b) and triggers the protections from disclosure set forth in Part 130.

The entirety of APEX's responses to questions raised during the trade secret phase of the hearing represent trade secrets. APEX's responses include descriptions of certain steps utilized in both its current and contemplated process. APEX's responses also include the identification of customers potentially interested in purchasing fresh etchant solution from APEX. Finally, APEX's responses include descriptions of certain flow diagrams that describe various processes utilized by APEX at its facility in Joliet, Illinois.

The entirety of Exhibit B represents a trade secret. Exhibit B is a set of letters from 11 potential customers of APEX. The letters state each customer's intent to negotiate a contract with APEX for the supply of fresh etchant and the sale of copper ammonium chloride ("CAC" or "used etchant solution"). The letters also confirm each company's practice of shipping the fresh etchant and CAC via bills of lading.

The entirety of Exhibits C, D, and E represent trade secrets. Exhibit C is an example of the typical paper flow utilized to ship a material internationally. Exhibit D is an example of the typical paper flow utilized to ship a material domestically. Exhibit E is an example of the document flow APEX utilizes to internally track the following categories of materials: 1) used etchant from supplier to APEX; 2) fresh etchant from APEX to customers; and 3) copper oxide from APEX to customers.

The entirety of Exhibit F represents a trade secret. Exhibit F contains two process flow diagrams. The first diagram, titled "High Purity Grade ("HPG") Cupric Oxide Simplified Process," demonstrates the steps involved in the current process utilized by APEX to produce copper oxide. The second diagram, titled "Copper Ammonium Chloride Simplified Process," demonstrates the steps that APEX would utilize to produce copper oxide if the Board were to grant APEX's Petition.

The entirety of Exhibit G represents a trade secret. Exhibit G contains a process flow diagram and a mass balance sheet. The process flow diagram demonstrates the steps involved in the process that APEX would utilize to produce copper oxide and ammonium chloride from CAC. The mass balance sheet describes the mass balance for the aforementioned process.

The entirety of Exhibit H represents a trade secret. Exhibit H is a process flow diagram that details the steps involved in APEX's treatment of the waste stream prior to the stream's discharge to the publicly owned treatment works.

The entirety of APEX's responses to questions raised during the closed, trade secret portion of the Hearing, as well as the entirety of Exhibits B, C, D, E, F, G, and H are "trade secrets" as defined in 415 ILCS 5/3.490 and 35 Ill. Adm. Code 101.202. More specifically, the materials are "scientific or technical information, design, process (including a manufacturing process), procedure, formula or improvement, or business plan which is secret in that it has not

been published or disseminated or otherwise become a matter of general public knowledge, and which has competitive value." 415 ILCS 5/3.490; 35 Ill. Adm. Code 101.202. Thus, APEX claims trade secret protection for the entirety of APEX's responses to questions raised during the closed, trade secret portion of the Hearing, as well as the entirety of Exhibits B, C, D, E, F, G, and H.

APEX will provide a statement of justification upon request pursuant to 35 Ill. Adm. Code 130.201.

Enclosed is a copy of each exhibit marked as provided in 35 Ill. Adm. Code 130.302.

Should you have any questions, please do not hesitate to contact me directly at (630) 442-5505 or via email at jpellis@pellislaw.com.

Very truly yours,

PELLIS LAW GROUP, LLP

Joseph L. Pellis II

JLP/mjt
Enclosures

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF APEX MATERIAL	)	
TECHNOLOGIES, LLC FOR AN	)	AS 2015-002
ADJUSTED STANDARD FROM	)	(Adjusted Standard – Land)
PORTIONS OF 35 ILL. ADM. CODE	)	
807.104 and 810.103, OR, IN THE	)	
ALTERNATIVE, A FINDING OF	)	
INAPPLICABILITY.	)	

APEX MATERIAL TECHNOLOGIES, LLC'S POST-HEARING BRIEF

Petitioner, APEX Material Technologies, LLC ("APEX"), by and through its attorneys, Pellis Law Group, LLP, provides this post-hearing brief in further support of its petition for a finding of inapplicability, or, in the alternative, for an adjusted standard from portions of 35 Ill. Adm. Code Sections 807.104 and 810.103. For the sake of clarity, APEX restates and responds in bold print to each of the questions presented by the Illinois Pollution Control Board (the "Board") and the Illinois Environmental Protection Agency ("IEPA") during the public portion of the Hearing as follows:

1. Ms. Liu requested that APEX provide test results for the copper ammonium chloride ("CAC" or "used etchant solution") that APEX intends to use in its process. *See* APEX Public Hearing Transcript, pp. 33:10-20; 34:13-19.

