Mercury Recovery Facility Permit Renewal Application

AERC
4317-J Fortune Place
West Melbourne, FL 32904
Mercury Recovery Permit #: 0072959-003-HO
EPA ID #: FPD 984 262 782

Revision Date:
07/28/11

Project #: **3577**

Prepared By: **Environmental Strategy Consultants, Inc.**
1528 Walnut Street, Suites 1812 – 1818
Philadelphia, PA 19102
(215) 731-4200 | Fax: (215) 731-4207
www.envirostrat.com

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TRANSMITTAL LETTER

ENVIRONMENTAL STRATEGY CONSULTANTS, INC.
Empowering business with solutions

AIR, WATER & WASTE
AUDITING
COMPLIANCE
HEALTH & SAFETY
MANAGEMENT SYSTEMS
OUTSOURCING
POLLUTION PREVENTION

August 1, 2011

Mr. Bheem Kothur
Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: **Transmittal of Mercury Recovery Permit Renewal Application | 0072959-003-HO | FLD 984 262 782**
AERC.com, Inc., 4317-J Fortune Place Suite J, West Melbourne, FL 32904-1509

Dear Mr. Kothur:

On behalf of AERC.com, Inc., Environmental Strategy Consultants, Inc. (ESC) is providing transmittal of the renewal application for their permitted mercury recovery facility located at 4317-J Fortune Place Suite J, West Melbourne, Florida.

The enclosed permit renewal application has been prepared in agreement with the permit application form and instructions as set forth in FDEP Form #62.737.900(2).

We appreciate your review and approval with regard to the administrative completeness of this application. Please direct any questions or comments regarding this transmittal please Ms. Tracy DePaola, AERC Southern Regional District Branch Manager at (321) 952-1516.

Sincerely,

Jeffery W. Smith, P.E.
Director of Compliance Services
Environmental Strategy Consultants, Inc.

Enclosure

cc: J. Kraemer | A. Tripp – FDEP
T. DePaola - AERC

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This Application is for the renewal of a Mercury Recovery Permit. The processes described are for the fluorescent and mercury lamp recovery systems, which require a Mercury Recovery Permit. The recovery system is integral to the company's overall service of recycling mercury from lamps, devices, and other materials containing mercury. Non-specific materials such as manufactured items, debris, and aqueous material should be covered in this document. All regulated activities, therefore, would be covered under this permit.

The purpose of the Recovery Permit Application is to renew the Mercury Recovery Permit and to demonstrate that the company meets or exceeds the permitting requirements of the Florida Department of Environmental Protection, pursuant to Florida Statutes 403.7186 and Rule 62-737 F.A.C., for the Management of Spent Mercury-Containing Lamps and Devices Destined for Recycling.

AERC.com, Inc. (formerly AERC/MTI) began operating a mercury lighting recycling facility at its present location in West Melbourne, FL in November 1993. As a result of the state regulations for mercury recycling facilities, AERC.com, Inc operated under "Interim Status" until the appropriate Recovery and Reclamation Permits are issued. On December 30, 1996, a Mercury Recovery and Reclamation Permit, Operation Permit Number HOO5-275169, was issued to AERC.com, Inc. (formerly AERC/MTI). The permit was renewed in December 2001, under Number 0072959-002-HO and has been operating under this since. At this time activities include:

Activities - Fluorescent and High Intensity Discharge lamp processing, recovery of lamp components for resale, removal of mercury-containing phosphor powders and ampuoles. In addition to the above activities, AERC.com, Inc. also accepts MCDs debris, which are accumulated and then shipped off-site to a TSD / reclamation facility for further processing. Mercury from other sources (e.g. soils, carbons. contaminated solid materials, etc.) is accepted by the facility for accumulation and shipment off-site to a TSD / reclamation facility.

Additional Activities - In addition to Fluorescent and High Intensity Discharge lamp Processing and MCDs, AERC.com, Inc. accepts batteries and PCB and non-PCB lighting ballasts for sorting and shipment to other recycling facilities, as well as, the acceptance of electronic scrap for demanufacturing or remanufacturing for shipment back to market for reuse or recycling. The facility also serves as a 10-day transfer facility for hazardous wastes that are destined to the AERC, PA permitted TSD facility. AERC is large quantity Universal Waste Handler, a Universal Waste Transporter as well as a Florida licensed Hazardous Waste Transporter.

AERC was established in Pennsylvania in 1990 and in Florida in 1993 to address a nationwide need for more environmentally sound recycling technologies for certain "characteristic" and

metals-bearing wastes. AERC recycles many waste materials containing mercury and other metals, as well as, recycling mercury-containing lamps.

AERC has a customer base of environmentally conscious Fortune 500 companies, educational institutions, government facilities, hospitals, laboratories, small businesses, and private citizens. We also offer a service to environmental and hazardous wastes management and transportation firms which provide other sources of recyclable raw materials and hazardous wastes for the development and operation of AERC's recycling technologies.

With strong emphasis on safety, industrial hygiene, and regulatory compliance, AERC has developed state-of-the-art environmentally sound processes for the recycling of metallic mercury, mercury compounds and mixtures, mercury containing materials and devices, fluorescent lamps and HID lamps. Much of the research to develop these processes is highly specialized and proprietary. In the case of mercury compounds, we are the only company in the nation that has perfected these recycling methods. Many of these mercury wastes are currently being landfilled or shipped out of the United States due to landfill prohibitions and a lack of U.S. recycling capacity.

Throughout this permit application AERC.com, Inc. has provided technical information on its processes, methods, and equipment. The company has developed several of these proprietary processes itself. Some of the process components and systems have been or will be purchased from commercial manufacturers. AERC is working with its customers and specialty equipment engineering and design firms to provide the best integration of systems and components possible. We continue to conduct R&D in order to provide the best-suited technologies for recycling. Because of this, some components and procedures used will be fundamentally similar, but may not be identical to those described in this document. Likewise, if AERC develops a more efficient method to prepare material for recycling, or to increase recovery, we intend to incorporate it into our process.

AERC.com, Inc. will provide the FLDEP with the level of detail needed for specific components or methods. With this in mind, AERC wishes to work with the agency to develop procedures to insure that these changes can be incorporated into the permit and operations with minimal effort and in a timely manner.

Renewal of this permit will allow AERC to continue to process and recycle fluorescent and HID lamps, powders, MCD’s, and other materials at the facility using recovery technologies. This will enable us to offer additional employment and training opportunities, make new capital investments at the facility, and help fill the void of fully permitted and environmentally sound recycling technologies and services throughout the nation.

PART I

APPLICATION FORM

APPLICATION FOR A MERCURY-CONTAINING LAMP OR DEVICE MERCURY RECOVERY OR MERCURY RECLAMATION FACILITY PERMIT

Part I

TO BE COMPLETED BY ALL APPLICANTS

Please Type or Print

A. General Information

1. Type of facility:

Mercury Recovery	[✔]	**Mercury Reclamation**	[ ]
Lamps	[✔]	Lamps	[ ]
Devices	[✔]	Devices	[ ]
		Other mercury wastes	[ ]
		Commodity grade mercury	[ ]

2. Type of application: [ ] new construction [✔] operation [ ] modification [ ] transfer

3. Revision Number: 0

4. Date current operation began (or is expected to begin): November 1993

5. Facility name: AERC.com, Inc.

6. EPA/DEP ID. No.: FLD 984 262 782

7. Facility location or street address: 4317-J Fortune Place

8. Facility mailing address:

4317-J Fortune Place	West Melbourne	FL	32904
Street or PO. Box	City	State	Zip

9. Contact person: Tracy DePaola Telephone: (321) 952-1516

Title: Southern Regional District Branch Manager

Mailing Address:

Same as Above			
Street or PO. Box	City	State	Zip

10. Operator's name: AERC.com, Inc. Telephone: (321) 952-1516

11. Operator's address:

Name: AERC.com, Inc.

Address:

Same as Above
Street or PO. Box City State Zip

12. Facility owner's name: Same as Above Telephone: (321) 952-1516

13. Facility owner's address:

Same as Above
Street or PO. Box City State Zip

14. Legal structure: [✔] Corporation [ ] Non-profit Corporation [ ] Partnership [ ] Individual
[ ] Local Government [ ] State Government [ ] Federal Government [ ] Other (specify)

15. If an individual, partnership, or business is operating under an assumed name, specify the county and state where the name is registered.

County: Brevard State: Florida

16. If the legal structure is a corporation, indicate the state of incorporation.

State of incorporation: Pennsylvania

17. If the legal structure is an individual or partnership, list the owners' names and mailing addresses.

Name: Robert W. Landmesser

Address:

400 Ocean Road Vero Beach FL 32963
Street or PO. Box City State Zip

Name:

Address:

Street or PO. Box City State Zip

Name:

Address:

Street or PO. Box City State Zip

Name:_____

Address:

_____
Street or PO. Box City State Zip

18. Site ownership status: [ ] owned [ ] to be purchased [✔] to be leased 5 years

[✔] presently leased; the expiration date of the lease is: Jan. 2011

If leased, indicate:

Land owner's name: Fortune Cookie Park, Inc.

Land owner's address:

Name: Fortune Cookie Park, Inc.

Address:

4310 Woodland Park Drive West Melbourne FL 32904
Street or PO. Box City State Zip

19. Name of professional engineer: Joe Tessitore

Registration no.: 23374

Address:

Name: Joe Tessitore

Address:

801 W State Rd 436 | Suite 2011 Altamonte Springs FL 32714-3053
Street or PO. Box City State Zip

Associated with: Ecology and Environment, Inc.

20. Facility located on Indian land: [ ] yes [✔] no

21. Existing or pending environmental permits: (attach a separate sheet if necessary)

TYPE OF PERMIT	AGENCY	PERMIT NUMBER	DATE ISSUED	EXPIRATION DATE

See Attachment #1

B. Site Information

1. Facility location : County: Brevard Nearest Community: West Melbourne

   Latitude: 28 deg 5' 39" N Longitude: 80 deg 41' 47" W

   Section: 6 Township: 28 South Range: 37 East

   UTM # 32,777 / East / 106,318

2. Area of facility site (acres): Approximately 0.81 acres

3. Attach a topographic map of the facility area and a scale drawing and photographs of the facility showing the location of all past, present, and future material receiving, storage and processing areas. Also show the incoming and outgoing material traffic pattern including estimated volume and controls. See Attachments #2 & #3

4. Is the site located in a 100-year flood plain? [ ] yes [✔] no
   If yes, describe how facility will be constructed to prevent flooding (labeled as **Attachment** ___).

C. Land Use Information

1. Present zoning of the site. Light Industrial

2. If a zoning change is needed, what should the new zoning be?

   N/A

3. Present land use of site

   Mercury Recovery Facility (Lamp Recycling)

D. Operating Information

1. Is hazardous waste generated on site? [✔] yes [ ] no

List the types and anticipated annual amounts of generation (attach a separate sheet if necessary).

D009 - Mercury-containing Phosphor Powder from Fluorescent Lamp Recovery Operation ~37 tons/year | D009 - Plant Scraps and Debris with mercury ~ 2 tons/year; D009 - HID Ampoules (mercury-containing devices) from UW lamp recycling | D009 - Mercury-containing carbon filter media (periodically removed from air filtration system ~1 ton/year | D002 - Acid/Caustic battery solutions (from management of broken or damaged UW batteries ~ 0.25 tons/year | D009 - Granulated Activated Carbon w/Hg ~ 0.1 tons/year

2. Attach a brief description of the facility operation, nature of the business, and activities.

AERC recovers Hg from lamps, devices, electronics and other manufactured items. The company separates the lamp components and sends the Hg powder and ampoules for retort at the AERC, PA TSD. Where possible, all components are recycled.

See Attachment #4

3. Specify below each process used for storing or recycling of lamps or devices (including daily design capacities for recycling operations) at the facility, and annual quantities, to be stored or processed at the facility. (Attach a separate sheet if necessary)

PROCESS	DAILY DESIGN CAPACITY	UNIT OF MEASURE	ANNUAL QUANTITY
LSS1	3500 T12 Lamps	Lamps/Hr	Appr. 8.4 million
HID Disassembly	400 Lamps	Lamps / Hr	Appr. 770,000

See Attachment #5

4. Indicate the type of material and total amount of maximum desired storage to be permitted by the facility. This is the maximum amount of raw or unprocessed material, such as lamps or devices, and the total types and amounts of processed material, such as glass or phosphor material, which shall exist at the facility at any time. This shall be the maximum allowed storage by the facility. (attach a separate sheet if necessary) See Attachment #6

These sections explain that storage volumes are calculated using drum equivalents since material is received in different shapes, sizes and containers. Maximum lamp storage volume if all lamps is 244,800. Max storage if all drums is 1,632 drums.

5. Attach a description of how the facility shall be constructed and operated and the specifics of the technology which shall be utilized to process or recycle lamps and devices. Include any engineering plans, calculations and other related information describing the process to include the design, installation and operation of any air pollution control equipment. All engineering plans and reports shall be signed and sealed by a professional engineer registered in the State of Florida. Describe the specific types of materials the facility shall accept for introduction into its process. (e.g. fluorescent lamps, electrical thermostats etc.)

Construction and Operation Plans are labeled as Attachment # 7

6. Attach a description of the facility's Contingency Plan for responding to and dealing with spills or releases of hazardous material to the environment during facility operation or any other emergency conditions. Include the name and 24-hour response telephone number of the facility emergency response coordinator, who is to be contacted in the event of an emergency. Plans should at a minimum conform to the requirements of 40 CFR 264, Subpart D. Attach a description of procedures, structures, or equipment used at the facility to:

   (1) Mitigate effects of equipment failure
   (2) Prevent hazards in unloading operations (e.g., ramps, special forklifts);
   (3) Prevent undue exposure of personnel to hazardous material (e.g., protective clothing);
   (4) Prevent releases to soil, water or the atmosphere; and

   Attach a description of the preparedness and prevention procedures including required equipment, testing and maintenance of equipment, access to communications or alarm system, required aisle space, and arrangements with local authorities. Procedures should at a minimum conform to the requirements of 40 CFR 264, Subpart C.

Contingency Plan is labeled as Attachment # 8

7. Attach a copy of the facility's Worker Health and Safety Plan including training. This plan shall be of sufficient detail to describe how workers will be informed of the hazards present in the workplace and how to protect them from exposure or injury from these conditions. The plan should contain elements to instruct employees in identification of hazards, releases, emergency response conditions and methods to prevent releases of hazardous material.

Worker Health and Safety Plan including training is labeled as Attachment # 9

8. Attach a copy of the facility's Quality Control Plan to be approved in accordance with Chapter 62-160, F.A.C. This plan should include detailed description of how the facility shall monitor the conformance to the facility's operational plan, training plan, its methods of determining compliance with permit conditions or Chapter 62-737, F.A.C., (e.g., material sampling and analysis) and the performance of its processing equipment or pollution control equipment (if applicable). The plan shall also contain the measures to monitor conformance with the facility's closure plan.

Quality Control plan to be labeled as Attachment # 10

9. Attach a copy of the facility's Closure Plan. This plan shall be of adequate detail as to describe how the facility shall properly remove all quantities of raw or unprocessed material and processed materials or wastes in the event of either voluntary or involuntary closure or cessation of operations. The plan must also include programs for clean up or decontamination of process equipment and process areas if applicable and any analytical testing which must be performed to determine the adequate removal of hazardous materials. The plan must also include the estimated costs involved in carrying out each aspect of the closure of the facility.

Attach the following information to meet the closure performance standard which requires removing all hazardous wastes and hazardous constituents and controlling, minimizing, or eliminating, to the extent necessary to protect human health and the environment, closure related releases of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the soil, ground water, surface waters or to the atmosphere. The closure plan must include the following information:

a. A description of how the applicant will close the facility.

b. An estimate of the maximum inventory of unprocessed and processed materials and wastes on site at any one time over the active life of the facility and a detailed description of the methods to be used during closure. The methods may include methods for removing, transporting, treating, storing, recycling or disposing of all processed and unprocessed materials and all hazardous wastes. Identify the type(s) of the off site recycling or hazardous waste management units the applicant will use, if applicable;

c. A detailed description of the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during closure. The steps include procedures for cleaning equipment and removing contaminated materials, methods for sampling and testing contaminated operational areas of the facility, and criteria for determining the extent of decontamination required to satisfy the closure plan standard;

d. A schedule for closure of each facility. The schedule must include, at a minimum, the total time required to close each facility and the time required for intervening closure activities which will allow tracking of the progress of final closure ; and

e. A detailed description of the costs of closure. Attach the most recent closure cost estimates for the facility and a copy of the financial mechanism used to establish financial assurance for closure of the facility. The financial information must be submitted using forms specified in 62-737.80-0(4), F.A.C.

Closure Plan is labeled as Attachment # 11

Financial Assurance Form is labeled as Attachment # 11

10. Attach a copy of the documents used to demonstrate both general and pollution liability insurance coverage of at least $1,000.000 as required in 62-737.800 F.A.C.. Proof of this coverage must be provided to the Department on an annual basis

Certificate of Insurance is labeled Attachment # 12

11. Attach a list of the destinations and uses of processed material shipped off site for disposal or recycling. This is to include the markets for recycled glass or metal end caps or the recovered mercury from reclamation operations. For mercury recovery facility applications, identify the mercury reclamation facility which accepts your material for recovery of the mercury. Iif this is an out of state facility, include the facility's certification of compliance to the provisions identified in 62-737.840 (4), F.A.C.

List of Destinations Facilities and Uses labeled as Attachment #13

12. Attach a copy of the facility's Inspection Plan. This plan shall include the measures the facility shall take to monitor and inspect the performance of process operations and pollution control equipment. Indicate the methods and frequency of these inspections and the types of logs or records which shall be maintained.

Inspection Plan is labeled as Attachment # 14

ATTACHMENT 1
ITEM A.21
Existing or Pending Environmental Permits

AERC Recycling Solutions, 4317-J Fortune Place, West Melbourne, FL 32904 | ~15,000 sq ft.

FACILITY PERMITS & REGULATORY AGENCY CONTACTS

PERMIT #	AGENCY	CONTACT	TELEPHONE

Notification of Regulated Waste Activity:

FLD984262782 — FDEP | USEPA

HW – LQG | Transporter
UW - LQH | &
Destination Facility

Florida Department of Environmental Protection
3900 Commonwealth Blvd. MS-49, Tallahassee, FL 32399
Phone: 850-245-2118 | Fax:

USEPA
EPA Region 4
61 Forsyth Street SW, Atlanta, GA 30303-8960
Phone: 404-562-9900 | 800-241-1754 | www.epa.gov/region04

Mercury Recovery Facility Permit: (Issued 12/30/96; Renewed 12/30/06; Expires 12/30/2011)

0072959-002-HO	FDEP	Vivian F. Garfein Director, Central District	(407) 893-3333
	FDEP	Danielle Bentzen P2 Coordinator	(312) 722-5381

Florida Department of Environmental Protection
Central District Office
3319 Maguire Blvd, Ste 232, Orlando, FL 32803-3767
Phone: 312-722-5381| danielle.bentzen@dep.state.fl.us

NPDES Storm Water Permit: (Issued 02/15/01; Renewed 04/07/06; Expires 04/06/2011 – Renewal pending)

FLR05C039	USEPA	Phil Coram Water Management Program	(850) 488-0300

Air Quality General Permit: (Issued 09/30/00; Renewed 10/10/10; Expires 09/30/2015)

0090124-006-AO Minor Source Operating Permit	FDEP Central District	Caroline D. Shine Program Administrator T. Anger Staff Assistant Air Resource Mgmt	(407) 893-3334

Notification of PCB Activity: (Notification made | No applicable expiration date)

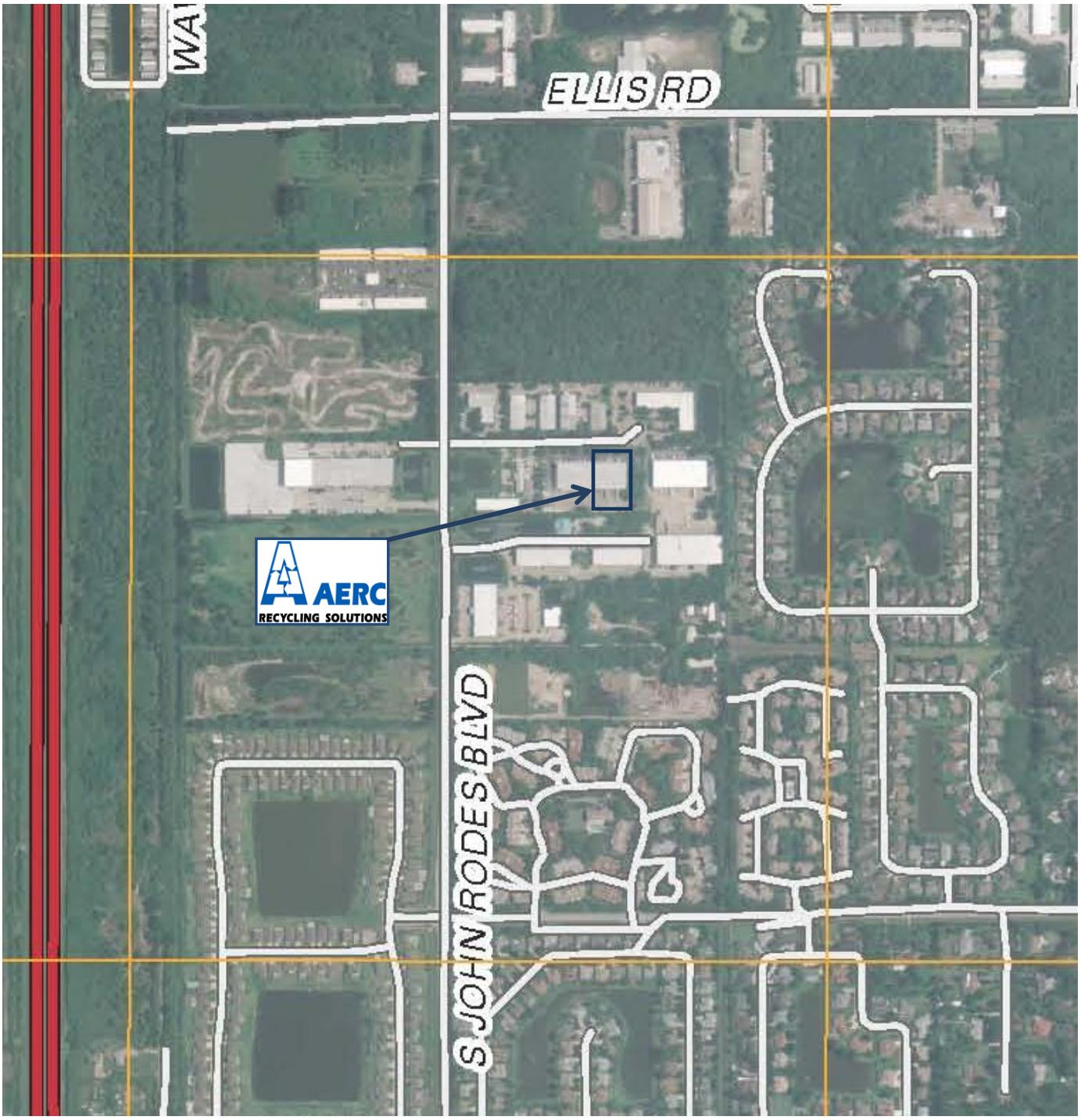
FLD984262782	USEPA Fibers & Organics Branch	(202) 554-1404

AERC has notified the USEPA as a transporter and commercial storer of PCB waste (as defined in 40 CFR § 761.3) due to the fact that AERC may potentially transport and store greater than 500 gallons of non-liquid material containing PCBs at regulated levels.

ATTACHMENT 2
ITEM B.1
Topographic Map

AERC.com, Inc.,
4317-J Fortune Place, West Melbourne, FL 32904

N



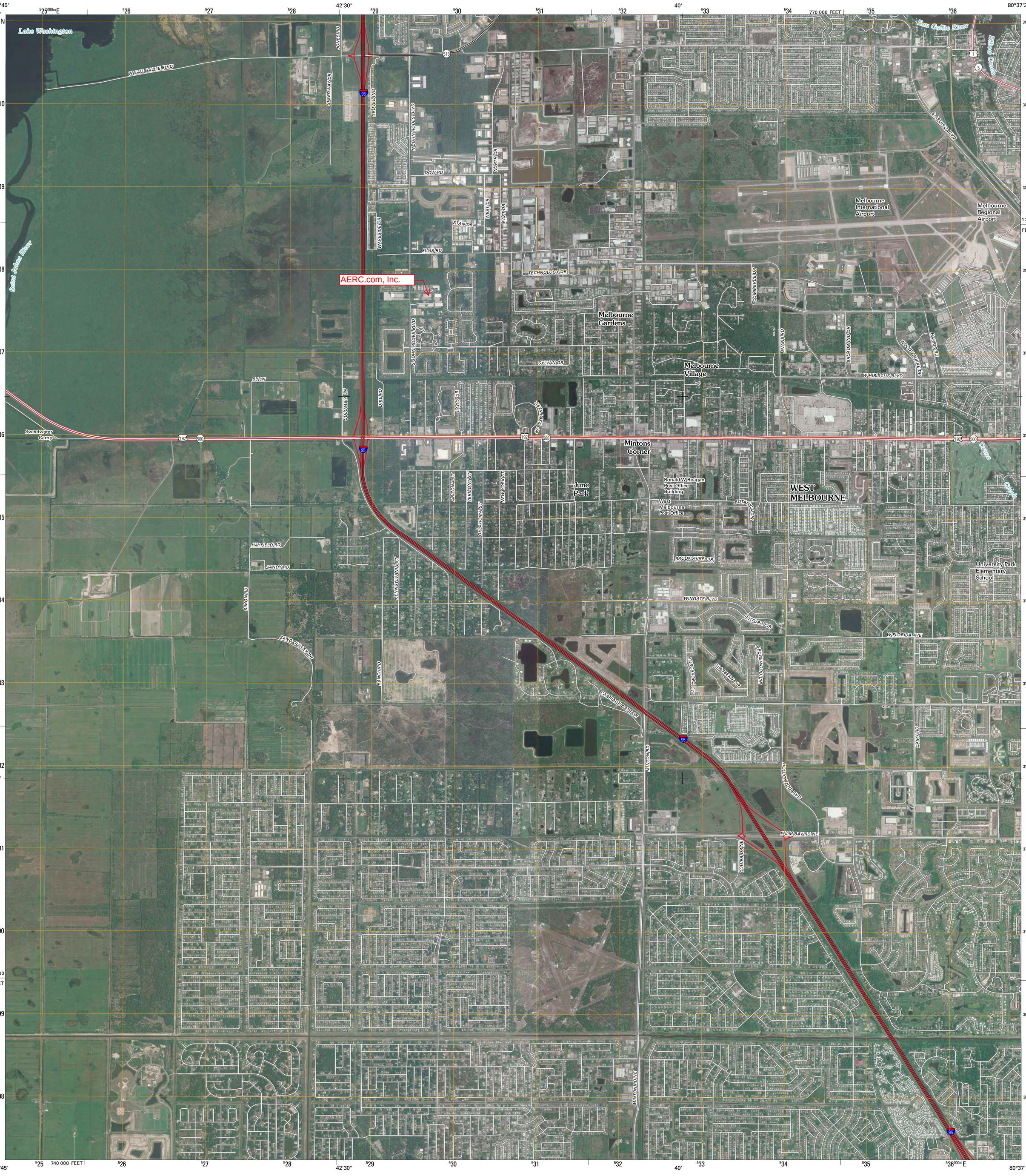
USGS MELBOURNE WEST QUADRANGLE FLORIDA | 2009 **[See full quadrangle USGS map]**

USGS science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

The National Map

MELBOURNE WEST QUADRANGLE
FLORIDA
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 17R
10 000-foot ticks: Florida Coordinate System of 1983
(east zone)

Imagery.....NAIP, June 2007
Roads.....National Transportation Dataset, 2008
Names.....GNIS, 2008

MN
5° 52′
104 MILS
GN
0° 9′
3 MILS

UTM GRID AND 2009 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
NM / NL 31 00
Grid Zone Designation 17R

SCALE 1:24 000

KILOMETERS: 1 0.5 0 1 2
METERS: 1000 500 0 1000 2000
MILES: 1 0.5 0 1
FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

This map was produced to conform with version 0.0.25 of the
draft USGS Standards for 7.5-Minute Quadrangle Maps.
A metadata file associated with this product is also draft version 0.0.25

FLORIDA

QUADRANGLE LOCATION

Deer Park NE	Eau Gallie	Tropic
Deer Park SE	Melbourne West	Melbourne East
Kenansville NE	Fellsmere NW	Grant

ADJOINING 7.5′ QUADRANGLES

ROAD CLASSIFICATION

Interstate Route
US Route
Ramp
State Route
Local Road
4WD

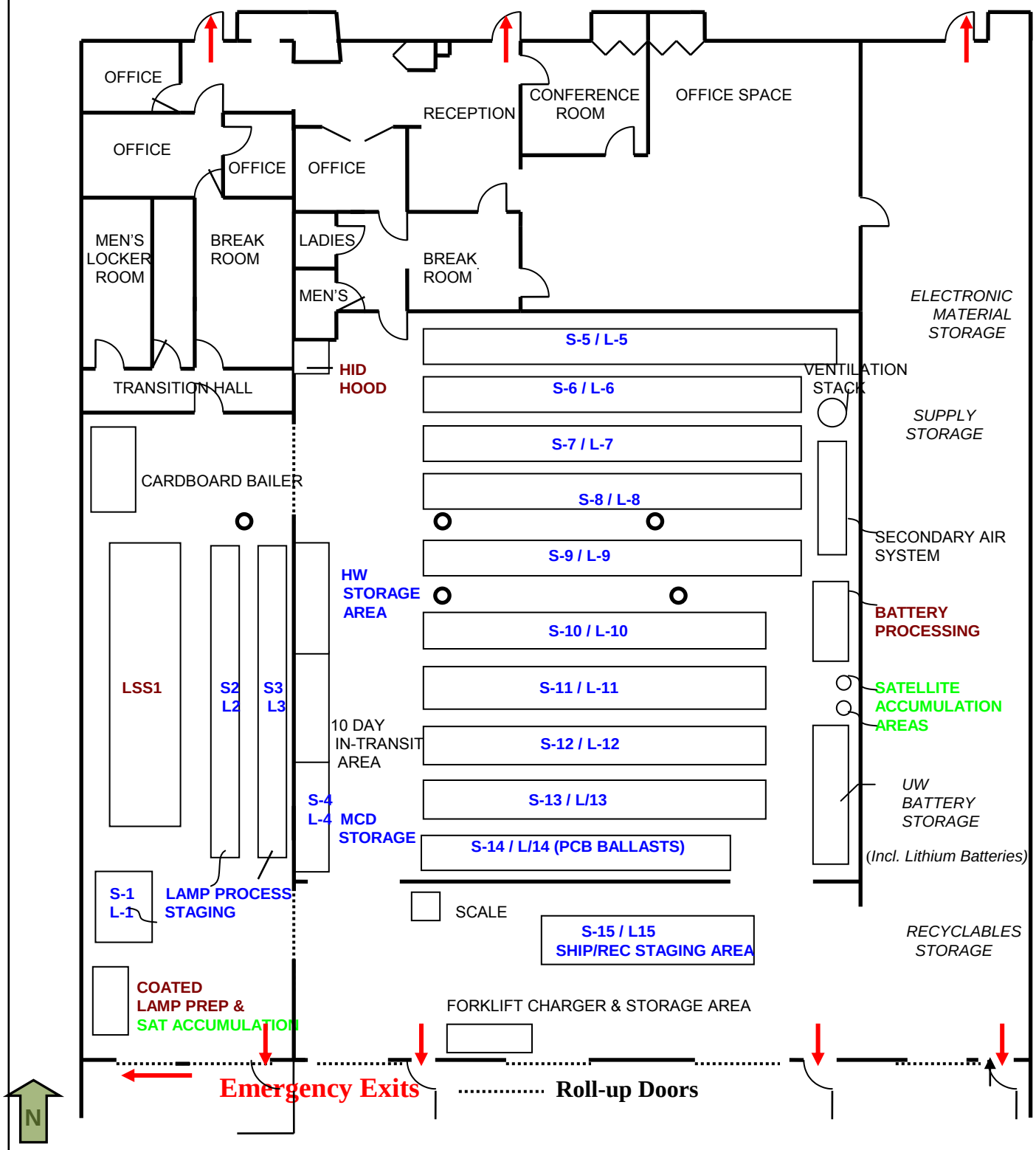
Interstate Route
US Route
State Route

MELBOURNE WEST, FL
2009

ATTACHMENT 3
ITEM B.2
Facility Features Drawing

AERC.com, Inc. Facility Plot Plan

Permitted Waste Storage Areas=BLUE **Process Areas = BROWN** **Satellite Accumulation Areas =GREEN**



Original: 05 June 2006

NOT TO SCALE

ATTACHMENT 4
ITEM D.2
Brief Description of Facility/Nature of Business

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Description (including Part # | Item # as applicable) **Page #**

D.2.1 Advanced Environmental Recycling Corporation (AERC)

Advanced Environmental Recycling Corporation (AERC) was develop in 1990 to answer a nation-wide need for environmentally sound recycling processes for metallic mercury, mercury compounds and solutions, and mercury containing devices.

While AERC was perfecting its triple distillation process for metallic mercury, many companies were discussing how to manage spent fluorescent lamps. Because fluorescent lamps contain mercury and often fail TCLP (a test for determining whether a waste is classified "hazardous") these companies were looking for an environmentally sound, low-liability recovery option.

In order to address the fluorescent lamp on a national basis, AERC formed a joint venture with and purchased state-of-the-art equipment from Mercury Technologies Corporation (MTC) of Hayward California. This AERC managed joint venture, named MTI, and was formed in November 1992.

In January of 2001, AERC and MTI were combined into one company and renamed AERC.com, Inc. The name may have changed, but our mentality, experience and environmental sound reputation has not. AERC.com, Inc. still can offer services and expertise that are second to none in the industry. A flowchart detailing the history of AERC is presented in **Exhibit D.2.1**.

In addition, AERC.com, Inc. ("AERC") has the resources, which allows us to focus on the most important aspects of mercury and fluorescent lamp recycling-safety, industrial hygiene, and environmental compliance, AERC utilizes an environmentally sound recycling process for mercury containing lamps. Our American-made equipment utilizes patented technology to treat all parts of the lamp, including the phosphor powder and mercury, at our captive facilities. This limits a generator's potential downstream liability by eliminating the need for third party recycling facility involvement. The lamp recycling process involves the separation of the glass, metal and phosphor powder. The metallic mercury contained in the phosphor powder is thermally separated and then resold back to market as a commodity grade mercury product for reused.

AERC also offers lighting ballast recycling. PCB and non-PCB ballasts are received and sorted. The PCB ballasts are accumulated and shipped off-site for recycling by a permitted PCB ballast recycler. The non-PCB ballasts are also shipped off-site to be recycled for their metal value.

The company also offers a recycling service for batteries. All types of batteries are received as Universal Waste. AERC sorts the batteries into their individual types and ships them off-site to various approved battery recyclers and TSD facilities.

Finally, the company has expanded into electronic scrap recycling. Various types of electronic equipment are received and evaluated and are either resold to market directly or are demanufactured or remanufactured for their component value and recycling.

AERC has four recycling facilities that can handle your company's lamp recycling needs nationwide. We have installed equipment in Allentown, Pennsylvania, Hayward, California, Ashland, Virginia and West Melbourne, Florida that recycles more than 30 million lamps annually. AERC also operates, together with its affiliate company, Com-Cycle electronic scrap recycling facilities in each of these cities. AERC offers our clients the most environmentally sound lamp, mercury and universal waste recycling services in the industry.

D.2.2 AERC Recycling Solutions Florida Facility – Nature of Business

The AERC West Melbourne Facility receives waste and recyclable materials containing mercury from numerous private and public sources. Customers include public and private institutions, hospitals, schools, laboratories, manufacturing operations, electrical maintenance companies; both large and small businesses. Materials received include mercury containing solids, such as fluorescent lamps and lighting devices, regulators, switches, thermometers, mercury-containing devices, and other materials, such as process and wash waters, debris and lamp powders. The facility also receives various types of batteries, PCB and non-PCB lighting ballasts, as well as electronic scrap.

The company also provides the service of packaging and collecting the materials at the customer's location, or arranging this for the customer, using a network of commercial transportation firms.

The business has been operating in its present location since November 1993. It currently employs 22 people, including process operations, administrative and management personnel. Operations employees work 8-hour shifts 5 days a week.

The company processes lamps and lamp components, along with mercury devices and recovers the mercury from most other sources. More information on the company and the organizational structure is included in this section – see **Exhibit D.2.2**.

Activities at the facility:

- Activities- Fluorescent and High Intensity Discharge lamp processing, recovery of lamp components for resale, removal of mercury-containing phosphor powders and ampuoles. In addition to the above activities, AERC also accepts MCDs debris, which are accumulated and then shipped off-site to a TSD / reclamation facility for further

processing. Mercury from other sources (e.g. soils, carbons. contaminated solid materials, etc.) is accepted by the facility for accumulation and shipment off-site to a TSD / reclamation facility.

- Additional Activities- In addition to Fluorescent and High Intensity Discharge lamp Processing and MCDs, AERC accepts batteries and PCB and non-PCB lighting ballasts for sorting and shipment to other recycling facilities, as well as, the acceptance of electronic scrap for demanufacturing or remanufacturing for shipment back to market for reuse or recycling. The facility also serves as a 10-day transfer facility for hazardous wastes that are destined to the AERC, PA permitted TSD facility. AERC is large quantity Universal Waste Handler, a Universal Waste Transporter as well as a Florida licensed Hazardous Waste Transporter.

EXHIBIT D.2.1 - History of AERC.com, INC.

AETC

- Founded in 1976
- Hazardous Waste Management Services
- 3 Part B Permitted Facilities
- Branch offices throughout the country
- Sold to Waste Management in

MTC

- Founded in 1987
- Permitted Fluorescent Lamp Recycling Facility in Hayward, California

AERC

- Founded in 1990 as a sister company to AETC
- Permitted Mercury Recycling Facility
- Located in Allentown, PA
- Recycles Fluorescent, Metallic Mercury, Mercury containing devices and Mercury compounds, Batteries and Lighting Ballasts

MTI

- Joint venture formed between AERC & MTC in 1992
- AERC – the managing partner
- Operates 3 permitted fluorescent lamp recycling facilities in Allentown, PA; Hayward, CA; and West Melbourne, FL.

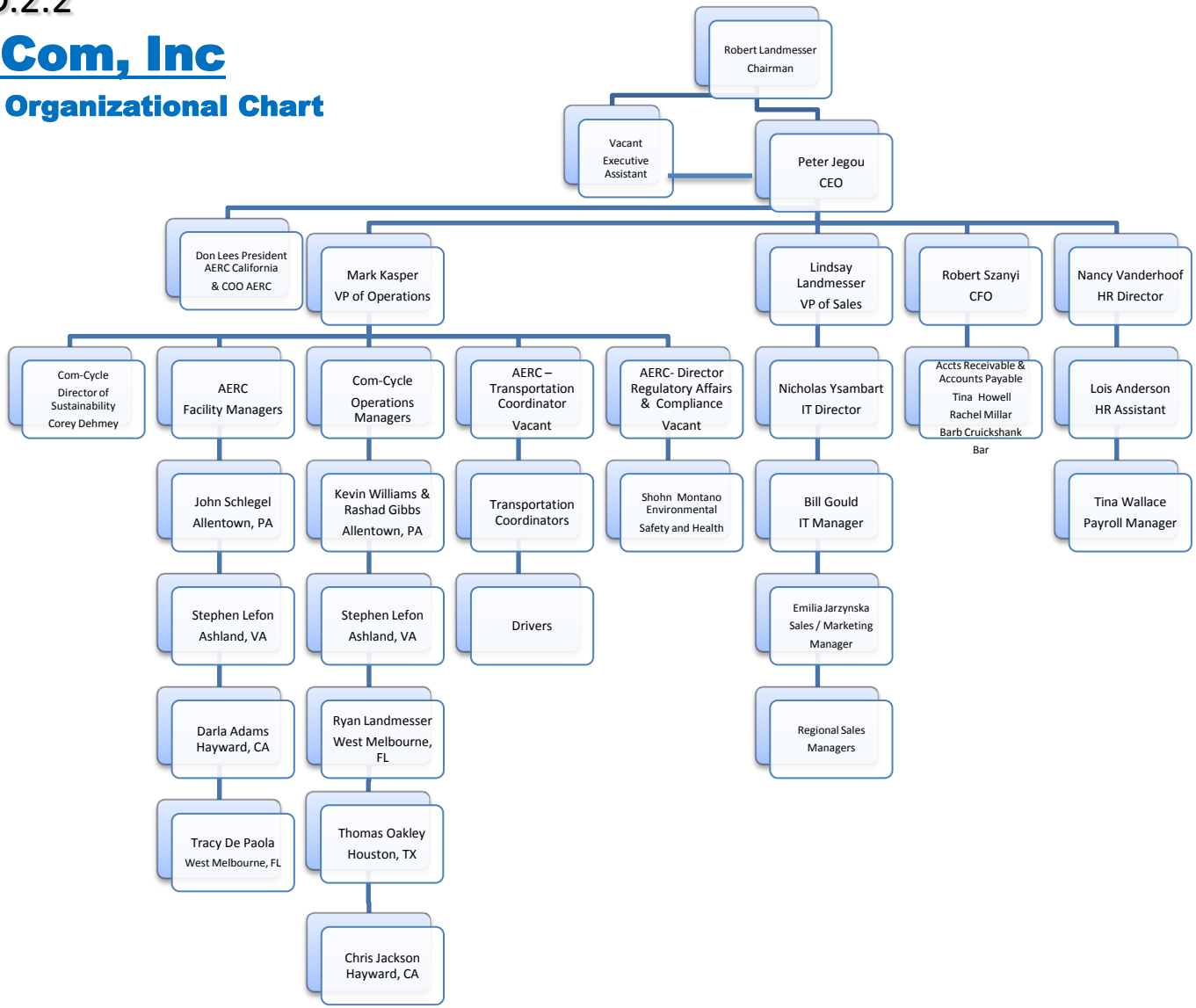
AERC.com, INC.

- Name changed from AERC/MTI to AERC.com, INC. in 2001
- Opened Ashland, VA Lamp Recycling Facility in 2001
- Began Electronic Scrap Recycling program in 2002

EXHIBIT D.2.2

AERC.Com, Inc

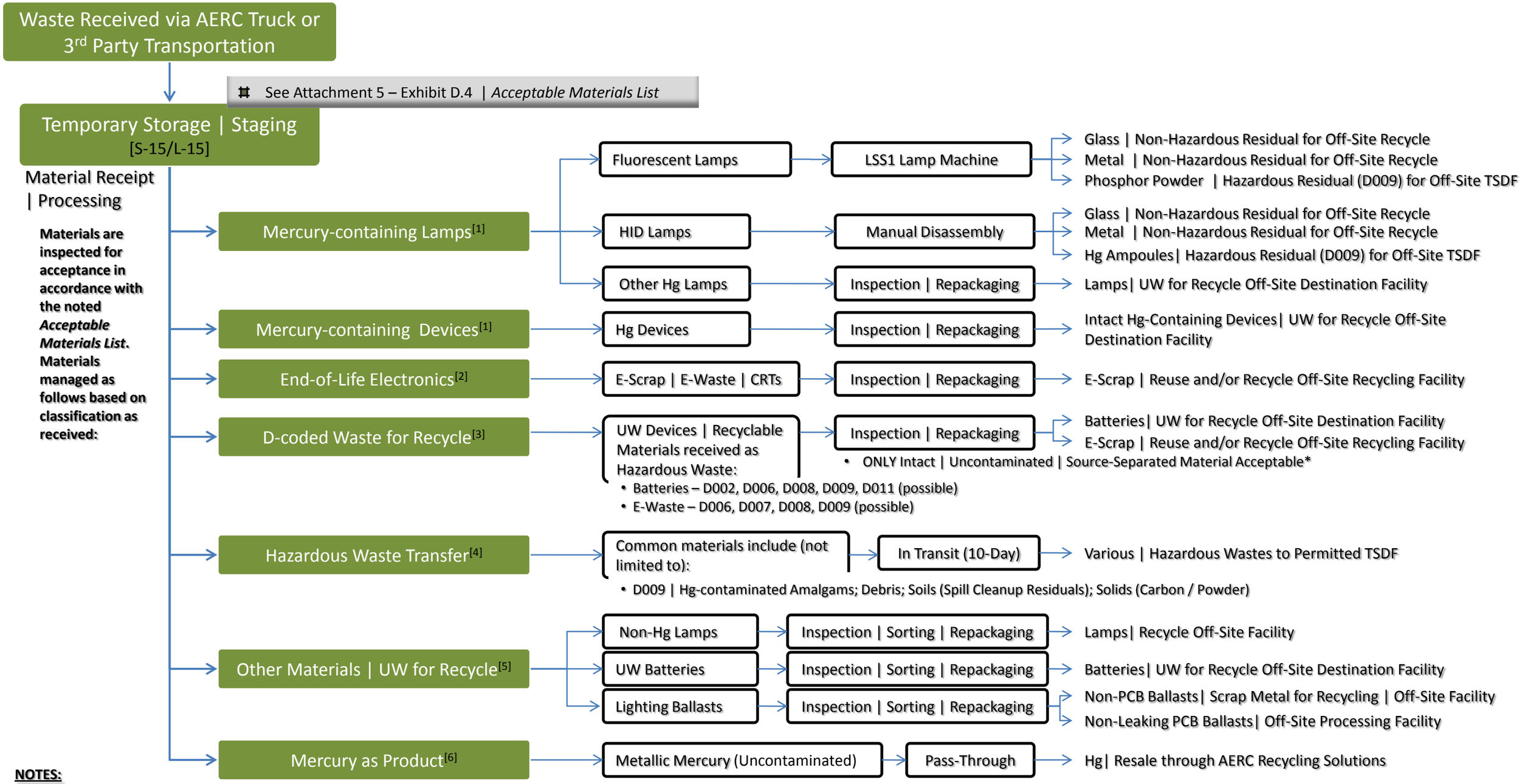
Corporate Organizational Chart



ATTACHMENT 5
ITEM D.3
Integrated Process Flow Diagram

ITEM D-3: Integrated Process Flow Diagram

AERC.com, Inc. | EPA ID No. FLD 984 262 782 | Operating Permit Number: 72959-003-HO



NOTES:

1. Material received and managed as Universal Waste in accordance with LQUWH requirements.
2. Material received as non-regulated solid waste for recycle.
3. Generator manifested material (D-coded hazardous waste) received as intact devices – managed by AERC for recycle. Includes those materials that meet the definition as either universal waste, e.g., batteries, and/or non-regulated solid waste when recycled, e.g., electronic scrap/CRTs. Materials that are meet definition of characteristic hazardous waste <u>are not</u> received by AERC – managed only as 10-Day material. * Manifest terminated | Documentation of intended recycle noted.
4. Hazardous waste managed in accordance with Transporter permit as 10-day Transfer material.
5. Includes: UW Batteries | Non-Hg Lamps | PCB and non-PCB Ballasts.
6. Pure Mercury (Hg) – salable product received as commercial grade material.