APEX Response:

APEX noted that it would be cost prohibitive to test the CAC from each of its 350+ potential customers prior to receiving a finding of inapplicability or an adjusted standard from the Board. APEX agreed, however, to test representative samples of CAC available from some of its potential customers and provide the results to the Board.

Specifically, ten samples of copper ammonium chloride were obtained from printed circuit board manufacturers in the Chicago area and tested for the following:

a. **TCLP metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver)**
b. **For samples in which the Chromium level exceeded the regulatory level of 5.0 ppm, a chromium assay would be performed to determine the amount of trivalent and hexavalent chrome present.**

Attached as Exhibit A are 10 sets of test results of CAC from 9 different potential customers that were run for TCLP Metals (and one sample tested for pH).

As demonstrated by the report, all of the CAC samples are well below the maximum concentrations of contaminants for the toxicity characteristic under 35 Ill. Adm. Code Part 721.124, with the exception of a slight variance in Arsenic in only three of the ten samples. APEX believes that the slight variance in the Arsenic level is due to naturally occurring inconsistency in the Copper, Lead and certain integrated circuits associated with the CAC.

As APEX discussed at the hearing, we would anticipate slight variances in certain components within the CAC, including Chromium and Lead, as well as other chemical elements, such as Arsenic, which are naturally occurring in many minerals, metals, and within integrated circuit board semiconductor materials.

APEX would also like to re-emphasize the fact that slight variances in the levels of metals will not cause any additional threat to human health or the environment. We must keep in mind that the maximum concentrations of contaminants for the toxicity characteristic under 35 Ill. Adm. Code Part 721.124 are designed to apply to "waste" as opposed to a product. The toxicity concentrations are set with the idea in mind that such

"waste" will ultimately be disposed of either via landfill or some other method of disposal. As APEX has repeatedly stated, and as 35 years of Board and Illinois legal precedent has demonstrated, the CAC material at issue in our matter is NOT a waste, but a useful product. None of the constituents within the CAC material will be disposed of, with the exception of the inert wastewater brine, and all of the TCLP metals will be extracted out during the APEX process. As such, slight variances in the toxicity levels within the CAC will be completely mitigated during the APEX process, so as to ultimately remove any potential threat to human health and the environment.

2. In APEX's Response to the Technical Questions of the Illinois Pollution Control Board ("Technical Response"), APEX provided a proposed Product Specification table for the used etchant solution. *See* Technical Response, pp.18-19, Question 25(3). During the Hearing, the Board and the IEPA asked several questions in order to clarify certain ranges found within the Product Specification table. Specifically, Mr. Rao inquired about the range of copper found within the CAC. *See* Transcript, p. 32:8-14. Mr. Rao further inquired about the intended range for cadmium and lead in the Proposed Conditions. *See* Transcript, pp. 46:11-47:9. Ms. Ryan also inquired about the intended range for cadmium and lead in the Proposed Conditions. *See* Transcript, p. 52:15-22.

APEX Response:

APEX has updated the Product Specification table to reflect its answers to the questions raised by the Board and the Agency. In addition, given the analytical testing completed in response to the Board's requests, APEX has provided a range for Arsenic values that it believes reflects a reasonable specification for this chemical element.

PRODUCT SPECIFICATION

Spent Etchant

Parameter	Unit	Range
Copper, as Cu	wt%	5 - 20
Iron, as Fe	wt%	0.05 max.
Zinc, as Zn	wt%	0.2 max.
Arsenic, as As	ppm	< 10.0
Cadmium, as Cd	ppm	< 5.0
Chromium (VI+), as Cr (VI+)	ppm	< 5.0
Lead, as Pb	ppm	< 50.0
Mercury, as Hg	ppm	< 0.2
Selenium, as Se	ppm	< 1.0
Silver, as Ag	ppm	< 5.0
pH		8 - 10.5
Appearance:	Clear, dark green liquid, free of suspended matter.	

3. Ms. Liu noted that APEX's Technical Response indicated it did not agree to Proposed Condition 5(b). *See* Technical Response, p.19, Question 25(5)(b). Ms. Liu requested that APEX propose a revision to Proposed Condition 5(b). *See* Transcript, pp. 47:11-24; 49:8-16.

APEX Response:

APEX proposes that Condition 5(b) be amended as follows:

"Post-production qualification of the copper oxide and ammonium chloride to ensure compliance with respective product specifications."