ATTACHMENT 6
ITEM D.4
Storage Area Capacity

ITEM D. 4. Storage Area Capacity

Capacity is calculated for the existing physical space at the facility. Capacity of an area is calculated using **either t**he maximum number of drums on pallets, **or** the number of whole lamps on pallets. Since all wastes are compatible it is assumed that each area will be used for any combination of lamps, drums, or other containers of mercury-containing devices (MCDs), batteries, crushed lamps, PCB ballasts, etc.; therefore area inventory and volume will vary. Storage capacities listed here include all incoming and processed material. Our estimates are that 60% of the inventory will be materials awaiting processing and 40% will be processed materials awaiting shipment to a recycler.

These capacities do not include the temporary storage of non-hazardous processed materials outside in covered containers awaiting transportation.

NOTE:
Each Storage Area is intended for use as either a drum storage area or palletized lamp box storage area. The information presented in this summary details maximum calculated capacity for each area based on either of these assumptions - totaling all areas to achieve maximum storage capacity.

				Maximum Storage Capacity		
Basis:	**S-#**	=	Area contains only pallets of drums.	Total Capacity (all **S** Designations)	1,088	Drums
	1 pallet	=	4 - open-top drums	or		
	L-#	=	Area contains only pallets of boxed lamps.	Total Capacity (all **L** Designations)	244,800	Lamps
	1 pallet	=	900 - whole lamps (in boxes)			

Area	Storage Capacity						Materials Stored	Waste Codes	Type
One (1)	12 ft	x	8 ft	=	96	sq ft	Lamp Process Staging | Universal Waste Lamps	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-1	6 pallets	2 high		=	48	drums			
L-1	6 pallets	2 high		=	10,800	lamps			
Two (2)	20 ft	x	4 ft	=	80	sq ft	Lamp Process Staging | Universal Waste Lamps	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-2	5 pallets	2 high		=	40	drums			
L-2	5 pallets	2 high		=	9,000	lamps			
Three (3)	20 ft	x	4 ft	=	80	sq ft	Lamp Process Staging | Universal Waste Lamps	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-3	5 pallets	2 high		=	40	drums			
L-3	5 pallets	2 high		=	9,000	lamps			
Four (4)	24 ft	x	4 ft	=	96	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-4	18 pallets	2 high		=	144	drums			
L-4	18 pallets	2 high		=	32,400	lamps			

ITEM D. 4. Storage Area Capacity

Area	Storage Capacity							Materials Stored	Waste Codes	Type
Five (5)		44 ft	x	4 ft	=	176	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-5	11 pallets		2 high		=	88	drums			
L-5	11 pallets		2 high		=	19,800	lamps			
Six (6)		40 ft	x	4 ft	=	160	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-6	10 pallets		2 high		=	80	drums			
L-6	10 pallets		2 high		=	18,000	lamps			
Seven (7)		40 ft	x	4 ft	=	160	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-7	10 pallets		2 high		=	80	drums			
L-7	10 pallets		2 high		=	18,000	lamps			
Eight (8)		40 ft	x	4 ft	=	160	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-8	10 pallets		2 high		=	80	drums			
L-8	10 pallets		2 high		=	18,000	lamps			
Nine (9)		40 ft	x	4 ft	=	160	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-9	10 pallets		2 high		=	80	drums			
L-9	10 pallets		2 high		=	18,000	lamps			
Ten (10)		36 ft	x	4 ft	=	144	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-10	9 pallets		2 high		=	72	drums			
L-10	9 pallets		2 high		=	16,200	lamps			
Eleven (11)		36 ft	x	4 ft	=	144	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-11	9 pallets		2 high		=	72	drums			
L-11	9 pallets		2 high		=	16,200	lamps			
Twelve (12)		36 ft	x	4 ft	=	144	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-12	9 pallets		2 high		=	72	drums			
L-12	9 pallets		2 high		=	16,200	lamps			
Thirteen (13)		36 ft	x	4 ft	=	144	sq ft	Mixed Universal Waste - Lamps, MCDs & Batteries	UW - N/A	Permitted | UW Handler (≤ 1 Year)
S-13	9 pallets		2 high		=	72	drums			
L-13	9 pallets		2 high		=	16,200	lamps			
Forteen (14)		28 ft	x	4 ft	=	112	sq ft	Mixed Universal Waste - Lamps, MCDs &	UW - N/A | PCB	Permitted |

ITEM D. 4. Storage Area Capacity

Area	Storage Capacity							Materials Stored	Waste Codes	Type
S-14	7	pallets	2	high	=	56	drums	Batteries	Ballasts - TSCA Waste	UW Handler (≤ 1 Year)
L-14	7	pallets	2	high	=	12,600	lamps			
Fifteen (15)	32 ft	x	4 ft		=	128	sq ft	Shipping & Receiving Staging Area	Various - Non-Haz | Haz | Universal Wastes	Permitted | UW Handler (≤ 1 Year)
S-15	8	pallets	2	high	=	64	drums			
L-15	8	pallets	2	high	=	14,400	lamps			

Additional material storage as associated with supporting activities.
The materials below are not included within the calculated Total Permitted Storage Area(s).

HW Storage	ft	x	ft		=	0	sq ft	Generator waste accumulation - including: phosphor powder; plant scraps & debris; filter media, etc…	D009	Generator (LQG) | 90-Day
	pallets		high		=	-	drums			
	pallets		high		=	-	lamps			
10-Day	ft	x	ft		=	0	sq ft	HW Transporter - material in transit	Various - Haz (Primarily D009, D011)	HW Transporter | 10-Day
	pallets		high		=	-	drums			
	pallets		high		=	-	lamps			

ATTACHMENT 7
ITEM D.5
Operations Plan

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Description (including Part # | Item # as applicable) **Page #**

Item D.5 Operations Plan

Exhibits/Figures/Tables

The information provided in this section comprises the Operations Plan for primary recycling activities throughout AERC Recycling Solutions facilities nationwide.

D.5.1 Fluorescent and Mercury Lamp Processing and Recovery

This section describes how fluorescent and other mercury containing lighting devices are disassembled, treated and separated in the AERC systems. These systems include an integrated set of components, the technology, and a set of process control and operating procedures, the process, which, together, are considered the lamp recycling and recovery system. For purposes of this discussion, the machinery, equipment, vacuum system, crushers, separators, etc. can all be considered containers, in that the components of the lamps remain inside them as they are being processed.

We have included process descriptions, and have excerpted non-confidential portions of more comprehensive technical documents developed by the company or provided by equipment manufacturers on the installation, operation and maintenance of some of the recycling systems, along with confidential process schematic drawings of equipment components. AERC maintains the detailed confidential documents at its facility and will make this information available to state officials upon request.

This section also includes summary information on HID Recovery Systems currently being used by AERC. This equipment integrates into the existing Vacuum and Air Handling, Vapor Control, Materials Control and other processing systems. The procedures, methods, monitoring and testing requirements in any of the systems are essentially the same as those used for standard fluorescent lamps.

An integral part of all systems operations are process control and monitoring plans and procedures, along with a discussion of the use of personal protective equipment, standard health and safety practices, air monitoring, medical surveillance, hazardous communications, employee training requirements, as well as the company's monitoring and record keeping requirements, which are part of an extensive QA/QC Program. These are summarized in the Training Plan (Item D.7 | Attachment 9) and the Quality Control Plan (Item D.8 | Attachment 10).

D.5.1a Fluorescent Lamp Recovery Process and Operations Descriptions

This operation involves processing and physical separation of fluorescent lamps containing mercury. The lamps are separated into the co-product streams of lamps end-caps, clean glass, and phosphor powder. The sources of these spent fluorescent lamps include households,

schools, commercial and industrial sites, and the manufacturers of these lighting components. Fluorescent lamps are transported to the facility in

accordance with local, state and federal regulations. The containers are then off-loaded from the vehicles and staged prior to processing.

After temporary storage, the lamps are processed in the equipment and physically separated into the components mentioned above. The recovery equipment components are designed for lamp crushing, co-product segregation, and include air filtration systems. The resulting materials generated from this activity (end caps, glass, and phosphor powder) are transported off site for further processing, recycling, or reuse.

D.5.1b Operations Procedures for Loading/Unloading, Handling and Storage of Mercury Lamps at AERC.

Loading/Unloading Procedures:

Lamps are delivered to the plant in small trucks, bobtails, 27' and 48' semi trailers. Plant workers unload the boxes or other lamp containers onto pallets. Work gloves and eye protection must be worn, as there may be pieces of glass from breakage in shipment. Depending on how customers pack lamps and how the trucks are loaded there may be as much as 5% breakage in a load. If breakage exceeds this amount the customer and/or transporter will be notified so steps can be taken to minimize breakage. Most of the time the breakage is contained within the lamp boxes and can be taken directly into the process. Culls (broken pieces of lamps still large enough for processing) are separated from the rest and brought to the processing area as soon as possible.

During the loading/unloading, most breakage or spillage of lamps is contained on the truck deck, the loading dock, or floor. Any breakage that may fall to the ground is cleaned in accordance with the procedures established, including use of brooms, mops, buckets, dustpans, vacuum systems, etc. If breakage is excessive, the work area is monitored and cleanup continues with appropriate respirators and personal protective equipment.

Broken Lamp Clean-up Procedure:

Within 5-minutes from the time when lamps are discovered broken, clean-up shall be undertaken by plant operators as follows:

The operator shall collect any breakage, using a broom or dust mop and dustpan, or vacuum system, removing large pieces carefully. Large pieces of lamps should be collected and

processed as soon as possible. Very small size breakage and powder residues are swept or vacuumed with the HEPA/Carbon filtered system in the plant. The area vacuumed includes approximately 25 square feet around the area where the breakage occurred. This will vary with the type and location of the breakage.

Handling and Storage Procedures:

Once the culls are handled, the remainder of the lamps are secured in boxes, bins and pallets and staged inside the plant prior to processing. Lamps are not left outside, unless they are inside closed trailers.

Once inside the building, the lamps are placed on the floor with the existing inventory. The lamps are stacked no higher than 12 feet. From this staging location the lamps are moved by hand, pallet jack and forklift directly to the process area. Sometimes they are removed from the boxes and placed into satellite accumulation lamp racks for subsequent processing.

Cardboard boxes which have been emptied of lamps are checked for remnants of broken pieces and powder. Remaining contamination is vacuumed if necessary. These boxes are then placed in a compactor, bailed and sold as recyclable cardboard.

For fire safety and health reasons, there is a no smoking policy in the building. The plant is equipped with a sprinkler system. No open flames are allowed, except in a controlled manner, such as for maintenance.

D.5.1.c Crush and Separation

The process flows are summarized here:

Whole lamps enter the recycling process and end-caps are separated from the glass and collected from the system, sampled, analyzed for mercury content, and shipped to an off-site metals recycling facility for their aluminum, brass and tungsten content.

The glass is further processed to remove the residual phosphor powder coating. The processed glass is placed into a collection container and is sampled, analyzed for mercury content, and subsequently sent off-site for disposal/recycling.

The powder containing mercury and non-condensed mercury vapors are conveyed and filtered inside the system, separated in the LSS1 lamp recycling equipment, and accumulated in containers for further retort processing offsite.

The excess air from the LSS1 lamp equipment is cleaned of all remaining dust in the baghouse air filter system. Dust-free air then passes through the carbon filtration system prior to discharge.

Equipment

In order to reduce the hazards of land-filling fluorescent lamps, AERC uses a lamp recycling process which consists of eleven separate but integral components:

(a) The Feed Conveyors
(b) Breaking Bar
(c) Primary Crushing Drums
(d) Elevating Conveyor
(e) Primary Trommel
(f) Vibrating Screen Conveyor
(g) Secondary Trommel
(h) Magnetic Conveyor
(i) Vapor Collection System
(j) Vacuum System
(k) Process Control System

Each component has a special purpose which is discussed in detail in a confidential technical operations manual kept at the facility. This document can be made available to FDEP staff upon request. The Model LSS1 Lamp Recycling System operating manual is presented in **Exhibit D.5.1.**

D.5.2 High Intensity Discharge (HID) Lamps

As discussed in the introduction to this section, the HID lamp recycling technology depicted here is being operated at the companies facilities throughout the U.S. The West Melbourne facility will use the same methods, procedures, QA/QC measures, testing and monitoring as used throughout the company. Currently, HIDs are processed as follows:

D.5.2.a HID Lamp Process Description and Operating Procedures

HID lamps are processed one-at-a-time to remove the inner capsule containing mercury and separate the non-hazardous metals and glass. During this process an air current is passed over the process area to remove and filter potential mercury emissions.

Air Filtration System

An air cleaning/filtration unit is fitted with a manometer to insure that the filters are not clogged and to determine when filters must be changed. Pressure differentials are measure across the filters. Filters are changed based on manufacturer specified pressure differentials.

As lamps are being processed any processed materials which collect in the unit's tray are emptied into the proper container. The top of the system is checked for items on top of the metal grating, which could restrict the proper down draft air flow while the unit is operating. A

continuous check for physical damage and proper operating conditions is performed while the system is operating

Materials Separation | HID Lamp Disassembling Procedure

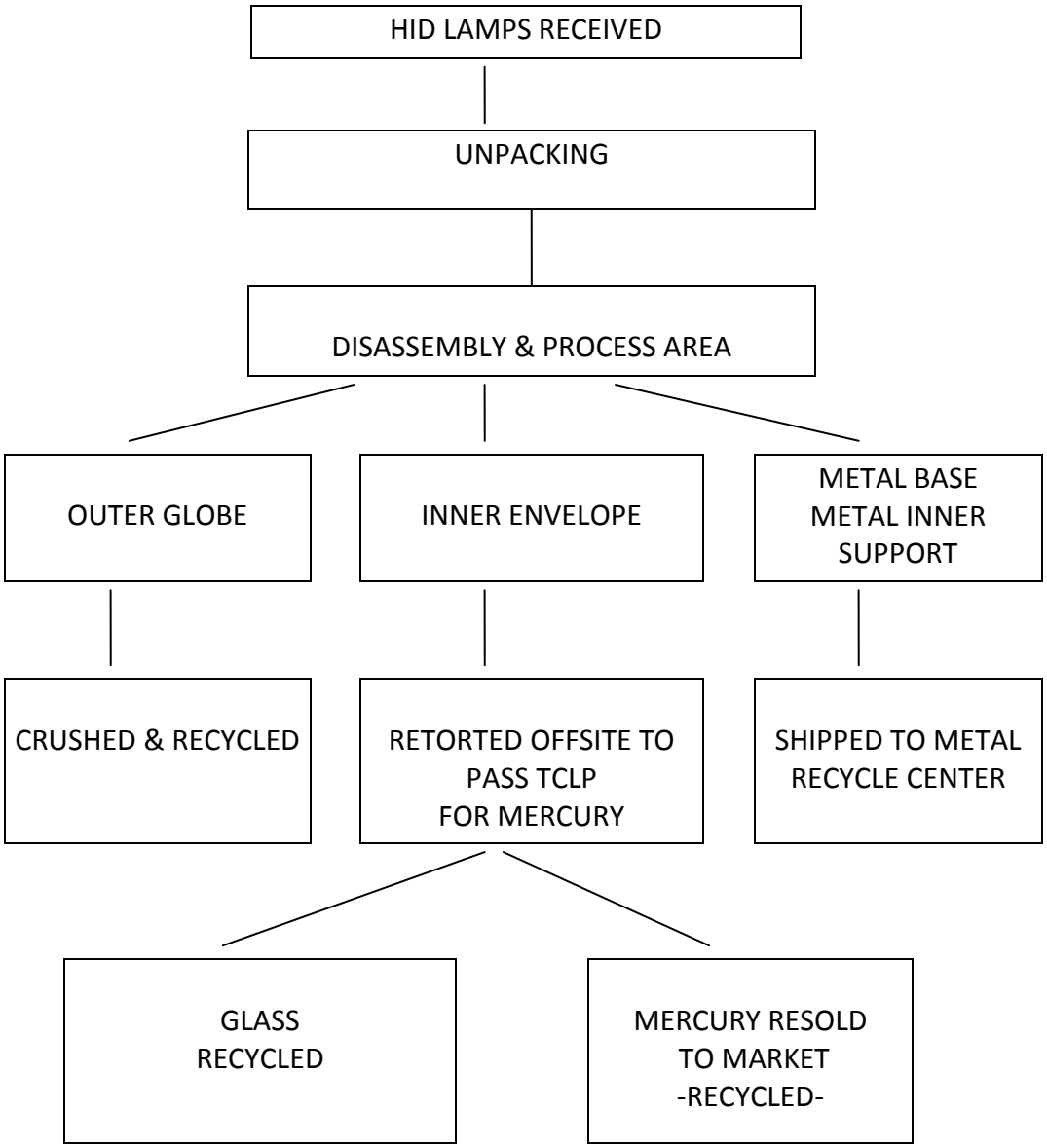
The process flow for the HID lamps, which is a manual process activity, is presented in Figure D.5: *Process Flow Summary for HID Lamp Recovery*.

Work is performed on top of metal grating on the air flow unit. The outer globe of the H.I.D. is separated from the base and placed into the glass recovery drum. The inner envelope, still be attached to the base is removed by cutting the wires and metal frame that holds the inner envelope. The inner envelope is placed into a collection container. The lamp base and other metal components are placed into appropriate containers.

The capsules containing mercury are sent off-site for further processing. The remainder of the lamp components are sampled, tested and shipped to metal or glass recyclers.

The main objective of the HID lamp processing system is to separate the lamp components without releasing mercury emissions into the air. The system is operated in conjunction with the Health and Safety and Quality Assurance/Quality Control measures discussed in reference to Item D.8 | Attachment 10.

Figure D.5: Process Flow Summary for HID Lamp Recovery



D.5.3 Mercury Containing Device Processing

The offsite mercury retort systems which AERC utilizes are designed to thermally recover and purify, through a heating and distillation process, mercury from various devices, process materials and manufactured items, debris, equipment or other materials that contain or have become contaminated with mercury.

The permitted AERC TSD in Allentown, PA uses two retort units to heat devices, such as thermometers, switches, regulators, and other materials, such as precipitates, filter media, powders, soils, and the like, which contain mercury. The product from these systems is commodity grade mercury which is resold back to market. The cleaned glass and metal is shipped off-site for recycling.

Receipt of materials

Materials are received at the West Melbourne facility from generators in drums or other shipping containers. Upon receipt these materials are separated into similar components (e.g. switches, regulators, thermometers, etc.), some of which need to be disassembled before they can be processed. Some of the items contain materials which cannot be placed in the retort unit. These include rubber gaskets, plastic parts or other organic materials. Thus, in some cases, there is a significant reduction (approximately 50-80%) in volume by removing the non-hazardous components <u>before</u> retort. Other items may be placed in the retort whole and when the mercury is removed they come out intact.

Once separated, materials are containerized for future shipment to the AERC, PA facility or an alternate approved facility for retorting.

D.5.4 Lighting Ballasts

In addition to lamp recycling processing AERC.com, Inc. offers service to its customers for the effective handling of non-leaking PCB and non-PCB ballasts.

Wastes are received in containers ranging from fiber cartons and poly pails to 55-gallon steel drums. AERC.com, Inc. conducts visual QC of these waste containers, repackages and consolidates these items as needed for shipping purposes. Only intact, non-leaking ballasts are received. Once accumulated, wastes are shipped to an approved offsite ballast recycler.

Ballasts are shipped using standard shipping documents as “Non-Leaking PCB Ballast” or “Non-PCB Ballast” a Certificate of Recycling can be provided for customer records.

D.5.5 Used Electronic Scrap

AERC.com, Inc (AERC) has developed an used electronic equipment, i.e., e-waste, management program as a service to its customers. These customers include a wide variety of generators, including, but not limited to retailers, manufacturers, as well as non-profit organizations and government institutions.

AERC's program has been designed to transport and collect whole, intact, electronic equipment. Electronic components are evaluated for reuse, rebuilt for reuse or disassembled or demanufactured by AERC for component resale and recycling. The computers and CRT's collected and shipped by AERC are identical to new computers being offered by establishments for sale or resale.

Although some disassembly may take place at the facility, the AERC West Melbourne facility primarily accumulates the used electronic equipment for shipment offsite to an AERC electronic scrap processing facility or to alternate approved electronic equipment recycling facilities.

AERC does not allow, authorize or approve of land disposal of any hazardous components generated through the electronic equipment demanufacturing processes.

AERC manages all used electronic equipment, whole and intact, and is not the ultimate recycling facility. AERC sends equipment to recycling facilities, which may, in-turn offer it for direct consumer resale.

AERC has interpreted that the products it collects are not waste. The decision-making for determining which components are offered for resale and which are demanufactured is not made by AERC, buy made rather, by the recycling/resale facilities using technical evaluation methods.

Components are shipped using standard Bill-of-Lading shipping documents are "Used Electronic Equipment for Recycling, Reuse or Resale". A Certificate of Recycling can be provided for customer records.

D.5.6 Battery Program

AERC.com, Inc. (AERC) in its continuing Universal Waste Program development, provides a necessary service for battery recycling. Small quantity generators do not have the logistical capability of getting the batteries to the ultimate battery recycling facilities. Therefore, AERC

created a service that includes but is not limited to various types of batteries such as lead acid, nickel-cadmium, alkaline, lithium and mercury batteries. AERC has established shipping and]

packaging guidelines for its customers to ensure that batteries are packaged and transported according to chemical compatibility and USDOT standards.

Once received at AERC, all batteries are inspected, unpacked and sorted into categories according to the final TSD or recycling facility requirements. These materials are repackaged and sent to the ultimate recycling facility. Attached are the specifics of this program.

D.5.6a Battery Processing Descriptions

AERC.com, INC. ("AERC") has developed a comprehensive battery recycling program. AERC provides onsite sorting and repackaging for all battery types. All containers of batteries are weighed, unpacked and sorted by recycling technicians at the Allentown facility. If necessary, the recycling technicians utilize a computerized database to properly identify individual batteries. All sorted, repackaged batteries are then shipped to offsite, secondary facilities for final recycling. Each permitted recovery/treatment facility is audited and pre-approved by AERC prior to the recycling of any batteries at the facilities.

D.5.6b Battery Categories

AERC accepts the following types of batteries, i.e., categories, for processing at our approved facilities. These categories of universal waste have been designated as such for billing and packaging purposes. As a general rule, batteries can be commingled within a category - however, categories should not be mixed.

Battery Category	General Description (common types included there-in)
CATEGORY 1	**Lead Acid** – includes: Sealed Lead Acid, i.e., gel-cell such as found in uninterrupted power supply (UPS) batteries | Common starting, lighting and ignition (SLI) Wet-Cell batteries ; large/multi-cell powered industrial truck batteries;
CATEGORY 2	**Corrosive Metal** - includes: Alkaline and NiCad (wet and dry), Carbon Zinc (non mercury), Nickel Iron, Nickel Hydride and Lithium Ion, Zinc Air
CATEGORY 3	**Mercury Bearing** - includes: Carbon Zinc, Button Cell, Silver Oxide, Mercuric Oxide
CATEGORY 4	**Reactive Metal** – includes: Lithium Primary Metal and Lithium-Ion; Magnesium

A more detailed summary of battery types and general characteristics is presented in **Exhibit D.5.2**. Additionally, guidance on the regulatory requirements for proper packaging and shipment of batteries is presented in **Exhibit D.5.3**.

D.5.7 Ten-Day Transfer Operations

The AERC, West Melbourne facility is set up as a ten-day transfer facility for hazardous wastes under it Florida DEP hazardous waste transporter approval. Wastes that are ultimately destined to the AERC, PA TSD facility may be transported through the AERC, FL facility on an as needed basis. This transfer operation is designed to help manage and provide cost effective logistical operations to clients for those wastes generated in the southeastern portion of the United States that ultimately must be shipped to the AERC, PA facility for acceptance and processing.

A summary of materials that AERC can accept for processing and/or manage via ten-day operations is presented in **Exhibit D.5.4**.

ATTACHMENT 7

EXHIBIT D.5.1

Model LSS1 Lamp Recycling System Operating Manual

RESOURCE TECHNOLOGY, INCORPORATED

Model LSS1
Lamp Recycling System

Operating Manual

Serial Number 000106

Update for 2011 Renewal Application | Original Rev. 20 May 2002

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APPENDICES

1.0 Introduction

This document details basic operating instructions and specifications for the Model LSS1 Lamp Recycling System currently used by AERC at all lamp recycling operations.

2.0 Process Description

2.1 General Description

The Model LSS1 Lamp Recycling System achieves the goal of setting a new standard for simplicity, safety, and recycling efficiency. Lamps enter this system on a power-feed belt passing through a negative pressure air chamber. Each lamp is crushed, separating glass and metal components into individual co products storage bins. Phosphor powder collects in the multi-stage filtration system. This powder should be treated in other equipment to recover elemental mercury for commercial use. Mercury vapors adsorb onto activated carbon filters eliminating fugitive emissions during processing. The Model LSS1 is fully computerized assuring easy operation. A touch screen control module provides one touch start-up for the entire system. This feature also provides operational monitoring of process and coproducts recovery lines. The Model LSS1 may include optional equipment that will continuously monitor the exhaust vent and provide a permanent record of system air quality.

2.2 Capacity and Performance

The Model LSS1 Lamp Recycling System has the capability of processing 2300 pounds (952 kg) of fluorescent lamps per hour. This equates to approximately:

T-12	T-8 lamps
3,500 4-foot	5,250 4-foot
1,750 8-feet;	3,075 8-feet

The Model LSS1 also handles circular and U-shaped fluorescent lamps, high intensity discharge lamps, and more.

2.3 Equipment Description

1. **#1 Lamp Feed Conveyor**: The #1 Lamp Feed Conveyor receives the manually loaded fluorescent lamps and transports them to the implosion chamber conveyor. The implosion chamber conveyor consists of a conveyor belt, loading aprons, electric motor, and gear reducer.
2. **#2 Lamp Feed Conveyor**: The #2 Feed Conveyor receives the fluorescent lamps from the #1 Feed Conveyor and transports the bulbs

to the breaker bar. The #2 Feed Conveyor and all subsequent components to this system are enclosed and operated under vacuum to collect fugitive mercury emissions.

3. **Breaker Bar**: The Breaker Bar is comprised of rotating steel arms, which break the lamps prior to their being gravity-fed into the primary crushing drums.
4. **Primary Crushing Drums**: The Primary Crushing Drums consist of two rotating steel drums, which crush the lamp components and deposit the particles on the elevating conveyor.
5. **Elevating Conveyor**: The Elevating Conveyor receives the crushed lamps from the primary crushing drums and transports them to the primary trommel.
6. **Primary Trommel**: The Primary Trommel utilizes a multi-layer screen, which separates the components by particle size. Larger (aluminum end-caps) are retained within the screen and are discharged for recycling. Particles between one inch and 1/16 of one inch (glass) are retained by the screen and continue onto the secondary trommel via the vibrating conveyor. Particles less than 1/16 of one inch pass through both screens to a 100 mesh vibrating screen separator. The rotating action of the primary trommel provides enough agitation to scrub the phosphor powder and mercury from the aluminum end-caps and from the glass particles.

   ***Note*: After passing through the Primary Trommel, the aluminum is discharged via a chute to a receiving container that can then be shipped as a commodity for recycling.**

7. **Vibrating Screen Separator**: The Vibrating Screen Separator receives phosphor powder and glass fines from the primary trommel. The Vibrating Screen Conveyor retains clean glass fines and transports them to a drum for recycling. The calcium phosphate powder passes through the vibrating screen and is collected in sealed drums for transport to a mercury retorting facility.
8. **Secondary Trommel**: The Secondary Trommel receives material from the primary trommel via a vibrating conveyor and again agitates and scrubs the glass. The glass particles that do not pass through the 1/16 of one inch openings in the outer screen of the secondary trommel are gravity-fed into the secondary crushing drums.
9. **Secondary Crushing Drums**: The Secondary Crushing Drums consists of two rotating steel drums, which crush the lamp glass to its final size, and deposits the glass on the magnetic conveyor.
10. **Magnetic Conveyor**: The Magnetic Conveyor receives particles of glass from the secondary crushing drums and transports them to a receiving container. Metallic particles (filaments and aluminum end-

caps attached to filaments) attract to the magnetic conveyor and are transported to an additional receiving container which can then be shipped for recycling.

11. **Shielded Lamp Shear**:
    The Shielded Lamp Shear is designed to allow shielded fluorescent lamps (Shatter Shields) to be processed in the LSS1. The Shielded Lamp is pushed through a funneled tube, where the lamp is manually pushed into the Shear. Two rotating blades cut the lamp into three inch pieces. The sliced lamp drops onto the #2 Lamp Feed Conveyer. The lamp glass breaks and falls away from the surlyn coating on the shielded lamp. All of the components complete the path through the LSS1, and the surlyn pieces exit the LSS1 with the aluminum end caps.
12. **Vapor Collection System**: The Vapor Collection System is designed to control mercury vapor and dust emissions from the process. The vapor collection system is comprised of a five horsepower fan, a bag house equipped with a series of particulate filters, an air compressor for filter back purge, and an activated carbon vessel. The blower, which produces airflow of approximately 500 CFM, draws mercury vapors and dust from the process equipment into the bag house. The bag house incorporates a set of nine cylindrical particulate filters that are in series with a set of two flat rectangular filters. This filter arrangement is designed to trap 99.99% of air-borne particles measuring 0.5 microns or larger. Purge occurs once each hour of running time on the feed belts. The purge opens a diaphragm and back purges the filters with a powerful burst of compressed air. When the system computer senses that back purging the filters are no longer effective at reducing the pressure drop across the filters, the process control system will disable the system and display the appropriate alarm signal on the touch screen. The system can be restarted following the replacement of the filters. Dust accumulates in the collection barrel located underneath the bag house.
13. **Housekeeping Vacuum System**: The LSS1 is supplied with a positive displacement vacuum pump connected to the vapor collection system. Controlled manually at the touch screen it is used for general housecleaning around the system
14. **Process Control System**: The Process Control System incorporates a programmable logic controller, touch screen, main disconnect, fuses, motor starters, and thermal overload protection for the equipment. The system operation is accomplished by following user prompts on the touch screen. Example screens are included in Appendix A and an electrical diagram is included in Appendix D. The system control logic is such that when in automatic mode no component can be operated without the vapor collection system or without the activation of the previous component in the process. The main control panel

contains high voltage components and should only be accessed with the main disconnect in the off position and after following proper lock-out/tag-out procedures, located in section 3.5 of this manual.

15. **Fine Glass / Powder Shaker:** This shaker is attached to the fine glass discharge of the vibrating screen separator. The purpose of the shaker is to reduce the quantity of calcium phosphate powder from the fine glass. This is achieved by shaking the fine glass on a 120-mesh screen. The fine glass vibrates off the top of the screen and into an auger, which transports the glass to the magnetic conveyor and discharged from the LSS1 with the other lamp glass. The Calcium Phosphate powder falls through the 120-mesh screen and is dropped into a 5-gallon pail. This powder is then manually transferred into a 55-gallon drum when the pail becomes full.

2.4 System Specifications

Height: 12 feet (3.66 meters)
Length: 30 feet (9.15 meters)
Width: 11 feet (3.35 meters)
Electrical Requirements: 100 AMP, 208/230/460 volt, 3 phase
Electrical control panel is UL approved.

3.0 Safety

3.1 General Safety Awareness

The LSS1 should be used in accordance with the manufacturer's instructions and good safety and health practices. The manufacturer also recommends that a health and safety professional be consulted regarding mandatory personal protective equipment (P.P.E.) and safety practices prior to the operation of the system.

3.1-1 Warning Signs

The LSS1 contains signs and labels required by OSHA 29 CFR 1910.145 and convey pertinent hazard warning information to the operator that is needed during the operation of this equipment.

3.1-2 Emergency Stop Buttons

Emergency stop buttons are located in four areas on the LSS1; three are on the front or operating side of the equipment, and one on the back side. Anytime there is an emergency and the LSS1 must be stopped immediately, an operator can depress any one of the four emergency stop buttons. This will completely shut down the LSS1, including the vapor fan. In order for the LSS1 to restart, the emergency stop button that was

activated must be pulled out to deactivate the emergency stop condition, and the system must be restarted at the touch screen.

3.1-3 Safety Interlocks

When operating in the automatic mode, the LSS1 is programmed through the Programmable Logic Controller (PLC) which prevents operation of the system without operating the vapor collection system. Furthermore, no system component can be operated out of sequence. Additional information concerning control logic is included in section 5.2 of this manual.

3.1-4 Machine Guarding

The Model LSS1 is designed and manufactured to provide a safe work environment for the operator. The LSS1 meets the requirements of OSHA 29 CFR1910.212 Machine Guarding Standard.

3.2 Operator Training Requirements

Operators of the LSS1 should be trained in compliance with the requirements of the Occupational Safety and Health Administration (OSHA) 29 CFR1910.120(p) for hazardous waste site workers. Additional training or certifications may be required by state or local agencies and should be researched and obtained prior to operation of this system. Training should include proper emergency response procedures and reporting requirements. Additionally, operators should be informed of the potential for adverse health effects resulting from the improper handling of mercury-containing material. Operators should be familiar with respiratory protection devices and other personal protective equipment which should be worn during the operation and maintenance of this equipment. Finally, operators should be familiar with the lock-out procedures which are outlined in section 3.5 of this manual.

3.3 Chemical Hygiene

While operating the LSS1, operators should follow good chemical hygiene practices. This is done by prohibiting consumption of food or beverage and use of tobacco products in areas where lamps are handled, stored or processed. Operators must use the proper P.P.E. while handling or processing lamps. Operators should wash their hands and face thoroughly with soap and water before breaks and meals, and shower at the end of the work shift.

3.4 Personal Protective Equipment

The LSS1 separates fluorescent lamps into three primary components: clean aluminum end-caps, clean crushed glass, and calcium phosphate powder (phosphor powder) containing mercury. Each of these waste

streams has a potential to cause injury or illness if handled improperly. The aluminum end-caps and crushed glass have sharp edges and can produce cuts and puncture wounds in unprotected operators. As a minimum requirement, protective gloves should be worn any time lamps are being handled or loaded. Phosphor powder containing mercury vapor is released from the lamps and collected throughout the system. Mercury can be introduced into the body by inhalation, absorption and ingestion. Care should be exercised in avoiding inhalation of this powder. Use of respiratory protection during certain operations and maintenance of this equipment is required. Specific personal protective equipment which is to be worn will be outlined in the following sub-sections.

3.4-1 Respiratory Protection

Since the primary root of mercury vapor entry into the body is through inhalation, respiratory protection may be required during certain operations and maintenance performed on the LSS1. Respiratory protection should be used anytime mercury vapors are present. Respiratory protection should be worn if a direct reading mercury vapor instrument indicates that mercury vapors are present during operation.

3.4-2 Eye Protection

Safety glasses shall be worn at all times while handling lamps, operating the LSS1, or conducting maintenance on the LSS1.

3.4-3 Hearing Protection

OSHA 29 CFR1910.95 the Occupational Noise Exposure Standard states that any employee exposed to 90 decibels of sound or greater for an eight hour period of time is required to wear hearing protection. The Model LSS1 Lamp Recycling System generates approximately 90 dBA of noise while in full operation. Therefore, all such exposed operators and anyone around the LSS1 while it is operating are required to wear hearing protection.

3.4-4 Body Protection

Since the phosphor powder contained in fluorescent lamps contains mercury, it is important that protective coveralls be worn by all personnel who are operating or conducting maintenance on the LSS1. This is important so that cross contamination does not occur from the phosphor powder collecting on their work uniforms.

3.5 Lock-out Procedure

In order to ensure that employees performing maintenance or repairs on the LSS1 do not become injured by accidental start-up or release of

stored energy, all required precautions as outlined in OSHA 29 CFR 1910.147 Lock-Out/Tag-Out Standard should be followed.

LOTO Procedure:

Step 1: Locate the circuit breaker that supplies power to the main control panel. Turn off the circuit breaker and lock-out the circuit breaker.

Step 2: Go to the main control panel for the LSS1 and turn off the knife switch on the outside of the electrical panel and lock that switch in the off position. Following the directions on the front of the panel, open the control panel. Check to ensure that the main breaker has been turned off. Then go to the touch screen and attempt to operate the equipment.

Step 3: Go to the rear of the LSS1 to the electrical switch for the air compressor, turn the switch to the off position, close the lock-out hasp over the switch, and place the lock through the hasp on the switch.

Step 4: Open the air system drain valve on the air compressor; this is to make sure there is no stored pneumatic energy in the LSS1.

Step 5: Turn the air system ball valve to the off position. Close the lock-out hasp over the valve and place a lock through the hasp on the valve.

Step 6: Attempt to operate any part of the LSS1 in order to verify that there is no stored energy within the equipment. After completion of the previous steps, you may perform the required work on the LSS1. In order to return the LSS1 to service, make sure all tools and equipment are removed from the machine and all components are secured back in the machine and follow the lock-out steps in reverse order.

3.6 Air Monitoring

Air monitoring for mercury vapor concentration should be conducted in the area around the LSS1. A direct reading mercury vapor instrument should be used to collect this data. Air monitoring should be conducted in the operator work area, vapor fan stack, and coproduct's collection areas to ensure that all employees working around the LSS1 will not be exposed to mercury vapor concentrations above the ACGIH Threshold Limit Value (TLV). If at any time the mercury vapor readings get close to the TLV, the people working in the affected area should don air purifying respirators, and correct the cause of emission.

4.0 Pre-operation and Start-up

The LSS1 start-up is accomplished by using the touch screen and following the prompts as they appear and as outlined in section 4.2 below.

4.1 Pre-operation Inspection

Prior to start-up of the LSS1, a walk around inspection should be performed to ensure that all coproduct receptacles are empty and in

position to receive the co-products as they are discharged from the LSS1. Furthermore, ensure that the four drums around the LSS1 are properly positioned and have straight, unobstructed connection boots and secure connection rings.

4.2 Equipment Start-up

The LSS1 is designed to run in an automatic mode. When the LSS1 runs in its automatic mode, all equipment operations are supervised through the programmable logic controller (PLC). If there is an alarm, the LSS1 will stop and indicate the reason for the alarm. To start the LSS1, make sure the circuit breaker supplying the LSS1 control panel is in the "ON" position. Proceed to the LSS1 main electrical panel and make sure that the knife switch on the control panel is in the "ON" position. Proceed to the front of the LSS1, turn the key switch on the touch pad to the "ON" position, follow the prompts on the screen, and touch the screen in the areas indicated to make your selection. To run the LSS1 in the Automatic mode press "automatic" in the selection area of the screen. When the automatic screen appears, press the system start to activate a five-second buzzer which indicates that the system will start. When the buzzer shuts off, the system will start in a sequence. When all of the systems are operating all indicator lights of the system, except "Vacuum Bar and H.I.D.", will be lit. It is at this point that you can start feeding lamps into the LSS1.

5.0 Equipment Operation

5.1 Feeding Lamps into Equipment

Lamps are manually placed on the #1 Feed Conveyor by trained operators. The Model LSS1 is designed to process approximately 3,500 lamps per hour. The lamps can be continuously laid end-to-end completely across the conveyor. Be careful not to place the lamps any higher than the guard at the end of the conveyor. This will avoid having the lamp break prior to entry into the implosion chamber conveyor. **DO NOT** feed cardboard, wood, plastic, or other debris into the machine as such will clog the vacuum lines or jam the equipment.

Caution: In order to prevent jamming of the machine, plastic coated lamps must not be placed directly on feed conveyor #1.

5.2 Monitoring Equipment Operation

The process control system incorporates a programmable logic controller (PLC) which monitors equipment operation. Should a motor overload, filters become clogged, or an emergency stop button be depressed, the PLC will

shut down that system and alert the operator to the problem. During normal operations it is important to pay attention externally to equipment operation. Look for signs of wear and tear such as leaking or clogged vacuum lines. Listen for any sound abnormalities that may indicate a bearing failure, a motor failure, or a jam in the equipment. It is also important to monitor the levels of glass, aluminum, fines, and powder discharged to containers. Proximity sensors are mounted in the lids of the drums attached to the glass fine discharge, the powder discharge, bag house discharge and the vacuum container discharge. These switches will shut off equipment operation via the PLC should the containers become full. When full, please check the touch screen alarm screen for indication as to which drum needs to be changed out. When a new drum is placed back into position, the PLC will allow operation to continue.

5.3 Monitoring Coproduct Quality and Volume

Quality in the lamp recycling business refers to how well the process can separate the hazardous materials from the non-hazardous materials. In order for the process to perform properly, the crush and separation operation must separate the end-caps, glass and contaminated powder from the other components. During normal operation, it is important to inspect the coproducts and coproduct discharge areas to ensure that there is no mixing of coproducts or cross contamination of materials (e.g. visible phosphor powder on the glass or aluminum end-caps, or glass-laden aluminum end caps).

One simple method to inspect glass quality is to put on rubber gloves and pick up a handful of glass gently and return it to the storage container. Inspect the rubber glove for evidence of powder. It may be necessary to sample the clean glass and the clean aluminum in order to maintain compliance with permit regulations.

It is important during operation of the LSS1 to monitor both the glass and aluminum discharge to assure that material is flowing freely and that no back-up of material will occur through the discharge chutes. Glass may be discharged into containers as small as 55 gallon drums or as large as semi trailers with optional equipment. Aluminum may also be discharged in the same manner. It is important to monitor these discharges as often as necessary to ensure that those containers do not get overfilled.

5.4 Using the Housekeeping Vacuum

The LSS1 is supplied with a positive displacement vacuum pump connected to the vapor collection system. The household vacuum system is controlled at the touch screen and is programmed to operate only when the LSS1 is running in the automatic mode. It is used for general housecleaning around the LSS1. Vacuum ports are located at various points around the equipment

and are to be used to collect small particles of glass, aluminum, and phosphor powder. These materials will then be separated throughout the remainder of the system. It is important to ensure that a vacuum hose is attached to an open vacuum port prior to initiating the vacuum system. Otherwise, damage may result to the vacuum system. It is important to vacuum only lamp components into the system so that foreign materials do not contaminate recyclable materials or cause blockages when passing through the machine.

6.0 Equipment Shutdown

6.1 Emergency Shutdown

If at anytime the LSS1 needs to be immediately shut down, an operator should depress one of the four emergency stop buttons located on the LSS1. Three emergency stop buttons are located on the front of the machine, and one is located on the back. In order to deactivate the alarm and restart the LSS1, the emergency stop button that was activated must be pulled out from the stop position. Note that the vapor collection system is disabled with an emergency shutdown. To prevent fugitive vapor emissions the vapor collection system must be restarted immediately following the treatment of the emergency.

6.2 Routine Shutdown

At the end of the production day or when you want to shut down the LSS1, simply press the system stop button on the touch screen of the automatic menu. This will shut down all operations of the LSS1 with the exception of the vapor fan.

(**The vapor fan should be allowed to continue to operate even though the LSS1 is not actively processing lamps. This will ensure that a negative pressure is maintained within the LSS1, preventing the release of mercury vapors from any residual lamps or phosphor powder that may remain in the system.)**

6.3 Daily Clean-up Procedures

At the end of each shift, the LSS1 should be allowed to continue to operate in the automatic mode for at least 10 minutes following the cessation of all processing. During this period the LSS1 equipment and surrounding floors should be swept of all visible calcium phosphate powder (phosphor powder) in order to decontaminate the area of mercury vapor. Coproduct collection containers should also be emptied at this time.

7.0 Routine (Scheduled) Maintenance

Below is a list of scheduled maintenance items:

ITEM	MONTHLY	SIX MONTH	ANNUAL
#1 Feed Conveyor	X	X	X
#2 Feed Conveyor	X	X	X
Elevated Conveyor Flights	X	X	X
Gear Reducers Oil Change		X	X
Carbon			See below
Glass Conveyor	X	X	X
Trommel Rollers	X	X	X
Air Compressor Oil	X	X	X
Vacuum Pump			X
Vacuum Blower Motor			X
All Air Lines	X	X	X

DAILY: Perform visual equipment inspection, check visible components for visible wear. Check nuts, bolts for tightness.

#1 Feed Conveyor: Inspect for tracking, wear and tension.
Adjust tracking and tension if necessary, replace if worn.

#2 Feed Conveyor: Inspect for tracking, wear and tension.
Adjust tracking and tension if necessary, replace if worn.

Elevated Conveyor Flights: Inspect the flights for wear, replace if wear is excessive.
Replace if UHMW wear strips are worn down to the metal flite

Gear Reducers: Check seals.
Change oil.

Carbon: Change when exhaust levels exceed regulatory levels.

Air Compressor: Change oil.

Vacuum pump: Change oil.

Air Lines: Check connections for air leaks

Every 100,000 lamps: Inspect clean-out points. Clean as necessary at the following locations: Feed conveyor side doors, Trommell #1 end access, vibrating conveyor port, magnetic conveyor tail.

8.0 Recommended Parts Inventory

SPARE PARTS INVENTORY

PARTS	QUANTITY
Conveyor Belt 1	1
Conveyor Belt 2	1
Cylindrical HEPA Filters	15
Square HEPA Filters	2
Air Compressor Oil	
Elevated Conveyor Flights	1 set
Elevated Conveyor Divider	1

Vacuum Blower Motor Oil - Mobil DTE BB
Texaco R & O 220
Amoco 220, or equal

Vacuum Blower Bearing Grease - Follow Manufacturers Recommended Instructions

Gear Reducer Motor Oil - Mobil 600 W Super
Texaco Honor cyl. Oil 680
Chevron NL Gear Comp 680

Touch-up Paint

Air Line

Gasketing Material (foam)

Gasketing Material (perma gum)

Silicone Sealant (RTV)

9.0 Warranty and Disclaimer

Resource Technology, Inc. ("RTI") warrants that its Model LSS1 Machine will be free from defects in materials and workmanship at the time of RTI's and for a period of 90 days thereafter exclusive of conveyor belts, which are excluded from warranty coverage; and electrical components, which are subject only to applicable manufacturer's warranties, if any.

During this limited warranty period RTI will provide new replacement parts or Equipment on an exchange basis as set forth below. All replaced parts or Equipment become the property of RTI. This limited warranty also does not include service to repair damage resulting from any accident, disaster, misuse, abuse, or any non-RTI installation, modification or attempted repair of the Equipment.

FOR WARRANTY SERVICE OR ASSISTANCE IT IS REQUIRED THAT A SERVICE REQUEST BE MADE WITHIN THE WARRANTY PERIOD. NO EQUIPMENT OR PARTS MAY BE RETURNED TO RTI WITHOUT RTI'S PRIOR WRITTEN AUTHORIZATION, AND ALL SUCH RETURNS WILL BE AT CUSTOMERS SOLE EXPENSE. If shipping is authorized, Customer must also prepay applicable RTI part or Equipment shipping charges and either obtain shipping insurance or assume the risk of loss or damage in transit. RTI reserves the right to charge Customers' account for replacement of parts or Equipment which are subsequently determined to be outside of Limited Warranty coverage, including applicable travel or service call charges.

THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OFFERED BY RTI, AND NEITHER RTI NOR ANY REPRESENTATIVE MAKES ANY OTHER REPRESENTATION OR WARRANTY OF ANY KING, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow limitations or exclusions of implied warranties, so the above exclusions may not apply to you.

CUSTOMER'S SOLE REMEDY UNDER THIS LIMITED WARRANTY SHALL BE PART OR EQUIPMENT AS PAROVIDED ABOVE. IN NO EVENT WILL RTI BE LIABLE FOR ANY DAMAGES, INCLUDING ANY ALLEGED DOWNTIME, LOST PROFITS, LOST SAVINGS, OR OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH EQUIPMENT, EVEN IF RTI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

APPENDIX B:
Trouble Shooting Guide

TROUBLE SHOOTING GUIDE		
Symptom	**Possible Causes**	**Corrective Action**
Feed conveyors stop	• Debris between conveyors • Belt is ripped • Debris in systems • Belt tension too loose • Conveyor pulley moved from center • Key is dislodged from shaft or reducer	• Remove debris • Replace belt • Remove debris • Adjust belt tension • Re-position pulley • Replace key in shaft
Crushing drums stop turning	• Debris in system (nuts, bolts, wood, etc.) • Key is dislodged from shaft	• Reverse motor to clear jam • Remove cover to clear debris • Replace key in shaft
Elevated conveyor stops	• Material overload • Debris in system • Key is dislodged from shaft	• Reverse conveyor to clear jams • Open cleanout(s) to remove material/debris
No power	• Main breaker off • Knife switch off • Key switch off	• Turn on main breaker • Turn on knife switch • Turn on key switch
Phosphor powder coming from co-product chute	• Clogged vapor lines	• Check ports • Clear lines
Baghouse filters clogged	• Air pulse system not working • Filters at end of service life	• Turn on air compressor • Ensure valve is open • Change filters
No air pressure	• Air compressor not turned on • Air compressor unplugged • Ball valve not closed • Mechanical problem • Filter has been ruptured and carbon contaminated with phosphor powder • Leak in air line	• Turn on air compressor • Plug in air compressor • Open valve • Replace air line • Replace cylindrical and square particulate filters – replace carbon
High mercury vapor emissions from exhaust stack	• Carbon is saturated	• Replace carbon
Air compressor will not shut off	• Diaphragm valve stuck open • Air line disconnected or damaged	• Disassemble and clean • Reconnect or replace

*Should a component that is commercially available fail, please refer to the component manufacturer's manuals

APPENDIX C: Inspection Form

START-UP CHECKLIST

	YES	NO
Make sure coproduct containers are empty and are ready to receive material.		
Make sure drum connection boots are straight, and connecting rings are secure.		
Make sure the power is turned on to the control panel..		
Turn on the air compressor, open the air valves.		
Walk around and inspect the machine. Look for loose nuts, bolts, fittings. Listen for air leaks. Check air gauges for proper pressure: **Compressor 140 psi** **Top Regulator 95 psi** **Lower Regulator 65 psi**		
Stage material for processing.		
Turn the key switch on the tough screen to the "ON" position.		
Follow the instructions on the touch screen. Proceed to run the equipment in "Automatic" mode.		
Perform air monitoring in the operator area, co-product area, exhaust stack.		
Begin processing lamps.		

ATTACHMENT 7

EXHIBIT D.5.2

Battery Type and Characteristics Summary Table

Exhbit D.5.2 - Battery Type and Characteristics Summary Table

			CONTAINER SIZE				
BATTERY TYPE	**COMMON SIZES**	**SALES**	**55-GALLON**	**30-GALLON**	**5-GALLON**	**NOTES/USAGE**	**HAZARDOUS CONSTITUENTS**
Alkaline	9-volt, D, C, AA, AAA, button, coin	* 63% of consumer battery market *Increasing	600 lbs.	330 lbs.	55 lbs.	Most commonly used and recognized battery nonrechargeable Portable Cassette Players and Radios	Manganese Dioxide, Potassium Hydroxide, Mercury
Carbon-zinc/ Lelanche/ Heavy-duty	9-volt, D, C, AA, AAA, general purpose and heavy duty	*21% of consumer battery market *Decreasing	300 lbs.	180 lbs.	30 lbs.	Nonrechargeable Flashlights, Toys	Manganese Dioxide, Zinc, Zinc Chloride, Mercury
Mercuric Oxide	Button, D, C, AA, AAA	*20% of button battery market *1% of total *banned from sale in MN after 2/1/92	250 lbs.	150 lbs.	25 lbs.	Nonrechargeable Hearing aids, Pacemakers and Photography. Marked with + symbol. Wastecode: D009	Mercury, Mercuric Oxide, Potassium or Sodium Hydroxide, Zinc Powder, Manganese Dioxide
Lithium Ion	9 volt, C, AA, coin, button	*0.4% of button market *0.2% of total *increasing	350 lbs.	210 lbs.	35 lbs.	Rechargeable and Nonrechargeable Cameras, Calculators. Often labelled with Li or Cr.	Lithium Cobaltate, Ethylene Carbonate, Diethyl Carbonate
Zinc Air	Button	*41% of button battery market *3 of total *increasing				Nonrechargeable Hearing aids and Pagers. Identify by Pinhole	Potassium Hydroxide, Manganese Dioxide, Zinc Dust, Mercury
Silver Oxide	Button	*38% of button market *3% of total				Nonrechargeable Photography Equipment, Power Tool & Appliances. Waste Code: D011	Silver Oxide, Manganese Dioxide, Potassium or Sodium Hydroxide, Zinc Powder, Mercury
Nickel-cadmium	9 volt, D, C, AA, AAA, flat box	*9% of consumer market *increasing dramatically	600 lbs.	330 lbs.	55 lbs.	Rechargable Appliances, Power Tools. Waste Code: D007	Nickel & Nickel Hydroxide, Cadmium & Cadmium Hydroxide, Potassium Hydroxide
Sealed lead-acid (non-automotive)	D and larger	Unknown but small *Increasing	650 lbs.	360 lbs.	60 lbs.	Rechargeable Power Tools, Emergency Lighting, Standby Power Waste Code: D008	Lead, Sulfuric Acid

* These percentages of sales are averages only - actual weights may vary due to the many different sizes of batteries available.

ATTACHMENT 7

EXHIBIT D.5.3a

Guidelines for Shipping & Packaging of Batteries

Guidelines for Shipping & Packaging of Batteries

Batteries contain both toxic materials, including: heavy metals such as mercury (Hg), lead (Pb), cadmium (Cd), and nickel (Ni); and corrosive materials, including: acids or alkaline solutions, pastes and gels containing sulfuric acid or potassium hydroxide. When improperly managed or disposed of, these materials can pose significant safety hazards and contaminate the environment.

AERC.com, Inc., dba AERC Recycling Solutions (AERC) encourages both consumers and persons commonly considered part of the regulated community, i.e., commercial or industrial generators, to use best management practices when handling these materials. AERC has developed these guidelines to encourage proper management and packaging of batteries in agreement with federal environmental, safety and transportation regulations. By following these recommended practices and packaging guidelines AERC believes that potential hazards associated with the logistics of battery recycling will be minimized during collection; accumulation; preparation and offering for shipment; and transportation by highway, rail and cargo vessel.

This information is offered to our customers as guidance ONLY and that Persons/Companies who act as Generators/Shippers and/or Transporters **are obligated to follow any and all applicable regulations**. This document details AERC requirements with reference to appropriate U.S. Environmental Protection Agency (EPA) universal waste (UW) management regulations | 40 CFR Part 273 and U.S. Department of Transportation (DOT) hazardous material regulations (HMR) | 49 CFR Parts 100-185. Regulated parties must meet applicable HMR requirements including, employee training provisions set forth in 49 CFR §172.204. It should be recognized that any person who loads or unloads hazardous materials into or from a transport vehicle must be properly trained.

Revision Summary

The release of this updated guidance is in response to changes in the HMR that have occurred during 2009 including final regulatory changes published within the Federal Register on January 14, 2009 entitled, *Hazardous Materials: Revision to Requirements for the Transportation of Batteries and Battery-Powered Devices* (Effective Date: February 13, 2009); the publication of an advisory letter from Mr. Ryan Posten, Director of HM Enforcement, DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) (Date: April 3, 2009); and a number of clarifying letter of interpretation with regard to the applicability of the HMR to all battery types and chemistries (Most recent Date: November 25, 2009).

The revisions to 49 CFR include amendments and clarifications addressing the safe transportation of batteries and battery-powered devices. Key to these changes:

- Requirements for reporting incidents involving batteries and battery-powered devices;
- Clarification of requirements for prevention of short-circuiting, dangerous evolution to heat, damage to terminals, and (in the case of air transport) unintentional activation;
- Clarification of requirements for determining whether a battery is considered non-spillable, including a revision to the proper shipping name;
- Requirements for a certification on the shipping documentation that batteries….have met the conditions and all requirements for transport as specified in the applicable exception or special provision;
- Clarification of the requirements for transport of dry batteries, including a revision to the proper shipping name.

Overall, the Final Rule looks to maintain alignment of the HMR with international requirements.

This document is organized to provide ready reference to relevant information by:

1. Defining battery categories and key characteristics with regard to the primary types of batteries commonly recycled – detailing the construction, composition and hazardous constituents associated with each type of battery.
2. Specifying general guidance for all batteries – most notably, transportation (of batteries) in a manner that prevents short circuiting and damage to the battery or its terminals so that to prevent the potential of a dangerous evolution of heat.
3. Detailing DOT shipping and packaging guidelines for both intact, i.e., universal waste, batteries and damaged (commonly hazardous waste) batteries.
4. Providing supplemental information to allow ready access to excerpts from the DOT regulations regarding applicable special provisions and packaging specifications (See Appendix I).

The PDF version of this document has added functionality through established document hyperlinks. Blue underlined text links take the reader to the referenced or supporting documents and/or initiates an transfer to another section of the document related to the topic in question. For example:

CAT - Goto the definition and description for the battery category in question.

TABLE 2 - Goto the associated DOT shipping description and packaging guideline for the battery class or category in question (when managed as a universal waste or non-RCRA regulated material).

TABLE 3 - Goto the associated DOT shipping description and packaging guideline for management of the material as a hazardous waste.

TOC - Goto the Table of Contents, i.e, top of the document.

Table of Contents

Resource Links

- EPA Battery Product Stewardship
- EPA Universal Waste Battery Regulations
- PHMSA Hazardous Materials Regulations
- PHMSA 74 FR 2199 – Final Rule: *Revision to Requirements for the Transportation of Batteries and Battery-Powered Devices*
- Title 49 CFR 172.101 Table (*List of Hazardous Materials)*

EXHIBITS

PHMSA Battery Advisory Letter

April 3, 2009

PHMSA Letter of Interpretation

November 25, 2009

U.S. Department
of Transportation

1200 New Jersey Avenue, SE
Washington, D.C. 20590

**Pipeline and Hazardous
Materials Safety Administration**

April 3,2009

To: All battery recyclers and battery collection points and related associations.

Based on recent investigations conducted by the U.S. Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), and based on recent incidents, this letter is generated to convey our findings and our ongoing effort to improve compliance and transportation safety. PHMSA has noted an ongoing trend of serious safety problems and non-compliance regarding the classification, packaging, marking, labeling, documentation, and transportation of spent batteries in commerce. PHMSA has great concern over the lack of compliance with and understanding of the transportation requirements for batteries. PHMSA recognizes the breadth and scope of the battery recycling and disposal industries. However, due to several incidents resulting in serious consequences, PHMSA pledges its efforts to reduce this risk by enforcing the safety standards and increasing awareness. In order to magnify its safety and compliance efforts, PHMSA feels this letter will help increase the awareness and provide a means of contact for the prescribed safety requirements to the appropriate battery recycling and disposal transportation streams.

PHMSA is concerned that many persons who ship batteries for recycling or disposal do not appreciate the hazards posed by batteries during transportation. PHMSA has documented numerous shipments that were not in compliance with requirements in the Hazardous Materials Regulations (HMR, 49 **CFR** Parts 171-180).

Common violations and safety problems noted during these investigations include:

(Primary lithium batteries with unprotected terminals)

1. Large numbers of used batteries, of many different types, are collected in large containers that do not adequately prevent damage to the batteries or prevent their release during transportation.

2. Outer packages are not marked and labeled as required to indicate that they contain batteries; the shipments are not described as required on accompanying shipping documents.

3. No action is being taken to prevent a short circuit, such as ***separating the batteries by placing each one in a separate plastic "baggie" or taping the terminals of the battery.***

These types of violations appear to have directly led to a November 2006 incident in which a shipment of used, rechargeable lead acid batteries caused a fire that completely destroyed the vehicle transporting the batteries.

PHMSA has also investigated two additional parcel carrier delivery truck fires. These incidents occurred in April and of July 2008. Both of these incidents involved batteries destined for recycling.

(July 2008 **truck fire** in Jackson, MI)

The following is a brief summary of the requirements that apply to ground shipments of batteries for recycling or disposal. These requirements also apply to shipments of batteries from battery manufacturers, equipment manufacturers, distributors and retail sales outlets. While additional requirements apply to air shipment of batteries PHMSA is not aware of used batteries being shipped by air.

All batteries are subject to requirements in the HMR because they have two types of hazards: (1) the chemicals or other materials contained in the battery, and **(2)** the electrical potential of the battery.

All batteries must be packaged for transportation in a manner that prevents short circuiting and damage to the battery or its terminals. This may be achieved by packing each battery in fully enclosed inner packagings made of non conductive material or separating the batteries from each other and other conductive material in the same package and pack to prevent damage and shifting while in transport.

(Individually packaged batteries to prevent short circuits)

Lithium batteries (including lithium-ion batteries) are "Class 9" miscellaneous hazardous materials, and are subject to requirements in § 173.185. Note that "small" and "medium" sized lithium batteries may be shipped by ground under the requirements in § 172.102 Special Provisions 188 and 189.

Batteries, wet including batteries containing electrolyte acid or alkaline battery fluid are "Class 8" corrosive hazardous materials, and are subject to requirements in § 173.159. This section allows for reduced requirements when the batteries are shipped by ground by themselves (*i.e.*, no other hazardous materials on the same vehicle).

Batteries containing sodium are "Division 4.3" dangerous when wet hazardous materials, and are subject to the requirements in § 173.189.

Batteries, dry, containing potassium hydroxide solid are class 8 corrosive hazardous materials, and are subject to requirements in 49 C.F.R. § 173.213.

Batteries, dry, include the common household type alkaline batteries. Additionally, these include nickel cadmium (NiCad), nickel metal hydride (NiMH) and silver-zinc batteries. These "dry" batteries unless specifically covered by another entry in the Hazardous Material Table (HMT) are not subject to the HMR provided they are in conformance with § 172.102 Special Provision (SP) 130. SP 130 prescribes they are to be securely packaged to prevent the dangerous evolution of heat and protect against short circuits. Insulating the exposed terminal ends and securely packaging the batteries is an effective means for complying with SP 130.

On January 14,2009, PHMSA published a Final Rule in the Federal Register under Dockets HM-215J and HM-224D titled "Revision to Requirements for the Transportation of Batteries and Battery-Powered Devices; and Harmonization with the United Nations Recommendations, International Maritime Dangerous Goods Code, and International Civil Aviation Organization's Technical Instructions".

Except as specified in §§ 171.14, 171.25, 172.102,172.448, and 178.703 as amended, compliance with the amendments adopted in this final rule will be required beginning January 1, 2010, with a voluntary compliance date of January 1,2009.

This final rule:

- Requires reporting of incidents involving batteries and battery-powered devices that result in a fire, violent rupture, explosion, or dangerous evolution of heat. Immediate notice is limited to air transport of batteries and battery-powered devices.

- Clarifies the requirement that batteries and battery-powered devices and vehicles be offered for transportation and transported in a manner that prevents short-circuiting, the potential of a dangerous evolution of heat, damage to terminals, and, in the case of transportation by aircraft, unintentional activation.

  Includes several examples of packaging methods that meet the requirement to be packed in a manner that prevents short circuits.

(November 2006 truck fire in Galesburg, IL)

DOT encourages and supports the safe recycling and disposal of used batteries. However, we take an aggressive approach to swiftly investigate and enforce the safety requirements in the HMR for complaints and transportation incidents such as the parcel carrier delivery truck battery incident in November 2006.

Persons who violate the HMR may be subject to significant civil penalties and criminal fines and imprisonment. The maximum penalties depend on several factors, including the nature and circumstances, extent and gravity, and severity of the consequences of the violation, but can range up to $100,000 for a civil penalty and $500,000 and ten years in jail for a criminal penalty. In a recent enforcement case, PHMSA assessed a total civil penalty of $360,000 for multiple violations of the HMR relating to the improper shipment of used batteries for recycling or disposal.

More detailed information on the requirements in the HMR governing the shipment of batteries and additional guidance are available on DOT's Hazmat Safety web site: http://www.phmsa.dot.gov/hazmat. The HMR are also accessible through our website, and you can obtain answers to specific questions from the Hazardous Materials Information Center at 1-800-467-4922 (in Washington, DC, call 202-366-4488).

Sincerely,

R. Ryan Posten
Director, Office of Hazardous Materials Enforcement

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

NOV 2 5 2009

Mr. George Kerchner
Wiley Rein LLP
1776 K Street NW
Washington, DC 20006

Ref. No. 09-0150R

Dear Mr. Kerchner:

Recently, our Office issued several letters, including our August 13, 2009 letter (Ref. No. 09-0150) responding to your request, regarding the applicability of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to the transport of used or spent dry cell batteries. This letter supersedes the response given in our August 13, 2009 letter.

After further consideration and analysis of dry battery chemistries and sizes and based on information available to us, it is the opinion of this Office that used or spent dry, sealed batteries of both non-rechargeable and rechargeable designs, described as "Batteries, dry, sealed, n.o.s." in the Hazardous Materials Table in § 172.101 of the HMR and not specifically covered by another proper shipping name, with a marked rating up to 9-volt are not likely to generate a dangerous quantity of heat, short circuit, or create sparks in transportation. Therefore, used or spent batteries of the type "Batteries, dry, sealed, n.o.s." with a marked rating of 9-volt or less that are combined in the same package and transported by highway or rail for recycling, reconditioning, or disposal are not subject to the HMR. Note that batteries utilizing different chemistries (i.e., those battery chemistries specifically covered by another proper shipping name) as well as dry, sealed batteries with a marked rating greater than 9-volt may not be combined with used or spent batteries of the type "Batteries, dry, sealed, n.o.s." in the same package. Note also, that the clarification provided in this letter does not apply to batteries that have been reconditioned for reuse.

I hope this information is helpful. If you have further questions, please contact this office.

Sincerely,

Charles E. Betts,
Chief, Standards Development
Office of Hazardous Materials Standards

Guidelines for Shipping & Packaging of Batteries	Document #: TR004	Revision Date: 4/19/10	AERC RECYCLING SOLUTIONS
AERC.com, Inc | Corporate Offices: 3 Gold Mine Road, Suite 106, Flanders, NJ Operating Locations: Allentown, PA | Ashland, VA | Hayward, CA | Houston, TX | West Melbourne, FL	Department: Regulatory Affairs	Revision #: C	Page: Page 1 of 32

Battery Categories & General Guidance

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AERC has developed battery category descriptions to facilitate effective billing practices and to more readily communicate safety standards for proper packaging based on general battery properties. Of primary importance is that persons offering batteries for management recognize that ONLY batteries of a similar chemistry be commingled, i.e., packaged within the same shipping container, and that these materials are properly prepared for shipment according EPA and DOT regulations.

AERC manages batteries for recycling based on the following categories:

Category #	Category Name	Hazardous Constituents | Description of Battery Types	Construction | Composition
1	Lead Acid	Lead | Sulfuric Acid	TABLE 2 | TABLE 3 | SP
TABLE 2		Wet-Cell Lead Acid [Flooded lead acid batteries of various sizes used in industrial, automotive and standby power (UPS) applications.]	Lead acid batteries are the oldest type of rechargeable battery consisting of a lead anode and a lead dioxide cathode. The electrolyte, an aqueous solution of 28 to 51 wt % sulfuric acid and battery cell plates, containing 60 to 75 wt % lead and lead oxide, present hazards in handling, storage and transport. Off-gassing of hydrogen, common during recharging, presents an explosion/fire hazard.
TABLE 2		Dry-Cell (Sealed) | Non-spillable or Valve Regulated Lead Acid (VRLA) [Non-Automotive/SLI batteries D-Size and larger used in portable/rechargeable tools, emergency lighting and marine applications.]	Similar construction to wet-cell batteries, having a lead anode and lead dioxide cathode (50-75 wt %) combined with a sulfuric acid electrolyte that will not spill. Specifically, there are two primary categories of non-spillable batteries: 1. Absorbed glass mat (AGM) batteries, these batteries contain a liquid electrolyte that is absorbed into a glass mat sandwiched between the electrodes. 2. Gel cell batteries, these are batteries which have a chemical added to the electrolyte which causes it to form a gel which will not spill from the battery.

Waste Mgmt Considerations \| Rules specific to the recycling of lead acid batteries are contained in 40 CFR Part 266 Subpart G. As an alternative, Generators may choose to manage their lead acid batteries in accordance with the UW standards (40 CFR 273). When managed as a UW, each battery or each package containing batteries must be marked with the words "Universal Waste Batteries" or "Used Lead Acid Batteries for Recycling".[1] When not managed as noted above, the characteristic RCRA waste codes and uniform hazardous waste manifest would be required.

Damaged and/or broken batteries and associated cleanup residuals may be considered characteristic hazardous wastes - D002 (Corrosivity) \| D008 (Lead) and must be managed in accordance with applicable regulatory requirements.

Guidelines for Shipping & Packaging of Batteries	Document #: TR004	Revision Date: 4/19/10	AERC RECYCLING SOLUTIONS
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Category #	Category Name	Hazardous Constituents | Description of Battery Types	Construction | Composition
2	Corrosive Metal	Mercury; Cadmium; Nickel; Zinc | Potassium Hydroxide; Manganese Dioxide; Nickel Hydroxide TABLE 2 | TABLE 3 | SP	
TABLE 2		Alkaline [wet and dry] [Used in consumer devices (non-rechargeable) with common sizes: A, AA, AAA, C, D, 9-volt, button & coin.]	Alkaline batteries have an anode containing a zinc powder and a cathode made up of manganese dioxide, graphite and an electrolyte paste of either potassium hydroxide or sodium hydroxide. These components, in addition to conductors, e.g., brass nail, and separators, including a plastic gasket, a steel washer and a metal end cap, assembled within a sealed unit.
TABLE 2		Zinc-carbon (Non-Hg) [Used in consumer devices (non-rechargeable) with common sizes: A, AA, AAA, C, D, 9-volt | general purpose & heavy duty.]	Zinc-carbon is a generic term for primary dry batteries that have a zinc anode and a cathode of manganese dioxide, and a slightly acidic electrolyte. The aqueous electrolyte may be a mixture of ammonium chloride and zinc chloride, i.e., LeClanche chemistry, or a solution of zinc chloride. As with other dry cell batteries, the electrolyte is mixed the other components to form a paste. All of these components, including the conductors and separators, are assembled into sealed unit.
TABLE 2	 	Nickel-Cadmium (NiCd) [wet and dry] [Dry-cell used in consumer devices and appliances (rechargeable) with common sizes: A, AA, AAA, C, D, 9-volt & flat box.] [Wet-cell commonly used in industrial applications such as back-up power.]	Nickel cadmium (NiCd) batteries have a cadmium anode (≈ 10 - 25% by wt) and a nickel oxyhydroxide cathode. The electrolyte used in a dry-cell NiCd battery is a paste of potassium hydroxide. The construction of these sealed casing batteries is based on a well-established electrochemical, rechargeable battery history. Of similar construction, the vented (or valve regulated) wet-cell NiCd battery contains an aqueous electrolyte solution of potassium hydroxide.
		Nickel Iron	Nickel-iron (NiFe) batteries contain a nickel oxide-hydroxide cathode and an iron anode, with an electrolyte of potassium hydroxide. The active materials are held in nickel-plated steel tubes or perforated pockets within a sealed unit.

Category #	Category Name	Hazardous Constituents | Description of Battery Types	Construction | Composition
TABLE 2		Nickel-Metal Hydride (NiMH) [Used in consumer devices and portable tools (rechargeable) with common sizes: AA, C, D, 9-volt & flat box.]	Nickel metal hydride (NiMH) batteries, constructed of a hydrogen-absorbing metal alloy anode and a nickel oxyhydroxide cathode, offer advantages to NiCd batteries with a higher energy density and limited heavy metal toxicity. The electrolyte is typically a potassium hydroxide paste that is assembled with conductors and separators into a hermetically sealed unit.
TABLE 2		Zinc Air [Sealed battery used consumer devices (as non-rechargeable) commonly found as a button or coin cells.]	Cells using zinc-air technology are energized only when atmospheric oxygen is absorbed into the electrolyte through a gas-permeable, liquid-tight membrane. Zinc-air battery electrochemistry is similar to Alkaline Manganese and have similar safety and environmental properties.

Waste Mgmt Considerations | The classes of dry-cell batteries that include alkaline and zinc-carbon are not known to fail TCLP for RCRA metals nor to contain any free liquid. Based on this solid waste characterization, these classes of batteries are not deemed hazardous waste and therefore not subject to the Federal UW standards and may be considered Non-Regulated under these regulations. However, individual states may adopt more stringent regulations, e.g., California, and as such, these batteries may be classified as UW in some jurisdictions. Ni-Cd batteries, both wet and dry, contain cadmium, a TCLP toxic RCRA metal. As such, deemed hazardous waste.

NOTE: In accordance with guidance published by the CA Integrated Waste Mgmt Board, **all batteries are considered hazardous waste in California when they are discarded**. This includes all batteries of sizes AAA, AA, C, D, button cell, 9 Volt, and all other batteries, both rechargeable and single use. **All batteries must be** recycled, or taken to a household hazardous waste disposal facility, a universal waste handler (e.g., storage facility or broker), or an authorized recycling facility.

When managed as a UW, each battery or each package containing batteries must be marked with the words “Universal Waste Batteries” or “Used Batteries for Recycling”. When not managed as UW, applicable characteristic RCRA waste codes and uniform hazardous waste manifest shipping papers would be required (for certain types of batteries in this Category).

Damaged and/or broken NiCd batteries and associated cleanup residuals may be considered characteristic hazardous wastes - D002 (Corrosivity) | D006 (Cadmium) and must be managed in accordance with applicable regulatory requirements.

Guidelines for Shipping & Packaging of Batteries	Document #: TR004	Revision Date: 4/19/10	AERC RECYCLING SOLUTIONS
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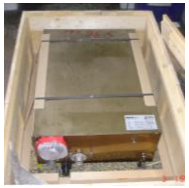
Category #	Category Name	Hazardous Constituents | Description of Battery Types	Construction | Composition
3	Mercury Bearing	Mercury; Silver Oxide; Zinc | Potassium Hydroxide; Sodium Hydroxide	TABLE 2 | TABLE 3 | SP
TABLE 2		Mercury | Mercuric Oxide [Used in consumer devices (non-rechargeable) with common sizes: AA, AAA, C, D & button cell.]	Mercury batteries have a zinc anode and a mercuric oxide cathode with an electrolyte paste of either potassium hydroxide or sodium hydroxide. In mercuric oxide batteries, mercury is used as an electrode rather than an additive to control gas buildup. The mercury, accounting for 35 to 50% of the battery weight, is required to maintain current levels of energy output. Like other dry-cell batteries, the components are assembled within a sealed unit.
TABLE 2		Carbon Zinc | Zinc Air (with Hg) [Used in consumer devices, e.g., flashlights and toys - non-rechargeable.]	Carbon zinc batteries of similar construction as noted in Category 2 - assembled within a sealed unit containing approximately 0.010 % mercury.
TABLE 2		Silver Oxide (aka Silver-Zinc) [Used in consumer devices such as hearing aids, watches, cameras and calculators (non-rechargeable) - common size: button cell.]	These dry-cell batteries are assembled into sealed unit having a zinc anode and a silver oxide cathode. The electrolyte used in a silver oxide battery is commonly a sodium hydroxide paste (but potassium hydroxide is also used). In addition to the above materials, many older silver oxide batteries contain a significant amount of mercury (~ 0.4 – 1.0%) requiring batteries containing both silver and mercury to managed as mercury-containing batteries.
TABLE 2		ATON	"Aids to Navigation" batteries vary in construction and chemistry but commonly contain zinc and mercury and an alkaline electrolyte (such as sodium hydroxide).

Waste Mgmt Considerations | Category 3 batteries are expected to fail TCLP for mercury. As such, the characteristic EPA waste codes D009 applies. When managed as a UW, each battery or each package containing batteries must be marked with the words "Universal Waste Batteries" or "Used Batteries for Recycling". When not managed as UW, applicable characteristic RCRA waste codes and uniform hazardous waste manifest shipping papers would be required. Damaged and/or broken Category 3 batteries and associated cleanup residuals are commonly considered to be characteristic hazardous wastes - D009 (Mercury) | D011 (Silver) and must be managed in accordance with applicable regulatory requirements.

Category #	Category Name	Hazardous Constituents | Description of Battery Types	Construction | Composition
4	Reactive Metals	Lithium; Magnesium; Sodium; Chromium | TABLE 2 | TABLE 3 | SP	Manganese Dioxide; Thionyl Chloride; Ethylene or Diethyl Carbonate
TABLE 2	 	Lithium Metal; Lithium Ion (Li-Ion) & Lithium Polymer (Li-Polymer) [Used in consumer devices such as cameras and calculators (non-rechargeable) in sizes: AA, C, 9-volt, button & coil cell. Li-Ion or Li-Poly batteries are rechargeable and commonly used in consumer electronics, e.g., laptops.]	Lithium batteries employ a variety of chemistries comprising many types of cathodes and electrolytes in conjunction with a lithium metal or lithium compound anode. The most common types of lithium cells used in consumer applications use metallic lithium as an anode and a manganese dioxide cathode, with an organic solvent-based lithium salt as the electrolyte. Common constructions of primary lithium {Anode | Cathode | Electrolyte} include: {Li | Manganese Dioxide | Li perchlorate within organic solvent}; {Li | Thionyl Chloride | Li tetrachloroaluminate in thionyl chloride}. Lithium Ion of a differing physical construction and operating chemistry – noting that these are rechargeable batteries having a combination anode composed of graphite. As such, these batteries are considered secondary lithium. Lithium polymer are an improved Li-Ion battery composed of a lithium-salt electrolyte contained in a solid polymer composite versus the organic solvent noted above.
TABLE 2	 	Magnesium (MgMnO2) [Similar to alkaline batteries - used in consumer devices (non-rechargeable) of varying sizes. Rechargeable versions of this battery type have been examined but are not believed to be commercially available.]	Magnesium batteries have a magnesium anode and manganese dioxide cathode. Similar to other dry-cell batteries, the electrolyte is a paste containing magnesium bromide or magnesium perchlorate, assembled with the conductors and separators in a sealed unit. The addition of a chromate inhibitor, required to prevent corrosion to the magnesium anode, presents handling and management concerns due to potential heavy metal toxicity. NOTE: If the battery is not a hermetically sealed unit, the battery should be considered a specialty battery that may require special handling.

Category #	Category Name	Hazardous Constituents | Description of Battery Types	Construction | Composition
TABLE 2		Sodium Nickel Chloride | Sodium [Used in industrial and/or military applications requiring high power density, e.g., weapon systems and possible applications in electrical vehicles (rechargeable).]	Sodium Nickel Chloride batteries, aka molten salt batteries, are constructed of a molten sodium negative electrode and a nickel-nickel chloride positive electrode. The use of the molten sodium requires battery operating temperatures in excess of 250°C. Another class of high energy density, high efficiency sodium battery is the sodium sulfur battery. The operating temperatures of these batteries (300-350°C range) and the highly corrosive nature of the sodium polysulfides limit their use to large-scale non-mobile applications.

Waste Mgmt Considerations | When managed as a UW, each battery or each package containing batteries must be marked with the words "Universal Waste Batteries" or "Used Batteries for Recycling". When not managed as UW, applicable characteristic RCRA waste codes (D003 or D007) and uniform hazardous waste manifest shipping papers would be required.

Damaged and/or broken Category 4 batteries are highly hazardous and associated cleanup residuals are commonly considered to be characteristic hazardous wastes. Both lithium and sodium metal are water reactive - D003 (Reactivity) code applies. The D007 (Chromium) waste code may apply to magnesium batteries due to the presence of this toxic metal (as noted above). Such materials must be managed in accordance with applicable regulatory requirements.

Section Endnotes

1) It is recognized that EPA UW regulations allow for the use of the words "Waste Batteries" and "Used Batteries." AERC encourages the use of the terms presented in this guidance document to provide a complete a description of the material as possible and to avoid confusion that may be caused in the use of the word "waste." Thus, the suggested language "Used *Lead Acid* Batteries for Recycling." The descriptor is updated based on the type/category of battery being recycled.

The information presented here-in is for ready reference with regard to over-the-road transport. Check the full text of 49 CFR for all applicable requirements – most notable with regard to *Quantity Limitations* and Vessel *Stowage*.

General Guidance

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The following guidelines are applicable to a majority of battery types and sizes. EXCEPT as noted below[1], batteries are subject to requirements of the HMR because of two underlying hazards:

1. The chemicals or other hazardous materials contained within the battery, and
2. The electrical potential of the battery.

As such, **batteries subject to the HMR** must be packaged for transportation in a manner that prevents short circuiting and damage to the battery or its terminals so that to prevent the potential of a dangerous evolution of heat. This may be achieved by:

- Packing each battery in fully enclosed inner packaging made of non-conductive material, or
- Separating the batteries and battery-powered devices from each other and other conductive material in the same package AND
- Packing to prevent damage and shifting while in transport.

- AERC, in cooperation with other industry partners, is working to evaluate methods for meeting requirements to prevent short circuiting and to prevent damage to terminals while in transit. Although the DOT does not explicitly require any one method, the Agency has offered the following recommendations -

  As **acceptable methods of short circuit protection**:

  - Ensuring exposed terminals are protected with non-conductive caps, non-conductive tape, or by other appropriate means. Proper insulation includes taping the terminals of the batteries or packaging in individual plastic bags. Clear tape is preferred so that battery identification is still possible. Other forms of insulation may also be used.

  As **acceptable methods for protecting battery terminals**:

  - Securely attaching covers of sufficient strength to protect the terminals;
  - Packaging the battery in a rigid plastic packaging; or
  - Constructing the battery with terminals that are recessed.

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[1] EXCEPTIONS to the HMR have been published by the USDOT Pipeline and Hazardous Materials Safety Administration (PHMSA) during 2009 – most notable was the letter of interpretation dated November 25, 2009. Management of spent dry-cell batteries with a rating ≤ 9-volt are not subject to regulation under the HMR when transported by highway or rail and separated from other types of batteries of different chemistries. See comments regarding these exceptions on the following pages.

- Only chemically compatible battery types should be packaged in the same package, i.e., category. For example, do not mix acidic batteries with alkaline batteries.
- Batteries that evolve gas and are packaged in drums must have pressure relief bungs in the lids.
- Shipping containers must be properly closed and sealed, e.g., drums must have bungs in lids.
- All batteries should be stored in a cool, dry environment. However, it is AERC does not recommend packaging batteries with vermiculite, desiccant or other packaging material.
- Containers larger than 5-gallon capacity must be secured to pallets for shipping.
- Leaking batteries must be individually packaged and may require shipment as an EPA hazardous waste.
- Batteries secured to a pallet with shrink-wrap in accordance with 49 CFR §173.159(c)(1) are considered to be a single non-bulk package even if the completed package weighs more than 400 kg (882 pounds). Therefore, marking and labeling should be in accordance with the non-bulk packaging requirements found under §172.301 and §172.400.
- Incident reporting in accordance with §171.16 is required for **ALL incidents** of fire, violent rupture, explosion, or a dangerous evolution of heat[2] which occur as a direct result of a battery or battery-powered device. This requirement applies to all battery shipments, including batteries that are prepared as excepted from the HMR requirements.
- Due to safety and handling concerns; in-process, off-specification batteries will not be returned to the Generator/Shipper if AERC is capable of handling the material. Off-spec fees will be applied as noted below.
- Practices that do not adhere to these packaging guidelines will result in an off-spec fee that may be applied per occurrence in addition to an hourly labor rate for processing. Hourly labor rates - $50/Hr.

[2] *Dangerous evolution of heat* is defined as an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging or other evidence.

Shipping & Packaging Guidelines

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This section details guidance for proper packaging and shipment in accordance with the HMR and based upon the DOT PHMSA website and the Hazardous Material Table (HMT). AERC recommends that the hazardous material proper shipping descriptions summarized in TABLE 1, *49 CFR §172.101 Hazardous Materials (HM) Table - Excerpts of Interest for Management of Spent Batteries*, is considered when managing universal waste (UW) batteries for recycle.

Additional information regarding the assignment of a proper shipping name and recommended packaging is provided following the excerpts from the HMT. This information, found in TABLES 2 and 3, provides details on packaging requirements and reviews the proper sequencing of the DOT basic description as required by 49 CFR §172.202(b) for both Intact UW Batteries, i.e., hazardous materials, and Damaged/Broken Batteries, i.e., potential hazardous wastes, respectfully, grouped according to AERC Battery Category.

NOTE:

The management of materials that result from incidental breakage of UW batteries is allowed in agreement with the UW regulations as long as such breakage occurs as part of the handling of the batteries, i.e., it is incidental and not intentional. Package incidentally damaged UW batteries in a separate 1H2 container – containing both the battery casing and electrolyte, e.g., battery acid. This container must be uniquely identified (labeled/marked) and included within the shipment of other UW batteries. Manage any other materials generated from the cleanup, i.e., contaminated PPE, wipers/booms and/or contaminated soil, in agreement with the full hazardous waste regulations as appropriate with proper identification/characterization of such solid waste.

Batteries that are significantly damaged/broken, as may result from an emergency response or during an intentional act to change the characteristics of the intact battery must be evaluated and managed according to the full requirements of the hazardous waste regulations (both federal and state specific).

See additional details for management of these materials within the information presented for each battery category/type in the tables which follow.

Remember, all of the information contained here-in is offered as a guide and that you as the Shipper must always check the HMR, Part 172, Subpart C, for specific requirements. Additional requirements, special provisions, and/or revisions may be applicable. The information contained here-in should be considered current as of the date of this revision.

TABLE 1: 49 CFR §172.101 Hazardous Material (HM) Table – Excerpts of Interest for Management of UW Batteries

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£ (1)	HM Descriptions and Proper Shipping Name (2)	Hazard Class or Division (3)	ID Number (4)	PG (5)	Label Codes (6)	Special Provisions (§172.102)✚ (7)	Packaging (§173.***) (8A)	(8B)	ERG #	Battery Type
	Batteries, dry, sealed, n.o.s.	.....	.....	.....	.....	130	.....	.....	.....	Various dry-cell battery chemistries, including: alkaline, zinc-carbon, nickel-cadmium, nickel-metal hydride and button cells containing mercury (Hg | Hg oxide & silver oxide)
	Batteries, dry, sealed, n.o.s. are not subject to HMR under the following conditions:	Spent dry-cell batteries with a rating of ≤ 9-volts when not combined with used or spent batteries of chemistries meeting the other shipping descriptions, e.g., alkaline; zinc-carbon; NiCd; NiMH; and button-cell carbon zinc, mercury | mercury oxide, silver oxide, are not required to meet any provisions of SP 130. In other words, these batteries are not required to be protected from short-circuiting, i.e., taped to protect terminals and, if of appropriate chemistries and voltage rating, can be mixed in a single container for management. HOWEVER, best practices should consider separating universal waste batteries according to BOTH DOT and USEPA characteristics.								
	Batteries, dry, containing potassium hydroxide solid, *electrical storage.*	8	UN3028	III	8	237	None	213	154	NiCd; Nickel Metal Hydride; Most dry-cell rechargeable batteries when > RQ
	Batteries, wet, filled with acid, *electrical storage.*	8	UN2794	III	8	.....	159	159	154	Lead acid
	Batteries, wet, filled with alkali, *electrical storage.*	8	UN2795	III	8	.....	159	159	154	Alkaline (wet); NiCd (industrial grade | wet); Ni-Iron; Zinc Carbonaire; ATON
	Batteries, wet, non-spillable, *electrical storage.*	8	UN2800	III	8	.....	159a	159	154	Dry-Cell (Sealed) | Non-spillable or VRLA
	Batteries, containing sodium	4.3	UN3292	II	4.3	.....	189	189	138	Sodium Nickel Chloride
	Battery fluid, acid	8	UN2796	II	8	N6, N34	154	202	157	Sulfuric acid Solution (Lead acid batteries)
	Battery fluid, alkali	8	UN2797	II	8	N6	154	202	157	Potassium or Sodium Hydroxide Solution

Continued on next page

TABLE 1: 49 CFR §172.101 Hazardous Material (HM) Table – Excerpts of Interest for Management of UW Batteries

TOC

£ (1)	HM Descriptions and Proper Shipping Name (2)	Hazard Class or Division (3)	ID Number (4)	PG (5)	Label Codes (6)	Special Provisions (§172.102)✚ (7)	Packaging (§173.***) (8A)	(8B)	ERG #	Battery Type
	Lithium battery	9	UN3090	II	9	29, 188, 189, 190	185	185	138	Lithium; Li-Ion; Li-Poly
	Alternative Shipping Descriptions[3] Lithium ion batteries *including lithium ion polymer batteries* Lithium metal batteries *including lithium alloy batteries*	9 9	UN3480 UN3090	II II	9 9	29, 188, 189, 190 29, 188, 189, 190	185 185	185 185	138	Li-Ion; Li-Poly Lithium; Li Metal; Li-Alloy
	Lithium batteries contained in equipment	9	UN3091	II	9	29, 188, 189, 190	185	185	138	Lithium; Li-Ion; Li-Poly
	Alternative Shipping Descriptions[3] Lithium ion batteries contained in equipment *including lithium ion polymer batteries* Lithium metal batteries contained in equipment *including lithium alloy batteries*	9 9	UN3481 UN3091	II II	9 9	29, 188, 189, 190 29, 188, 189, 190	185 185	185 185	138	Li-Ion; Li-Poly Lithium; Li Metal; Li-Alloy
	Lithium batteries packed with equipment	9	UN3091	II	9	29, 188, 189, 190	185	185	138	Lithium; Li-Ion; Li-Poly
	Alternative Shipping Descriptions[3] Lithium ion batteries packed with equipment *including lithium ion polymer batteries*	9	UN3481	II	9	29, 188, 189, 190	185	185	138	Li-Ion; Li-Poly *Continued on next page*

[3] PHMSA provided a Notice of Approval: Lithium Battery Shipping Descriptions within the ***Federal Register****/Vol. 74, No. 163/Tuesday, August 25, 2009.* This notice adopts the use of international shipping descriptions as alternatives to the lithium battery hazardous material descriptions and UN identification numbers currently authorized in the HMT, effective the date of publication of the notice. These alternatives have not been formerly published within the HMT and therefore may be used as of this notice pending future updates to HMT.