4. Mr. Rao instructed APEX to explain the difference between bills of lading and waste manifests. *See* Transcript, p. 35:10-12. Ms. Liu also asked APEX to explain the difference. *See* Transcript, p. 54:6-21.

APEX Response:

35 Illinois Administrative Code Sections 722 and 723 sets forth the standards applicable to generators and transporters of hazardous waste. Part of these requirements include the use of a USEPA Uniform Hazardous Waste Manifest Form 8700-22 or Form 8700-22A (if more than two transporters are involved). The USEPA Uniform Hazardous Waste Manifest form is a 6 part form made with carbonless paper and comes with a unique Manifest Tracking Number (MTN) preprinted at the top right of the form. These manifest forms must be used nationwide to document shipments of hazardous waste by all generators, transporters, and treatment/storage/disposal facilities.

In contrast, a Bill of Lading is a generic shipping document that generally needs to meet Department of Transportation and Interstate Commerce Commission regulations for land, sea, and air shipments, and is used to document shipments of various materials. It provides space to list all essential shipping details including carrier, consignee, description, and costs.

5. Mr. Rao instructed APEX to check with its potential customers in order to determine whether the used etchant solution is currently being shipped via bills of lading or waste manifests. *See* Transcript, pp. 35:15-37:13.

APEX Response:

APEX has determined that its potential customers currently ship the used etchant solution via bills of lading and not on waste manifests. Attached as Exhibit B are letters

from 11 potential customers that confirm each company's practice of shipping the CAC and fresh etchant solution via bills of lading. Exhibit B constitutes trade secret information and has been filed separately pursuant to 35 Ill. Adm. Code Part 130.

6. Mr. Rao asked APEX to explain the paper tracking utilized to ship materials both internationally and domestically. *See* Transcript, p. 37:14-24.

APEX Response:

Attached as Exhibit C is an example of the typical paper flow utilized to ship a material between countries. Exhibit C constitutes trade secret information and has been filed separately pursuant to 35 Ill. Adm. Code Part 130. Attached as Exhibit D is an example of the typical paper flow utilized to ship a material domestically. Exhibit D constitutes trade secret information and has been filed separately pursuant to 35 Ill. Adm. Code Part 130. Attached as Exhibit E is the document flow APEX utilizes to internally track the following categories of materials: 1) used etchant from supplier to APEX; 2) fresh etchant from APEX to customers; and 3) copper oxide from APEX to customers. Exhibit E constitutes trade secret information and has been filed separately pursuant to 35 Ill. Adm. Code Part 130.

7. Mr. Rao notes that Exhibit N of APEX's Petition is a letter that refers to Exhibits 1, 2, and 3, however, only Exhibits 1 and 2 were provided with the letter. Mr. Rao requests that APEX provide Exhibit 3. *See* Transcript, p. 49:18-50:21.

APEX Response:

APEX regrets that it was unable to locate Exhibit 3 to the letter.

8. Mr. Rajani Patel, a potential customer of APEX, testified during the Hearing. Mr. Patel is a process engineer and works in the printed circuit board industry. He offered testimony

regarding the process utilized to etch circuit boards. During his testimony, there was a bit of confusion regarding a scientific term, "Baume." *See generally* Transcript, pp. 60-62. APEX would like to offer the following clarification.

APEX Response:

The term "Baume" or "degrees Baume" (abbreviated as ^{0}Bé) is a unit used to describe the specific gravity of a liquid which is in turn an indication of the density or weight per unit volume of a liquid. In the case of printed circuit board manufacturing process, the Baume of the etching solution is an indication of the amount of dissolved copper in the etchant used in the manufacturing process. As the amount of copper in solution increases, so does the Baume of the solution.

The instrument used to measure Baume is a hydrometer. This is a sealed, air-filled, elongated glass bulb of precise weight and equipped with a visible scale on it. Baume is determined by simply placing the hydrometer in the liquid of interest and observing to what point on the scale the hydrometer sinks in the liquid. The level to which the hydrometer sinks in the etchant is a function of the amount of copper in the etchant – the more dissolved copper present, the less the hydrometer sinks.