TABLE 1: 49 CFR §172.101 Hazardous Material (HM) Table – Excerpts of Interest for Management of UW Batteries

TOC

£ (1)	HM Descriptions and Proper Shipping Name (2)	Hazard Class or Division (3)	ID Number (4)	PG (5)	Label Codes (6)	Special Provisions (§172.102)✚ (7)	Packaging (§173.***) (8A)	(8B)	ERG #	Battery Type
	Lithium metal batteries packed with equipment *including lithium alloy batteries*	9	UN3091	II	9	29, 188, 189, 190	185	185		Lithium; Li Metal; Li-Alloy
A	Mercury *contained in manufactured articles*	8	UN2809	III	8	…..	None	164	172	Mercury button cell | Mercury Oxide when > RQ
G	Environmentally hazardous substance, liquid, n.o.s.	9	UN3082	III	9	8, 146, 335	155	203	171	…..
G	Environmentally hazardous substance, solid, n.o.s.	9	UN3077	III	9	8, 146, 335	155	213	171	…..
D G	Hazardous waste solid, n.o.s.	9	NA3077	III	9	No non-bulk SP applies.	155	213	171	Various categories of UW batteries managed as hazardous waste – Table 3.

NOTES

✚ ONLY Special Provisions specific to multi-modal application that may apply to bulk and non-bulk packagings, i.e., consisting only of numbers (for example, "29") and codes containing the letter "N"(referring only to non-bulk packaging requirements) are presented in this summary. See the full text of the HMT for all applicable Special Provisions references for each cited proper shipping name.

£ NOTE: The additional prefix "RQ" may apply to a particular shipping description if the container contains > than reportable quantity for an individual hazardous constituent as contained within specific battery types (based upon the Manufacturer's MSDS). However, RQ's do not apply for metals in a solid form with mean particle size >0.004 inches according to USEPA CERCLA exclusion. As such, RQ does not apply to common batteries containing: cadmium, chromium, copper, lead, nickel, silver and zinc.

- Corrosivity – RQ = 100 Lbs [D002] & Reactivity – RQ = 100 Lbs [D003]
- RCRA Metals: Cadmium (Cd) – RQ = 10 Lbs [D006] | Chromium (Cr) – RQ = 10 Lbs [D007] | Lead (Pb) – RQ = 10 Lbs [D008] | Mercury (Hg) - RQ = 1 Lb [D009] | Silver (Ag) – RQ = 1 Lb [D011]
- Sodium (Na) – RQ = 10 Lbs | Zinc (Zn) – RQ = 1,000 Lbs

NOTES for TABLES 2 & 3

✖ HM – Specifies the material to be a DOT hazardous material. As such, the "HM" column on the BOL or MANIFEST must be marked with an "✖" or the letters "RQ" in the case of the shipment of a reportable quantity.

See TABLE 3 for information detailing handling waste batteries (including broken and/or damaged batteries – other than incidental) managed as hazardous waste.

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
1 CAT TOC	Lead Acid	Package SMALL (< 3" x 5" X 6") non-leaking wet cell batteries or dry-cell (sealed) Non-spillable in one of the following DOT specification packages as listed in 49 CFR §173.159: • 1H2 – Plastic, removable head drum; or • 1G2 – Fiberboard drum with poly liner (4 mil thickness); or • CF – Fiber box with poly liner (4 mil thickness). Metal drums (1A2) are not acceptable for shipping of wet cell batteries. PG III performance level spec packaging required. Vented pressure relief bungs are required for containers > 5-gallon capacity to avoid potentially dangerous overpressure. Package LARGE, non-leaking lead acid batteries using one of the following methods: 1. Place batteries securely on a wooden pallet. Place a piece of electrical tape over each terminal to avoid terminal contact. Use shrink-wrap or nylon strapping to secure batteries to the pallet. DO NOT USE METAL STRAPPING TO SECURE BATTERIES TO THE PALLET. Batteries may be double stacked on pallets, but pallet height may not exceed 2 times the height of the battery. 2. Individual, large lead acid batteries may be packaged one battery per pallet, poly 5-gallon pail or fiberboard box. Terminals must be insulated, e.g., taped, to avoid short circuit.	BOL   
1 CAT HW	Wet Cell	**UN2794, Batteries, wet, filled with acid, 8, III** **(Used lead acid batteries for recycling)(ERG #154)** DOT 49 CFR §172.102 Special Provision – None | DOT Packaging – 49 CFR §173.159	✖ HM Above labeling & marking information applies for this category.

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
1 CAT HW	Dry-Cell (Sealed) | Non-spillable or Valve Regulated Lead Acid (VRLA)	**UN2800, Batteries, wet, non-spillable, 8, III** **(Used lead acid batteries for recycling)(ERG #154)** DOT 49 CFR §172.102 Special Provision - None | DOT Packaging – 49 CFR §173.159a & 159 Batteries must be contained in a strong outer packaging with the battery and outer packaging plainly identified with a durable marking stating "NONSPILLABLE" or "NONSPILLABLE BATTERY."	✖ HM Above labeling & marking information applies for this category.
1	Incidental Damaged UW Batteries	Handle UW batteries having incidental damage as UW packaged in a separate 1H2 container (Plastic, removable head drum/pail). Ship on BOL with other UW batteries under **separate line item** with the appropriate DOT name on as noted above and the following description: (Used/damaged lead acid batteries and battery acid for recycling)(ERG #154)	

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
2	Corrosive Metal	Dry-Cell, non-leaking Category 2 batteries (segregated from leaking) in one of the following DOT specification packages. PG III performance level spec packaging required. • 1A2 – Steel, removable head drum with a minimum 4-mil thickness poly liner; or • 1H2 – Plastic, removable head drum; or • 1G2 – Fiberboard drum with poly liner (4 mil thickness). LARGE, non-leaking wet NiCd batteries (> 3" x 5" X 6") must be packaged using one of the following methods: 1. Place batteries securely on a wooden pallet. Place a piece of electrical tape over each terminal to avoid terminal contact. Use shrink-wrap or nylon strapping to secure batteries to the pallet. DO NOT USE METAL STRAPPING TO SECU*RE BATTERIES TO THE PALLET. Batteries may be double stacked on pallets, but pallet height may not exceed* 1/1/2 times the width of the pallet. 2. Individual, large Category 2 batteries may be packaged one battery per pallet, poly 5-gallon pail or fiberboard box. Terminals must be insulated, e.g., taped, to avoid contact.	BOL  Individual labeling & marking information applies as noted for each battery type within this category.
2 CAT HW	Alkaline [Dry - includes 1.5 & 9-volt] Zinc-carbon [Dry | Non-Hg | 6-volt]	**Batteries, dry, sealed, n.o.s.,** **(Used alkaline/zinc-carbon batteries for recycling)** Non-RCRA Regulated Material - The solid waste determination for these batteries commonly concludes this class of batteries to be non-hazardous. As such, not regulated as UW (EXCEPT IN THE STATE OF CALIFORNIA). As specified in the DOT exception letter dated November 25, 2009 (Ref No. 09-0150R) – management of used or spent batteries of the type "Batteries, dry, sealed, n.o.s." with a marked rating of 9-volt or less that are combined in the same package when transported by highway or rail and separated from other types of batteries of different sizes or chemistries are not subject to regulation under the HMR.	 [Continued next pg]

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
		DOT 49 CFR | DOT Packaging – Not applicable. DOT-approved packaging and/or short-circuit protection ARE NOT required. However, AERC requests that containers are closed and labeled to identify the batteries as noted above.	
2 CAT HW	NiMH	**Batteries, dry, sealed, n.o.s.,** **(Used nickel-metal hydride batteries for recycling)** DOT 49 CFR | DOT Packaging – Not applicable. DOT-approved packaging and/or short-circuit protection ARE NOT required for dry-cell ≤ 9-volts. However, AERC requests that containers are closed and labeled to identify these batteries. Non-RCRA Regulated Material - The solid waste determination for these batteries commonly concludes this class of batteries to be non-hazardous. As such, not regulated as UW (EXCEPT IN THE STATE OF CALIFORNIA). See additional details in TABLE 3.	
2 CAT HW	Alkaline [Wet] NiFe Zinc Air	**UN2795, Batteries, wet, filled with alkali, 8, III** **(Used (*fill-in*) batteries for recycling)(ERG #154)** DOT 49 CFR §172.102 Special Provision - None | DOT Packaging – 49 CFR §173.159 Metal drums (1A2) are not acceptable for shipping of wet cell batteries. PG III performance level spec packaging required.	✗ HM  

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
2 CAT HW	NiCd	**Batteries, dry, sealed, n.o.s.,** **(Used nickel-cadmium batteries for recycling)** DOT 49 CFR | DOT Packaging – Not applicable. DOT-approved packaging and/or short-circuit protection ARE NOT required for dry-cell ≤ 9-volts. However, AERC requests that containers are closed and labeled to identify these batteries. **RCRA Regulated Universal Waste -** These batteries commonly fail TCLP for cadmium. As such, regulated as UW, using the above noted DOT description. Batteries must be contained in strong outer packaging. See additional details in TABLE 3.	
2 CAT HW	NiCd [Wet]	**UN2795, Batteries, wet, filled with alkali, 8, III** **(Used nickel-cadmium batteries for recycling)(ERG #154)** DOT 49 CFR §172.102 Special Provision – None | DOT Packaging – 49 CFR §173.159 Metal drums (1A2) are not acceptable for shipping of wet cell batteries. PG III performance level spec packaging required.	✖ HM  
2	Incidental Damaged UW Batteries	Handle UW batteries having incidental damage as UW packaged in a separate 1H2 container (Plastic, removable head drum/pail). Ship on BOL with other UW batteries under **separate line item** with the appropriate DOT name on as noted above and the following description (as appropriate): (Used/damaged (*fill-in*) batteries and electrolyte for recycling)(ERG #154)	

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
3	Mercury Bearing	Non-leaking Category 3 batteries (segregated from leaking) in one of the following DOT specification packages. PG III performance level spec packaging required: • 1A2 – Steel, removable head drum with a minimum 4-mil thickness poly liner; or • 1H2 – Plastic, removable head drum; or • 1G2 – Fiberboard drum with poly liner (4 mil thickness).	BOL  Individual labeling & marking information applies as noted for each battery type/class within this category.
3 CAT HW	Mercury Mercury Oxide & Carbon Zinc and Silver Oxide (w/Hg)	**Batteries, dry, sealed, n.o.s.,** **(Used mercury-containing batteries for recycling)** DOT 49 CFR | DOT Packaging – Not applicable. DOT-approved packaging and/or short-circuit protection ARE NOT required. However, AERC requests that containers are closed and labeled to identify the batteries as noted above. Batteries must be contained in strong outer packaging. Packages which contain ≥ 2 ½ pounds of this type of battery meet the DOT definition of a hazardous material (exceeding the RQ for mercury) and are subject to additional HMR requirements. Use the alternate shipping description that follows on the next page.	

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
	[Packages exceeding the RQ for mercury]	**RQ, UN2809, Mercury contained in manufactured articles, 8, III** **(Used mercury batteries for recycling)(ERG #172)** DOT 49 CFR §172.102 Special Provision - None | DOT Packaging – 49 CFR §173.164 **RCRA Regulated Universal Waste -** When not managed as UW, applicable characteristic RCRA waste codes and uniform hazardous waste manifest shipping papers would be required. The solid waste determination for these batteries may conclude this class of batteries to be characteristically toxic hazardous waste for mercury. See additional details in TABLE 3.	✖ HM  
3 CAT HW	Silver Oxide	**Batteries, dry, sealed, n.o.s.,** **(Used silver oxide batteries for recycling)** DOT 49 CFR | DOT Packaging – Not applicable. DOT-approved packaging and/or short-circuit protection ARE NOT required. However, AERC requests that containers are closed and labeled to identify the batteries as noted above. **RCRA Regulated Universal Waste -** When not managed as UW, applicable characteristic RCRA waste codes and uniform hazardous waste manifest shipping papers would be required. The solid waste determination for these batteries may conclude this class of batteries to be characteristically toxic hazardous waste for silver. See additional details in TABLE 3.	

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
3 CAT HW	ATON	**UN2795, Batteries, wet, filled with alkali, 8, III** **(Used ATON batteries for recycling)(ERG #154)** NOTE: "RQ" added as prefix to description if package contains > 2 ½ pounds (mercury). DOT 49 CFR §172.102 Special Provision – None | DOT Packaging – 49 CFR §173.159 Metal drums (1A2) are not acceptable for shipping of wet cell batteries. PG III performance level spec packaging required.	✖ HM  
3	Incidental Damaged UW Batteries	Handle UW batteries having incidental damage as UW packaged in a separate 1H2 container (Plastic, removable head drum/pail). Ship on BOL with other UW batteries under **separate line item** with the DOT name on as noted above (based on RQ) and the following descriptions: (Used/damaged mercury-containing batteries for recycling) or (Used/damaged silver oxide batteries for recycling)	

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
4	Reactive Metal	Non-leaking Category 4 batteries (segregated from leaking) in one of the following DOT specification packages. **PG II performance level spec packaging required.** • 1A2 – **5-gallon** steel, removable head drum with a minimum 4-mil thickness poly liner; or • 1H2 – **5-gallon** plastic, removable head drum; or • 1G2 – **5-gallon** fiberboard drum with poly liner (4 mil thickness). AERC requests that based on the high-energy density and reactivity of this battery category, containers of reactive metal batteries are limited to a maximum size of 5-gallons (66 lb gross weight per container). Package each battery to ensure protection of the terminals and avoid electrical short circuit. The following practices are recommended: • Place each battery in sealed individual plastic bag; OR • Use original packaging in which the batteries were received (if in good condition and can be resealed); OR • Place a piece of electrical, i.e., insulating, tape over each terminal to avoid terminal contact.	BOL  Individual labeling & marking information applies as noted for each battery type or class within this category.
	Reactive Metal →	**FAILURE TO PROTECT TERMINALS WILL LEAD TO OVERHEATING and/or FIRE and EXPLOSION** DURING STORAGE and/or TRANSPORTATION. Provide cushioning for each battery to prevent contact with other batteries by layering with vermiculite, speedi-dry or kitty litter. Failure to provide adequate cushioning may lead to a fire or explosion during storage and/or transportation! Additional exceptions for small and medium sized lithium cells/batteries – Relief from certain DOT requirements can be found in 49 CFR §172.202 Special Provisions 188 and 189. See Appendix I.	

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
4 CAT HW	Lithium (Primary); Li-Ion & Li-Poly (Secondary)	**UN3090, Lithium battery, 9, II** **(Used lithium batteries for recycling)(ERG #138)** DOT 49 CFR §172.102 Special Provisions 29, 188, 189, 190 applies | DOT Packaging - 49 CFR §173.185 NOTE: PHMSA provided a Notice of Approval: Lithium Battery Shipping Descriptions within the ***Federal Register***/*Vol. 74, No. 163/Tuesday, August 25, 2009.* This notice adopts the use of international shipping descriptions as alternatives to the lithium battery hazardous material descriptions and UN identification numbers currently authorized in the HMT, effective the date of publication of the notice. These alternative descriptions may be used – see alternatives below:	✖ HM  
4 CAT HW	Lithium Metal (Primary) & Li-Alloy	**UN3090, Lithium metal batteries, 9, II** **(Used lithium metal batteries for recycling)(ERG #138)** DOT 49 CFR §172.102 Special Provisions 29, 188, 189, 190 applies | DOT Packaging - 49 CFR §173.185	✖ HM 
	Li-Ion & Li-Poly (Secondary)	**UN3480, Lithium ion batteries, 9, II** **(Used lithium ion polymer batteries for recycling)(ERG #138)** DOT 49 CFR §172.102 Special Provisions 29, 188, 189, 190 applies | DOT Packaging - 49 CFR §173.185	

TABLE 2: Management of Intact UW Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
4 CAT HW	Magnesium	**Batteries, dry, sealed, n.o.s.** **(Used magnesium batteries for recycling)** DOT 49 CFR §172.102 Special Provision 130 applies | DOT Packaging – Not specified. **RCRA Regulated Universal Waste -** When not managed as UW, applicable characteristic RCRA waste codes and uniform hazardous waste manifest shipping papers would be required. The solid waste determination for these batteries may conclude this class of batteries to be characteristically toxic hazardous waste for chromium. See additional details in TABLE 3.	
4 CAT HW	Sodium Nickel Chloride	**UN3292, Batteries, containing sodium, 4.3, II** **(Used sodium batteries for recycling)(ERG #138)** DOT 49 CFR §172.102 Special Provisions - None | DOT Packaging - 49 CFR §173.189	✖ HM  
4	Incidental Damaged UW Batteries	Handle UW batteries having incidental damage as UW packaged in a separate 1H2 container (Plastic, removable head drum/pail). Ship on BOL with other UW batteries under **separate line item** with the appropriate DOT name on as noted above and the following description: (Used/damaged (*fill-in*) batteries for recycling)(ERG #138) or (Used/damaged magnesium batteries for recycling)	

TABLE 3: Damaged and/or Broken Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
1 CAT TAB2 TOC	Lead Acid	Leaking, lead acid batteries must be packaged as follows: 1. Separate all free liquid from battery casing. This liquid should be placed in a poly 1H1 drum or other DOT container compatible with the battery liquid. Profile this solution separately using an AERC Recycling Profile. 2. Place the battery carcasses in a poly drum liner (4 mil thickness) and place in a poly 1H2 (removable head) drum. Leaking batteries must be labeled and shipped as a hazardous waste. 3. Do not pack battery carcasses with vermiculite, desiccant or packaging material. NOTE: An approval (separate from the UW battery authorization) is required to manage any Category 1 batteries or associated clean-up residuals as solid waste.	MANIFEST  Individual labeling & marking applies as noted for this category.
1	Damaged Wet Cell Containerized battery acid managed as:	UN2794, Waste Batteries, wet, filled with acid, 8, III (ERG #154) (Waste lead acid batteries for recycling) EPA hazardous waste code D008 (Characteristic of Toxicity - Lead) should be entered in Item 13 of the manifest. NOTE: "RQ" added as prefix to description if shipping container contains > 10 Lbs of lead. UN2796, Waste Battery fluid, acid, 8, II, (ERG #157) EPA hazardous waste code D002 (Characteristic of Corrosivity) should be entered in Item 13 of the manifest. NOTE: "RQ" added as prefix to description if shipping container contains > 100 Lbs of acid. DOT 49 CFR §172.102 Special Provision N6 & N34 apply DOT Packaging – 49 CFR §173.154 & 202.	✗ HM  

TABLE 3: Damaged and/or Broken Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
2	Corrosive Metal	Some alkaline batteries have been determined to contain mercury. Although most alkaline batteries have been determined to be non-hazardous, i.e., TCLP for Mercury < 0.2 mg/L, the Generator must appropriately assess their individual situation through the use of available specification data (e.g., MSDS) to properly examine applicability of characteristic EPA waste codes. NOTE: An approval (separate from the UW battery authorization) is required to manage any Category 2 batteries or associated clean-up residuals as solid waste.	MANIFEST [Unless specified.]  See individual entries below for each battery type.
2	Alkaline [Dry | Non-Hg] NiMH Zinc-carbon	UN3077, Environmentally hazardous substance, solid, n.o.s., (Potassium Hydroxide), 9, III (Used/damaged alkaline batteries for recycling – Non RCRA Regulated)(ERG #171) DOT 49 CFR §172.102 Special Provision 8, 146 & 335 apply DOT Packaging – 49 CFR §173.155 & 213. This class of batteries not known to fail TCLP for RCRA metals nor does it contain any free liquid. Based on this solid waste characterization, these batteries are not deemed hazardous waste and therefore not subject to the Federal UW standards. However, individual states may adopt more stringent regulations; as such, these batteries may be classified as UW in some jurisdictions. If the material is shipped with hazardous materials on a manifest, the word "None"should be entered in Item 13 of the manifest to with regard to applicable EPA waste code numbers.  	BOL  ✖ HM 

TABLE 3: Damaged and/or Broken Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
2	Damaged Alkaline [Wet] Zinc Air	UN2795, Waste Batteries, wet, filled with alkali, 8, III (Waste alkaline batteries for recycling)(ERG #154) EPA hazardous waste code D002 (Corrosivity) should be entered in Item 13 of the manifest. NOTE: "RQ" added as prefix to description if shipping container contains > 100 Lbs. DOT 49 CFR §172.102 Special Provision – None | DOT Packaging – 49 CFR §173.159 Metal drums (1A2) are not acceptable for shipping of wet cell batteries. PG III performance level spec packaging required.	✖ HM 
	Containerized battery fluid (if packaged separately) manage as:	UN2797, Waste Battery fluid, alkali, 8, II, (ERG #157) EPA hazardous waste code D002 (Corrosivity) should be entered in Item 13 of the manifest. NOTE: "RQ" added as prefix to description if shipping container contains > 100 Lbs of acid – characteristic corrosive hazardous waste. DOT 49 CFR §172.102 Special Provision N6 applies DOT Packaging – 49 CFR §173.154 & 202.	
2	Damaged NiCd [Dry]	UN3028, Waste Batteries, dry, containing potassium hydroxide solid, 8, III (Waste nickel-cadmium batteries for recycling)(ERG #154) EPA hazardous waste code D006 (Characteristic of Toxicity - Cadmium) should be entered in Item 13 of the manifest. NOTE: "RQ" added as prefix to description if shipping container contains > 10 Lbs of cadmium. DOT 49 CFR §172.102 Special Provision 237 applies | DOT Packaging – 49 CFR §173.213	✖ HM Above labeling & marking information applies to these batteries.

TABLE 3: Damaged and/or Broken Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
2	Damaged NiCd [Wet]	UN2795, Waste Batteries, wet, filled with alkali, 8, III (Waste nickel-cadmium batteries for recycling)(ERG #154) EPA hazardous waste codes D002 (Corrosivity) and D006 (Characteristic of Toxicity - Cadmium) should be entered in Item 13 of the manifest. NOTE: "RQ" added as prefix to description if shipping container contains > 10 Lbs of cadmium. DOT 49 CFR §172.102 Special Provision – None | DOT Packaging – 49 CFR §173.159 Metal drums (1A2) are not acceptable for shipping of wet cell batteries. PG III performance level spec packaging required.	✖ HM Above labeling & marking information applies to these batteries.
3	Mercury Bearing	Category 3 batteries expected to fail TCLP for mercury. As such, the characteristic EPA waste codes D009 applies. NOTE: An approval (separate from the UW battery authorization) is required to manage any Category 3 batteries or associated clean-up residuals as solid waste.	MANIFEST 
3	Mercury Mercury Oxide & Carbon Zinc and Silver Oxide (w/Hg)	UN2809, Waste Mercury contained in manufactured articles, 8, III (Waste mercury batteries for recycling)(ERG #172) EPA hazardous waste code D009 (Characteristic of Toxicity - Mercury) should be entered in Item 13 of the manifest. DOT 49 CFR §172.102 Special Provision - None | DOT Packaging – 49 CFR §173.164 PG III performance level spec packaging required. [Continued on next pg]	✖ HM 

TABLE 3: Damaged and/or Broken Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
		NOTE: "RQ" added as prefix to shipping description if package contains ≥ 2 ½ pounds. RQ for Mercury | D009 = 1 Lb.	
3	Silver Oxide	NA3077, Hazardous waste, solid, n.o.s., (Silver), 9, III (Waste silver oxide batteries for recycling)(ERG #171) EPA hazardous waste code D011 (Characteristic of Toxicity - Silver) should be entered in Item 13 of the manifest. DOT 49 CFR §172.102 Special Provisions – Not applicable. DOT Packaging – 49 CFR §173.155 & 213. PG III performance level spec packaging required. NOTE: "RQ" added as prefix to shipping description if package contains > 1 Lb | RQ for Silver (D011).	✖ HM  
3	ATON	UN2795, Waste Batteries, wet, filled with alkali, 8, III (Waste ATON batteries for recycling)(ERG #154) EPA hazardous waste code D002 (Characteristic of Corrosivity) should be entered in Item 13 of the manifest. NOTE: "RQ" added as prefix to description if package contains > 2 ½ pounds (mercury). DOT 49 CFR §172.102 Special Provision – None DOT Packaging – 49 CFR §173.159 PG III performance level spec packaging required. [Continued on next pg]	✖ HM 

TABLE 3: Damaged and/or Broken Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
		Metal drums (1A2) are not acceptable for shipping of wet cell batteries. PG III performance level spec packaging required.	
4	Reactive Metal	Category 4 batteries expected to be characteristic hazardous waste (due to water reactivity of lithium). As such, EPA waste code D003 applies. NOTE: An approval (separate from the UW battery authorization) is required to manage any Category 4 batteries or associated clean-up residuals as solid waste. NOTE: PHMSA provided a Notice of Approval: Lithium Battery Shipping Descriptions within the ***Federal Register***/*Vol. 74, No. 163/Tuesday, August 25, 2009.* This notice adopts the use of international shipping descriptions as alternatives to the lithium battery hazardous material descriptions and UN identification numbers currently authorized in the HMT, effective the date of publication of the notice. These alternative descriptions, although not shown within this table, may be used as appropriate.	MANIFEST  
4	Lithium (Primary); Li-Ion & Li-Poly (Secondary)	UN3090, Waste Lithium battery, 9, II (Waste lithium batteries for recycling)(ERG #138) EPA hazardous waste code D003 (Characteristic of Reactivity) should be entered in Item 13 of the manifest. DOT 49 CFR §172.102 Special Provisions 29, 188, 189, 190 applies | DOT Packaging - 49 CFR §173.185 [Continued on next pg]	✘ HM 

TABLE 3: Damaged and/or Broken Batteries

Cat #	Category Name | Additional Info	Packaging Requirements | Proper Shipping Description(s)	Shipping Papers | Labeling | Marking
		PG II performance level spec packaging required. NOTE: "RQ" added as prefix to shipping description if package contains > 100 Lb | RQ for Reactivity (D003).	
4	Magnesium	NA3077, Hazardous waste, solid, n.o.s., (Chromium), 9, III (Waste magnesium batteries for recycling)(ERG #171) EPA hazardous waste code D007 (Characteristic of Toxicity - Chromium) should be entered in Item 13 of the manifest. DOT 49 CFR §172.102 Special Provisions – Not applicable. DOT Packaging – 49 CFR §173.155 & 213. PG III performance level spec packaging required. NOTE: "RQ" added as prefix to shipping description if package contains > 10 Lb | RQ for Chromium (D007).	✖ HM 
4	Sodium Nickel Chloride	UN3292, Waste Batteries, containing sodium, 4.3, II (Used sodium batteries for recycling)(ERG #138) EPA hazardous waste code D003 (Characteristic of Reactivity) should be entered in Item 13 of the manifest. DOT 49 CFR §172.102 Special Provisions - None | DOT Packaging - 49 CFR §173.189 PG II performance level spec packaging required. NOTE: "RQ" added as prefix to shipping description if package contains > 100 Lb | RQ for Reactivity (D003).	✖ HM 

Material Discrepancies & Incident Reporting

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Material Discrepancies

As noted in the April 3, 2009, *Battery Advisory Letter,* PHMSA has noted "an ongoing trend of serious safety problems and non-compliance regarding the classification, packaging, marking, labeling, documentation, and transportation of spent batteries in commerce." As part of this action, Battery Recyclers are obligated to examine materials offered for transport, including associated paperwork, markings/labels and packaging, to ensure requirements set forth by DOT for safe transport of recycled batteries are achieved.

- To improve communications specific DOT issues, AERC has revised load inspection notification documentation. AERC Form TR-02004-F1, *Load/Piece Count/Paperwork Discrepancy Form,* shall be completed and forwarded to Customers in order to identify non-compliances and to communicate violations of transportation safety regulations found with material either offered for transport or received via third-party carriers.

AERC believes that this action supports sound environmental, health and safety practices and is necessary to ensure the welfare of both our personnel, our Customers and the general public.

Incident Reporting | §171.16

Included within the federal register release of the updated battery regulations on January 14, 2009 were specific requirements regarding when an incident (as it is associated with the transportation of a battery or battery-device) must be reported to the DOT. The following is an excerpt from this updated regulation. AERC will meet necessary reporting requirements when/if batteries either offered for transport or received via third-party carriers meet this regulatory standard.

Detailed hazardous materials incident reports.

(a) *General.* Each person in physical possession of a hazardous material at the time that any of the following incidents occurs during transportation (including loading, unloading, and temporary storage) must submit a Hazardous Materials Incident Report on DOT Form F 5800.1 (01/2004) within 30 days of discovery of the incident:…

(1) Any of the circumstances set forth in §171.15(b);

(2) An unintentional release of a hazardous material or the discharge of any quantity of hazardous waste;

(3) A specification cargo tank with a capacity of 1,000 gallons or greater containing any hazardous material suffers structural damage to the lading retention system or damage that requires repair to a system intended to protect the lading retention system, even if there is no release of hazardous material;

(4) An undeclared hazardous material is discovered; or

(5) A fire, violent rupture, explosion or dangerous evolution of heat (*i.e.* , an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a battery or battery-powered device.

APPENDIX I

Referenced Special Provisions & Packaging Specifications

TOC

Referenced Special Provisions & Packaging Specifications

This appendix details excerpts from the DOT regulations as referenced within HMT (TABLE 1) and as listed within the packaging requirements specified in TABLE 2 and TABLE3. The information contained here-in includes:

- ✓ Special Provisions – As detailed in HMT Column (7) with reference to the appropriate 49 CFR §172.102 paragraph. ONLY Special Provisions specific to multi-modal application that may apply to bulk and non-bulk packagings, i.e., consisting only of numbers (for example, "29") and codes containing the letter "N" (referring only to non-bulk packaging requirements) are presented in this summary. See the full text of the HMT for all applicable Special Provisions references for each cited proper shipping name.
  - SP 130 | Ref: Batteries, dry, sealed, n.o.s.
  - SP 237 | Ref: Batteries, dry, containing potassium hydroxide solid
  - SP 134 | Ref: Battery-powered vehicle
  - SP N6, N34 | Ref: Battery fluid
  - SP 29, 188, 189, 190 | Ref: Lithium battery(ies)
  - SP 8, 146, 335 | Ref: Environmentally hazardous substance, solid/liquid, n.o.s.
- ✓ Packaging Specifications – As detailed in HMT Columns (8A) & (8B) with reference to the appropriate 49 CFR §173.*** section as it applies to the HM described here-in.

The information contained here-in should be considered current as of the date of this revision.

Special Provisions | §172.102

SP 8

TOC

A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid *or* solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies.

SP 29

TOC

For transportation by motor vehicle, rail car or vessel, production runs (exceptions for prototypes can be found in §173.185(e)) of not more than 100 lithium cells or batteries are excepted from the testing requirements of §173.185(a)(1) if—

a. For a lithium metal cell or battery, the lithium content is not more than 1.0 g per cell and the aggregate lithium content is not more than 2.0 g per battery, and, for a lithium-ion cell or battery, the equivalent lithium content is not more than 1.5 g per cell and the aggregate equivalent lithium content is not more than 8 g per battery;

b. The cells and batteries are transported in an outer packaging that is a metal, plastic or plywood drum or metal, plastic or wooden box that meets the criteria for Packing Group I packagings; and

c. Each cell and battery is individually packed in an inner packaging inside an outer packaging and is surrounded by cushioning material that is non-combustible, and non-conductive.

SP 130

TOC

Dry batteries not specifically covered by another entry in the §172.101 Table must be described using this entry. Batteries described as "Batteries, dry, sealed, n.o.s" are hermetically sealed and generally utilize metals (other than lead) and/or carbon as electrodes. These batteries are typically used for portable power applications. The rechargeable (and some non-rechargeable) types have gelled alkaline electrolytes (rather than acidic) making it difficult for them to generate hydrogen or oxygen when overcharged and therefore, differentiating them from non-spillable batteries. "Batteries, dry, sealed, n.o.s." are not subject to any other requirements of this subchapter except for the following:

(1) Incident reporting requirements. For transportation by aircraft, a telephone report in accordance with §171.15(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat (*i.e.* , an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a dry battery. For all modes of transportation, a written report submitted, retained, and updated in accordance with §171.16 is required if a fire, violent rupture, explosion or dangerous evolution of heat occurs as a direct result of a dry battery or battery-powered device;

(2) Batteries and battery-powered device(s) containing batteries must be prepared and packaged for transport in a manner to prevent:

(i) A dangerous evolution of heat;

(ii) Short circuits, including but not limited to the following methods:

(a) Packaging each battery or each battery-powered device when practicable, in fully enclosed inner packagings made of non-conductive material;

(b) Separating or packaging batteries in a manner to prevent contact with other batteries, devices or conductive materials (*e.g.* , metal) in the packagings; or

(c) Ensuring exposed terminals or connectors are protected with non-conductive caps, non-conductive tape, or by other appropriate means; and

(iii) Damage to terminals. If not impact resistant, the outer packaging should not be used as the sole means of protecting the battery terminals from damage or short circuiting. Batteries must be securely cushioned and packed to prevent shifting which could loosen terminal caps or reorient the terminals to produce short circuits. Batteries contained in devices must be securely installed. Terminal protection methods include but are not limited to the following:

(a) Securely attaching covers of sufficient strength to protect the terminals;

(b) Packaging the battery in a rigid plastic packaging; or

(c) Constructing the battery with terminals that are recessed or otherwise protected so that the terminals will not be subjected to damage if the package is dropped.

(3) When transported by aircraft, for a battery whose voltage (electrical potential) exceeds 9 volts:

(i) When contained in a device, the device must be packaged in a manner that prevents unintentional activation or must have an independent means of preventing unintentional activation (*e.g.* , packaging restricts access to activation switch, switch caps or locks, recessed switches, trigger locks, temperature sensitive circuit breakers, etc.); and

(ii) An indication of compliance with this special provision must be provided by marking each package with the words "not restricted" or by including the words "not restricted" on a transport document such as an air waybill accompanying the shipment.

SP 134

TOC

This entry only applies to vehicles, machinery and equipment powered by wet batteries, sodium batteries, or lithium batteries that are transported with these batteries installed. Examples of such items are electrically-powered cars, lawn mowers, wheelchairs, and other mobility aids. Self-propelled vehicles that also contain an internal combustion engine must be consigned under the entry "Vehicle, flammable gas powered" or "Vehicle, flammable liquid powered", as appropriate. Except as provided in Special Provision A101, vehicles, machinery and equipment powered by primary lithium batteries that are transported with these batteries installed are forbidden aboard passenger-carrying aircraft.

SP 146

TOC

This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in §171.8 of this subchapter, or any hazard class, as defined in part 173 of this subchapter, if it is designated as environmentally hazardous by another Competent Authority. This provision may be used for both domestic and international shipments.

SP 188

TOC

Small lithium cells and batteries. Lithium cells or batteries, including cells or batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. *Primary lithium batteries and cells.*

(1) Primary lithium batteries and cells are forbidden for transport aboard passenger-carrying aircraft. The outside of each package that contains primary (nonrechargeable) lithium batteries or cells must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a background of contrasting color. The letters in the marking must be:

(i) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(ii) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions; and

(2) The provisions of paragraph (a)(1) do not apply to packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries or cells that are contained in or packed with equipment and the package contains no more than the number of lithium batteries or cells necessary to power the piece of equipment;

b. For a lithium metal or lithium alloy cell, the lithium content is not more than 1.0 g. For a lithium-ion cell, the equivalent lithium content is not more than 1.5 g;

c. For a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2.0 g. For a lithium-ion battery, the aggregate equivalent lithium content is not more than 8 g;

d. Effective October 1, 2009, the cell or battery must be of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see §171.7 of this subchapter);

e. Cells or batteries are separated or packaged in a manner to prevent short circuits and are packed in a strong outer packaging or are contained in equipment;

f. Effective October 1, 2008, except when contained in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must be:

(1) Marked to indicate that it contains lithium batteries, and special procedures should be followed if the package is damaged;

(2) Accompanied by a document indicating that the package contains lithium batteries and special procedures should be followed if the package is damaged;

(3) Capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents; and

(4) Gross weight of the package may not exceed 30 kg (66 pounds). This requirement does not apply to lithium cells or batteries packed with equipment;

g. Electrical devices must conform to §173.21;

h. For transportation by aircraft, a telephone report in accordance with §171.15(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat (*i.e.* , an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a lithium battery. For all modes of transportation, a written report submitted, retained, and updated in accordance with §171.16 is required if a fire, violent rupture, explosion or dangerous evolution of heat occurs as a direct result of a lithium battery or battery-powered device; and

i. Lithium batteries or cells are not authorized aboard an aircraft in checked or carry-on luggage except as provided in §175.10.

SP 189

TOC

Medium lithium cells and batteries. Effective October 1, 2008, when transported by motor vehicle or rail car, lithium cells or batteries, including cells or batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. The lithium content anode of each cell, when fully charged, is not more than 5 grams.

b. The aggregate lithium content of the anode of each battery, when fully charged, is not more than 25 grams.

c. The cells or batteries are of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see §171.7 of this subchapter). A cell or battery and equipment containing a cell or battery that was first transported prior to January 1, 2006 and is of a type proven to meet the criteria of Class 9 by testing in accordance with the tests in the UN Manual of Tests and Criteria, Third revised edition, 1999, need not be retested.

d. Cells or batteries are separated or packaged in a manner to prevent short circuits and are packed in a strong outer packaging or are contained in equipment.

e. The outside of each package must be marked “LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT AND VESSEL” on a background of contrasting color, in letters:

(1) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(2) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions.

f. Except when contained in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must be:

(1) Marked to indicate that it contains lithium batteries, and special procedures should be followed if the package is damaged;

(2) Accompanied by a document indicating that the package contains lithium batteries and special procedures should be followed if the package is damaged;

(3) Capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents; and

(4) Gross weight of the package may not exceed 30 kg (66 pounds). This requirement does not apply to lithium cells or batteries packed with equipment.

g. Electrical devices must conform to §173.21 of this subchapter; and

h. A written report submitted, retained, and updated in accordance with §171.16 is required if a fire, violent rupture, explosion or dangerous evolution of heat (*i.e.*, an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a lithium battery or battery-powered device.

SP 190

TOC

Until the effective date of the standards set forth in Special Provision 189, medium lithium cells or batteries, including cells or batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. *Primary lithium batteries and cells*.

(1) Primary lithium batteries and cells are forbidden for transport aboard passenger-carrying aircraft. The outside of each package that contains primary (nonrechargeable) lithium batteries or cells must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a background of contrasting color. The letters in the marking must be:

(i) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(ii) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions; and

(2) The provisions of paragraph (a)(1) do not apply to packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries or cells that are contained in or packed with equipment and the package contains no more than the number of lithium batteries or cells necessary to power the piece of equipment.

b. The lithium content of each cell, when fully charged, is not more than 5 grams.

c. The aggregate lithium content of each battery, when fully charged, is not more than 25 grams.

d. The cells or batteries are of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see §171.7 of this subchapter). A cell or battery and equipment containing a cell or battery that was first transported prior to January 1, 2006 and is of a type proven to meet the criteria of Class 9 by testing in accordance with the tests in the UN Manual of Tests and Criteria, Third Revised Edition, 1999, need not be retested.

e. Cells or batteries are separated so as to prevent short circuits and are packed in a strong outer packaging or are contained in equipment.

f. Electrical devices must conform to §173.21 of this subchapter.

SP 237

TOC

"Batteries, dry, containing potassium hydroxide solid, *electric storage* " must be prepared and packaged in accordance with the requirements of §173.159(a), (b), and (c). For transportation by aircraft, the provisions of §173.159(b)(2) are applicable.

SP 335

TOC

Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leakproof when used as bulk packaging.

SP N6

TOC

Battery fluid packaged with electric storage batteries, wet or dry, must conform to the packaging provisions of §173.159 (g) or (h) of this subchapter.

SP N34

TOC

Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.

Packaging Specifications | §173.***

Title 49: Transportation
PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

§ 173.24 General requirements for packagings and packages.

TOC

(a) Applicability. Except as otherwise provided in this subchapter, the provisions of this section apply to—
(1) Bulk and non-bulk packagings;
(2) New packagings and packagings which are reused; and
(3) Specification and non-specification packagings.

(b) Each package used for the shipment of hazardous materials under this subchapter shall be designed, constructed, maintained, filled, its contents so limited, and closed, so that under conditions normally incident to transportation—
(1) Except as otherwise provided in this subchapter, there will be no identifiable (without the use of instruments) release of hazardous materials to the environment;
(2) The effectiveness of the package will not be substantially reduced; for example, impact resistance, strength, packaging compatibility, etc. must be maintained for the minimum and maximum temperatures, changes in humidity and pressure, and shocks, loadings and vibrations, normally encountered during transportation;
(3) There will be no mixture of gases or vapors in the package which could, through any credible spontaneous increase of heat or pressure, significantly reduce the effectiveness of the packaging;
(4) There will be no hazardous material residue adhering to the outside of the package during transport.

(c) Authorized packagings. A packaging is authorized for a hazardous material only if—
(1) The packaging is prescribed or permitted for the hazardous material in a packaging section specified for that material in Column 8 of the §172.101 table and conforms to applicable requirements in the special provisions of Column 7 of the §172.101 table and, for specification packagings (but not including UN standard packagings manufactured outside the United States), the specification requirements in parts 178 and 179 of this subchapter; or
(2) The packaging is permitted under, and conforms to, provisions contained in subparts B or C of part 171 of this subchapter or §§173.3, 173.4, 173.4a, 173.4b, 173.5, 173.5a, 173.6, 173.7, 173.8, 173.27, or §176.11 of this subchapter.

(d) *Specification packagings and UN standard packagings manufactured outside the U.S.* —
(1) *Specification packagings.* A specification packaging, including a UN standard packaging manufactured in the United States, must conform in all details to the applicable specification or standard in part 178 or part 179 of this subchapter.
(2) UN standard packagings manufactured outside the United States. A UN standard packaging manufactured outside the United States, in accordance with national or international regulations based on the UN Recommendations (IBR, see §171.7 of this subchapter), may be imported and used and is considered to be an authorized packaging under the provisions of paragraph (c)(1) of this section, subject to the following conditions and limitations:
(i) The packaging fully conforms to applicable provisions in the UN Recommendations and the requirements of this subpart, including reuse provisions;
(ii) The packaging is capable of passing the prescribed tests in part 178 of this subchapter applicable to that standard; and
(iii) The competent authority of the country of manufacture provides reciprocal treatment for UN standard packagings manufactured in the U.S.

(e) Compatibility.
(1) Even though certain packagings are specified in this part, it is, nevertheless, the responsibility of the person offering a hazardous material for transportation to ensure that such packagings are compatible with their lading. This particularly applies to corrosivity, permeability, softening, premature aging and embrittlement.

(2) Packaging materials and contents must be such that there will be no significant chemical or galvanic reaction between the materials and contents of the package.

(3) Plastic packagings and receptacles. (i) Plastic used in packagings and receptacles must be of a type compatible with the lading and may not be permeable to an extent that a hazardous condition is likely to occur during transportation, handling or refilling.

(ii) Each plastic packaging or receptacle which is used for liquid hazardous materials must be capable of withstanding without failure the procedure specified in appendix B of this part ("Procedure for Testing Chemical Compatibility and Rate of Permeation in Plastic Packagings and Receptacles"). The procedure specified in appendix B of this part must be performed on each plastic packaging or receptacle used for Packing Group I materials. The maximum rate of permeation of hazardous lading through or into the plastic packaging or receptacles may not exceed 0.5 percent for materials meeting the definition of a Division 6.1 material according to §173.132 and 2.0 percent for other hazardous materials, when subjected to a temperature no lower than—

(A) 18 °C (64 °F) for 180 days in accordance with Test Method 1 in appendix B of this part;

(B) 50 °C (122 °F) for 28 days in accordance with Test Method 2 in appendix B of this part; or

(C) 60 °C (140 °F) for 14 days in accordance with Test Method 3 in appendix B of this part.

(iii) Alternative procedures or rates of permeation are permitted if they yield a level of safety equivalent to or greater than that provided by paragraph (e)(3)(ii) of this section and are specifically approved by the Associate Administrator.

(4) Mixed contents. Hazardous materials may not be packed or mixed together in the same outer packaging with other hazardous or nonhazardous materials if such materials are capable of reacting dangerously with each other and causing—

(i) Combustion or dangerous evolution of heat;

(ii) Evolution of flammable, poisonous, or asphyxiant gases; or

(iii) Formation of unstable or corrosive materials.

(5) Packagings used for solids, which may become liquid at temperatures likely to be encountered during transportation, must be capable of containing the hazardous material in the liquid state.

(f) Closures.

(1) Closures on packagings shall be so designed and closed that under conditions (including the effects of temperature, pressure and vibration) normally incident to transportation—

(i) Except as provided in paragraph (g) of this section, there is no identifiable release of hazardous materials to the environment from the opening to which the closure is applied; and

(ii) The closure is leakproof and secured against loosening. For air transport, stoppers, corks or other such friction closures must be held in place by positive means.

(2) Except as otherwise provided in this subchapter, a closure (including gaskets or other closure components, if any) used on a specification packaging must conform to all applicable requirements of the specification and must be closed in accordance with information, as applicable, provided by the manufacturer's notification required by §178.2 of this subchapter.

(g) *Venting.* Venting of packagings, to reduce internal pressure which may develop by the evolution of gas from the contents, is permitted only when—

(1) Except for shipments of cryogenic liquids as specified in §173.320(c) and of carbon dioxide, solid (dry ice), transportation by aircraft is not involved;

(2) Except as otherwise provided in this subchapter, the evolved gases are not poisonous, likely to create a flammable mixture with air or be an asphyxiant under normal conditions of transportation;

(3) The packaging is designed so as to preclude an unintentional release of hazardous materials from the receptacle;

(4) For bulk packagings, other than IBCs, venting is authorized for the specific hazardous material by a special provision in the §172.101 table or by the applicable bulk packaging specification in part 178 of this subchapter; and

(5) Intermediate bulk packagings (IBCs) may be vented when required to reduce internal pressure that may develop by the evolution of gas subject to the requirements of paragraphs (g)(1) through (g)(3) of this section. The IBC must be of a type that has successfully passed (with the vent in place) the applicable design qualification tests with no release of hazardous material.

(h) Outage and filling limits—

(1) *General.* When filling packagings and receptacles for liquids, sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the packaging or receptacle will occur as a result of an expansion of the liquid caused by temperatures likely to be encountered during transportation. Requirements for outage and filling limits for non-bulk and bulk packagings are specified in §§173.24a(d) and 173.24b(a), respectively.

(2) *Compressed gases and cryogenic liquids.* Filling limits for compressed gases and cryogenic liquids are specified in §§173.301 through 173.306 for cylinders and §§173.314 through 173.319 for bulk packagings.

(i) *Air transportation.* Except as provided in subpart C of part 171 of this subchapter, packages offered or intended for transportation by aircraft must conform to the general requirements for transportation by aircraft in §173.27.

[Amdt. 173–224, 55 FR 52610, Dec. 21, 1990, as amended by Amdt. 173–227, 56 FR 49989, Oct. 2, 1991; 56 FR 66265, Dec. 20, 1991; Amdt. 173–238, 59 FR 38064, July 26, 1994; Amdt. 173–241, 59 FR 67491, Dec. 29, 1994; Amdt. 173–242, 60 FR 26805, May 18, 1995; 66 FR 8647, Feb. 1, 2001; 66 FR 45379, 81, Aug. 28, 2001; 68 FR 45032, July 31, 2003; 68 FR 75742, Dec. 31, 2003; 69 FR 76154, Dec. 20, 2004; 72 FR 25176, May 3, 2007; 73 FR 4717, Jan. 28, 2008; 74 FR 2255, Jan. 14, 2009]

§ 173.24a Additional general requirements for non-bulk packagings and packages. TOC

(a) *Packaging design.* Except as provided in §172.312 of this subchapter:

(1) *Inner packaging closures.* A combination packaging containing liquid hazardous materials must be packed so that closures on inner packagings are upright.

(2) *Friction.* The nature and thickness of the outer packaging must be such that friction during transportation is not likely to generate an amount of heat sufficient to alter dangerously the chemical stability of the contents.

(3) *Securing and cushioning.* Inner packagings of combination packagings must be so packed, secured and cushioned to prevent their breakage or leakage and to control their shifting within the outer packaging under conditions normally incident to transportation. Cushioning material must not be capable of reacting dangerously with the contents of the inner packagings or having its protective properties significantly weakened in the event of leakage.

(4) *Metallic devices.* Nails, staples and other metallic devices shall not protrude into the interior of the outer packaging in such a manner as to be likely to damage inner packagings or receptacles.

(5) *Vibration.* Each non-bulk package must be capable of withstanding, without rupture or leakage, the vibration test procedure specified in §178.608 of this subchapter.

(b) *Non-bulk packaging filling limits.*

(1) A single or composite non-bulk packaging may be filled with a liquid hazardous material only when the specific gravity of the material does not exceed that marked on the packaging, or a specific gravity of 1.2 if not marked, except as follows:

(i) A Packing Group I packaging may be used for a Packing Group II material with a specific gravity not exceeding the greater of 1.8, or 1.5 times the specific gravity marked on the packaging, provided all the performance criteria can still be met with the higher specific gravity material;

(ii) A Packing Group I packaging may be used for a Packing Group III material with a specific gravity not exceeding the greater of 2.7, or 2.25 times the specific gravity marked on the packaging, provided all the performance criteria can still be met with the higher specific gravity material; and

(iii) A Packing Group II packaging may be used for a Packing Group III material with a specific gravity not exceeding the greater of 1.8, or 1.5 times the specific gravity marked on the packaging, provided all the performance criteria can still be met with the higher specific gravity material.

(2) Except as otherwise provided in this section, a non-bulk packaging may not be filled with a hazardous material to a gross mass greater than the maximum gross mass marked on the packaging.

(3) A single or composite non-bulk packaging which is tested and marked for liquid hazardous materials may be filled with a solid hazardous material to a gross mass, in kilograms, not exceeding the rated capacity of the packaging in liters, multiplied by the specific gravity marked on the packaging, or 1.2 if not marked. In addition:

(i) A single or composite non-bulk packaging which is tested and marked for Packing Group I liquid hazardous materials may be filled with a solid Packing Group II hazardous material to a gross mass, in kilograms, not exceeding the rated capacity of the packaging in liters, multiplied by 1.5, multiplied by the specific gravity marked on the packaging, or 1.2 if not marked.

(ii) A single or composite non-bulk packaging which is tested and marked for Packing Group I liquid hazardous materials may be filled with a solid Packing Group III hazardous material to a gross mass, in kilograms, not exceeding the rated capacity of the packaging in liters, multiplied by 2.25, multiplied by the specific gravity marked on the packaging, or 1.2 if not marked.

(iii) A single or composite non-bulk packaging which is tested and marked for Packing Group II liquid hazardous materials may be filled with a solid Packing Group III hazardous material to a gross mass, in kilograms, not exceeding the rated capacity of the packaging in liters, multiplied by 1.5, multiplied by the specific gravity marked on the packaging, or 1.2 if not marked.

(4) Packagings tested as prescribed in §178.605 of this subchapter and marked with the hydrostatic test pressure as prescribed in §178.503(a)(5) of this subchapter may be used for liquids only when the vapor pressure of the liquid conforms to one of the following:

(i) The vapor pressure must be such that the total pressure in the packaging (i.e., the vapor pressure of the liquid plus the partial pressure of air or other inert gases, less 100 kPa (15 psia)) at 55 °C (131 °F), determined on the basis of a maximum degree of filling in accordance with paragraph (d) of this section and a filling temperature of 15 °C (59 °F)), will not exceed two-thirds of the marked test pressure;

(ii) The vapor pressure at 50 °C (122 °F) must be less than four-sevenths of the sum of the marked test pressure plus 100 kPa (15 psia); or

(iii) The vapor pressure at 55 °C (131 °F) must be less than two-thirds of the sum of the marked test pressure plus 100 kPa (15 psia).

(5) No hazardous material may remain on the outside of a package after filling.

(c) *Mixed contents.*

(1) An outer non-bulk packaging may contain more than one hazardous material only when—

(i) The inner and outer packagings used for each hazardous material conform to the relevant packaging sections of this part applicable to that hazardous material;

(ii) The package as prepared for shipment meets the performance tests prescribed in part 178 of this subchapter for the packing group indicating the highest order of hazard for the hazardous materials contained in the package;

(iii) Corrosive materials (except ORM-D) in bottles are further packed in securely closed inner receptacles before packing in outer packagings; and

(iv) For transportation by aircraft, the total net quantity does not exceed the lowest permitted maximum net quantity per package as shown in Column 9a or 9b, as appropriate, of the §172.101 table. The permitted maximum net quantity must be calculated in kilograms if a package contains both a liquid and a solid.

(2) A packaging containing inner packagings of Division 6.2 materials may not contain other hazardous materials except—

(i) Refrigerants, such as dry ice or liquid nitrogen, as authorized under the HMR;

(ii) Anticoagulants used to stabilize blood or plasma; or

(iii) Small quantities of Class 3, Class 8, Class 9, or other materials in Packing Groups II or III used to stabilize or prevent degradation of the sample, provided the quantity of such materials does not exceed 30 mL (1 ounce) or 30 g (1 ounce) in each inner packaging. The maximum quantity in an outer package, including a

hazardous material used to preserve or stabilize a sample, may not exceed 4 L (1 gallon) or 4 kg (8.8 pounds). Such preservatives are not subject to the requirements of this subchapter.

(d) Liquids must not completely fill a receptacle at a temperature of 55 °C (131 °F) or less.

[Amdt. 173–224, 55 FR 52611, Dec. 21, 1990, as amended at 56 FR 66265, Dec. 20, 1991; 57 FR 45460, Oct. 1, 1992; 58 FR 51532, Oct. 1, 1993; Amdt. 173–255, 61 FR 50624, Sept. 26, 1996; 66 FR 45380, Aug. 28, 2001; 68 FR 61941, Oct. 30, 2003; 71 FR 32258, June 2, 2006]

§ 173.154 Exceptions for Class 8 (corrosive materials).

TOC

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the §172.101 table of this subchapter.

(b) *Limited quantities.* Limited quantities of corrosive materials (Class 8) in Packing Group II and III are excepted from labeling requirements, unless the material also meets the definition of Division 6.1 or is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. For transportation by aircraft, the package must also comply with the applicable requirements of §173.27 of this subchapter and only hazardous materials authorized aboard passenger-carrying aircraft may be transported as a limited quantity. In addition, shipments of these limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For corrosive materials in Packing Group II, inner packagings not over 1.0 L (0.3 gallon) net capacity each for liquids or not over 1.0 kg (2.2 pounds) net capacity each for solids, unless the material has a subsidiary hazard of Division 6.1, Packing Group II in which case the inner packagings may not exceed 100 mL (3.38 ounces) for liquids or 0.5 kg (1.1 pounds) for solids, packed in a strong outer packaging.

(2) For corrosive materials in Packing Group III, in inner packagings not over 5.0 L (1.3 gallons) net capacity each for liquids, or not over 5.0 kg (11 lbs) net capacity each for solids, and packed in strong outer packagings.

(c) *Consumer commodities.* Except for a material that has a subsidiary hazard of Division 6.1, Packing Group II, a limited quantity which conforms to the provisions of paragraph (b) of this section, and is a “consumer commodity” as defined in §171.8 of this subchapter, may be renamed “Consumer commodity” and reclassed as ORM–D. In addition to the exceptions provided by paragraph (b) of this section, shipments of ORM–D materials are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or are offered for transportation and transported by aircraft, and are eligible for the exceptions provided in §173.156.

(d) *Materials corrosive to aluminum or steel only.* Except for a hazardous substance, a hazardous waste, or a marine pollutant, a material classed as a Class 8, Packing Group III, material solely because of its corrosive effect—

(1) On aluminum is not subject to any other requirements of this subchapter when transported by motor vehicle or rail car in a packaging constructed of materials that will not react dangerously with or be degraded by the corrosive material; or

(2) On steel is not subject to any other requirements of this subchapter when transported by motor vehicle or rail car in a bulk packaging constructed of materials that will not react dangerously with or be degraded by the corrosive material.

[Amdt. 173–224, 55 FR 52634, Dec. 21, 1990, as amended at 56 FR 66270, Dec. 20, 1991; 57 FR 45463, Oct. 1, 1992; Amdt. 173–231, 57 FR 52940, Nov. 5, 1992; 68 FR 45033, July 31, 2003; 69 FR 76157, Dec. 20, 2004; 71 FR 14603, Mar. 22, 2006; 72 FR 55693, Oct. 1, 2007]

§ 173.155 Exceptions for Class 9 (miscellaneous hazardous materials).

TOC

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the §172.101 table of this subchapter.

(b) *Limited quantities* . Limited quantities of miscellaneous hazardous materials (Class 9) are excepted from labeling, unless offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. For transportation by aircraft, the package must also comply with the applicable requirements of §173.27 of this subchapter and only hazardous materials authorized aboard passenger-carrying aircraft may be transported as a limited quantity. In addition, shipments of these limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For liquids, inner packagings not over 5.0 L (1.3 gallons) net capacity each. packed in strong outer packagings.

(2) For solids, inner packagings not over 5.0 kg (11 pounds) net capacity each, packed in strong outer packagings.

(c) *Consumer commodities.* A limited quantity which conforms to the provisions of paragraph (b) of this section and is a "consumer commodity" as defined in §171.8 of this subchapter, may be renamed "Consumer commodity" and reclassed as ORM-D material. In addition to the exceptions provided by paragraph (b) of this section, shipments of ORM-D materials are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, a hazardous waste, or a marine pollutant or unless offered for transportation or transported by aircraft, and are eligible for the exceptions provided in §173.156.

[Amdt. 173–224, 55 FR 52634, Dec. 21, 1990, as amended at 56 FR 66270, Dec. 20, 1991; Amdt. 173–231, 57 FR 52940, Nov. 5, 1992; Amdt. 173–253, 61 FR 27174, May 30, 1996; 71 FR 14603, Mar. 22, 2006]

§ 173.159 Batteries, wet.

TOC

(a) Electric storage batteries, containing electrolyte acid or alkaline corrosive battery fluid (wet batteries), may not be packed with other materials except as provided in paragraphs (g) and (h) of this section and in §§173.220 and 173.222; and any battery or battery-powered device must be prepared and packaged for transport in a manner to prevent:

(1) A dangerous evolution of heat (*i.e.* , an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence);

(2) Short circuits, including, but not limited to:

(i) Packaging each battery or each battery-powered device when practicable, in fully enclosed inner packagings made of non-conductive material;

(ii) Separating or packaging batteries and battery-powered devices in a manner to prevent contact with other batteries, devices or conductive materials (*e.g.* , metal) in the packagings; or

(iii) Ensuring exposed terminals are protected with non-conductive caps, non-conductive tape, or by other appropriate means; and

(3) *Damage to terminals.* If not impact resistant, the outer packaging must not be used as the sole means of protecting the battery terminals from damage or short circuiting. Batteries must be securely cushioned and packed to prevent shifting which could loosen terminal caps or reorient the terminals. Batteries contained in devices must be securely installed. Terminal protection methods include but are not limited to:

(i) Securely attaching covers of sufficient strength to protect the terminals;

(ii) Packaging the battery in a rigid plastic packaging; or

(iii) Constructing the battery with terminals that are recessed or otherwise protected so that the terminals will not be subjected to damage if the package is dropped.

(b) For transportation by aircraft:

(1) The packaging for wet batteries must incorporate an acid- or alkali-proof liner, or include a supplementary packaging with sufficient strength and adequately sealed to prevent leakage of electrolyte fluid in the event of spillage; and

(2) Any battery-powered device, equipment or vehicle must be packaged for transport in a manner to prevent unintentional activation or must have an independent means of preventing unintentional activation (*e.g.* , packaging restricts access to activation switch, switch caps or locks, recessed switches, trigger locks, temperature sensitive circuit breakers, etc.).

(c) The following specification packagings are authorized for batteries packed without other materials provided all requirements of paragraph (a) of this section, and for transportation by aircraft, paragraph (b) of this section are met:

(1) Wooden box: 4C1, 4C2, 4D, or 4F.

(2) Fiberboard box: 4G.

(3) Plywood drum: 1D.

(4) Fiber drum: 1G.

(5) Plastic drum: 1H2.

(6) Plastic jerrican: 3H2.

(7) Plastic box: 4H2.

(d) The following non-specification packagings are authorized for batteries packed without other materials provided all requirements of paragraph (a) of this section, and for transportation by aircraft, paragraph (b) of this section are met:

(1) Electric storage batteries are firmly secured to skids or pallets capable of withstanding the shocks normally incident to transportation are authorized for transportation by rail, highway, or vessel. The height of the completed unit must not exceed 11/2times the width of the skid or pallet. The unit must be capable of withstanding, without damage, a superimposed weight equal to two times the weight of the unit or, if the weight of the unit exceeds 907 kg (2,000 pounds), a superimposed weight of 1814 kg (4,000 pounds). Battery terminals must not be relied upon to support any part of the superimposed weight and must not short out if a conductive material is placed in direct contact with them.

(2) Electric storage batteries weighing 225 kg (500 pounds) or more, consisting of carriers' equipment, may be shipped by rail when mounted on suitable skids. Such shipments may not be offered in interchange service.

(3) One to three batteries not over 11.3 kg (25 pounds) each, packed in strong outer boxes. The maximum authorized gross weight is 34 kg (75 pounds).

(4) Not more than four batteries not over 7 kg (15 pounds) each, packed in strong outer fiberboard or wooden boxes. The maximum authorized gross weight is 30 kg (65 pounds).

(5) Not more than five batteries not over 4.5 kg (10 pounds) each, packed in strong outer fiberboard or wooden boxes. The maximum authorized gross weight is 30 kg (65 pounds).

(6) Single batteries not exceeding 34 kg (75 pounds) each, packed in 5-sided slip covers or in completely closed fiberboard boxes. Slip covers and boxes must be of solid or double-faced corrugated fiberboard of at least 91 kg (200 pounds) Mullen test strength. The slip cover or fiberboard box must fit snugly and provide inside top clearance of at least 1.3 cm (0.5 inch) above battery terminals and filler caps with reinforcement in place. Assembled for shipment, the bottom edges of the slipcover must come to within 2.5 cm (1 inch) of the bottom of the battery. The completed package (battery and box or slip cover) must be capable of withstanding a top-to-bottom compression test of at least 225 kg (500 pounds) without damage to battery terminal caps, cell covers or filler caps.

(7) Single batteries exceeding 34 kg (75 pounds) each may be packed in completely closed fiberboard boxes. Boxes must be of double-wall corrugated fiberboard of at least 181 kg (400 pounds) test, or solid fiberboard testing at least 181 kg (400 pounds); a box may have hand holes in its ends provided that the hand holes will not materially weaken the box. Sides and ends of the box must have cushioning between the battery and walls of the box; combined thickness of cushioning material and walls of the box must not

be less than 1.3 cm (0.5 inch); and cushioning must be excelsior pads, corrugated fiberboard, or other suitable cushioning material. The bottom of the battery must be protected by a minimum of one excelsior pad or by a double-wall corrugated fiberboard pad. The top of the battery must be protected by a wood frame, corrugated trays or scored sheets of corrugated fiberboard having minimum test of 91 kg (200 pounds), or other equally effective cushioning material. Top protection must bear evenly on connectors and/or edges of the battery cover to facilitate stacking of batteries. No more than one battery may be placed in one box. The maximum authorized gross weight is 91 kg (200 pounds).

(e) When transported by highway or rail, electric storage batteries containing electrolyte or corrosive battery fluid are not subject to any other requirements of this subchapter, if all of the following are met:

(1) No other hazardous materials may be transported in the same vehicle;

(2) The batteries must be loaded or braced so as to prevent damage and short circuits in transit;

(3) Any other material loaded in the same vehicle must be blocked, braced, or otherwise secured to prevent contact with or damage to the batteries; and

(4) The transport vehicle may not carry material shipped by any person other than the shipper of the batteries.

(f) Batteries can be considered as non-spillable provided they are capable of withstanding the following two tests, without leakage of battery fluid from the battery:

(1) *Vibration test*. The battery must be rigidly clamped to the platform of a vibration machine, and a simple harmonic motion having an amplitude of 0.8 mm (0.03 inches) with a 1.6 mm (0.063 inches) maximum total excursion must be applied. The frequency must be varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return must be traversed in 95 ± 5 minutes for each mounting position (direction of vibrator) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

(2) *Pressure differential test*. Following the vibration test, the battery must be stored for six hours at 24 °C ± 4 °C (75 °F ± 7 °F) while subjected to a pressure differential of at least 88 kPa (13 psig). The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

(g) Electrolyte, acid or alkaline corrosive battery fluid, packed with batteries wet or dry, must be packed in one of the following specification packagings:

(1) In 4C1, 4C2, 4D, or 4F wooden boxes with inner receptacles of glass, not over 4.0 L (1 gallon) each with not over 8.0 L (2 gallons) total in each outside container. Inside containers must be well-cushioned and separated from batteries by a strong solid wooden partition. The completed package must conform to Packing Group III requirements.

(2) Electrolyte, acid, or alkaline corrosive battery fluid included with electric storage batteries and filling kits may be packed in strong rigid outer packagings when shipments are made by, for, or to the Departments of the Army, Navy, or Air Force of the United States. Packagings must conform to military specifications. The electrolyte, acid, or alkaline corrosive battery fluid must be packed in polyethylene bottles of not over 1.0 L (0.3 gallon) capacity each. Not more than 24 bottles, securely separated from electric storage batteries and kits, may be offered for transportation or transported in each package.

(3) In 4G fiberboard boxes with not more than 12 inside packagings of polyethylene or other material resistant to the lading, each not over 2.0 L (0.5 gallon) capacity each. Completed packages must conform to Packing Group III requirements. Inner packagings must be adequately separated from the storage battery. The maximum authorized gross weight is 29 kg (64 pounds). These packages are not authorized for transportation by aircraft.

(h) Dry batteries or battery charger devices may be packaged in 4G fiberboard boxes with inner receptacles containing battery fluid. Completed packagings must conform to Packing Group III requirements. Not more

than 12 inner receptacles may be packed in one outer box. The maximum authorized gross weight is 34 kg (75 pounds).

(i) When approved by the Associate Administrator, electric storage batteries, containing electrolyte or corrosive battery fluid in a separate reservoir from which fluid is injected into the battery cells by a power device cartridge assembled with the battery, and which meet the criteria of paragraph (f) are not subject to any other requirements of this subchapter.

[74 FR 2257, Jan. 14, 2009]

§ 173.159a Exceptions for Non-spillable batteries.

TOC

(a) Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the §172.101 table or in a packaging section in this part.

(b) Non-spillable batteries offered for transportation or transported in accordance with this section are subject to the incident reporting requirements. For transportation by aircraft, a telephone report in accordance with §171.15(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat (*i.e.* , an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a nonspillable battery. For all modes of transportation, a written report in accordance with §171.16(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat occurs as a direct result of a nonspillable battery.

(c) Non-spillable batteries are excepted from the packaging requirements of §173.159 under the following conditions:

(1) Non-spillable batteries must be securely packed in strong outer packagings and meet the requirements of §173.159(a). A non-spillable battery which is an integral part of and necessary for the operation of mechanical or electronic equipment must be securely fastened in the battery holder on the equipment;

(2) The battery and outer packaging must be plainly and durably marked “NONSPILLABLE” or “NONSPILLABLE BATTERY.” The requirement to mark the outer package does not apply when the battery is installed in a piece of equipment that is transported unpackaged.

(d) Non-spillable batteries are excepted from all other requirements of this subchapter when offered for transportation and transported in accordance with paragraph (c) of this section and the following:

(1) At a temperature of 55 °C (131 °F), the battery must not contain any unabsorbed free-flowing liquid, and must be designed so that electrolyte will not flow from a ruptured or cracked case; and

(2) For transport by aircraft, when contained in a battery-powered device, equipment or vehicle must be prepared and packaged for transport in a manner to prevent unintentional activation in conformance with §173.159(b)(2) of this Subpart.

[74 FR 2258, Jan. 14, 2009]

§ 173.164 Mercury (metallic and articles containing mercury).

TOC

(a) For transportation by aircraft, mercury must be packaged in packagings which meet the requirements of part 178 of this subchapter at the Packing Group I performance level, as follows:

(1) In inner packagings of earthenware, glass or plastic containing not more than 3.5 kg (7.7 pounds) of mercury, or inner packagings which are glass ampoules containing not more than 0.5 kg (1.1 pounds) of mercury, or iron or steel quicksilver flasks containing not more than 35 kg (77 pounds) of mercury. The inner packagings or flasks must be packed in steel drums (1A2), steel jerricans (3A2), wooden boxes (4C1), (4C2), plywood boxes (4D), reconstituted wood boxes (4F), fiberboard boxes (4G), plastic boxes (4H2), plywood drums (1D) or fiber drums (1G).

(2) [Reserved]

(3) When inner packagings of earthenware, glass or plastic are used, they must be packed in the outer packaging with sufficient cushioning material to prevent breakage.

(4) Either the inner packagings or the outer packagings must have inner linings or bags of strong leakproof and puncture-resistant material impervious to mercury, completely surrounding the contents, so that the escape of mercury will be prevented irrespective of the position of the package.

(b) Manufactured articles or apparatuses, each containing not more than 100 mg (0.0035 ounce) of mercury and packaged so that the quantity of mercury per package does not exceed 1 g (0.035 ounce) are not subject to the requirements of this subchapter.

(c) Manufactured articles or apparatuses containing mercury are excepted from the specification packaging requirements of this subchapter when packaged as follows:

(1) Manufactured articles or apparatuses of which metallic mercury is a component part, such as manometers, pumps, thermometers, switches, etc. (for electron tubes, mercury vapor tubes and similar tubes, see paragraph (c)(3) of this section), must be in strong outer packagings, having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury, which will prevent the escape of mercury from the package irrespective of its position. Mercury switches and relays are excepted from these packaging requirements, if they are totally enclosed, leakproof and in sealed metal or plastic units.

(2) Thermometers, switches and relays, each containing a total quantity of not more than 15 g (0.53 ounces) of mercury, are excepted from the requirements of this subchapter if installed as an integral part of a machine or apparatus and so fitted that shock of impact damage, leading to leakage of mercury, is unlikely to occur under conditions normally incident to transport.

(3) Electron tubes, mercury vapor tubes and similar tubes must be packaged as follows:

(i) Tubes which are packed in strong outer packagings with all seams and joints sealed with self-adhesive, pressure-sensitive tape which will prevent the escape of mercury from the package, are authorized up to a total net quantity of 450 g (15.9 ounces) of mercury per package;

(ii) Tubes with more than 450 g (15.9 ounces) of mercury are authorized only when packed in strong outer packagings, having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury which will prevent escape of mercury from the package irrespective of its position;

(iii) Tubes which do not contain more than 5 g (0.2 ounce) of mercury each and which are packed in the manufacturer's original packagings, are authorized up to a total net quantity of 30 g (1.1 ounces) of mercury per package;

(iv) Tubes which are completely jacketed in sealed leakproof metal cases are authorized in the manufacturer's original packagings.

(4) A person offering for transportation electron tubes, mercury vapor tubes, and similar tubes shall indicate the quantity of mercury therein on the shipping paper.

(5) Mercurial barometers conforming to paragraph (c)(1) of this section, which are loaded and unloaded from an aircraft under the supervision of, and accompanied in flight by, a National Weather Service official or similar United States agency official, are excepted from any other requirements of this subchapter.

(d) For transportation by other than aircraft, mercury must be packaged—

(1) In any packaging which meets the requirements of part 178 of this subchapter at the Packing Group III performance level; or

(2) In non-specification reusable metal packagings.

(e) Except for a hazardous substance or a hazardous waste or for transportation by aircraft or vessel, packages containing less than 0.45 kg (1.0 pound) net weight of mercury are not subject to the requirements of this subchapter.

[Amdt. 173–224, 55 FR 52643, Dec. 21, 1990, as amended at 56 FR 66270, Dec. 20, 1991; Amdt. 173–241, 59 FR 67509, Dec. 29, 1994; Amdt. 173–246, 60 FR 49110, Sept. 21, 1995; 64 FR 10777, 10778, Mar. 5, 1999; 68 FR 57632, Oct. 6, 2003]

§ 173.185 Lithium cells and batteries.

TOC

(a) *Cells and batteries.* A lithium cell or battery, including a lithium polymer cell or battery and a lithium-ion cell or battery, must conform to all of the following requirements:

(1) Be of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see §171.7 of this subchapter). A cell or battery and equipment containing a cell or battery that was first transported prior to January 1, 2006 and is of a type proven to meet the criteria of Class 9 by testing in accordance with the tests in the UN Manual of Tests and Criteria, Third Revised Edition, 1999, need not be retested.

(2) Incorporate a safety venting device or otherwise be designed in a manner that will preclude a violent rupture under conditions normally incident to transportation.

(3) Be equipped with an effective means to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.) if a battery contains cells or series of cells that are connected in parallel.

(4) Be packaged in combination packagings conforming to the requirements of part 178, subparts L and M, of this subchapter at the Packing Group II performance level. The lithium battery or cell must be packed in inner packagings in such a manner as to prevent short circuits, including movement which could lead to short circuits. The inner packaging must be packed within one of the following outer packagings: metal boxes (4A or 4B); wooden boxes (4C1, 4C2, 4D, or 4F); fiberboard boxes (4G); solid plastic boxes (4H2); fiber drums (1G); metal drums (1A2 or 1B2); plywood drums (1D); plastic jerricans (3H2); or metal jerricans (3A2 or 3B2).

(5) Be equipped with an effective means of preventing external short circuits.

(6) Except as provided in paragraph (d) of this section, cells and batteries with a liquid cathode containing sulfur dioxide, sulfuryl chloride or thionyl chloride may not be offered for transportation or transported if any cell has been discharged to the extent that the open circuit voltage is less than two volts or is less than 2/3 of the voltage of the fully charged cell, whichever is less.

(b) *Lithium cells or batteries packed with equipment.* Lithium cells or batteries packed with equipment may be transported as Class 9 materials if the batteries and cells meet all the requirements of paragraph (a) of this section. The equipment and the packages of cells or batteries must be further packed in a strong outer packaging. The cells or batteries must be packed in such a manner as to prevent short circuits, including movement that could lead to short circuits.

(c) *Lithium cells or batteries contained in equipment* . Lithium cells or batteries contained in equipment may be transported as Class 9 materials if the cells and batteries meet all the requirements of paragraph (a) of this section, except paragraph (a)(4) of this section, and the equipment is packed in a strong outer packaging that is waterproof or is made waterproof through the use of a liner unless the equipment is made waterproof by nature of its construction. The equipment and cells or batteries must be secured within the outer packaging and be packed so as to prevent movement, short circuits, and accidental operation during transport.

(d) *Cells and batteries, for disposal or recycling.* A lithium cell or battery offered for transportation or transported by motor vehicle to a permitted storage facility, disposal site or for purposes of recycling is excepted from the specification packaging requirements of paragraph (a)(4) of this section and the requirements of paragraphs (a)(1) and (a)(6) of this section when protected against short circuits and packed in a strong outer packaging conforming to the requirements of §§173.24 and 173.24a.

(e) *Shipments for testing (prototypes).* A lithium cell or battery is excepted from the requirements of (a)(1) of this section when transported by motor vehicle for purposes of testing. The cell or battery must be individually packed in an inner packaging, surrounded by cushioning material that is non-combustible and nonconductive. The cell or battery must be transported as a Class 9 material.

(f) A lithium cell or battery that does not comply with the provisions of this subchapter may be transported only under conditions approved by the Associate Administrator.

(g) Batteries employing a strong, impact-resistant outer casing and exceeding a gross weight of 12 kg (26.5 lbs.), and assemblies of such batteries, may be packed in strong outer packagings, in protective enclosures (for example, in fully enclosed wooden slatted crates) or on pallets. Batteries must be secured to prevent inadvertent movement, and the terminals may not support the weight of other superimposed elements. Batteries packaged in this manner are not permitted for transportation by passenger aircraft, and may be transported by cargo aircraft only if approved by the Associate Administrator prior to transportation.

[72 FR 44949, Aug. 9, 2007]

§ 173.189 Batteries containing sodium or cells containing sodium.

TOC

(a) Batteries and cells may not contain any hazardous material other than sodium, sulfur or polysulfides. Cells not forming a component of a completed battery may not be offered for transportation at a temperature at which any liquid sodium is present in the cell. Batteries may only be offered for transportation, or transported, at a temperature at which any liquid sodium present in the battery conforms to the conditions prescribed in paragraph (d) of this section.

(b) Cells must consist of hermetically sealed metal casings which fully enclose the hazardous materials and which are so constructed and closed as to prevent the release of the hazardous materials under normal conditions of transport. Cells must be placed in suitable outer packagings with sufficient cushioning material to prevent contact between cells and between cells and the internal surfaces of the outer packaging, and to ensure that no dangerous shifting of the cells within the outer packaging occurs in transport. Cells must be packaged in 1A2, 1B2, 1D, 1G, 1H2, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings which meet the requirements of part 178 of this subchapter at the Packing Group II performance level.

(c) Batteries must consist of cells secured within, and fully enclosed by a metal casing so constructed and closed as to prevent the release of the hazardous materials under normal conditions of transport. Batteries may be offered for transportation, and transported, unpacked or in protective packagings that are not subject to the requirements of part 178 of this subchapter.

(d) Batteries containing any liquid sodium may not be offered for transportation, or transported, by aircraft. Batteries containing liquid sodium may be transported by motor vehicle, rail car or vessel under the following conditions:

(1) Batteries must be equipped with an effective means of preventing external short circuits, such as by providing complete electrical insulation of battery terminals or other external electrical connectors. Battery terminals or other electrical connectors penetrating the heat insulation fitted in battery casings must be provided with thermal insulation sufficient to prevent the temperature of the exposed surfaces of such devices from exceeding 55 °C (130 °F).

(2) No battery may be offered for transportation if the temperature at any point on the external surface of the battery exceeds 55 °C (130 °F).

(3) If any external source of heating is used during transportation to maintain sodium in batteries in a molten state, means must be provided to ensure that the internal temperature of the battery does not reach or exceed 400 °C (752 °F).

(4) When loaded in a transport vehicle or freight container:

(i) Batteries must be secured so as to prevent significant shifting within the transport vehicle or freight container under conditions normally incident to transportation;

(ii) Adequate ventilation and/or separation between batteries must be provided to ensure that the temperature at any point on the external surface of the battery casing will not exceed 240 °C (464 °F) during transportation; and

(iii) No other hazardous materials, with the exception of cells containing sodium, may be loaded in the same transport vehicle or freight container. Batteries must be separated from all other freight by a distance of not less than 0.5 m (1.6 feet).

(e) Vehicles, machinery and equipment powered by sodium batteries must be consigned under the entry "Battery-powered vehicle or Battery-powered equipment."

[Amdt. 173–241, 59 FR 67511, Dec. 29, 1994, as amended by Amdt. 173–256, 61 FR 51338, Oct. 1, 1996; 66 FR 45380, Aug. 28, 2001; 68 FR 61941, Oct. 30, 2003; 74 FR 2259, Jan. 14, 2009]

§ 173.202 Non-bulk packagings for liquid hazardous materials in Packing Group II. TOC

(a) When §172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I or II performance level (unless otherwise excepted), and to the particular requirements of the special provisions of column 7 of the §172.101 table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plastic drum: 1H1 or 1H2

Fiber drum: 1G (with liner)
Wooden barrel: 2C1
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum or fiber drum: 6PA1, 6PB1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PH2
Plastic receptacle in plywood drum: 6HD1
Glass, porcelain or stoneware in plywood drum or wickerwork hamper: 6PDl or 6PD2
Cylinders, specification, as prescribed for any compressed gas, except for Specifications 8 and 3HT

[Amdt. 173–224, 55 FR 52643, Dec. 21, 1990, as amended at 56 FR 66271, Dec. 20, 1991; Amdt 173–241, 59 FR 67518, Dec. 29, 1994; Amdt. 173–261, 62 FR 24734, May 6, 1997; 62 FR 51560, Oct. 1, 1997]

§ 173.203 Non-bulk packagings for liquid hazardous materials in Packing Group III. TOC

(a) When §172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I, II or III performance level, and to the requirements of the special provisions of column 7 of the §172.101 table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) The following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1
Plastic drum: 1H1 or 1H2
Fiber drum: 1G (with liner)
Wooden barrel: 2C1
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum or fiber drum: 6PA1, 6PB1, or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PH2
Plastic receptacle in plywood drum: 6HD1
Glass, porcelain or stoneware in plywood drum or wickerwork hamper: 6PD1 or 6PD2
Cylinders, as prescribed for any compressed gas, except for Specifications 8 and 3HT

[Amdt. 173–224, 55 FR 52643, Dec. 21, 1990, as amended at 56 FR 66271, Dec. 20, 1991; Amdt. 173–241, 59 FR 67518, Dec. 29, 1994; Amdt. 173–261, 62 FR 24734, May 6, 1997]

§ 173.213 Non-bulk packagings for solid hazardous materials in Packing Group III. TOC

(a) When §172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I, II or III performance level, and to the requirements of the special provisions of column 7 of the §172.101 table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum: 1N1 or 1N2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Aluminum box: 4B
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) The following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Plywood drum: 1D
Plastic drum: 1H1 or 1H2
Fiber drum: 1G
Metal drum other than steel or aluminum: 1N1 or 1N2
Wooden barrel: 2C1 or 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Aluminum jerrican: 3B1 or 3B2
Steel box: 4A
Steel box with liner: 4A
Aluminum box: 4B
Aluminum box with liner: 4B
Natural wood box: 4C1
Natural wood box, sift proof: 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2
Bag, woven plastic: 5H1, 5H2 or 5H3
Bag, plastic film: 5H4
Bag, textile: 5L1, 5L2 or 5L3
Bag, paper, multiwall, water resistant: 5M2
Plastic receptacle in steel, aluminum, plywood, fiber or plastic drum: 6HA1, 6HB1, 6HD1, 6HG1 or 6HH1
Plastic receptacle in steel, aluminum, wood, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum, plywood or fiber drum: 6PA1, 6PB1, 6PD1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in expanded or solid plastic packaging: 6PH1 or 6PH2
Cylinders, as prescribed for any compressed gas, except for Specification 8 and 3HT

[Amdt. 173–224, 55 FR 52643, Dec. 21, 1990, as amended by Amdt. 173–241, 59 FR 67511, 67518, Dec. 29, 1994; Amdt. 173–261, 62 FR 24734, May 6, 1997; 69 FR 76158, Dec. 20, 2004; 70 FR 34398, June 14, 2000

APPENDIX II

AERC Forms

- Load/Piece Count/Paperwork Discrepancy Form | TR-004-F1
- AERC Profile for Recycling of Batteries | EP-02003-F1

TOC

AERC RECYCLING SOLUTIONS

Load/Piece Count/Paperwork Discrepancy Form

Generator Name: _____

Customer Name: _____
[If different than Generator, i.e., Broker or 3rd Party]

Document #: _____ Date: _____

☐ BOL ☐ Uniform HW Manifest

AERC Location:

☐ 02 | Allentown, PA ☐ 04 | West Melbourne, FL ☐ 05 | Hayward, CA
☐ 07 | Ashland, VA ☐ 06 | Houston, TX ☐ 15 | Hayward, CA

Details of Discrepancy:

_____

_____

_____

_____

49 CFR noted non-compliance items:

☐ Lack of insulation/prevention of short circuiting (SP 130 | §173.21(c), §173.159 and/or §173.185)
☐ Improper packaging or container in poor condition (§173.24)
☐ Improper or missing markings/labels (§172.300 through 400 *et al*)
☐ Shipping description/material identification (§172.201 *et al*)
☐ Lack of adequate bracing (§173.159)
☐ Missing caps/leaking cells (§173.3(c))

ACTION TAKEN:

☐ Customer Contacted Name of Person Spoken With:_____

By Whom:_____ Date/Time:_____

☐ All Copies Changed ☐ Write-up in Section 18

☐ Other Action: _____

Additional Details:

_____

INSTRUCTIONS

Use this form to document any discrepancy found on HMR shipments received by the noted facility. The original copy of this document must be filed with the associated shipping papers and a copy provided to the Customer (with supporting documentation such as the BOL or Manifest) as necessary to resolve the discrepancy. This form can be used in conjunction with the standard Discrepancy Form to document the processing and billing for the noted materials.

AERC RECYCLING SOLUTIONS
AERC.com, Inc.
2591 Mitchell Ave
Allentown, PA 18103
(800) 949-1553 | Fax: (610) 797-7696 | (610) 797-0938

Approval #:

(AERC Use Only)

Date Received:

Location: ☐ Allentown | 02 ☐ West Melbourne | 04 ☐ Hayward | 05 ☐ Houston | 06 ☐ Ashland | 07

AERC Profile for Recycling of Batteries

(Please type or print in ink)

Customer No:	
Waste Name/Description:	
Generator:	EPA ID #:
Shipping Address (Street, City, State, Zip):	
Generator Contact:	E-Mail Address:
Phone:	Fax:
Billing Information (Company,Street, City, State, Zip):	
Billing Contact:	E-Mail Address:
Phone:	Fax:
Process Generating Waste-Be Specific:	

Waste Description/Characterization & DOT Information (Describe material and designate appropriate category and type of battery(ies)):

Reference 40 CFR and 49 CFR for applicable requirements. Complete all sections as appropriate for ALL categories of batteries expected to be managed under this approval. Generator must follow applicable waste handling and transportation requirements as set forth in 40 CFR and 49 CFR. See AERC's *Guidelines for Shipping & Packaging Batteries* for specific guidance and recommended practices.

Physical Description of Waste: ☐ Intact or Incidentally Broken Batteries | Manage as Universal Waste (40 CFR Part 273)
☐ Leaking/Damaged Batteries | Manage in Agreement with Hazardous Waste Mgmt Requirements[1] (40 CFR 261 | 262, et. Al.) Applicable EPA Waste Codes: _____

Category 1 | Lead Acid Battery	Proper DOT Shipping Description[2] — CHECK ALL THAT APPLY
☐ Lead Acid	UN2794, Batteries, wet, filled with acid, 8, III (Used lead acid batteries for recycling)(ERG #154)
☐ Sealed Lead Acid | VRLA	UN2800, Batteries, wet, non-spillable, 8, III (Used sealed lead acid batteries for recycling)(ERG #154)
Is material being managed as:	☐ Universal Waste (40 CFR Part 273) ☐ Lead Acid for Reclaim *(Exemption per 40 CFR part 266 subpart G)*

Category 2 | Corrosive Metal Battery	CHECK ALL THAT APPLY
☐ Alkaline – Dry cell | **1.5-volt | 9-volt | Not-Mixed with other chemistries/DOT descriptions.**	Batteries, dry, sealed, n.o.s. (Used alkaline batteries for recycling)
☐ Alkaline – Wet cell	UN2795, Batteries, wet, filled with alkali, 8, III (Used alkaline batteries for recycling)(ERG #154)
☐ Zinc Carbon (non-Hg) | Zinc Air | **6-volt | Not-Mixed with other chemistries/DOT descriptions.**	Batteries, dry, sealed, n.o.s. (Used zinc carbon batteries for recycling)
☐ NiCd – Dry cell **| 9-volt | Not-Mixed with other chemistries/DOT descriptions.**	Batteries, dry, sealed, n.o.s. (Used nickel-cadmium dry-cell batteries for recycling) NOTE: NiCd batteries rated > 9-volts must meet SP 130 requirements.
☐ NiCd – Wet cell	UN2795, Batteries, wet, filled with alkali, 8, III (Used nickel-cadmium batteries for recycling)(ERG #154)
☐ Nickel Iron Batteries	UN2795, Batteries, wet, filled with alkali, 8, III (Used nickel-iron batteries for recycling)(ERG #154)
☐ Nickel Metal Hydride (NiMH)	Batteries, dry, sealed, n.o.s. (Used NiMH batteries for recycling) NOTE: NiMH batteries rated > 9-volts must meet SP 130 requirements.