Respectfully submitted,

APEX MATERIAL TECHNOLOGIES, LLC

Dated: February 2, 2015

By: /s/ Joseph L. Pellis II

Joseph L. Pellis II, *Esq.*
Daniel R. Lavoie, *Esq.* (*pro hac vice*)
PELLIS LAW GROUP, LLP
901 Warrenville Road, Suite 205
Lisle, Illinois 60532
t: +1 (630) 442-5505
f: +1 (630) 442-5519
jpellis@pellislaw.com
Attorneys for the Petitioner

Exhibit A

First Environmental Laboratories, Inc.
IL ELAP / NELAC Accreditation # 100292
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

January 26, 2015

Mr. Daniel Lavoie
PELLIS LAW GROUP, LLP
570 Seventh Ave, 20th Floor
New York, NY 10018

Project ID: Apex Project
First Environmental File ID: 15-0230
Date Received: January 19, 2015

Dear Mr. Daniel Lavoie:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our accreditation number is 100292 and our current certificate is number 003469: effective 09/25/2014 through 02/28/2015.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

Neal Cleghorn
Project Manager

First Environmental Laboratories, Inc.
IL ELAP / NELAC Accreditation # 100292
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

Case Narrative

PELLIS LAW GROUP, LLP

Lab File ID: **15-0230**

Project ID: **Apex Project**

Date Received: **January 19, 2015**

All quality control criteria, as outlined in the methods, have been met except as noted below or on the following analytical report.

The results in this report apply to the samples in the following table:

Laboratory Sample ID	Client Sample Identifier	Date/Time Collected
15-0230-001	Eagle	01/16/15
15-0230-002	Delta Precision	01/16/15
15-0230-003	Advanced Circuits	01/16/15
15-0230-004	American Progressive Circuits	01/16/15
15-0230-005	Sunrise	01/16/15
15-0230-006	Alpha Circuits	01/16/15
15-0230-007	MicroCircuits	01/16/15
15-0230-008	Ampel Circuits	01/16/15
15-0230-009	Delta Circuits	01/16/15
15-0230-010	Galaxy	01/16/15

Sample Batch Comments:

Time of sample collection was not provided.

The following is a definition of flags that may be used in this report:

Flag	Description	Flag	Description
<	Analyte not detected at or above the reporting limit.	L	LCS recovery outside control limits.
C	Sample received in an improper container for this test.	M	MS recovery outside control limits; LCS acceptable.
D	Surrogates diluted out; recovery not available.	N	Analyte is not part of our NELAC accreditation.
E	Estimated result; concentration exceeds calibration range.	P	Chemical preservation pH adjusted in lab.
G	Surrogate recovery outside control limits.	Q	Result was determined by a GC/MS database search.
H	Analysis or extraction holding time exceeded.	S	Analysis was subcontracted to another laboratory.
J	Estimated result; concentration is less than routine RL but greater than MDL.	W	Reporting limit elevated due to sample matrix.
RL	Routine Reporting Limit (Lowest amount that can be detected when routine weights/volumes are used without dilution.)	ND	Analyte was not detected using a library search routine; No calibration standard was analyzed.

First Environmental Laboratories, Inc.
IL ELAP / NELAC Accreditation # 100292
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Eagle
Sample No: 15-0230-001

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311 Analysis Date: 01/21/15	**Method: 6010C**		**Preparation Method 3010A** Preparation Date: 01/20/15		
Arsenic		8.05	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		1.15	0.005	mg/L	
TCLP Mercury Method 1311 Analysis Date: 01/22/15	**Method: 7470A**				
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals Analysis Date: 01/21/15	**Method: 6010C**		**Preparation Method 3010A** Preparation Date: 01/20/15		
Chromium		0.25	0.005	mg/L	W
pH @ 25°C Analysis Date: 01/21/15	**Method: 9040B**				
pH @ 25°C		9.38		Units	

First Environmental Laboratories, Inc.
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1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Delta Precision
Sample No: 15-0230-002

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		3.15	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		0.800	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

First Environmental Laboratories, Inc.
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Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Advanced Circuits
Sample No: 15-0230-003

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		1.20	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		0.500	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

First Environmental Laboratories, Inc.
IL ELAP / NELAC Accreditation # 100292
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Analytical Report

Client:	PELLIS LAW GROUP, LLP	**Date Collected:**	01/16/15
Project ID:	Apex Project	**Time Collected:**	
Sample ID:	American Progressive Circuits	**Date Received:**	01/19/15
Sample No:	15-0230-004	**Date Reported:**	01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		0.600	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		2.50	0.005	mg/L	
Selenium		< 0.5	0.010	mg/L	W
Silver		0.650	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

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Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Sunrise
Sample No: 15-0230-005

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		3.95	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		0.650	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

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Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Alpha Circuits
Sample No: 15-0230-006

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		6.30	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		0.850	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

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Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: MicroCircuits
Sample No: 15-0230-007

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		2.20	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		1.00	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