Category 3 | Mercury Bearing Battery

CHECK ALL THAT APPLY

☐ Zinc Carbon (w/Hg) * ☐ Mercury | Mercuric Oxide* ☐ Silver Oxide (w/Hg) * * Containers of > ≈2 ½ Lbs these batteries meet the definition of a hazardous material (RQ Hg - 1 Lb). Use the alternative DOT Description →	Batteries, dry, sealed, n.o.s. (Used mercury-containing batteries for recycling) Batteries, dry, sealed, n.o.s. (Used silver oxide mercury-containing batteries for recycling) RQ, UN2809, Mercury contained in manufactured articles, 8, III (Used mercury batteries for recycling)(ERG #172)
☐ Silver Oxide	Non-DOT Regulated | RCRA-Regulated Universal Waste (Used silver oxide batteries for recycling)
☐ ATON	UN2795, Batteries, wet, filled with alkali, 8, III (Used ATON batteries for recycling)(ERG #154)

Category 4 | Reactive Metal Battery

CHECK ALL THAT APPLY

☐ Lithium Metal (Primary) ☐ Li-Ion | Li-Polymer ☐ Li-Thionyl Chloride | Li-Co Alternative Shipping Descriptions may be used: (As per 8/25/09 PHMSA *Notice of Approval*)	UN3090, Lithium battery, 9, II (Used lithium batteries for recycling)(ERG #138) – *Also, to be more descriptive, use*: (Used Li-Ion *or* Li-Polymer *or* Li-Thionyl Chloride batteries for recycling)(ERG #138) UN3090, Lithium metal batteries, 9, II (Used lithium metal batteries for recycling)(ERG #138) UN3480, Lithium ion batteries, 9, II (Used lithium ion polymer batteries for recycling)(ERG #138)
☐ Magnesium Metal	Batteries, dry, sealed, n.o.s. (Used magnesium batteries for recycling)
☐ Sodium | NaNiCl	UN3292, Batteries, containing sodium, 4.3, II (Used sodium batteries for recycling)(ERG #138)

NOTES:

(1) Materials to be managed under this approval are assumed to meet the requirements of the universal waste standard (40 CFR Part 273 & associated applicable state regulations). Management under the full hazardous waste standard **REQUIRES SUBMITTAL OF A SEPARATE HAZARDOUS WASTE PROFILE**. Shipment must be completed on a hazardous waste manifest using an alternative shipping description than noted above and may require management alternate processing/charges. Contact AERC Customer Service representative and/or Regulatory Affairs Department staff.

(2) Specified DOT Shipping Description for management of batteries that are **not** classified for management under the full hazardous waste requirements. Specify "RQ" upon reaching hazardous substance threshold(s) as detailed within 49 CFR §172.101 Appendix A, Table 1 and Table 2.

Alternative DOT Description Not Specified Above:

DOT Shipping Name:		Packing Group:	Hazard Class:	UN/NA:
Reportable Quantity:	ERG#:	EPA Waste Codes if Applicable:		

Estimated Quantity of Waste for Management:

☐ Event/One-Time ☐ Base/On-going (Check One)

Estimated Quantity: _____ ☐ Lbs ☐ Tons ☐ Cu Yd ☐ DM/DF ☐ Other (specify):_____ (Check One)

Shipping Frequency: _____ Units per ☐ Mth ☐ Qtr ☐ Yr ☐ Other (specify):_____ (Check One)

Annual Report Information (Codes)

SIC Code(s):			Source Code(s):			Form Code(s):		
			Mgmt Method Code(s):					

Certification

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed. As Authorized Representative for the Generator, I hereby certify that material offered for management will meet applicable waste handling and transportation requirements as set forth in 40 CFR and 49 CFR. Materials offered for shipment and management that are not prepared in accordance with the applicable requirements will be subject to rejection and/or notice of discrepancy (and surcharge). I understand that batteries will be managed by AERC according to the appropriate regulatory standards, i.e., Universal Waste Standards 40 CFR 473, unless otherwise agreed upon and authorized between the Generator and AERC.

_____ _____

Signature **Date**

_____

Print Name/Title

I have received a copy of the AERC guidance for shipping & packaging of batteries. _____ *(Initial)*

ATTACHMENT 7

EXHIBIT D.5.3b

Guidelines for Shipping & Packaging Mercury Devices

Guidelines for Shipping & Packaging Mercury Devices

49 CFR §172.101 Hazardous Material (HM) Table - Excerpts of Interest

The information contained here-in is offered as a guide and that you as the Shipper must always check the HMR, Part 172, Subpart C, for specific requirements. Additional requirements, special provisions, and/or revisions may be applicable. The information contained here-in should be considered current as of the date of this revision.

£ (1)	HM Descriptions and Proper Shipping Name (2)	Hazard Class or Division (3)	ID Number (4)	PG (5)	Label Codes (6)	Special Provisions (§172.102)✚ (7)	Packaging (§173.***) (8A)	(8B)	(8C)	ERG #
A	Mercury *contained in manufactured articles*	8	UN2809	III	8	.....	None	164	None	172

NOTES

✚ ONLY Special Provisions specific to multi-modal application that may apply to bulk and non-bulk packagings, i.e., consisting only of numbers (for example, "29") and codes containing the letter "N"(referring only to non-bulk packaging requirements) are presented in this summary. See the full text of the HMT for all applicable Special Provisions references for each cited proper shipping name.

£ NOTE: "RQ" added as prefix to shipping description if the container contains > than reportable quantity for an individual hazardous constituent as contained within specific battery types (based upon the Manufacturer's MSDS). For example:

- Mercury (Hg) - RQ = 1 Lb | D009

Referenced Special Provisions & Packaging Specifications

This appendix details excerpts from the DOT regulations as referenced above.

- ✓ Packaging Specifications – As detailed in HMT Columns with reference to the appropriate 49 CFR §173.*** section as it applies to the HM described here-in.

Packaging Specifications | §173.*** | (8A) – *Exceptions;* (8B) – *Non-Bulk;* (8C) - *Bulk*

Title 49: Transportation

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

§ 173.164 Mercury (metallic and articles containing mercury).

(a) For transportation by aircraft, mercury must be packaged in packagings which meet the requirements of part 178 of this subchapter at the Packing Group I performance level, as follows:

(1) In inner packagings of earthenware, glass or plastic containing not more than 3.5 kg (7.7 pounds) of mercury, or inner packagings which are glass ampoules containing not more than 0.5 kg (1.1 pounds) of mercury, or iron or steel quicksilver flasks containing not more than 35 kg (77 pounds) of mercury. The inner packagings or flasks must be packed in steel drums (1A2), steel jerricans (3A2), wooden boxes (4C1), (4C2), plywood boxes (4D), reconstituted wood boxes (4F), fiberboard boxes (4G), plastic boxes (4H2), plywood drums (1D) or fiber drums (1G).

(2) [Reserved]

(3) When inner packagings of earthenware, glass or plastic are used, they must be packed in the outer packaging with sufficient cushioning material to prevent breakage.

(4) Either the inner packagings or the outer packagings must have inner linings or bags of strong leakproof and puncture-resistant material impervious to mercury, completely surrounding the contents, so that the escape of mercury will be prevented irrespective of the position of the package.

(b) Manufactured articles or apparatuses, each containing not more than 100 mg (0.0035 ounce) of mercury and packaged so that the quantity of mercury per package does not exceed 1 g (0.035 ounce) are not subject to the requirements of this subchapter.

(c) Manufactured articles or apparatuses containing mercury are excepted from the specification packaging requirements of this subchapter when packaged as follows:

(1) Manufactured articles or apparatuses of which metallic mercury is a component part, such as manometers, pumps, thermometers, switches, etc. (for electron tubes, mercury vapor tubes and similar tubes, see paragraph (c)(3) of this section), **must be in strong outer packagings, having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury, which will prevent the escape of mercury from the package irrespective of its position.** Mercury switches and relays are excepted from these packaging requirements, if they are totally enclosed, leakproof and in sealed metal or plastic units.

(2) Thermometers, switches and relays, each containing a total quantity of not more than 15 g (0.53 ounces) of mercury, are excepted from the requirements of this subchapter if installed as an integral part of a machine or apparatus and so fitted that shock of impact damage, leading to leakage of mercury, is unlikely to occur under conditions normally incident to transport.

(3) Electron tubes, mercury vapor tubes and similar tubes must be packaged as follows:

(i) Tubes which are packed in strong outer packagings with all seams and joints sealed with self-adhesive, pressure-sensitive tape which will prevent the escape of mercury from the package, are authorized up to a total net quantity of 450 g (15.9 ounces) of mercury per package;

(ii) Tubes with more than 450 g (15.9 ounces) of mercury are authorized only when packed in strong outer packagings, having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury which will prevent escape of mercury from the package irrespective of its position;

(iii) Tubes which do not contain more than 5 g (0.2 ounce) of mercury each and which are packed in the manufacturer's original packagings, are authorized up to a total net quantity of 30 g (1.1 ounces) of mercury per package;

(iv) Tubes which are completely jacketed in sealed leakproof metal cases are authorized in the manufacturer's original packagings.

(4) A person offering for transportation electron tubes, mercury vapor tubes, and similar tubes shall indicate the quantity of mercury therein on the shipping paper.

(5) Mercurial barometers conforming to paragraph (c)(1) of this section, which are loaded and unloaded from an aircraft under the supervision of, and accompanied in flight by, a National Weather Service official or similar United States agency official, are excepted from any other requirements of this subchapter.

(d) For transportation by other than aircraft, mercury must be packaged—

(1) In any packaging which meets the requirements of part 178 of this subchapter at the Packing Group III performance level; or

(2) In non-specification reusable metal packagings.

(e) Except for a hazardous substance or a hazardous waste or for transportation by aircraft or vessel, packages containing less than 0.45 kg (1.0 pound) net weight of mercury are not subject to the requirements of this subchapter.

[Amdt. 173–224, 55 FR 52643, Dec. 21, 1990, as amended at 56 FR 66270, Dec. 20, 1991; Amdt. 173–241, 59 FR 67509, Dec. 29, 1994; Amdt. 173–246, 60 FR 49110, Sept. 21, 1995; 64 FR 10777, 10778, Mar. 5, 1999; 68 FR 57632, Oct. 6, 2003]

NOTE:

The container shown to the right is not in agreement with EITHER the HMR or the RCRA hazardous waste management requirements. The use of stretch wrap to contain the large mercury-device shown in the photo IS NOT AN ACCEPTABLE PRACTICE.

The reason the generator classified the material as a hazardous waste is not known. However, if the device is intact it would classify as a universal waste mercury-containing device and would not need to be marked as a hazardous waste. In any regard – UW or HW - the container must be closed when offered for transport.

Lastly, it should be noted that the Class 8 label, although appropriately located adjacent to marking containing the proper shipping name, is oriented up-side down and would be considered in violation of the labeling requirements of Subpart E – Labeling 49 CFR § 172.400 – 407.

ATTACHMENT 7

EXHIBIT D.5.4

Acceptable Materials List

AERC RECYCLING SOLUTIONS

AERC Recycling Solutions
ACCEPTABLE MATERIALS

4317-J Fortune Place, West Melbourne, FL 32094 ● 321-952-1516 ● Fax: 321-952-1060

ACCEPTABLE MATERIALS LIST
WEST MELBOURNE, FL

Mercury-containing Lamps:

Arc Lamps
Deuterium Lamps
Germicidal Lamps
High Pressure Sodium Lamps
Mercury Vapor Lamps
Metal Halide Lamps
Neon Lamps
Ultraviolet Lamps
Fluorescent Lamps - Circular, Compact, Crushed, Coated, Straight and U-Tubes

Other Lamp Types:

Halogen Lamps
Incandescent Lamps

Electronic Scrap:

CPUs
Circuit Boards
Keyboards
Monitors /CRTs

Ballasts:

PCB
Non-PCB

Batteries:

Alkaline
ATON
Carbon Zinc
Lead Acid
Lithium
Magnesium
Nickel Cadmium
Nickel Iron
Nickel Metal Hydride
Silver Oxide

Metallic Mercury

Mercury-containing Solids:

Carbon
Phosphor Powder

Mercury Apparatus, Debris, Devices and Soils:

Amalgams (Silver, Sulfur, Zinc and Gold) - ***[NO BIOHAZARDS]***
Dental Amalgams (unused and/or in capsules) - ***[NO BIOHAZARDS]***
Esophageal Bougies - ***[IN BLEACH - NO BIOHAZARDS]***
Intestine Miller Abbott Tubes - ***[IN BLEACH - NO BIOHAZARDS]***
Mercury Batteries
Debris: *Paper*
PPE (aprons, gloves and tyveks)
Plastic
Wood
Mercury-contaminated Glassware and Metalware:
Barometers
Manometers
Glass Switches
Relays
Ignitron Tubes
Thermometers
Regulators
Thermostats

ATTACHMENT 8
ITEM D.6
Contingency Plan

TABLE OF CONTENTS

Description (including Part # | Item # as applicable) **Page #**

ITEM D.6 CONTINGENCY PLAN

Exhibits/Figures/Tables

AERC.com, Inc.
4317 J Fortune Place
West Melbourne, FL 32904-1509
Tel.: (321) 952-1516
Fax: (321) 952-1060
EPA I. D. #FLD984262782

CONTINGENCY PLAN

and

EMERGENCY PROCEDURES

MERCURY RECLAMATION FACILITY

Revised: 2 August 2011

Table of Contents

1.0 Contingency Plan & Emergency Procedures

The following Contingency plan has been prepared for the AERC.com, Inc. facility West Melbourne, Florida and is designed to minimize hazards to human health or the environment from fires, explosions or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil or surface water. A copy of the Contingency Plan and all revisions will be maintained at the facility and will be submitted to local police departments, fire departments and state and local emergency response teams that may be called upon to provide emergency service. The provisions of the plan will be carried out immediately whenever there is a fire, explosion or release of hazardous substance, which could threaten human health or the environment.

2.0 Emergency Coordinators

The following is a list of emergency coordinators who will be given the responsibility for coordinating all emergency responses measures and who have the authority to commit the resources necessary to carry out the Contingency Plan. Listed in the descending order in which they would be called, each coordinator will be thoroughly familiar with all aspects of the Contingency Plan, all operations and activities at the facility, the location of all records within the facility and the facility layout.

At all times, there will be at least one emergency coordinator on the facility premises or on call. This list will be maintained and amended as necessary

Primary Emergency Coordinator

Tracy DePaola
3301 Gatlin Driver
Rockledge, FL 32955
Home: 321-208-8285
Work: 321-952-1516
Cell Phone: 321-517-6108

Secondary Emergency Coordinator

Anthony Session
2409 Delys Street
Cocoa, FL 32926
Home: 321-631-9348
Cell Phone: 321-917-9914

or

Freud Jean
1286 Wade Street
Palm Bay, FL 32909
Cell Phone: 239-245-3985

Tertiary Emergency Coordinator

Mark Kasper
2330 Southwest 26th Street
Allentown, PA 18103
Work: 610-433-4011
Cell Phone: 484-951-6702

Transportation Emergency Coordinator

Mike Maliska
1391 Wekiva Drive
Melbourne, FL 3294
Home: 321-253-3094
Work: 321-952-1516
Cell Phone: 321-205-3569

Note: additional emergency contacts to be named

3.0 Duties And Responsibilities Of Emergency Coordinator

Whenever there is an imminent or actual emergency situation, the Emergency Coordinator will immediately:

1. Activate facility alarms or communications system, where applicable, to notify facility personnel, and

2. Notify local emergency response agencies including the Fire Department.

Whenever there is a hazardous emission, discharge, fire or explosion, the Emergency Coordinator must immediately identify the character, exact source, amount and extent of emitted or discharged materials. This will be accomplished by observation or review of records and, if necessary, by chemical analysis.

At the same time, the Emergency Coordinator must assess possible hazards to human health and the environment that may result from the emission, discharge, fire or explosion.

4.0 Reporting Requirements

The type and quantity of material released during an incident will determine the specific reporting requirements to be followed. Specific requirements have been developed under RCRA and the Florida Department of Environmental Protection (FL DEP) for releases of hazardous wastes. Reporting requirements and procedures have been developed under the Superfund Amendments and Reauthorization Act (SARA) for releases of reportable quantities of extremely hazardous substances (EHS). In addition, reporting requirements and procedures have been developed under the Comprehensive Environmental Responsibility and Cleanup Act (CERCLA) for releases of reportable quantities of CERCLA Hazardous Substances. The following outlines the specific reporting procedures:

A. All Emergency Incidents:

If the determination is made that human health and the environment are threatened outside the facility, the Emergency Coordinator will immediately:

1. Notify appropriate local authorities if an assessment indicates evacuation of local areas is advisable; and

2. Notify the Florida Department of Environmental Protection (FL DEP) and

3. Notify the National Response Center, if necessary, as specified in Section B below:
4. Report the following:

    a. Name of person reporting incident

    b. Name, EPA ID Number and location of the facility

    c. Phone number where the person reporting the incident can be reached

    d. Time of the incident

    e. Brief description of the incident, nature of the materials involved, extent of any injuries and possible hazards to human health and the environment

    f. The estimated quantity of material involved

    g. The extent of contamination of land, water or air, if known

    h. An indication of whether the substance is an extremely hazardous substance (EHS)

    i. Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals

During an emergency, the Emergency Coordinator must take all measures necessary to ensure that the emission, discharge, fire or explosion does not occur, reoccur or spread to other material at the facility.

These measures shall include, where applicable, stopping operations, collecting and containing released materials and removing or isolating containers. The Emergency Coordinator must ensure that adequate monitoring is conducted for leaks, pressure build-up, gas generation or ruptures of containers, wherever appropriate.

Immediately after an emergency, the Emergency Coordinator, with FL DEP approval, must provide for treating, storing or disposing of residues, contaminated soil, etc., resulting from the incident. The Emergency Coordinator must ensure that, in the affected areas, no incompatible materials are treated, stored or disposed of until cleanup procedures are completed and all emergency equipment utilized is cleaned and fit for its intended use prior to resuming operations. Emergency equipment decontamination will be performed using sound decontamination practices. AERC will rely on a mercury decontamination solution (HgX) as well as a general purpose detergent to satisfy decontamination.

B. - Release of CERCLA Hazardous Substance

If the determination is made that the release is of a reportable quantity (RQ) of any CERCLA hazardous substance, the following notification must be given:

1. Notify the National Response Center at 1-800-424-8802.
2. Report the information as listed in A. 4., above.

5.0 Emergency Notification Form

AERC.com, Inc. – 4317 J Fortune Place, West Melbourne, FL 32904-1509 TELEPHONE (321) 952-1516
EPA I. D. NUMBER FLD984262782

		TELEPHONE NUMBER
FIRE:	Brevard County	911
	Non-emergency	(321) 633-2056
POLICE:	City of West Melbourne	911
	Non-emergency	(321) 723-9673
AMBULANCE:	Brevard County	911
	Non-emergency	(321) 633-2056
SHERIFF:	Brevard County Sheriff's Office	911
	Non-Emergency	(321) 633-7162
HOSPITAL:	Holmes Regional Medical Center	(321) 434-7000
	Emergency Dept.	(321) 434-7298
POISON CONTROL CENTER:		(800) 282-3171
SPILL CLEANUP:	ONXY Environmental Services	(321) 722-2455
ELECTRIC POWER EMERGENCIES:	Florida Power and Light	(800) 226-3545
WATER & SEWER EMERGENCIES		
	Monday-Friday, 8:30-5:00	(321) 727-3710
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION:		
	Central District Emergency Response Office	(407) 893-3337
	State Warning Point	(800) 320-0519
BREVARD COUNTY EMERGENCY OPERATIONS CENTER (24-HOURS):		(321) 633-1770
NATIONAL RESPONSE CENTER:		(800) 424-8802
CHEM-TREC:		(800) 424-9300
INFOTRAC:		(800) 535-5053

ADJACENT COMPANIES: Atlas Van Lines (321) 676-0050

EMERGENCY COORDINATORS:		Home Phone	Cell Phone
PRIMARY:	Tracy DePaola	321-208-8285	321-517-6108
SECONDARY:	Anthony Session	321-631-9348	321-917-9914
TERTIARY:	Ryan Landmesser	N/A	908-295-5121

TRANSPORTATION:

Mike Maliska	321-253-394	321-205-3569

6.0 Emergency Response Procedures

Potential accidents fall under two general classifications: (1) Fire and/or explosions or (2) spills or material release.

A Fire and/or Explosion:

Fire-fighting and other emergency vehicles and equipment can easily access container storage areas. The loading dock storage areas will have adequate aisle space to move emergency equipment.

During times of power failure or severe weather, fire prevention personnel will be assigned to protect AERC's personnel and property. If a fire should break out, efforts will be placed on preventing the fire from spreading to nearby areas. AERC's facility personnel may control small-scale fires.

The following actions will be taken in the areas affected by the fire or explosion:

1. Fire, police and emergency personnel will be notified immediately.
2. The area will be evacuated and all AERC personnel will be notified of the emergency.
3. Fire doors in the building will be closed.
4. Facility operations will be shut down immediately.
5. The Emergency Coordinator will be contacted.
6. The area will be cleared of all personnel not actively involved in fighting the fire.
7. All injured personnel will be removed and qualified personnel will administer medical treatment.
8. In areas where fire suppression systems exist, all doors and other openings will be closed.
9. Air inside and outside the building will be monitored for mercury. If there are elevated levels inside PPE will be used by all personnel. If there are elevated levels of mercury outside the building monitoring will continue at frequent intervals down wind to determine attenuation levels and the release will be reported to the local and county authorities.

Fire fighting will not be done at the risk of injury to persons involved. However, early containment of fires can significantly decrease total damage. Area or plant evacuation will be necessary in case of a major fire or explosion. Specifics are outlined under general evacuation procedures. All personnel have been trained in evacuation procedures and means of exit from their respective work areas.

Until evacuation is signaled, personnel who are not in an affected area will stay in their respective work areas. Contract personnel and visitors will be cleared from the area and instructed to report to the Operations Office.

When the fire has been extinguished and the safety of personnel is no longer endangered, and "all clear" signal will be given verbally by the Emergency Coordinator. All emergency equipment used in the emergency will be cleaned and fit for use prior to resumption of operations in the affected areas.

B Spill or Material Release

If an employee discovers a chemical spill or a malfunctioning piece of equipment causing a release of hazardous materials, he or she will immediately report it to the supervisor. The area supervisor will contact the Emergency Coordinator at the time of the incident. When contacted, the Emergency Coordinator will obtain information pertaining to the following:

1. The nature of the malfunction or cause for the release
2. The material spilled or released and its location
3. An estimate of quantity released and the site at which it is being released
4. The direction in which the spill, vapor or smoke release is heading
5. Any injuries involved
6. Fire and/or explosion or possibility thereof
7. The areas affected and the intensity of the fire or explosion

From this information, the Emergency Coordinator will assess the magnitude and potential seriousness of the spill or release. If the accident is determined to be within AERC's emergency response capabilities, the necessary facility personnel will be contacted and deployed. If the Incident is beyond AERC's capabilities, the Emergency Coordinator will contact the appropriate authorities and AREC's outside contractor, ONYX Environmental Services.

In the event of a leak or spill, released materials will be collected via palletized containment systems. (Container storage areas and the containment systems will be inspected daily for the signs of a release). If any mercury-containing material is spilled outdoors, the air in the area will be monitored for mercury vapors, and down wind monitoring will be done to determine attenuation levels. Any migration of mercury vapors off the property will be reported to the Brevard County and/or West Melbourne authorities.

Since only containers will be handled at the facility, a spill most likely to occur would be that involving a single container. The initial response to such an emergency will be to identify, isolate, contain and treat the leaking container and spilled material.

If the spill results in the formation of toxic vapors that are being dispersed off the property, the facility will be evacuated, except for all emergency response personnel, to an area an appropriate distance upwind. Industrial areas within one quarter mile of the facility will be notified whenever there is a large quantity of volatile material released.

Most small spills and leaks will be easily contained within their immediate area. Upon direction of the Emergency Coordinator, clean-up personnel will use absorbent pads, booms or other inert materials to contain and clean up a small spill. All containment and clean-up materials will be placed into drums for proper disposal. A list of onsite emergency equipment is listed in **Attachment II**.

The Emergency Coordinator is responsible for determining which emergency situations require facility evacuation. The public address system will be used to notify key facility personnel as to the nature of the emergency and the recommended plan of action.

Facility evacuation routes are indicated on the attached Floor Plan shown (**Attachment I**).

In the event the Emergency Coordinator calls for facility evacuation, the following actions will be taken:

1. The call for evacuation will be given. This will be achieved either with the use of the internal communications systems or by voice, whichever is most expedient.

2. All personnel, visitors and contractor will immediately leave through the designated evacuation routes.

3. No further entry of visitors, contractors or trucks will be permitted. All vehicle traffic within the facility will cease to allow safe evacuation.

4. No persons shall be allowed to re-enter the facility unless specifically authorized by the Emergency Coordinator. Those within the facility will normally include emergency teams.

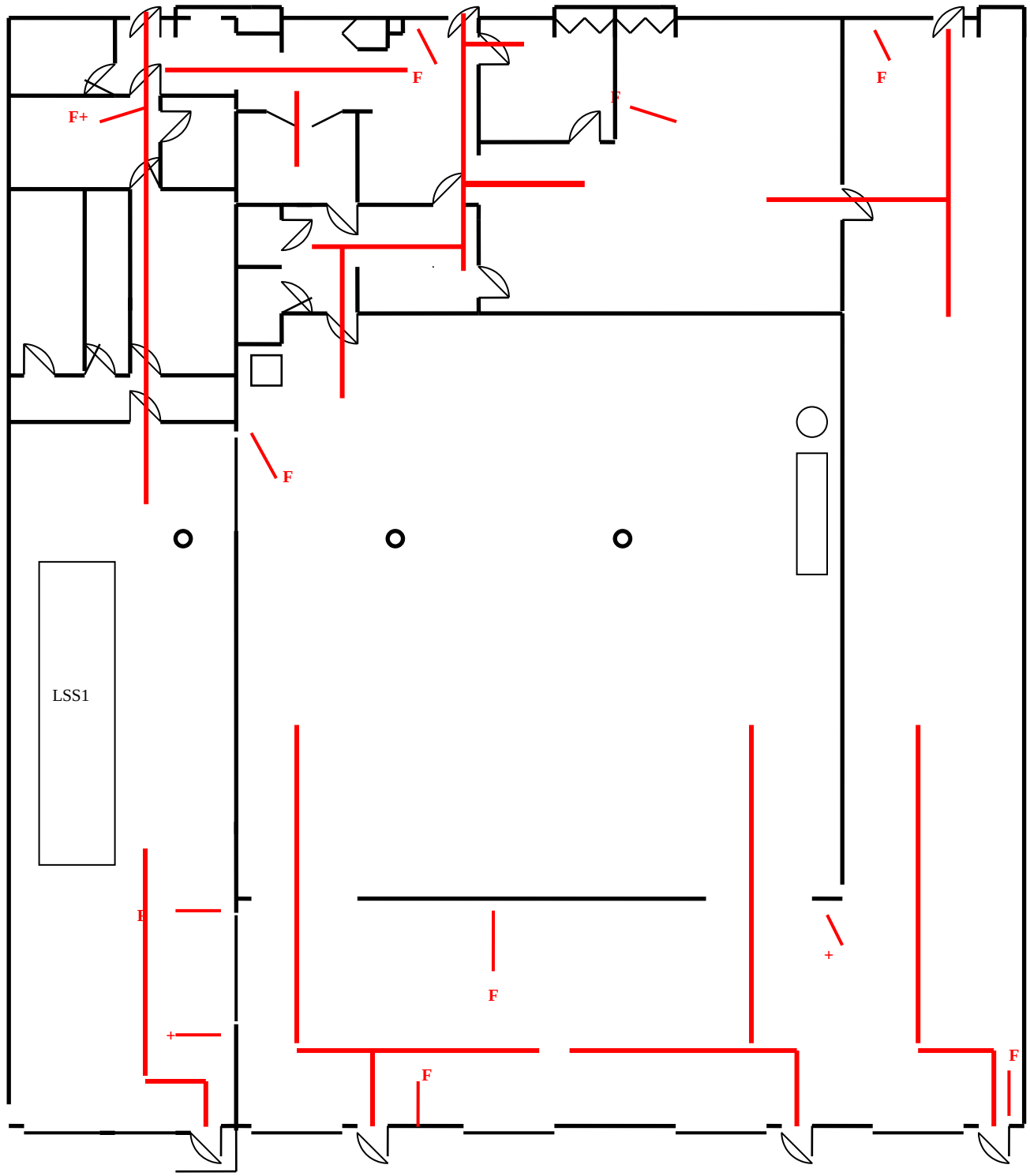
5. All persons will be accounted for by their immediate supervisors. No attempt to find persons not accounted for will involve endangering lives of others by re-entry into emergency areas.

6. Re-entry into emergency areas will be made only after the Emergency Coordinator gives clearance. At his or her direction, a notification will be given for reentry into the facility.

7. Annual drills will be held to practice these procedures.

ATTACHMENT I

Evacuation Routes



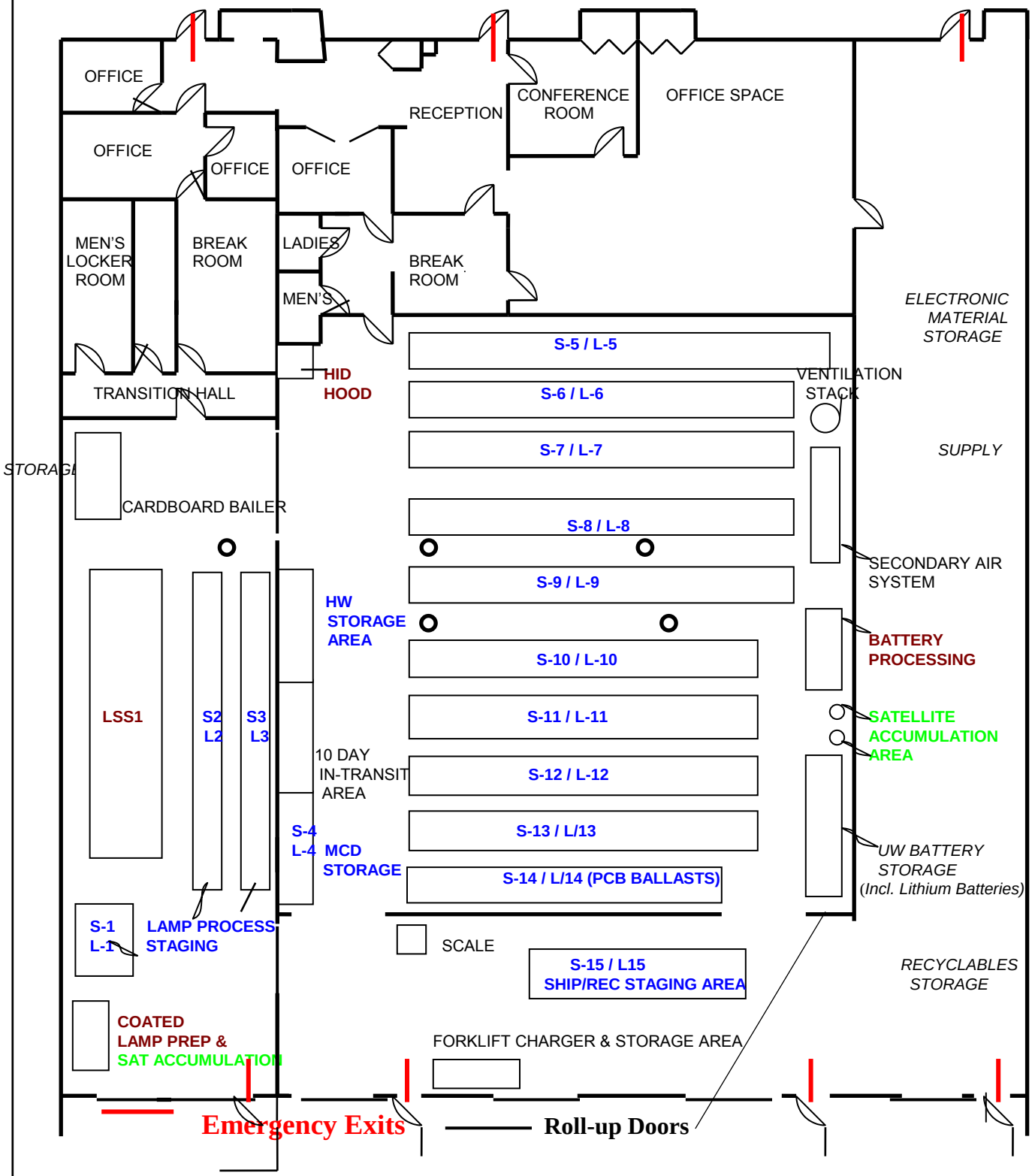
Evacuation Route

Fire Extinguisher F

First Aid Kit + ———

AERC.com, Inc. Facility Plot Plan

Permitted Waste Storage Areas=BLUE **Process Areas = BROWN** **Satellite Accumulation Areas =GREEN**



Attachment II

Hazardous Material Emergency Equipment

In the event of a release of a hazardous material at our facility, we have on site the following clean-up materials:

- Absorbent booms, pillows and mats
- Vermiculite
- HgX Mercury Decontamination Powder
- General Purpose Detergent
- Peristaltic pumps
- Amph-O-Mag Acid and Base Neutralizer
- D.O.T. containers & recovery drums
- Shovels, brooms and various other hand tools
- Barricades, cones and fencing

ATTACHMENT III - Material and Waste Hazard Summary

Materials managed as part mercury-recovery operations; UW management or 10-day transfer activities.

AERC Waste Name	Major Hazardous Chemical Components	USDOT Description & Emergency Response Guide Cross Reference			Description of Hazards | Hazard Class Categories	NFPA Hazard Ratings			
		ID #	Hazard Class	Guide #		H	F	R	SH
Lead Acid Batteries	Universal Waste Battery	**UN2794**	**8 | Corrosive**	**154**	**Corrosive, Oxidizer, Toxic**	4	0	2	Acid
	Sulfuric Acid (> 51% acid)	UN1830	8 | Corrosive	137	Corrosive Liquid	3	0	2	~~W~~
	Lead	NR	Not Regulated	NR	Toxic (Probable Carcinogen)	3	3	1	
Nickel-Cadmium Batteries	Universal Waste Battery	**UN2795**	**8 | Corrosive**	**154**	**Corrosive, Toxic**	3	1	2	
	Nickel	UN3077	9	171	Toxic (Probable Carcinogen)	4	0	0	
	Cadmium	UN2570	6.1 | Poison, Toxic	154	Toxic (Probable Carcinogen)	4	3	1	
	Potassium Hydroxide	UN1814	8 | Corrosive	154	Corrosive Liquid	3	0	1	
Lithium-Ion Batteries	Universal Waste Battery	**UN3090**	**9**	**138**	**Water Reactive | Explosive Hazard**	3	2	2	~~W~~
	Lithium Metal	UN1415	4.3 | Water Reactive	138	Dangerous When Wet | Water Reactive	3	2	2	~~W~~
Magnesium Carbon Batteries	Universal Waste Battery	**UN3090**	**9**	**138**	**Universal Waste Battery**	0	1	1	
	Magnesium Metal	UN1869	4.1	138	Flammable Solid	0	1	1	
Fluorescent Lamps, broken	Mercury compound solid, n.o.s.	**UN2025**	**6.1 | Toxic**	**151**	**Solid, Toxic | Mercury-containing UW**	3	0	0	
Low-Pressure Sodium Lamps	Universal Waste Lamp	**UN1428**	**4.3 | Water Reactive**	**138**	**Water Reactive | Explosive Hazard**	3	3	2	~~W~~
	Sodium Metal	UN1428	4.3 | Water Reactive	138	Dangerous When Wet | Water Reactive	3	3	2	~~W~~
Lighting Ballasts - PCB Containing	Polychlorinated Biphenyls, Liq	**UN2315**	**9**	**171**	**Toxic (Carcinogen)**	2	1	0	
Mercury	Mercury - elemental	**UN2809**	**8 | Corrosive**	**172**	**Corrosive Liquid, Toxic**	3	0	0	
Phosphor Powder - contains trace mercury | see information for broken lamps | mecury					**Solid, Toxic | Mercury-containing HW**	3	0	0	
Nessler's Reagent	Solution, containing:	**UN2922**	**8, 6.1**	**154**	**Corrosive Liquid, Toxic**	4	0	1	
	Potassium Hydroxide	UN1814	8 | Corrosive	154	Corrosive Liquid	3	0	1	
	Mercuric Iodide	UN1638	6.1 | Poison, Toxic	151	Poison, Toxic	4	0	1	
COD Solution	Solution, containing:	**UN2922**	**8 | Corrosive**	**154**	**Corrosive Liquid, Toxic | Water Reactive**	4	0	2	~~W~~
	Sulfuric Acid (> 51% acid)	UN1830	8 | Corrosive	137	Corrosive Liquid	3	0	2	~~W~~
	Mercuric sulfate	UN1645	6.1 | Poison, Toxic	151	Poison, Toxic	4	0	1	
Hydrochloric Acid with mercury	Solution, containing:	**UN2922**	**8, 6.1**	**154**	**Corrosive Liquid, Toxic**	3	0	1	
	Hydrochloric acid	UN1789	8 | Corrosive	157	Corrosive Liquid	3	0	1	
	Mercury compound liquid, n.o.s.	UN2024	6.1 | Poison, Toxic	151	Poison, Toxic	3	0	0	
Sulfuric Acid with mercury	Solution, containing:	**UN2922**	**8, 6.1**	**154**	**Corrosive Liquid, Toxic**	3	0	2	~~W~~
	Sulfuric Acid (> 51% acid)	UN1830	8 | Corrosive	137	Corrosive Liquid	3	0	2	~~W~~
	Mercury compound liquid, n.o.s.	UN2024	6.1 | Poison, Toxic	151	Poison, Toxic | Corrosive Liquid	3	0	0	
Nitric Acid with mercury	Solution, containing:	**UN2922**	**8, 6.1**	**154**	**Corrosive Liquid, Toxic**	3	0	0	OXY
	Nitric Acid (< 70% acid)	UN2031	8 | Corrosive	157	Corrosive Liquid	3	0	0	OXY
	Mercuric Nitrate	UN1625	6.1 | Poison, Toxic	141	Poison, Toxic | Oxidizer	3	0	0	
Sodium Hydroxide Solution	Sodium Hydroxide Solution	**UN1824**	**8 | Corrosive**	**154**	**Corrosive Liquid**	3	0	1	

ATTACHMENT 8

EXHIBIT D.6.1

INFOTRAC Customer Record Information

INFOTRAC

Chemical Emergency Response System

200 North Palmetto St. - Leesburg Florida 34748

Phone: 352-323-3500 Fax: 352-323-1991

Customer Update

Customer ID
84301

Sales Person RL
Member Date 1/1/1999
Status B

Customer Information

AERC.COM.INC
2591 MITCHELL AVE
ALLENTOWN PA 18103 6609

Attention H LEON HENDERSHOT
Phone (610) 797-7608 **Fax** (610) 797-7696
Email lhendershot@aercrecycling.com
MSDS Contact
Website
UPS Number 16X-058 **Fed Ex Number**

The following is a list of emergency contacts for AERC.COM.INC

Contact Name	Work Phone	Ext	Home Phone	Cell Phone	Email
LEON HENDERSHOT	(610) 797-7608	158	908-475-3254	(908) 884-0552	lhendershot@aercrecyclin
Jeff Smith ~~FRANK LOSAGIO~~	(610) 797-7608	149 ~~216~~		(908) 878-7178 ~~(484) 225-0478~~	jsmith@aercrecycling.com ~~flosagio@aercrecycling.co~~
MARK KASPER	(610) 433-4011			(484) 951-6702	mkasper@aercrecycling.c

---

Billing Information

Phone 610-797-7608 **Fax** 610-797-7696
Email ~~lhendewrshot~~@aercrecycling.com lhendershot@ aercrecycling.com
AERC.COM.INC
2591 MITCHELL AVE
ALLENTOWN PA 18103 6609

Accounting Contact H LEON HENDERSHOT
County

INFOTRAC

Chemical Emergency Response System

200 North Palmetto St. - Leesburg Florida 34748

Phone: 352-323-3500 Fax: 352-323-1991

Customer Update

Customer ID
84301

Sales Person RL
Member Date 1/1/1999
Status B

The Following is a List of branch locations or other shipping names

Branch Name ADVANCED ENVIRONMENTAL RECYCLING LLC
Branch Address FORMER NAME
City, St, Zip
Phone Number
Fax Number

Emergency Contact Information for ADVANCED ENVIRONMENTAL RECYCLING LLC

Branch Name AERC
Branch Address SAME
City, St, Zip ALLENTOWN PA 18103
Phone Number
Fax Number

Emergency Contact Information for AERC

Contact Name	Work Phone	Pager	Home Phone	Cell Phone	Email
LEON HENDERSHOT	(610) 797-7608		(908) 475-3254	(908) 884-0552	lhendershot@~~aercrecling~~ aercrecycling.com

Branch Name AERC.COM INC ASHLAND
Branch Address 116 SYLVIA RD STE E
City, St, Zip ASHLAND VA 23005
Phone Number (804) 798-9295
Fax Number (804) 798-9296

Emergency Contact Information for AERC.COM INC ASHLAND

Contact Name	Work Phone	Pager	Home Phone	Cell Phone	Email
~~THOMAS ROSEVEAR~~	~~(804) 798-9295~~		~~(484) 201-8124~~		~~trosevear@aercrecycling.~~
KELLY DAVIS	(804) 798-9295			(804) 677-1895	kyost@aercrecycling.com

Stephen Lefon (804) 798-9295 cell (804) 840-1532 slefon@aercrecycling.com

INFOTRAC

Chemical Emergency Response System

200 North Palmetto St. - Leesburg Florida 34748

Phone: 352-323-3500 Fax: 352-323-1991

Customer Update

Customer ID
84301

Sales Person RL
Member Date 1/1/1999
Status B

Branch Name AERC.COM INC-HAYWARD
Branch Address 30677 HUNTWOOD AV
City, St, Zip HAYWARD CA 94544
Phone Number (510) 429-1129
Fax Number (510) 429-1498

Emergency Contact Information for AERC.COM INC-HAYWARD

Contact Name	Work Phone	Pager	Home Phone	Cell Phone	Email
JOE JIMENEZ	(510) 429-4970		(510) 290-1462	(510) 290-1462	jjimenez@aercycling.com
DON LEES	(510) 429-4970			(510) 290-1458	dlees@aercrecycling.com

Branch Name AERC.COM INC-WEST MELBOURNE
Branch Address 4317 J FORTUNE PL
City, St, Zip MELBOURNE FL 32904
Phone Number (321) 952-1516
Fax Number (321) 952-1060

Emergency Contact Information for AERC.COM INC-WEST MELBOURNE

Contact Name	Work Phone	Pager	Home Phone	Cell Phone	Email
TRACY DEPAOLA	(321) 952-1516			(321) 517-6108	tdepaola@aercrecycling.com
GERRY LANZA	(321) 952-1516			(321) 698-5522	glanza@aercrecycling.com

INFOTRAC
THE HAZMAT SOLUTION COMPANYsm

200 North Palmetto St. • Leesburg, Florida 34748
1-352-323-3500

Dear Valued Customer:

Soon it will be time to renew your emergency response service agreement with Infotrac Response System. As part of your HazMat compliance plan, Infotrac provides you with your 800-535-5053 Emergency Telephone Number, 24/7/365. As you know, this number must be monitored by someone who has knowledge in hazardous materials and can mitigate information in the event of a spill, leak, fire, exposure, accident or emergency incident during transportation. This number must appear on all of your shipping papers whenever you ship a regulated product under 49 CFR 172.101.

To guarantee you the best possible service that you expect from Infotrac we need your help. First, we are enclosing the current information we have on your company. Please take a moment to review the telephone numbers and contacts that we have. If there are any changes or discrepancies, please make the changes directly on the *company update sheet as necessary. When returning this sheet please attach any instructions that will allow us to better change the records, if no changes have occurred please note OK.

Second, the products that you registered with Infotrac were submitted with Material Safety Data Sheets, (MSDS) and/or waste profiles. Frequent changes can occur with an MSDS, as well as the products that you handle. Together we must make corrections to the list of your registered products to keep in regulatory compliance. Regulation 172.604 Subpart G of the Department of Transportation Hazardous Materials Communication requirements states: "you shall ensure that the agency or organization (INFOTRAC) has received current information on the material before it is offered for transportation". Your help with this task is greatly appreciated. Corrections may include additions, deletions or changes to the hazardous materials you use, manufacture, or distribute. Proper MSDS information is vital to our incident response on your behalf in the event of an emergency.

****Infotrac has established a reputation for being the finest response company in North America. Included in your yearly fee, Infotrac will index and process fifteen (15) free updates or MSDS additions or deletions. Any additional MSDS indexing and processing will be billed at a nominal $1.75 per MSDS* ***

Infotrac MSDS Worksheet

COMPANY NAME:_____.

NUMBER OF CHANGES AND/OR ADDITIONS SUBMITTED _____

Please help us register your companies MSDS correctly by following these guidelines:
If you have any of the following changes to a product you are REQUIRED to submit an MSDS:.

- New Manufacturer of product.
- New Date of MSDS.
- New Chemical formula/make-up.
- New trade name.

-SUBMIT MSDS in one of the following forms:

- Paper copies.
- CD-ROM in PDF format.
- CD-ROM in WORD Document format.

Please check one box to show us what your MSDS update includes:

	1. **No changes** with MSDS registered.
	2. **Only New MSDS** being submitted to be registered.
	3. **Only Revisions and Updated MSDS** submitted to existing MSDS, (NO NEW MSDS are being submitted).
	4. **Both** A. New MSDS & B. Revisions and Updated MSDS submitted.
	Please have an Infotrac representative contact me about the MSDS. NAME: TEL#:

1. No changes, please submit this worksheet you are finished.

2. **New MSDS**
   -Submit MSDS in acceptable format.
   -PLEASE WRITE ***NEW*** ON THESE:

3. **Revisions and Updates**
   -Submit Updated MSDS in acceptable format.
   -PLEASE WRITE ***UPDATE*** ON THESE.

*RETURN THIS FORM TO INFOTRAC.

P. 1

* * * Communication Result Report (Dec. 12. 2008 3:45PM) * * *

Fax Header) AERC

Date/Time: Dec. 12. 2008 3:44PM

File No.	Mode	Destination	Pg(s)	Result	Page Not Sent
8567	Memory TX	13523231991	P. 3	OK	

Reason for error
E. 1) Hang up or line fail
E. 2) Busy
E. 3) No answer
E. 4) No facsimile connection
E. 5) Exceeded max. E-mail size

INFOTRAC
Chemical Emergency Response System
200 North Palmetto St. - Leesburg Florida 34748
Phone: 352-323-3500 Fax: 352-323-1991

Customer Update

Customer ID 84301

Sales Person RL
Member Date 1/1/1999
Status B

Customer Information
AERC.COM.INC
2591 MITCHELL AVE
ALLENTOWN PA 18103 6609

Attention H LEON HENDERSHOT
Phone (610) 797-7608 **Fax** (610) 797-7696
Email lhendershot@aercrecycling.com
MSDS Contact
Website
UPS Number 16X-058 **Fed Ex Number**

The following is a list of emergency contacts for AERC.COM.INC

Contact Name	Work Phone	Ext	Home Phone	Cell Phone	Email
LEON HENDERSHOT	(610) 797-7608	158	908-475-3254	(908) 884-0552	lhendershot@aercrecyclin
~~FRANK LOSAGIO~~ Jeff Smith	(610) 797-7608	~~216~~ 149		~~(484) 226-6478~~ (908) 878-7478	~~floasagio@aarcrecycling.co~~ jsmith@aerc recycling.c
MARK KASPER	(610) 433-4011			(484) 951-6702	mkasper@aercrecycling.c

Billing Information
Phone 610-797-7608 **Fax** 610-797-7696
Email ~~lhendewrshot~~@aercrecycling.com lhendershot@aercrecycling.com
AERC.COM.INC
2591 MITCHELL AVE
ALLENTOWN PA 18103 6609

Accounting Contact H LEON HENDERSHOT
County

ERC.COM.INC

ATTACHMENT 8

EXHIBIT D.6.2

VEOLIA ES Waste Services/Emergency Response Agreement

EMERGENCY RESPONSE SERVICES AGREEMENT

THIS AGREEMENT, effective this 11th day of August 2008, by and between VEOLIA ES SPECIAL SERVICES, INC. duly organized and existing by virtue of the laws of the State of Wisconsin (Contractor), and AERC.com, Inc. (Client), WHEREAS, Contractor is engaged in providing emergency services on a 24 hours per day, 7 days per week basis, as may be required to fulfill Client's obligations to federal, state and local governmental authorities, which may include analysis and remediation of contamination, surface and subsurface investigations, transportation, excavation and disposal of underground storage tanks, including monitoring well installation, and emergency services reasonably required to mitigate oil and hazardous substances released into the environment, which may include containment, recovery and removal (WORK); and,

WHEREAS, Client desires to engage Contractor to perform environmental emergency and non-emergency services as specified in this Agreement, and to perform other services as Client may require; and, NOW, THEREFORE, for valuable consideration, the parties agree as follows:

ARTICLE I. SCOPE OF WORK

1.1 Contractor agrees to provide emergency response services (WORK) required for the mitigation of adverse environmental conditions arising from or by the release, spill, escape of oil, hazardous substances, pollutants or contaminants into the environment, at a location specified by CLIENT (Project Site), and further identified on an Emergency Work Order (EWO) (Attachment A). Contractor and Client understand that the complete and exact WORK required may not be known at the time of Client's request. The complete and exact WORK to be performed by Contractor shall be determined by Contractor in Contractor's professional discretion and in coordination with Client's representative, whether or not Client's representative is present at the Project Site.

1.2 If the WORK to be performed involves diving services, Contractor's Diving Terms and Conditions are hereby incorporated by reference with the same force and effect as if fully set forth herein. (Attachment B).

1.3 Unless otherwise specifically agreed to in writing, Contractor, either directly or through Contractor's affiliated companies, or other Contractor-approved subcontractors, shall furnish all labor, materials, tools, equipment, unloading, hauling, taxes, insurance, and other items necessary, to perform the WORK in conformance with this Agreement. Contractor's affiliated companies shall include, but are not limited to, Veolia ES Industrial Services, Veolia ES Technical Solutions, LLC., Veolia ES Waste Services, Inc., US Filter, Inc., and their respective operating subsidiaries.

ARTICLE II. ADMINISTRATION

2.1 Client may request WORK by contacting Contractor's Emergency Response Dispatch Center at any time by calling 1-800-688-4005. An EWO will be prepared by Contractor's dispatcher and faxed to Client for signature and return fax to confirm WORK contracted for hereunder.

2.2 This Agreement shall not obligate Client to purchase WORK from Contractor nor shall it obligate Contractor to provide WORK, but shall govern all EWO's issued pursuant to this Agreement. Contractor will use its commercially reasonable best efforts to respond to all Client requests utilizing its own or subcontracted resources.

ARTICLE III. CONTRACTOR'S RESPONSIBILITIES

3.1 Contractor shall at all times keep the Project Site reasonably free from the accumulation of debris and rubbish that may result from its performance of the WORK. At the completion of the WORK, Contractor shall remove all of its vehicles, equipment, machinery, and surplus construction materials from and around the Project Site.

3.2 Contractor shall take necessary precautions for the safety of its employees, and shall comply with all applicable provisions of federal, state and local safety laws. Contractor shall erect and properly maintain, as required by the conditions and progress of the WORK, necessary safeguards for the protection of its employees. It is understood and agreed, however, that Contractor shall have no responsibility for the elimination or abatement of safety hazards created or otherwise resulting from WORK at the Project Site carried on by other persons or firms directly employed by Client as separate contractors or by Client's employees and agents. Client agrees to cause any such separate contractors, employees and/or agents to abide by and fully adhere to all applicable provisions of federal, state and local laws and regulations and to comply with all reasonable requests and directions of Contractor for the elimination or abatement of any such safety hazard at the Project Site. In all cases, Contractor's Response Manager will determine in his sole discretion whether conditions are safe for Contractor personnel.

3.3 Contractor shall exercise the standard of care normally exercised within the industry in the performance of WORK pursuant to this Agreement. Contractor makes no warranty of any kind, nor a warranty of merchantability or fitness for a particular use or purpose or otherwise concerning any materials with respect to which Client may request WORK. Contractor makes no expressed or implied warranties other than the warranties expressly made herein.

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3.4 Contractor shall keep such records as may be necessary to reflect: (a) proper financial management under this Agreement; (b) the WORK performed at the project site, including, when applicable, all testing, sampling and investigatory services performed by Contractor. All such records will be subject to review by Client on the condition that Client identifies, in writing, those documents requested.

3.5 Contractor represents that it holds the occupational and professional permits and licenses required for the performance of its WORK generally expected to be performed pursuant to this Agreement.

3.6 Contractor represents, warrants and agrees that it shall provide its WORK including handling, transportation, and storage of oil and hazardous wastes in compliance with the Oil Pollution Control Act of 1990 (OPA90), Resource Conservation and Recovery Act, 42 USC. 6901, et. seq. (RCRA) when applicable, and all other applicable federal, state and local laws and regulations, and will conduct any cleanup consistent with the national, regional and area contingency plans and other lawful authority.

ARTICLE IV. CLIENT's RESPONSIBILITIES

4.1 Client shall provide full and complete information regarding its requirements for the WORK and shall immediately transmit to Contractor any new information which becomes available or any change in plans subsequent to any such providing of information.

4.2 Client shall be responsible for the location of any installations and underground utilities for Contractor prior to commencement of any WORK under this Agreement.

4.3 Client shall furnish, at no cost to Contractor, all available information on the project site describing: physical characteristics, soil reports and subsurface investigations, legal limitations, legal description, and other reports or documents that may be reasonably requested by Contractor.

4.4 Client shall secure and pay for all necessary approvals, easements, and permits required for the WORK to be performed.

4.5 Client warrants either that a) Client holds clear title to all materials to be handled pursuant to the WORK and b) Client is under no obligation, legal restraint or order (whether statutory, regulatory, administrative, judicial or otherwise) which would otherwise prohibit the transportation, treatment, storage and/or disposal of such materials by any transporter or to any disposal facility; or, c) Client is fully authorized, and requires no additional approvals other than those already obtained, to execute this Agreement, and d) Client is fully authorized, and requires no additional approvals other than those already obtained, to provide for the transportation, treatment, storage and/or disposal of such materials.

4.6 Client shall immediately communicate to Contractor those special hazard risks of which Client is or becomes aware involved in the handling of the materials. Such information shall include, but not be limited to, any relevant notification of substantial risk required to be given by Client pursuant to the Toxic Substances Control Act (TSCA), as amended, or the Resource Conservation and Recovery Act (RCRA), as amended, or any applicable state counterpart to such statutes or regulations which statutes or regulations require identification or are hereafter revised to require identification of any substance or materials or any portion thereof present at the Project Site.

4.7 Notwithstanding any other provision of this Agreement, Contractor shall not be responsible for contamination of any product or raw material handled by Contractor or Contractor's subcontractors as part of the WORK, unless agreed to in writing by Contractor prior to commencement of the Work, nor for contamination of any product or raw material in proximity to the WORK, during the performance of this Agreement.

4.8 Client shall have sole and exclusive responsibility to notify all applicable persons and governmental agencies or authorities of a reportable incident, as required by any applicable federal, state or local laws, statutes, rules, regulations or orders, to protect the health and safety of persons or property, and to make any other notifications required by governmental agencies or authorities which may relate in any way to the WORK provided hereunder. In no event shall Contractor be deemed to have assumed the responsibilities described in this Section 4.8, unless otherwise agreed to in writing and signed by Contractor.

4.9 The information to be provided by Client required by Sections 4.1 through and including 4.7 shall be furnished promptly at Client's expense, and Contractor shall be entitled to rely upon the accuracy and completeness thereof.

4.10 Client may be required by federal, state or local regulation or statute to report the results of WORK performed by Contractor under this Agreement. It is agreed between parties that Client shall be responsible for all such reporting and shall hold harmless and indemnify Contractor from any and all fines, penalties, assessments and costs resulting from any failure of Client to make such report.

4.11 As between Contractor and Client, Client has and retains all legal liability for the evaluation and selection of the proper disposal site for any waste generated as a result of the WORK. Contractor may, upon request of Client, provide

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NOT accept ownership, title, or responsibility for Client's waste, materials or substances involved with the WORK, unless such waste, material, or substance is/are treated at a facility owned by Contractor.

4.12 Client shall be responsible for the cost of any and all repairs to all roadways, structures, and rights of way to/from the project site and/or to/from the most convenient public way and Contractor's reasonable use thereof.

4.13 Materials requiring transportation and/or disposal/discharge will have the composition and characteristic described in the EWO. Any disposal, treatment, or storage facility shall be selected by the Client, who shall promptly complete any required paperwork to obtain approval at the said facility.

4.14 Client shall provide Contractor complete, legal access to all sites, locations, facilities and information as deemed necessary by Contractor for the safe, lawful, and proper provision of WORK under this Agreement.

4.15 Client shall designate a representative who has the knowledge and authority to act on behalf of Client, and shall identify this individual to Contractor's Response Manager.

4.16 In the event Client intends to use this Agreement for compliance with the Oil Pollution Act of 1990 (OPA90), Client agrees to notify Contractor of the Client's operating location(s) for which Contractor is the cited Contractor in Client's respective response plans. Client recognizes that OPA response times are for planning purposes only, and Client shall not hold Contractor liable for any damages associated with failure to respond within such timeframes.

4.17 Client's authorized representative shall be required to execute all documentation required for the lawful transportation and disposal of the wastes pursuant to the WORK, including the waste profile sheet. The waste profile sheet shall be provided to Contractor by any convenient means available, including facsimile transmission and the waste profile sheet shall include instructions as to the ultimate disposal site for the wastes. Notwithstanding anything contained in this Agreement to the contrary, exigent conditions at the Project Site may dictate that Veolia ES function as Client's agent only for the purposes of coordinating transportation for subsequent treatment, storage and/or disposal of wastes on behalf of Client in the absence of the Client's authorized representative. Contractor shall not, and in no event shall Contractor be required to, execute a waste profile sheet, or any documentation that could otherwise be deemed a waste profile sheet. Client hereby authorizes Contractor to coordinate those transportation activities as necessary in the absence of Client's authorized representative.

ARTICLE V. COMPENSATION

5.1 Contractor shall charge Client on a time and materials basis in accordance with the current Emergency Response Services Fee Schedule (Attachment C) attached hereto which charges shall be paid in US Dollars within thirty (30) days of the date of the invoice. Contractor reserves the right to increase such rates from time to time upon thirty- (30) days written notice to Client.

5.2 Client's obligation to pay amounts due pursuant to this Agreement, within the time periods specified, shall not be conditioned upon, nor limited by, the types, amounts, or availability of insurance coverage.

5.3 Client has specified that all invoices are to be submitted for payment to:

AERC.com, Inc.
3 Gold Mine Road, Suite 106, Flanders, NJ 07836
Telephone: (973) 691-3200 | Fax: (973) 691-3233 Attn: Nirsa Ortiz – Accts Payable

5.3 PAYMENT: Invoices shall be payable within thirty (30) days of the date of invoice. All outstanding balances remaining unpaid thirty (30) days after the invoice date shall be subject to accrued interest from the invoice date to the date of payment in full at the rate of one and one-half (1.5%) percent per month or the maximum rate of interest permissible under applicable law, whichever is less. Payments received will be applied first to collection costs (including attorneys' fees), if any second to accrued interest, and the balance of the payment to any unpaid charges. Contractor will be paid under the terms and conditions of this Agreement, and payment to Contractor for the WORK shall not be contingent upon nor be delayed pursuant to any insurance settlement.

5.4 All invoices not disputed in writing within fifteen (15) business days of the date of invoice are deemed accepted in full by Client as true, accurate, reasonable, and payable in full.

5.5 Contractor's obligations under this Agreement may be subject to Client's establishment of credit approval with the Contractor's credit department.

5.6 Contractor may, after giving ten (10) days written notice, suspend WORK under this Agreement, without liability until all past due amounts (including, but not limited to, collection costs, attorney's fees, and interest accrued) have been paid in full.

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5.7 If at any time Client's account to Contractor or to any Contractor affiliated company becomes more than ninety (90) days past due (calculated from the date of the invoice), Contractor shall be under no obligation to respond to any request by Client for WORK to be performed.

5.8 If all or any portion of Client's account is referred to an attorney or other third party for collection, Client agrees to reimburse Contractor for all costs of collection, including all collection agency fees, court costs and actual attorneys fees, incurred by Contractor in collecting the unpaid amount.

ARTICLE VI. CHANGES IN THE WORK REQUESTED

6.1 In the event changes in the WORK requested in the EWO result in increased work, unless otherwise negotiated between the parties, Contractor will invoice Client for increased hours worked, equipment used and materials expended in accordance with the fee schedule.

ARTICLE VII. INDEMNIFICATION

7.1 Contractor agrees to indemnify and save harmless Client from and against any and all liabilities, claims, demands and causes of action for bodily injury to or death of any person or destruction of or damage to any property that occurred as a direct result of the negligent performance of the WORK by Contractor, its agents, employees or subcontractors, except to the extent such liabilities, claims, demands and causes of action occurred as a result of Client's failure to comply with and fulfill its obligations under this Agreement, or as a result of the negligent or intentional acts of Client. CONTRACTOR's liability under this Section shall not exceed CONTRACTOR's insurance coverage as set forth in Attachment D.

7.2 Client shall indemnify and hold harmless Contractor, its directors, officers, employees, agents and subcontractors against any and all costs, expenses (including attorneys fees), liabilities, claims, demands and causes of action for, including, without limitation, any bodily injury to or death of any person or destruction of or damage to any property, which Contractor, individually or collectively with Contractor affiliated companies, may suffer by reason of any act or omission of Client, its agents, contractors, employees or representatives, or the failure of any such party to observe or comply with any of Client's duties and obligations under this Agreement. Client shall further indemnify Contractor in accordance with the provisions of this Section 7.2 for CERCLA liability which might otherwise attach to Contractor pursuant to Contractor's authorized activities hereunder, unless CERCLA liability otherwise attaches to Contractor as a transporter, owner/operator, or generator.

7.3 In no event shall either party be liable to the other party for incidental or consequential damages of any kind or nature.

7.4 To the extent available to Contractor, it is the intent of the parties that Contractor shall be entitled to the benefits of the provisions of OPA 90 and any applicable state statute providing for responder immunity.

ARTICLE VIII. CONFIDENTIALITY

8.1 Contractor and Client (including both parties, employees, officers, agents, and directors) shall treat as confidential and proprietary and not disclose to others during or subsequent to the term of this Agreement, except as is necessary to perform WORK under this Agreement, (and then only on a confidential basis and satisfactory to both parties), any information whether verbal or written, of any description whatsoever, (including any technical information, experience or data) regarding either party's plans, programs, plants, processes, products, costs, equipment, operations, or customers which may come within the knowledge of the parties, their officers, or their employees in the performance of this Agreement, without in each instance securing the prior written consent of the other party.

8.2 Nothing contained within this Article shall prevent either Contractor or Client from disclosing to others or using in any manner information which either party can show:

a) has been published or become part of the public domain other than by the acts, omissions, or fault of the party seeking to disclose or make use of such information or any agent, employee or contractor of such party;
b) has been furnished or made known to Contractor or Client by third parties (other than those acting directly or indirectly for or on behalf of Contractor or Client) as a matter of legal right without restrictions on its disclosure; or,
c) was in either party's possession prior to the disclosure thereof by Client or Contractor to each other.

8.3 In the event that either party shall be required by subpoena, court, or administrative order (hereinafter "The Order") to disclose any of the information deemed by this Agreement to be confidential and/or proprietary that party shall give immediate written notice to the other party. Upon receipt of same, the party whose information may be the subject of The Order expressly reserves the right to interpose all objections it may have to the disclosure of its information. The foregoing obligation shall survive the termination or expiration of this Agreement and shall continue until a specific written release is given by either party.

8.4 Notwithstanding the provisions of this Article 8, either party shall have the express right to publicly disclose, for the purposes of sales and marketing, the fact that it has entered into this Agreement without receipt of the other party's

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approval. In addition, Client shall have the express right to provide copies of this Agreement, **minus Attachment C**, to any governmental agency as may be necessary to document compliance with any governmental regulation or law.

8.5 For purposes of compliance with OPA 90, Contractor is hereby authorized to communicate with any federal, state, or local governmental agency regarding the certification status of any contractor or subcontractor resources with or without prior notice to Client. In the event Contractor intends to decertify any resources which resources Client had been granted prior permission to certify, Contractor agrees to provide Client thirty (30) days written notice prior to notification of any federal, state or local governmental agency.

ARTICLE IX. EXCUSE OF PERFORMANCE

9.1 The performance of this Agreement, except for the payment of money for WORK already rendered, may be suspended by either party in the event performance of this Agreement is prevented by a cause or causes beyond the reasonable control of the party during excused performance. Such causes shall include, but not be limited to: acts of God, acts of war; riot; fire; explosion; accident; flood; or sabotage; lack of adequate fuel, power, raw materials, labor or transportation facilities; governmental laws, regulations, requirements, orders or actions; breakage or failure of machinery or apparatus; national defense requirements; injunctions or restraining orders; labor trouble, strike, lockout or injunction (provided that neither party shall be required to settle a labor dispute against its own best judgement).

ARTICLE X. DELEGATION AND ASSIGNMENT

10.1 Upon the prior written consent of Client, Contractor may delegate, orally or in writing, the performance of the WORK, or any portion thereof, which is by this Agreement undertaken by Contractor. Any such delegation shall not operate to relieve Contractor of its responsibilities hereunder; and, notwithstanding any such delegation, Contractor shall remain obligated to Client in these undertakings.

ARTICLE XI. LIEN NOTICE

11.1 As may be required by various states' mechanic's lien laws, and if appropriate to WORK contemplated under this Agreement, **Contractor hereby notifies Client that persons or companies who furnish labor or materials for the improvement of real property owned by Client and who give the Client appropriate statutory notice after furnishing labor or materials for the improvements, may have lien rights in Client's real property. Accordingly, Client may receive notices of claims for lien from those persons or companies who furnish labor or material for the improvement of Client's real property, and Client should give a copy of each notice received to Client's mortgage lender, if any. Contractor agrees to cooperate with Client and his lender, if any, to see that all-potential lien claimants are duly paid.**

ARTICLE XII. ADDITIONAL GENERAL PROVISIONS

12.1 Waiver - Any waiver by either party of any provision or condition of this Agreement shall not be construed or deemed to be a waiver of any other provision or condition of this Agreement, nor a waiver of a subsequent breach of the same provision or condition, unless such waiver be so expressed in writing and signed by the party to be bound.

12.2 Survival – Sections 3.4, 4.5, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, all sections of Article V, all sections of Article VII, all sections of Article VIII, and all sections of Article XII hereof shall survive any termination of this Agreement, as shall any other obligations already accrued under this Agreement.

12.3 Construction – Headings of particular paragraphs or sections herein are inserted for convenience only and are in no way to be construed as a limitation of scope or intent of the paragraphs or sections to which they refer.

12.4 Severability - If any section, subsection, sentence or clause of this Agreement shall be adjudicated illegal, invalid or unenforceable, such illegality, invalidity or unenforceability shall not affect the legality, validity or enforceability of this Agreement as a whole or of any section, subsection, sentence or clause hereof not so adjudicated.

12.5 Independent Contractor – Contractor is and shall perform this Agreement as an independent contractor and, as such, shall have and maintain complete control over all of its employees, agents and operations. Neither Contractor nor anyone employed by Contractor shall be, nor deemed to be, the agent, representative, employee or servant of Client, unless specifically authorized by both Client and Contractor in writing.

12.6 Governing Law – The validity, interpretation and performance of this Agreement and the legal relations of the parties shall be governed by and construed in accordance with the laws of the State of Wisconsin, without regard to principles of conflicts of laws. The parties agree that the WORK provided hereunder shall not be subject to the provisions of any Uniform Commercial Code.

12.7 RCRA and CERCLA Status – Nothing contained in this Agreement shall be construed or interpreted as requiring Contractor to assume the status of a generator, transporter, or a treatment, storage or disposal facility, as those terms are

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defined by RCRA or CERCLA, or any other federal, state or local law, statute, rule or regulation governing the generation, transportation, treatment, storage or disposal of hazardous wastes, solid wastes or special wastes.

12.8 Amendments - This Agreement may be amended or modified only by a written amendment to the Agreement signed by both parties. Additional or different terms or any attempt by Client, through a Purchase Order, or other document, to vary in any degree any of the terms of this Agreement shall be deemed material and shall be rejected, unless expressly agreed to in writing and signed by Contractor.

12.9 Notice - Any notice, communication, or statement required or permitted to be given hereunder shall be in writing and deemed to have been sufficiently given when delivered in person, by nationally-recognized commercial carrier, or by registered, or certified mail, postage prepaid, return receipt requested, to the address of the respective party below: Additional contact information is provided for convenience only, and shall not be construed as a means of providing sufficient legal notice.

Client:		Contract Administrator
Vice President of Operations		Veolia ES Special Services, Inc.
AERC.com, Inc., AERC Recycling Solutions		P.O. Box 367
2591 Mitchell Ave		Germantown, WI 53022-0367
Allentown, PA 18103		
(610) 797-7608	Telephone	(262) 236-8130 Telephone
(610) 797-7696	Telecopier	(262) 236-8140 Telecopier

12.10 Entire Agreement - This Agreement and its attachments, the completed Emergency WORK Order, and any duly executed change orders, represent the entire understanding and agreement between the parties hereto concerning emergency services and supersedes any and all prior emergency services agreements, whether written or oral, that may exist between the parties regarding same. In the event Agreement documents conflict, the terms and conditions as outlined in this Agreement, its attachments and duly authorized change orders shall take precedence over all other documents.

12.11 Electronic Signature - Both parties expressly stipulate that this document may be executed and become effective electronically by entering an electronic signature in the signature block below. Such electronic signature and document shall be deemed an original signature and an original document certifying the validity of this Agreement, its enforceability, and the intent to lawfully enter this Agreement.

12.12 Term of Agreement - This Agreement, effective as of the date last signed below, is for a one- (1) year term. This Agreement shall be automatically renewed for additional consecutive one- (1) year terms, unless either party gives a termination notice with at least thirty (30) days advance written notice.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representative as of the day and year last signed below.

Client:	Veolia ES Special Services, Inc:
x By:	x By:
x MARK C. KASPER Printed Name:	x Jon Zielke Printed Name:
x VP OPERATIONS Title:	x Technical Services Manager Title:
x 8-11-08 Date:	x 8/12/08 Date:

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ATTACHMENT 8

EXHIBIT D.6.3

AERC Transportation Contingency Plan

TRANSPORTATION CONTINGENCY PLAN

AERC.com, Inc.

US DOT ID # 687877

AERC RECYCLING SOLUTIONS

Document #TR001 | Rev F | 6/3/10

See Operating Facility/Terminal Location Summary on next page.

Terminal Location Summary

AERC.com, Inc.

Corporate Offices	3 Gold Mine Rd., Suite 106, **Flanders, NJ** 07836 Telephone: (973) 691-3200 | Fax: (973) 691-3233
AERC | AERC Recycling Solutions Operating Locations SIC Codes: 2819 | 4953 NAICS Codes: 325188 | 562211	Facilities operate as universal waste large quantity handlers; conduct universal waste lamp recycling as well as hazardous wastes activities (as noted) based upon site-specific permit conditions.
AERC Recycling Solutions [LSS1 lamp recycling unit | UW/HW Recycling|Storage|Transfer]	2591 Mitchell Ave, Lehigh County **Allentown, PA** 18103-6609 Telephone: (610) 797-7608 | Fax: (610) 797-7696 NE Regional Manager: John Schlegel Operations Manager: Chris Salazar EPA ID# PAD987367216
AERC Recycling Solutions [UW Handler | HW transfer]	116 Sylvia Rd. Suite E, Hanover County **Ashland, VA** 23005-1320 Telephone (804) 798-9295 | Fax: (804) 798-9296 Facility Manager: Stephen LeFon EPA ID# VAR000502591
AERC Recycling Solutions [LSS1 lamp recycling unit | UW/HW Recycling|Storage|Transfer]	30677 Huntwood Ave , Alameda County **Hayward, CA** 94544-7021 Telephone: (510) 429-4970 Facility Manager: Craig Stormo EPA ID# CAD982411993
AERC Recycling Solutions [LSS1 lamp recycling unit | UW/HW Recycling|Storage|Transfer]	4317-J Fortune Place, Brevard County **West Melbourne, FL** 32904-1509 Telephone: (321) 952-1516 | Fax: (321) 952-1060 SE Regional Manager: Tracy DePaola EPA ID# FLD984262782
AERC Recycling Solutions [Transfer Station only]	120 Willingham Rd, Monroe County **Boling Broke, GA** 31004 -0537 EPA ID# GAR000034645 Telephone: (478) 994-8116 | Fax: (478) 994-8117 Operations Manager: Tracy DePaola

[Continued on next page]

Terminal Location Summary

AERC.com, Inc.

AERC | Com-Cycle Operating Locations Applicable SIC Codes: 4953 NAICS Codes: 562211 (UW) | 562219	Facilities that receive and recycle obsolete electronic devices and related "E-scrap" for assessment management services that range from equipment refurbishment and resale to demanufacture and recycling. Facilities may also operate as universal waste handlers.
Com-Cycle [E-Waste Beneficial Reuse & Recycling | UW Handler]	1801 Union Blvd., Suite 108, Lehigh County, **Allentown, PA** 18109 Telephone: (610) 433-4011 | Fax: (610) 433-4012 Operations Manager: Mark Kasper Lead Supervisor: Kevin Williams EPA ID# PAR000524462
Com-Cycle [E-Waste Beneficial Reuse & Recycle]	10991 Leadbetter Rd., Hanover County, **Ashland, VA** 23005 Telephone: (804) 550-1762 | Fax: (804) 550-1763 Operations Manager: Stephen LeFon EPA ID# VAR000514489
Com-Cycle [E-Waste Beneficial Reuse | UW Handler]	3 Gold Mine Rd., Suite 106, Morris County, **Flanders, NJ** 07836 Telephone: (973) 691-3200 | Fax: (973) 691-3233 Operations Manager: Open EPA ID# NJR000028506
Com-Cycle [E-Waste Beneficial Reuse & Recycling | UW Handler]	1475 Crocker Ave., Alameda County , **Hayward, CA** 94544 Telephone: (510) 429-1129 | Fax: (510) 429-1498 Facility Manager: Craig Stormo EPA ID# CAR000170092
Com-Cycle [E-Waste Beneficial Reuse & Recycling | UW Handler]	1610 Greens Rd., Suite 200, Harris County, **Houston, TX** 77032 Telephone: (281) 645-8103 | Fax: (281) 645-8696 Operations Manager: Thomas Oakley EPA ID# TXR000079158
Com-Cycle AERC Recycling Solutions [UW Handler/Transfer Station]	1976 West Holt Ave. Los Angeles, **Pomona, CA** 91768 Telephone: N/A Facility Manager: Craig Stormo | Site Contact: Dan Kirkland EPA ID# CAR000205492
Com-Cycle [E- Waste Beneficial Reuse & Recycle]	4301 Woodland Park Dr. Suite 105, Brevard County , **West Melbourne, FL** 32904 Telephone (321) 984-1772 | Fax: (321) 984-1797 Operations Manager: Ryan Landmesser EPA ID# FLR000122655

1.0 Contingency Plan and Emergency Procedures

The following Contingency Plan has been prepared for the operation of the hazardous and universal waste transport vehicles operated by AERC.com, Inc. (hereinafter, AERC). This plan is designed to minimize hazards to human health and the environment from any unplanned sudden or non-sudden release of hazardous materials, hazardous waste, universal waste or universal waste constituents to air, soil, surface water or groundwater during transportation. Copies of the Transportation Contingency Plan (latest revision) will be carried on all transport vehicles and maintained at all AERC.com, Inc. facilities. The provisions of the plan will be carried out immediately whenever there is a release of hazardous waste, universal waste or hazardous materials which could threaten human health or the environment.

2.0 All Emergency Incidents

In the most basic sense, an "Emergency" is defined as

ACCIDENT & INJURY REPORTING

In the event of an accident involving property damage or personal injury a report must be made as soon as is practical, i.e., after securing the accident scene and obtaining necessary medical care for injured parties.

This documentation, at a minimum, includes completion of Form HS-02004-F3 - *Incident Summary Form*. The report of an injury to an AERC employee must be done according to established company injury report procedures (as required by OSHA). The employee must complete as much information as possible detailed in Form HS-02004-F1 - *Injury-Illness Report.* A copy of the current procedure and referenced forms are included in Attachment 1 (**YELLOW TAB**).

A record of the accident, as required by AERC insurance provider, must also be documented using the XL Insurance *Driver Accident Report Form*. A copy of this form is provided as Attachment 1.1.

HAZARDOUS MATERIAL RELEASE

In the event of a release of hazardous materials, hazardous waste, universal waste or universal waste constituents to air, soil, surface water or groundwater during transportation, the vehicle operator shall determine whether any material resulting from the release is a hazard. Furthermore, if a determination is made that ***human health and the environment are threatened***, the Vehicle Operator will immediately:

Notify

A. Local municipal authorities **(Police, Fire, EMS, Haz-Mat)** **911**

B. **INFOTRAC** **800 535-5053**

Ask the INFOTRAC operator for the appropriate state agency and telephone number to report your emergency. Do this immediately!

C. **National Response Center** **(800) 424-8802**

D. **The generator of the material involved in the incident.**

NOTE: For incidents within the Commonwealth of Massachusetts see the AERC supplemental Notification Requirements Policy presented within Attachment 2 **(RED TAB)**.

Reporting instructions detailed in Section 6.0.

3.0 Emergency Coordinators

A current list of Emergency Coordinators who have the responsibility for coordinating all emergency response measures and who have the authority to commit the resources necessary to carry out this Contingency Plan is detailed within form TR*001-F1*, *Emergency Coordinator List* (Attachment 2 **(RED TAB)**).

Each Emergency Coordinator will be thoroughly familiar with all aspects of the Contingency Plan, all transportation activities and the steps to be taken to mitigate a transportation emergency.

EMERGENCY COORDINATORS

- All Vehicle Operators are initial on-scene Emergency Coordinators
- Leon Hendershot (Nationwide – All Operations)

- Craig Stormo (California Operations)
- Tracy DePaola (Florida and Georgia Operations)
- Chris Salazar (Pennsylvania Operations)
- Thomas Oakley (Texas Operations)
- Stephen LeFon (Virginia Operations)

Additional management staff who may assume duties as EC's noted on the Operating Facility/Terminal Location Summary list.

Follow-up Notification | Technical Assistance

- Donald Lees (CA and TX)
- John Schlegel (NE Region – PA and VA)
- Jeffery Smith (Nationwide – All Operations)

4.0 Emergency Notifications Summary

A current summary of emergency notifications contact information that shall be used in case of an emergency are detailed within form TR*001-F2*, *Emergency Notification Summary* (Attachment 2 **(RED TAB)**).

5.0 Duties and Responsibilities of Vehicle Operator

Whenever there is an imminent or actual emergency, the Vehicle Operator will immediately:

A. Identify the character (universal or hazardous) of waste, exact source, amount and extent of emitted or discharged materials (by observation or review of records) and determine if **human health or the environment are threatened**; and, if so, the Vehicle Operator will immediately make the notifications as required in Section 2.0 on page 4.

B. As can be accomplished without risk of personal injury - don appropriate personal protective equipment and take all measures necessary to stop the release or prevent the emission, discharge or spread to other/additional materials. These measures shall include, where applicable, stopping operations, collecting and containing released materials and removing or isolating containers; and, containing the release utilizing the tools carried on the vehicle or on the scene.

C. The Vehicle Operator shall also immediately notify the AERC.com, Inc. facility of the incident and, if warranted, request the assistance of the AERC.com, Inc. Emergency Coordinators and/or the emergency response contractor. The clean-up will be accomplished by the driver of the vehicle or by a clean-up contractor on the scene.

With containment effected and the spill source controlled, cleanup will commence. If the spill is contained on an impervious paved surface, material should be absorbed onto a compatible material (e.g., sand, spill pads). If the spillage has reached soil, all contaminated dirt should be collected into drums or bags for disposal at an EPA approved site. If any spilled waste has reached the ground, the contaminated soil will be removed. The extent of contamination will be determined by sampling the spill area. A qualified laboratory will analyze the sample. Sampling

techniques, chain-of-custody requirements, and analytical methods will follow approved procedures such as those outlined in SW-846. Any soil exhibiting contamination above the local background level will be removed to an appropriate permitted disposal site.

In addition to contaminated absorbents, dirt, or the like as noted above, damaged containers also present a disposal problem. Special "recovery drums" (oversize metal drums) will be used for containing damaged 55-gallon drums. Disposal will be at an approved site.

6.0 Reporting Requirements

The type and quantity of material released during an incident will determine the specific reporting requirements to be followed. Specific requirements have been developed under RCRA and other State agency hazardous waste regulations for releases of hazardous wastes. Reporting requirements and procedures have been developed under the Comprehensive Environmental Responsibility and Cleanup Act (CERCLA or “Superfund”) for releases of reportable quantities of CERCLA Hazardous Substances. Additionally, reporting requirements and procedures have been developed under the Superfund Amendments and Reauthorization Act (SARA) for releases of reportable quantities of extremely hazardous substances (EHS).

INFOTRAC will provide the specific details for reporting each incident to the required agency. This will be dependent on the detail and location of each incident. The final incident report will be compiled and submitted to all agencies requiring this, by the National Service Manager, Regulatory and Safety Department, Facility Manager and Vehicle Operator.

The Department of Transportation, Director of Hazardous Materials Registration, Materials and Transportation Bureau, Washington, DC 20590 will be notified, in writing, of the occurrence, and nature of the incident if the following criteria are met:

1. A person is killed or requires hospitalization due to injuries.
2. Carrier or property damage exceeds $50,000.00.
3. Notification caused by continuing danger to life.

Information to be Reported Shall Include (but is not limited to):

1. Name of the person reporting the incident;
2. Company name, EPA ID Number and address/location of the transporter;
3. Phone number where the person reporting the incident can be reached;
4. Date, time and location of the incident;
5. Mode of transportation and type of transport vehicle;
6. A brief description of the incident and extent of any injuries and possible hazards to human health and the environment. Recorded information shall also include the names and statements of any witnesses.
7. A description of each waste involved in the incident:

a. The shipping name, hazard class, UN/NA Number of the waste;
b. The estimated quantity of material or waste released; and,
c. The extent of contamination of land, water or air.

8. Shipping name, hazard class and the UN or NA number of any other material carried on the transport vehicle.
9. An indication of whether the substance is an extremely hazardous substance (EHS); and
10. Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals.
11. Request a copy of notification / report of the event from all agencies present. If not available at the scene, obtain the telephone number, name of agency; incident number and contact person so follow-up can be made.
12. Photographs of the accident scene as possible using the Driver's cellular phone. (Secure a disposable camera is no other equipment is available)

NOTE: If the incident occurred in Alabama or involves a shipment from Alabama, a copy will be submitted to the Alabama Department of Environmental Management, Coliseum Boulevard, Montgomery, Alabama 36110-2059.

7.0 Emergency Equipment

The **initial response** to such an emergency will be to identify, isolate, contain and treat the individual container and spilled material. The driver/operator (acting as the sole emergency responder) will act as follows to:

- As can be done in a safe manner without risk of personal injury, use available emergency supplies, including: absorbent pads, booms or other inert materials to confine, contain and clean-up the release. See Attachment 5, *Emergency Equipment List*, for a summary of available emergency supplies **(PINK TAB)**.
- Work instructions for the cleanup of commonly transported materials are presented in Attachment 3 (**WHITE TAB**).
- Supplemental information regarding the potential hazards of commonly transported materials are presented in Attachment 4 (**GREEN TAB**).
-
- Place all containment and clean-up supplies into appropriate DOT-approved containers for proper management.

8.0 External Communications

The driver/operator of the AERC.com, Inc. vehicle will contact additional Emergency Coordinators and other personnel and agencies listed in this Plan via the cellular telephone that is carried by the driver/vehicle operator. Additional emergency assistance will be coordinated as required.

9.0 Decontamination Procedures

AERC.com, Inc. only transports Hazardous and Universal Waste in approved containers in box trailers. AERC.com, Inc. only transports mercury bearing wastes and does not transport incompatible materials.

The cargo portion of each transport vehicle will be inspected and decontaminated (if necessary) to prevent any spread of contaminates. If there are contaminants present, the cargo area of the transport vehicle will be cleaned. All hazardous waste and universal waste decontaminants will be contained within USDOT-approved containers and returned to the AERC.com, Inc. facility following the cleanup of any releases. If any hazardous waste decontaminants are encountered, such materials will be removed and transported to a permitted TSD facility for proper treatment or disposal.

Mercury decontamination products, such as HgX, will be used to decontaminate any mercury contamination that occurs from a spill or release. If decontamination requirements are beyond AERC.com, Inc.'s capability, a spill clean-up contractor will perform those duties.

Additional work instructions will be developed for individual hazardous materials as deemed necessary and appropriate. See referenced attachments to this Plan for these instructions and supporting technical information. In addition, the current addition of the *Emergency Response Guidebook* is used as an additional general reference source for emergency response information.

10.0 Employee Training Program

The AERC.com, Inc. hazardous waste transportation training program includes the following elements:

1. 24 hour HAZWOPER training (29CFR1910.120)
2. HM126 Requirements
3. Refresher training on C.D.L. Study Manual
4. Instruction as to the nature of the universal waste (e.g. batteries, thermostats, etc.) being transported and the nature of universal/hazardous waste characterization;
5. The safety and health hazards associated with the materials being transported (e.g. mercury, acid, alkali, etc.);
6. Practices for preventing spills;
7. Procedures for responding properly and rapidly to spills;

8. Emergency procedures (e.g. use of the Contingency Plan); and,
9. Use of the emergency equipment that is carried aboard the AERC.com, Inc. transport vehicle.

The AERC.com, Inc. universal and hazardous waste transportation training programs are provided annually to all AERC.com, Inc. transport vehicle operators.

11.0 Change Record

Rev	DOC CNTRL #	Date	Responsible Person	Description of Change
A-D (1-4)	Not assigned[1]	Various	Not Verified (L. Hendershot)	Various – Not specified
E	TR02001	8/25/08	Jeffery Smith – Director of Regulatory Affairs	Initial restructuring | formatting in agreement with EMS. 1st Step – Not fully completed.
F	TR001	5/5/10	Jeffery Smith – Director of Regulatory Affairs	Update document control # | Update Emergency Coordinators and associated facility list to include all locations (AERC and Com-Cycle). Insert updated cleanup procedures.

[1] Document control system not formally in place as of the time of this revision.

12.0 Approvals

Approved:

TITLE: *Transportation National Services Manager* **H. Leon Hendershot** **Date**

Approved:

TITLE: *Director of Regulatory Affairs* **Jeffery W. Smith, PE** **Date**

13.0 Distribution

13.1 Electronic Copy – Regulatory Affairs Dept., Allentown, PA

13.2 Hard Copies –

- 13.2.1 Operating Locations - Copy to Facility Management and Driver(s)
- 13.2.2 Transportation National Service Manager
- 13.2.3 Regulatory Affairs Department

Attachment 1

Form HS-02004-F1 - *Injury-Illness Report*

XL Insurance *Driver Accident Report Form*

AERC RECYCLING SOLUTIONS

Emergency Incident Summary

Type of Incident (Indicate Fire, HAZMAT or First Aid)	Building Number/Location	Room/Area	Date of Incident

Information Gathering

Name of Witness	Time of Observation	Description of Observation	Phone Number

Responders

Name	Position(s) During Incident	Responder Notes

Injuries

Name of Victim	Injury Summary	Treatment

Agencies Contacted

Name of Agency	Reason for Contact	Plan of Action

Incident Summary

HSE Representative

Name/Title	Signature	Date (MMDDYY)

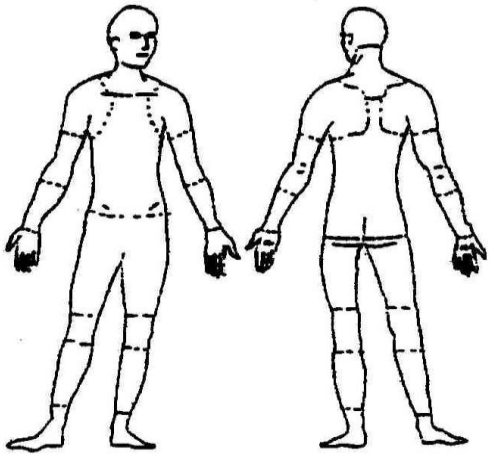
Injury/Illness Report

AERC RECYCLING SOLUTIONS

This form is to be used as soon as possible after an incident that involves an injury, illness or a near miss that could have resulted in an injury or illness. SEND COMPLETED REPORT TO THE HSE COORDINATOR UPON COMPLETION.