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Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Ampel Circuits
Sample No: 15-0230-008

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		5.15	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		0.950	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

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Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Delta Circuits
Sample No: 15-0230-009

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Arsenic		2.55	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		0.700	0.005	mg/L	
TCLP Mercury Method 1311	**Method: 7470A**				
Analysis Date: 01/22/15					
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals	**Method: 6010C**		**Preparation Method 3010A**		
Analysis Date: 01/21/15			Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

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Analytical Report

Client: PELLIS LAW GROUP, LLP
Project ID: Apex Project
Sample ID: Galaxy
Sample No: 15-0230-010

Date Collected: 01/16/15
Time Collected:
Date Received: 01/19/15
Date Reported: 01/23/15

Analyte		Result	R.L.	Units	Flags
TCLP Metals Method 1311 Analysis Date: 01/21/15	**Method: 6010C**		**Preparation Method 3010A** Preparation Date: 01/20/15		
Arsenic		1.80	0.010	mg/L	
Barium		< 50	1.0	mg/L	W
Cadmium		< 0.25	0.005	mg/L	W
Chromium		< 0.25	0.005	mg/L	W
Lead		< 0.25	0.005	mg/L	W
Selenium		< 0.5	0.010	mg/L	W
Silver		0.950	0.005	mg/L	
TCLP Mercury Method 1311 Analysis Date: 01/22/15	**Method: 7470A**				
Mercury		< 0.0100	0.0005	mg/L	W
Total Metals Analysis Date: 01/21/15	**Method: 6010C**		**Preparation Method 3010A** Preparation Date: 01/20/15		
Chromium		< 0.25	0.005	mg/L	W

CHAIN OF CUSTODY RECORD

First Environmental Laboratories, Inc.

First Environmental Laboratories
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Phone: (630) 778-1200 • Fax: (630) 778-1233
E-mail: firstinfo@firstenv.com
IEPA Certification #100292

Company Name: DIRECT RECYCLING INCORP.
Street Address: 204 SUNSET DRIVE
City: WILMETTE IL. State: Zip: 60091
Phone: 847 2861816 Fax: 0244 e-mail: MARTINLIEBERMAN1@AOL.COM
Send Report To: Via: Fax ☐ e-mail ☑
Sampled By:

Project I.D.: APEX PROJECT
P.O. #:

Matrix Codes: S = Soil W = Water O = Other

Date/Time Taken	Sample Description	Matrix	TCLP-Metals-8	Tot. Chromium						Hold – Do Not Analyze	Comments	Lab I.D.
1/16/15	EAGLE		X	X								15-0230-001
↓	DELTA PRECISION		X	X								002
	ADVANCED CIRCUITS		X	X								003
	AMERICAN PROGRESSIVE CIRCUITS		X	X								004
	SUNRISE		X	X								005
	ALPHA CIRCUITS		X	X								006
	MICRO CIRCUITS		X	X								007
	AMPEL CIRCUITS		X	X								008
	DELTA CIRCUITS		X	X								009
↓	GALAXY		X	X								010

FOR LAB USE ONLY:

Cooler Temperature: 0.1-6ºC Yes__ No.__ N/A ºC
Received within 6 hrs. of collection:______
Ice Present: Yes__ No__

Sample Refrigerated: Yes__ No__
Refrigerator Temperature:______ºC
5035 Vials Frozen: Yes__ No__
Freezer Temperature:______ºC

Preservation Requirements Met: ☐ Yes ☐ No
Need to meet: IL TACO ☐ IN. RISC ☐

Notes and Special Instructions: SHAKE PRIOR ANALYSIS

Relinquished By: [signature] Date/Time ______ Received By: [signature] Date/Time 1/19/15 11:50
Relinquished By: ______ Date/Time ______ Received By: ______ Date/Time ______

Rev. 8/14

Exhibit B

Filed separately as a trade secret, pursuant to 35 Ill. Adm. Code Part 130

Exhibit C

Filed separately as a trade secret, pursuant to 35 Ill. Adm. Code Part 130

Exhibit D

Filed separately as a trade secret, pursuant to 35 Ill. Adm. Code Part 130

Exhibit E

Filed separately as a trade secret, pursuant to 35 Ill. Adm. Code Part 130

Exhibit F

Filed separately as a trade secret, pursuant to 35 Ill. Adm. Code Part 130

Exhibit G

Filed separately as a trade secret, pursuant to 35 Ill. Adm. Code Part 130

Exhibit H

Filed separately as a trade secret, pursuant to 35 Ill. Adm. Code Part 130