Date of incident:	Date Reported:	Date Returned to Work:
Name of person(s) completing report:		
Incident Location (Complete Address):		
Type of report (circle): Death Lost Time Dr. Visit Only First Aid Near Miss		

Step 1 – Injured Employee Information		
Name:	Sex (circle): Male Female	DOB:
Address:	SS#:	Age:
	Date fo Hire:	# Dependants Under 18:
Home Phone:	Marital Status:	
Department:	Job Title:	
Supervisor:	Job at time of incident:	
This employee works (circle): Full Time Part Time Seasonal Temporary		
Normal Starting Time:	Regular Shift Hours:	

Step 2 – Description if Incident	
Location of Incident:	Time of Incident:
What part of the employees workday did the injury occur? (circle): Entering/Leaving Work Normal Work Activities Meal Period Break Overtime Other	
Part of body affected (shade all that apply)	Nature of Incident (circle the most serious one)
	Abrasion Amputation Broken Bone Bruise Burn (Heat) Burn (Chemical) Concussion Crushing Injury Cut, Laceration or Puncture Damage to a Body System Hernia Illness Sprain, Strain Other -
Describe, step-by-step, the events that led up to the injury. Include names of any machines, parts, objects, tools, materials or other important details.	

Injury/Illness Report

This form is to be used as soon as possible after an incident that involves an injury, illness or a near miss that could have resulted in an injury or illness.

Step 2 - Description of The Incident Continued	
Treatment Sought (Circle): First Aid Only Hospital/Clinic Specialist	
Hospital/Clinic Name:	Physician Name:
Address:	
Phone:	Hospitalized Overnight (Circle): Yes No
Name and Contact Information of witnesses (if any):	

Step 3 – Cause of Incident	
List Required Personal Protective Equipment:	
Was The Employee Wearing The Required PPE?:	
Unsafe Working Conditions (Circle all that apply)	Unsafe Acts by People (Circle all that apply)
Inadequate Guard	Operating Without Permission
Unguarded Hazard	Operating at Unsafe Speed
Safety Device Defective	Servicing Powered Equipment
Tool or Equipment Defective	Making a Safety Device Inoperable
Workstation Layout is Hazardous	Using Defective Equipment
Unsafe Lighting	Using Equipment in an Unapproved Way
Unsafe Ventilation	Unsafe Lifting
Lack of Needed Personal Protective Equipment	Taking an Unsafe Position of Posture
Lack of Appropriate Equipment or Tools	Distraction, Horseplay or Teasing
Unsafe Clothing	Failure to Wear PPE
None or Insufficient Training	Failure to Use Available Equipment or Tools
Other -	Other -
Why did the unsafe conditions exist?	
Why did the unsafe acts occur?	
Were the unsafe acts reported prior to the incident? Yes No	
Have there been similar incidents or near misses prior to this one? Yes No	

Step 4 - Improving the Future			
What changes would you suggest to prevent this incident from reoccurring? (circle all that apply)			
Stop this Activity	Guard the Hazard	Employee Training	Supervisor training
Task Redesign	Workstation Redesign	Create New Policy	Enforce Current Policy
Inspections for Hazard	Personal Protective Equipment	Other (Explain)	
What should be or has been done to carry about the above suggestion?			

Step 5 - Form Completer Information		
Written By:	Title:	Date:
Reviewed by:	Title:	Date:

Driver Accident Report Form

Complete This Form As Thoroughly As Possible

DRIVER INFORMATION

Company Name _____

Name _____ Social Security No. _____

Address _____ Home Phone _____

Driver's License No. and State _____

Vehicle Truck No. _____ Year _____ Make _____ VIN No. _____

Trailer No. _____ Year _____ Make _____ VIN No. _____

Description of Damage _____

CO-DRIVER INFORMATION

Name _____ Social Security No. _____

Address _____ Home Phone _____

Driver's License No. and State _____

OTHER VEHICLE

Owned By _____ Address _____ Phone _____

Driven By _____ Address _____ Phone _____

Year _____ Make _____ Vehicle Color _____ License No. _____

Insurance Company _____ Policy No. _____

Description of Damage _____

Passengers in other vehicle or injured pedestrians

	Name	Address	Phone	Age	Nature of Injury, if any
1.					
2.					
3.					

** If more than one other vehicle involved, list above information for each on separate page and attach to this report.*

CARGO INFORMATION

Was the trailer loaded? ☐ Yes ☐ No How many trailers were you hauling? _____

What type of cargo were you carrying and what is its status? _____

Was it hazardous material? ☐ Yes ☐ No Did it spill? ☐ Yes ☐ No Was the EPA called? ☐ Yes ☐ No

Extent of Spill? _____

TRIP INFORMATION

What type of trip were you on? ☐ Short Haul ☐ Long Haul Were you under a trip lease? ☐ Yes ☐ No

If Yes, with whom? _____

Was a hold harmless signed? ☐ Yes ☐ No Whose Bill of Lading are you running under? _____

Beginning of last 8 hour break Date _____ Time _____ am/pm

End of last eight hour break Date _____ Time _____ am/pm

Where did you take your break? _____

ACCIDENT FACTS

1. Date _____ Time _____ am/pm
2. Location State _____ Nearest Town _____
3. Road Name or No. _____ Direction of Travel ☐ North ☐ East ☐ South ☐ West
4. Were police present at the scene? ☐ Yes ☐ No Name of Police Department _____

   Were any citations issued? ☐ Yes ☐ No If Yes, for what? (i.e. speeding, etc.) _____

   Who issued the citations? _____
5. Was anyone injured? ☐ Yes ☐ No If Yes, who was injured? _____

   Describe Injuries _____
6. Speed limit at accident scene _____ Your speed _____ Other Vehicle(s) estimated speed _____
7. Accident Type ☐ Collision ☐ Non-Collision

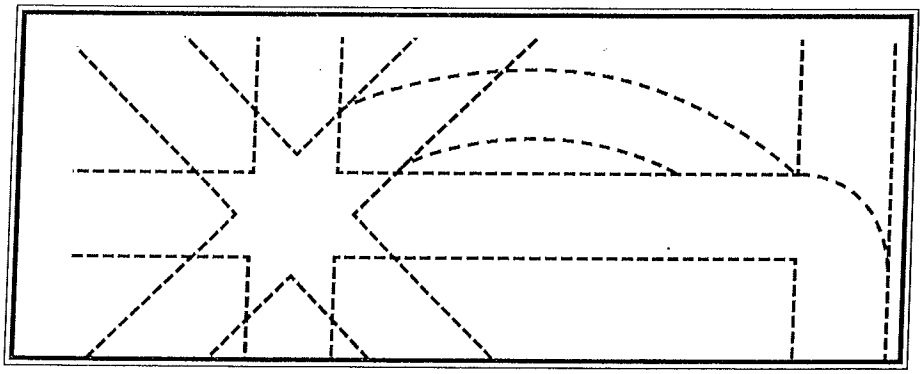
XL INSURANCE

4134-07/04

Driver Accident Report Form

8. Your action at the time of the accident
   - ☐ Going straight ahead
   - ☐ Changing lanes
   - ☐ Making right turn
   - ☐ Making left turn
   - ☐ Making U-turn
   - ☐ Slowing or stopping
   - ☐ Starting in traffic lane
   - ☐ Starting from parked position
   - ☐ Stopped in traffic
   - ☐ Parked
   - ☐ Backing
   - ☐ Other _____
9. Road Description
   - ☐ Straight - level
   - ☐ Straight - on grade
   - ☐ Straight - hillcrest
   - ☐ Curve - level
   - ☐ Curve - on grade
   - ☐ Curve - hillcrest
10. Light
    ☐ Daylight ☐ Dawn ☐ Dusk ☐ Darkness ☐ Darkness - road lighted
11. Weather
    ☐ Clear ☐ Rain ☐ Snow ☐ Fog/Smog ☐ Sleet ☐ Blowing Dust
12. Road Defects
    - ☐ Low shoulder
    - ☐ Soft shoulder
    - ☐ Holes, bumps, etc.
    - ☐ Loose material on roadway
    - ☐ Construction - barricaded
    - ☐ Construction - non-barricaded
    - ☐ Other _____
13. Road Lanes
    ☐ Divided ☐ Undivided
14. Visibility (check all that apply)
    - ☐ Not obscured
    - ☐ Rain, snow, ice on windshield
    - ☐ Trees, crops, bushes
    - ☐ Buildings
    - ☐ Embankment
    - ☐ Sign board
    - ☐ Hillcrest
    - ☐ Parked vehicle(s)
    - ☐ Moving vehicle(s)
    - ☐ Blinded by headlights
    - ☐ Blinded by sunlight
    - ☐ Other _____
15. Traffic Control
    - ☐ Stop sign
    - ☐ Stop-and-go light
    - ☐ Officer or flagman
    - ☐ Railroad crossing gates
    - ☐ Railroad flashing lights
    - ☐ None
    - ☐ Other _____
16. Traffic Control Defects
    Was traffic sign visible? ☐ Yes ☐ No Was traffic control functioning? ☐ Yes ☐ No

Please illustrate in this block how the accident occurred.



Write in street names and, if possible, the points of the compass.

17. Description of Accident _____

_____

_____

18. Additional Information _____

_____

_____

Attachment 2

TR001-F1 | Emergency Coordinator List

TR001-F2 | Emergency Notification Summary

Attachment 2 Transportation Contingency Plan	Document #: TR001-F1b	Revision Date: 06/03/10	AERC RECYCLING SOLUTIONS

Emergency Coordinator List

AERC.com, Inc.

The following list details Emergency Coordinators who will be given the responsibility for coordinating all emergency response measures and who have the authority to commit the resources necessary to carry out this Transportation Contingency Plan. Listed in order of precedence, each Coordinator will be thoroughly familiar with all aspects of this Contingency Plan as well as associated AERC operations, activities and facility documentation.

This list will be maintained and amended as necessary.

TRANSPORTATION EMERGENCY COORDINATORS

PRIMARY EMERGENCY COORDINATOR

LEON HENDERSHOT – National Service Manager | Transportation

Cell Phone: (908) 884-0552 | Work: (610) 797-7608 | Home: (908) 475-3254

SUPPLEMENTAL EMERGENCY COORDINATORS

		Home Phone	Cell Number
SECONDARY:	Craig Stormo (CA)	(510) 688-0634	(510) 688-0634
	Tracy DePaola (FL | GA)	(321) 242-3027	(321) 517-6108
	Chris Salazar (PA)	(570) 643-0836	(484) 951-6702
	Thomas Oakley (TX)	(281) 826-3138	(510) 290-1458
	Stephen Lefon (VA)	(804) 840-1532	(804) 678-8766
TERTIARY:	Donald Lees (CA Facilities)	(510) 429-4970	(510) 290-1458
	John Schlegel (NE Region)	(484) 664-8886	(484) 553-8394

IF THE SPILL/RELEASE OCCURS AT OR NEAR AN AERC FACILITY LOCATION – CHECK THE FACILITY CONTINGENCY PLAN FOR ADDITIONAL, AREA-SPECIFIC NOTIFICATIONS.

AERC 24-HOUR EMERGENCY NUMBER [INFOTRAC] (800) 535-5053

TECHNICAL SUPPORT | SUPPLEMENTAL EMERGENCY COORDINATORS

JEFF SMITH – Director of Regulatory Affairs

Cell Phone: (908) 878-7178 | Work: (610) 797-7608 | Home: (610) 614-1521

SHOHN MONTANO – Environmental, Health and Safety Services Specialist

Cell Phone: (484) 619-0021| Work: (610) 797-7608

Attachment 2 Transportation Contingency Plan	Document #: TR001-F2	Revision Date: 06/03/10	AERC RECYCLING SOLUTIONS

Emergency Notification Summary

AERC.com, Inc.

AGENCY | OUTSIDE AUTHORITY	DESCRIPTION | AFFILIATION	TELEPHONE NUMBER
LOCAL AUTHORITIES	Local EMS | Police | Fire	**911**
National Response Center	Reportable Release	**(800) 424-8802**
Veolia ES **[Emergency Response]**	3rd Party Response Provider 24/7	**(800) 688-4005** (262) 236-8130
	Veolia Environmental Services (CA)	(510) 440-7300
XL Insurance [Emergency Response]	Company Insurance Provider | Initiate Claim Reporting – Secure Additional Response Resources	(800) 823-7351
CHEM-TREC		(800) 424-9300
INFOTRAC		(800) 525-5053
Poison Control Center		(800) 552-6337
AERC.com, Inc.	Allentown Offices	(610) 797-7608

RESIDENT STATE CONTACT INFORMATION		TELEPHONE NUMBER
CA Office of Emergency Services	(24 Hrs)	**(800) 852-7550**
FL Dept of Environmental Protection	Central District Office	**(800) 320-0519**
	After Hours	**(850) 413-9911**
	Brevard County Emergency Operations Center (24 Hrs)	**(321) 633-1770**
GA DNR Environmental Protection Division	State Operations Center	**(800) 241-4113**
	Atlanta Area Office	**(404) 656-4300**
PA Dept of Environmental Protection	NE District Office	**(570) 826-2511** or **(800) 541-2050**
New Jersey	Department of Environmental Protection	**(877) 927-6337**
TX Commission on Environmental Quality	State of Texas	**(800) 832-8224**
	Region 12 | Houston Office	**(800) 832-8224**
VA Dept of Environmental Quality	Piedmont Regional Office	**(804) 527-5064**
	Central Office	**(804) 698-4000**

Attachment 2 Transportation Contingency Plan	Document #: TR001-F2	Revision Date: 06/03/10	AERC RECYCLING SOLUTIONS

Emergency Notification Summary

AERC.com, Inc.

INTERSTATE CONTACT INFORMATION		TELEPHONE NUMBER
Alabama	Department of Public Safety	**(334) 242-4378**
	Department of Environmental Management	**(334) 260-2700**
	Emergency Management Agency (EMA)	**(800) 356-9596**
	EMA Hazardous Materials/Waste Incidents	**(800) 843-0699**
Connecticut	State Police	**(800) 203-0004**
	Chemical Spill Reporting Emergency Line	**(860) 424-3338**
Delaware	Department of Natural Resources & Environmental Control	**(800) 662-8802** or **(302) 739-9401**
Massachusetts	Department of Environmental Protection	**(888) 304-1133** or **(617) 556-1133**
New Hampshire	Department of Environmental Services (8 AM – 4 PM)	**(603) 271-3899**
	State Police (ALL OTHER HOURS)	**(603) 271-3636**
New York	Department of Environmental Conservation	**(800) 457-7362**
Rhode Island	Department of Environmental Management (24 Hrs)	**(800) 498-1326**
	Office of Waste Management	**(877) 927-6337**

THE ABOVE LISTING IS NOT COMPLETE. IF YOU ARE LOCATED WITHIN 0A STATE FOR WHICH YOU DO NOT HAVE STATE SPECIFIC INFORMATION:

- **FIRST CONTACT THE NATIONAL RESPONSE CENTER**
- **SECOND CONTACT AERC.com CORPORATE TRANSPORTATION AND EHS COMPLIANCE STAFF LISTED ABOVE**

AERC RECYCLING SOLUTIONS

Supplemental Information included as part of AERC's License to Transport Hazardous Waste within the Commonwealth of Massachusetts. MADEP Regulations §30.413 & 30.415.

Notification Requirements Policy

This policy statement provides written documentation of specific notification requirements for AERC Drivers operating within the **Commonwealth of Massachusetts**:

In the event of a release of hazardous materials, hazardous waste, universal waste or universal waste constituents to air, soil, surface water or groundwater during transportation within the Commonwealth of Massachusetts, the Driver shall determine whether any material resulting from the release is a hazard and if ***human health and/or the environment may be threatened***. Upon making such judgment, the Driver will immediately notify the following authorities:

CALL LIST

A. **MASS Department of Environmental Protection** **(888) 304-1133** or **(617) 556-1133**

B. **National Response Center** **(800) 424-8802**

C. **The GENERATOR** of the material involved in the incident..[1] **Check Manifest**

D. Local municipal authorities **(Police, Fire, EMS, Haz-Mat)** **911**

THE ABOVE NOTIFICATIONS ARE REQUIRED FOR ANY AMOUNT OF HAZARDOUS WASTE

E. **INFOTRAC** **800 535-5053**

Ask the INFOTRAC operator for the appropriate state agency and telephone number to report your emergency. Do this immediately!

[1] 49 CFR § 172.604 Emergency response telephone number: The AERC Driver shall review the hazardous waste manifest prior to departing the Generator's/Shipper's location to ensure a legible and complete Emergency Contact Phone # is written on the manifest/shipping papers. The Generator Emergency Contact phone # is found on Line #1| Item #3 of the Uniform Hazardous Waste Manifest. The telephone number required by paragraph (a) of the above referenced section of the DOT regulations must be the number of the person offering the hazardous material for transportation or the number of an agency or organization capable of, and accepting responsibility for, providing the detailed information concerning the hazardous material. A person offering a hazardous material for transportation who lists the telephone number of an agency or organization shall ensure that agency or organization has received current information on the material, as required by paragraph (a)(2) of this section before it is offered for transportation.

AERC RECYCLING SOLUTIONS

Supplemental Information included as part of AERC's License to Transport Hazardous Waste within the Commonwealth of Massachusetts. MADEP Regulations §30.413 & 30.415.

Notification Requirements Policy

TRIGGERING EVENTS

The National Response Center and the Director of the Office of Hazardous Materials Regulations, Material Transportation Bureau, Department of Transportation, Washington, D.C. must be notified in event of:

1. A person is killed or requires hospitalization due to injuries;
2. Carrier or property damage exceeds $50,000;
3. Accident/spill involves radioactive materials or etiological agents;
4. Notification caused by continuing danger to life.

It is noted that the above specified notification requirements are considered to be an integrated component of the current revision of the AERC *Transportation Contingency Plan* (provided as application component TDS 1-13). As such, all of this information is made available to and reviewed with AERC Drivers for over the road hazardous materials transport.

Any questions or comments regarding this policy and/or the referenced Contingency Plan should be directed to either Mr. Leon Hendershot or Mr. Jeffery Smith of AERC's Allentown, PA office - (610) 797-7608.

Sincerely,

Jeffery W. Smith, PE
Director of Regulatory Affairs & Compliance

Attachment 3

Spill Cleanup Procedures

Work Instructions

Clean-up Procedures

(How to Clean Up Spills of Common Materials Handled At AERC)

Clean up Procedure

The Emergency Coordinator will direct cleanup any resultant spills or contamination from the Event. The Coordinator will work with all appropriate agencies to ensure that work is performed to their satisfaction.

Before reopening the facility, the coordinator will ensure that all affected areas have been cleaned, remediated, or decontaminated as appropriate. The coordinator will ensure that all emergency equipment has been decontaminated or replaced. The coordinator will notify local authorities that this has occurred and that the facility is to reopen.

General Guidelines - All Employees

- Keep calm, think, avoid panic and confusion.
- Know all exit locations. Be sure you know the safest and quickest way out of the facility.
- The emergency coordinator and the emergency support personnel must have visual access to all areas to ensure that the facility is clear of personnel.
- Do not delay evacuation of the facility and adjacent areas for any reason. Do not stop or divert your route to secure personal belongings.
- Do not assist in fire control unless properly trained and qualified.

When evacuating the facility, WALK to the nearest safe exit. Report to the safe area away from the facility and wait for instructions from the Emergency Coordinator or a company official.

Keep out of the way, stay clear of the facility and DO NOT interfere with emergency operations.

DO NOT reenter the facility until instructed to do so by the Emergency Coordinator or a company official.

Be a “buddy.” As you leave the facility, take a quick look around to ensure that everyone heard the instructions to evacuate.

Emergency Procedure – RELEASE OF MERCURY VAPORS

Fluorescent Lamps: *(Based on EPA Guidance, modified for AERC.)*

Fluorescent light bulbs contain a very small amount of mercury sealed within the glass tubing.

Before Clean-up: Air Out the Space

- Evacuate the trailer or loading dock, the immediate area (at least 25 feet away).
- Avoid walking through the area containing the broken lamps (if possible).

Clean-Up Steps for Hard Surfaces

- Carefully scoop up glass pieces and powder using stiff paper or cardboard and place into a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder.
- Wipe the area clean with damp paper towels or disposable wet wipes. Place towels in the glass jar or plastic bag.
- Do not use a vacuum or broom to clean up the broken bulb on hard surfaces.

Disposal of Clean-up Materials

- Immediately place all clean-up materials in a closed top drum.
- Label the material as “Broken universal waste fluorescent lamps – Spill Cleanup.”
- Wash your hands after disposing of the jars or plastic bags containing clean-up materials.

Emergency Procedure – CRT GENERAL SAFE WORK PRACTICES

Inspect packaging materials for shipping integrity prior to moving the pallet
Repack or apply more shrink wrap if required
Follow all safe lifting practices, such as use of legs rather than the back
Inspect all units to look out for broken glass or sharp protrusions

CRT Clean up

CRT's are to be packaged in a manner to prevent breakage. Additionally, during disassembly, AERC has a strict process to minimize breakage of the CRT. Should breakage occur, it must be contained immediately to prevent contamination and minimize employee exposure. The CRT glass must be placed in a sift proof, leak proof container with a lid, such as a cubic yard box with a liner, or a drum with a lid. The small glass pieces must be swept and if required, utilized tape to pick up small shards. DO NOT use a hose to wash broken materials into drain. The container must be marked as Universal Waste CRT Glass, and the earliest received date of the CRT. The material will be shipped off-site for proper recycling. Proper PPE to be worn includes: Dust mask, leather or similar gloves and safety glasses at a minimum. DO NOT sweep up small pieces with your hand. Use a small broom and dustpan.

Basic equipment for spill clean up includes:

- Hand brooms,
- Dust pans
- Particulate face mask
- Leather or comparable gloves
- Containers with lids

Procedure:

- Assess the amount of material spilled
- Don proper PPE, minimum dust mask, gloves and safety glasses
- Use hand broom and dustpan to collect the spilled material
- Place the collected material into a container with a lid
- Mark the container as appropriate – "Broken CRT Glass – Spill Cleanup."

Emergency Procedure – BALLAST, TRANSFORMERS, CAPACITORS, PROJECTION TV MINERAL OIL

The response to a leaking PCB ballast (or related electrical device leak) will be to identify, isolate, contain and treat the individual item/container and spilled material. The Emergency Coordinator will direct personnel to:

- Use available emergency supplies, including: absorbent pads, booms or other inert materials to confine, contain and clean-up the release.
- Use proper personal protective equipment to clean up a PCB ballast leak. The PPE shall include:
  - AERC work uniform.
  - Tyvek® coveralls.[2]
  - Neoprene outer-gloves over Nitrile® inner-gloves.

Place all containment and clean-up supplies into appropriate DOT-approved containers for proper management.

Cleanup residual PCB oil that may be on the floor/concrete after ballasts have been picked up and repacked:

- Use a small plastic scraper to remove as much visible oil and/or potting paste as possible.
- Place the scraped material into a plastic bag with the leaking ballast (s).
- Double wash/rinse all contaminated surfaces using a mixture of 5% solution of trisodium phosphate and water. Wipe down all potentially contaminated surfaces as necessary – placing the collected liquids and wipers containing PCBs into a plastic bag within the collection container.
- Place any contaminated PPE or cleanup supplies into the collection container. Use as small of a DOT-approved container as possible to adequately contain the ballast(s) and cleanup residuals.

Ensure complete decontamination by conducting the collection of smooth surface wipe samples to detect the presence of residual PCB contamination. Sampling will be conducted in agreement with the minimum, U.S. EPA wipe-testing protocol (as follows):

- A standard-size template (10-cm square) should be used to present the area to be cleaned.

[2] If the release is of a minor nature in that some leaking ballasts fell out of the drum and there is no free flowing PCB oil – standard issue Tyvek® coveralls may be worn. If there are a large number of leaking ballasts out of the drum or there is free flowing oil on the ground – Saranex-coated Tyvek® SHALL BE WORN.

- Use a gauze or steel wool pad saturated with hexane. NOTE: Hexane is a volatile solvent. Proper PPE must be worn. The wipe sample must be collected quickly to limit evaporation of hexane from the saturated pad.
- The area, including a one-foot buffer surrounding the area of visible contamination, must be cleaned and sampled. If the area that is contaminated is outside the confines of the building, i.e., soil, the area must be excavated and filled with clean soil.
- EPA guidance shall be referenced for additional information with regard to the completion of post cleanup sampling.
- Once sampling is complete – any potentially contaminated sampling materials shall be placed into the collection container(s).

See Handling Small Scale Spills for additional guidance when dealing with any leaking ballast, transformer, capacitor or other device containing mineral oil or dielectric fluid. Such materials must be placed into a removable head UN authorized drum.

Emergency Procedure – LEAD ACID BATTERIES

Safety Equipment:

- Soda Ash
- Plastic shovels/scoops/dust pans
- Safety glasses with face shield
- Nitrile gloves, 2 pair

Immediate Action:

- Tend to any medical emergencies
- Don protective material. DO NOT touch any spilled material with unprotected hands or approach with unprotected eyes.
- Stop the lead if it is safe to do so (i.e. upright battery, overpack battery etc.
- Absorb all spilled material with bentonite or other inert, inorganic absorbent
- Neutralize the floor by wiping the floor with rags with a soda ash solution on them.
- Sweep and remove all soda ash and place in the drum with the leaking battery.

Emergency Procedure – HANDLING SMALL SCALE CHEMICAL SPILLS | OTHER BATTERY TYPES

If hazardous material spill is less than one liter and has a hazard rating below 2 in all hazard categories, the following procedures should be followed (i.e. mineral oil):

When a small scale chemical spill occurs:

- Restrict access to area.
- Immediately notify the Operations Supervisor and others in the area of the spill.
- Mark the area to prevent others from coming in contact with the spilled material.
- Contact the EC or secondary EC. Inform them of:
- Name of chemical
- Quantity spilled
- Location of spill
- Obtain an MSDS for material. Refer to the chemical's MSDS for spill clean-up instructions. It is required that a MSDS be kept available for each chemical used.
- MSDS Section on Precautions for safe handling and use
- Use recommended Personal Protective Equipment. A minimum of nitrile gloves and safety glasses is required.
- Follow other precautions listed in MSDS.

General Procedures:

Simple acid and base spills should be neutralized with an appropriate neutralizing agent:

1. Acid spills, e.g., sulfuric acid
   - Sodium bicarbonate, sodium sesqicarbonate or other derivatives are acceptable.
2. For basic spills (Potassium hydroxide)
   - Citric acid or an acidic cleaner would be a suitable neutralizing agent.
3. Allow the spill time to neutralize (i.e., wait until the bubbling reaction stops.)
4. When using a neutralizing spill kit, these kits are buffered and will not have a bubbling action. Be careful not to over-neutralize.
5. Test the pH of the floor after the neutralization reaction has stopped with pH paper. Once a pH of between 6 and 9 has been achieved, the material can be transferred into an appropriate secondary container for disposal.
6. The container will then be marked with the "Hazardous Waste" label appropriately identifying what material was cleaned up.

Mercury Spills:

1. Mercury spills require special clean up procedures. Utilize the special Mercury Spill Kit when dealing with mercury spills. Instructions for clean up are located on the Mercury Spill Kit container. See attached.
2. For broken mercury thermometers, clean up spilled mercury as described above and collect mercury and broken thermometer in a sealable plastic bag and place into pail for disposal.

Attachment 4

Hazardous Material Supplemental Information

Hazardous Material Supplemental Information

The information contained within this attachment presents additional safety data for the safe handling and response to releases of each of the general hazardous materials detailed in Section 5.1. Information presented here-in is separated as detailed within the following contents summary.

Attachment Contents

Common DOT Descriptions & Applicable ERG Guidance

UN3090 – ERG #138 | Substances – Water Reactive
UN2794 | UN2795 | UN3028 – ERG #154 | Substances – Toxic and/or Corrosive
UN2315 - ERG #171 | Substances (Low to Moderate Hazard)
UN2809 – ERG #172 | Gallium and Mercury

Mercury

Mercury Lamp MSDS
Mercury Hazard Data Sheet

Sulfuric Acid

Lead-Acid Battery MSDS
Sulfuric Acid Hazard Data Sheet
Lead Hazard Data Sheet

Other Materials

PCBs Hazard Data Sheet
Low-Pressure Sodium Lamp MSDS
Sodium Hazard Data Sheet
Lithium-ion Battery MSDS
Lithium Hazard Data Sheet
Nickel Cadmium Battery MSDS
Nickel Hazard Data Sheet
Cadmium Hazard Data Sheet

NOTE:

Representative MSDS' are provided as examples of common materials. Actual materials found within active material inventories, i.e., in transit, may vary.

Attachment 5

Emergency Equipment List

Attachment 5 Transportation Contingency Plan	Document #: TR001	Revision Date: 06/03/10	AERC RECYCLING SOLUTIONS

Emergency Equipment List

Paperwork

Transportation Contingency Plan (Current revision)	North American Emergency Response Guidebook (Current revision)
Universal waste used battery labels | US DOT Labels	Universal waste used lamps labels
	Shipping and Packaging Guidelines for all AERC.com, Inc. acceptable materials.
Bills of lading	Uniform Non-hazardous Waste Manifest
Hazardous Waste Manifests	Hazardous waste labels (as applicable)
Hazardous waste transporter licenses (as applicable)	

D.O.T Required Safety Equipment

Emergency reflectors	First aid kit
Fire extinguisher (ABC)	Flashlight
Eyewash bottle	Cellular telephone (carried by Operator)
Spare Auto Fuses	

Operators P.P.E. Gear Bag

Nitrile gloves	Spare Work Uniform
Leather work gloves	Safety Glasses
Nitrile coated Aramid Gloves	23-P coated Tyvek® suit
Full-face A.P.R.	Hg & Multi-purpose cartridges

Tool Box Contents

Duct tape	Utility knife
Bung wrench (Spark Resistant)	Crescent wrench (Spark Resistant)
Speed wrench with 9/16” + 13/16” sockets (Spark Resistant)	Dead Blow Hammer

Spill Response Equipment

Plastic sheeting	Acid and Base Neutralizing Material
Plastic Bags	pH paper
Absorbent booms	>15-gallon plastic drum with lid
Spill pads and pillows	Towels
Broom	Dust pan and brush
Shovel	20# Bag of Vermiculite
	Mercury Spill Kit

ATTACHMENT 9
ITEM D.7
Worker Health and Safety Plan

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Description (including Part # | Item # as applicable) **Page #**

D.7.1 AERC FL Employee Training Program

Training is AERC's most productive tool to ensure health and safety and good industrial hygiene and environmental controls. Production workers undergo comprehensive and ongoing training including, but not limited to:

- General orientation
- Hazard communication
- Proper PPE selection
- HM126
- Contingency plan
- Material handling
- Forklift
- Confined Space Recognition
- Toxicology
- Fire safety and portable fire extinguishers
- Hazardous Waste Management Practices
- Air sampling
- Respirator training and fit test

All operation workers must receive general orientation and hazardous communication training prior to actual participation in production work. AERC considers training an on going process closely associated with employee development. Refresher training is performed periodically with good industrial hygiene and environmental controls being reinforced repeatedly.

All new operations employees must complete a 24 hour OSHA TSD Facility Training, and each employee must also complete a minimum of 8 hour annual refresher courses. (per OSHA, CFR 29 § 1910.120)

This section contains:

1. The Table of Contents and outline of the training syllabus used by the company, from which the 24 hour courses are taken. The entire document is available for agency review upon request.

2. Sample Position Descriptions for various process operations at the AERC West Melbourne facility. These records are maintained on file at the facility and are available to the agency upon request.

3. Outline for Hazardous Waste Management Practices / Hazardous Waste Permit Training. This training is conducted for every new employee as well as annually.

TABLE OF CONTENTS

Training Program

EMPLOYEE TRAINING AND EDUCATION

Purpose

AERC provides training regarding the safe handling of hazardous wastes for all employees assigned to work with, or near, potentially hazardous materials or activities. The formal training program is structured to insure that all employees receive timely training programs which are salient to job responsibilities.

Responsibility

It is the responsibility of the Manager of Facilities, Safety and Industrial Hygiene to prepare, organize and disseminate training materials.

Training Programs

The formal training programs are broken down into three general categories:

1. Initial training program - See excerpted table of contents

2. Annual Refresher

3. Monthly Safety Training

Each of these three programs is outlined below:

4.3.1 **Initial Training Requirements**

Orientation Training Program: Phase I

The AERC Orientation Training Program qualifies individuals conducting hazardous waste activities at RCRA facilities.

The initial training program exceeds the 24-hour training requirement under 29 CFR 1910.120 for routine RCRA activities, so that personnel can be properly trained for respirator usage and emergencies. All facility personnel are required to attend AERC Orientation Training Programs regardless of past experience. Upon completion of this program, new employees enter their new position as trainees for a period of approximately 8 weeks. During this period, they work under the direct

supervision of an experienced supervisor with periodic progress reviews conducted by the employee's department manager. An outline of topics for the training program appears below. Upon completion of this program, the employee is given a certificate of course completion.

Training Overview

This is a detailed overview of all of the components to our safety-training program.

A. 24- hour initial training program agenda. This training meets the requirements of 29CFR1910.120(p)(7)(i) HAZWOPER.

I Introduction

Discuss the corporate history and structure, including an overview of how materials are passed through the facility. In addition, a discussion regarding employee health benefits and medical surveillance requirements are discussed.

II Hazard Communication / Awareness

The purpose of this training is two fold; (1) to meet the requirements of the Hazard Communication standard regarding working with hazardous materials, and (2) to increase the trainee's awareness of the non-chemical hazards associated with their job.

III Toxicology

This course provides a review of toxicological terms and concepts and reinforces the use of a systematic approach to preventing chemical exposure. Types of toxins, routes of exposure, toxic effects, host factors and exposure limits are all examined. Material Safety Data Sheets for fluorescent lamps and mercury are reviewed.

IV Personal Protective Equipment

A discussion and demonstration on the proper use of personal protective equipment such as gloves, hearing protection, chemical protective coveralls, etc. is performed. A detailed explanation of the proper use of selection guides for determining the appropriate gloves, protective clothing and respirator is held.

V Site Control & Work Zones

This section details the importance of site control and work zones (hot, warm, cold) to prevent cross contamination. A diagram of the AERC facility is used as a model to illustrate the site specific work zones. The bootie policy and the rules regarding their use and travel through the transition area.

VI Air Monitoring

Employees are provided with a demonstration of an air monitoring survey being conducted at the AERC facility. In addition, the AERC Air Monitoring policy (SHP007) is explained in detail. Survey points, documentation, action level and frequency of monitoring are all discussed. An explanation of the operation and use of the Jerome 431X mercury vapor analyzer is conducted.

VII Control of Hazardous Energy

The importance of control (Lockout) of hazardous energy are stressed and illustrated with the use of a video giving an overview of the components to a typical lockout operation. The AERC Hazardous Energy Control Plan along with specific lockout procedures are explained in great detail.

VIII Confined Space Recognition

The recognition of permit required confined spaces and the hazard associated with them are highlighted through lecture and video. In addition, the AERC.com, Inc. confined space policy (SHP018) is explained.

IX Respiratory Protection

The proper use, maintenance and inspection of the 3M series 6000 air-purifying respirator are reviewed and demonstrated. Each operations employee is issued both a full face and half face respirator. Each employee is properly fit tested with both respirators. Each employee must demonstrate competency in the inspection and use of each piece of respiratory equipment issued. Included in this section is an explanation of the circumstances and situations that require the use of respiratory protection equipment at the AERC facility.

X Fire Extinguisher / Fire Safety

In this section, we discuss the basic principles and procedures for fire safety. The fire tetrahedrons as well as the four classes of fire are explained. The various types of fire extinguishers in the plant are explained. Employees also view a video (Fighting fires with portable extinguishers) produced by the National Fire Protection Association.

XI D.O.T. HM-126 Module 1

An overview of the HM-126 requirements including hazard classes, 172.101 table, labeling, placarding, shipping papers, emergency response guidebook and packaging requirements

XII Material Handling

Trainees are walked through the handling of materials from receipt of shipment, processing, and all details pertaining to plant operations, lamp procedures and general work practices reviewed. Employees will be assigned to “hands on” instructor to guide them step by step through their specific job functions.

XIII Contingency Plan / P.P.C Plan

All aspects of the facility contingency plan and P.P.C. plan are reviewed. Emergency coordinators, location of emergency equipment, spill procedures, fire procedures, first aid incidents, evacuation routes, meeting / accountability locations and shutdown procedures are reviewed in detail.

XIV Forklift Safety and Use

Employees who are required to operate a forklift will receive training on the safe use, inspection and operation of the forklift. Trainees must pass a competency test (written and practical) before being authorized to operate a forklift in the plant.

XV Corporate Safety Policies & Procedures

A detailed review of the AERC.com, Inc. corporate safety policy and procedure plan is performed. All safety policies which effect the daily activity of the new employees are explained.

XVI Safety Awareness

A lecture on the importance of following safety policies and work practices is performed. Employees then view a safety awareness video from J.J. Keller & Associates.

XVII Hazardous Waste Business Practices

An overview of Hazardous Waste Management Practices including labeling, storage requirements, container requirements, and inspections is conducted. In addition, students watch a video (Hazardous Waste Employee Training- Cradle to Grave Responsibility) on management practices.

Orientation Training Program: Phase II

Following completion of the Orientation Program the trainee participates in On-the-Job Training for approximately 8 weeks. The major thrust of the second phase is to draw on the employee's recent training and to re-emphasize basic aspects of hazardous materials safety.

In accordance with 29 CFR, Part 1910.120, the program provides the training required for employees to participate in hazardous waste operations and emergency response.

Annual Refresher

The Company believes that frequent reinforcement and review of basic safety principles is paramount in providing a safe work environment. All Facility employees participate in the annual “refresher” training.

The 8-hour refresher training is comprised of topics from the initial 24-Hour Training Program. The following list covers the topics that are covered during the refresher.

AERC SAFETY TRAINING SEMINAR TOPICS

Topic	Approximate Length of Session (Hrs)
1. Corporate Safety Policies and Procedures	0.75
2. Site Control and Work Zones	0.50
3. Toxicology	0.50
4. Air Monitoring	0.50
5. Fire Safety/Fire Extinguisher Training	0.50
6. Hazard Communication/Awareness	1.0
7. Personal Protective Equipment	1.0
8. Air purifying Respirator Training	1.25
9. Hazardous Waste Practices	1.0
10. Forklift Use and Safety	1.0

Monthly Safety Training:

The Company believes that frequent reinforcement and review of basic safety principles is paramount in providing a safe work environment. In order to maintain safety awareness all Facility employees participate in the Monthly Safety Training.

Each monthly training session lasts approximately 1.0 hour. The topics for each training session are taken from the 24-Hour Training Outline.

D.7.2 Regulatory Compliance Training Synopsis for Employees: AERC, West Melbourne, FL

Permits:

AERC.com, Inc., EPA I.D. Number FLD984262782 operate a mercury-containing lamp and device recovery and reclamation facility per FL DEP Permit # HO05-275169.

AERC also hold the following permits:

- FL DEP Air Permit 0090124-001-AC
- US EPA Storm Water Permit FLR05C039

Waste Regulations

All solid waste must be characterized to ascertain whether it exhibits a *characteristic* of hazardous waste (i.e. ignitability, corrosivity, reactivity, toxicity) or if the waste is *listed* as hazardous by the USEPA or other regulatory body. Generator knowledge may be used during such characterization of waste. The Toxicity Characteristic Leaching Procedure (TCLP) test is used to test the extent to which a waste will leach hazardous constituents. For example, AERC/MTI regularly tests its waste for mercury using the TCLP. If a solid waste leaches $\geq$0.2mg/L Hg, then it is a hazardous waste for the characteristic of toxicity (EPA waste code = D009).

A solid waste is a hazardous waste if it is listed by the USEPA in the Lists of Hazardous Wastes found in 40 CFR, Chapter 261, Subpart D. Such listed waste will have an EPA waste code starting with the letter F, K, P or U followed by three digits depending on whether the waste is generated from a non-specific source, specific source, discard of commercial chemical products, off-specification species, container residue or spill residue. The codes for mercury of D009 (waste) and U151 (off-spec product) are most encountered at the AERC/MTI facilities.

Solid waste that is not hazardous waste may be further regulated per municipal, residual or other such regulations as defined by the Federal or State regulatory agencies.

Hazardous Waste Regulations

The USEPA and State regulatory agencies regulate the generation, transport, storage, disposal and treatment of hazardous waste. The USEPA regulations may be found in Title 40 of the Code of Federal Regulations (40 CFR).

Generator Status - A generator of hazardous waste must determine the amount of hazardous waste that he generates per month. The categories are as follows:

- Conditionally Exempt Small Quantity Generator, less than 100 Kg/month
- Small Quantity Generator, 100 - 1000 Kg/month
- Large Quantity Generator, ≥ 1000 Kg/month

Note: Acute hazardous wastes (P and U-listed) generated in amounts of ≥ 1 Kg/month or cleanup of a spill/residue of ≥ 100 Kg/month result in a LQG status.
Note: Households are exempt from the hazardous waste regulations - homeowners should utilize their household hazardous waste programs.

The various generators have differing time limits for the accumulation of hazardous wastes onsite their facilities. LQGs may not accumulate hazardous wastes onsite their facilities greater than 90 days unless they are permitted for such storage. Storage facilities are typically permitted to store hazardous wastes onsite their facilities for up to one year.

Transporters - transporters of hazardous waste are licensed by individual States. Transportation regulations include in-transit time limits, emergency planning and equipment, personnel training, manifest procedures and recordkeeping/reporting requirements.

Treatment/Storage/Disposal (TSD) Facilities - TSDs are subject to numerous standards, including waste analysis procedures, personnel training, preparedness & prevention practices, manifest and recordkeeping, closure, post-closure monitoring, bonding, insurance, permitting, inspection requirements, container storage requirements, etc.

The various AERC facilities all possess some level of permit for their respective recycling activities. The permits both permit and restrict the facilities to certain activities as outlined in the facility applications.

Universal Waste Rule (UWR)

The USEPA initiated the Universal Waste Program effective May 11, 1995. Batteries, pesticides and mercury thermostats were identified as "universal wastes", i.e. the wastes are generated by a vast community or universe of generators. The USEPA added hazardous lamps to the list of items that may be managed as universal wastes on July 6, 1999, effective January 6, 2000.

Many States that are authorized to enforce the USEPA RCRA program have since added lamps to the list of universal wastes within their States (via seeking such authorization from the USEPA). Likewise, during the time that said States are seeking such authorizations, they have issued enforcement directives allowing generators to utilize the universal waste program. In

States that are not authorized to administer the RCRA program, the universal waste rule became effective on January 6, 2000. Lastly, other States have utilized expanded universal waste programs for several years and allow generators to manage additional wastes such as mercury-containing devices under their State universal waste rules.

When utilizing the UWR, generators must ensure that their universal wastes are being sent to a recycling facility. Furthermore, generators may not switch between the universal and hazardous waste programs - they must choose a single approach for each shipment of universal waste.

Benefits of the UWR

- Allows generators to accumulate universal wastes at their facilities up to one year.
- Allows generators to utilize a non-hazardous waste manifest or bill-of-lading instead of a hazardous waste manifest.
- Allows generators to utilize a common transporter instead of a hazardous waste transporter for the transport of the wastes to a destination facility.
- Generators do not have to count universal wastes within the amount of monthly hazardous waste generation when determining their hazardous waste generator status. A generator of UW is either a Small or Large Quantity Handler of Universal Waste (SQHUW or LQHUW) depending if they generate less than or greater than or equal to 5,000 Kg of UW per month.

Hazardous Wastes vs. Hazardous Materials:

40 CFR vs. 49 CFR

Please be aware that the terms "hazardous waste" and "hazardous materials" refer to different regulations and regulatory agencies. As previously noted, hazardous waste refers to the regulations established by the USEPA and State environmental agencies. "Hazardous materials" refers to materials, whether product or waste, that pose a hazard during transport. The hazardous materials regulations are established by the USDOT (Department of Transportation) and State DOT agencies. The USDOT hazardous materials regulations may be found in 49 CFR.

Hazardous waste manifests, non-hazardous waste manifests and bills of lading are the various documents used to transport materials to the AERC/MTI facilities.

A generator is typically required to transport hazardous waste to a designated facility using the specific hazardous waste manifest of the destination state. For example, the AERC facility in Allentown, PA is required to accept fully-regulated hazardous waste (e.g. mercury-

contaminated carbon) on a Pennsylvania hazardous waste manifest and only from a PADEP-permitted hazardous waste transporter.

Universal wastes and product materials may be shipped on a bill of lading, non-hazardous waste manifest or hazardous waste manifest (without EPA waste codes) using a common transporter.

These various shipping documents are used to track shipments between the generator, transporter and destination facility. Many State regulatory agencies require generators and/or transporters and/or destination facilities to forward copies of hazardous waste manifests to the State to prove that hazardous wastes are arriving at the final destination facilities within the prescribed time limits.

Note that the hazardous materials shipping descriptions may be found on the various documents and that a material may be regulated as a hazardous or universal waste and may also be (or not be) a hazardous material. One should also become familiar with the USEPA hazardous waste codes (e.g. D009 = mercury) and that hazardous waste codes may not be associated with a shipment of universal waste. TSD operators should be familiar with the handling/treatment codes that are required to be entered on the hazardous waste manifests and that various copies of the manifests are labeled/numbered with different numbers/names.

LDR

A completed/signed Land Disposal Restriction (LDR) form is required to accompany the initial shipment of a unique hazardous waste stream that a generator is transferring to a TSD facility. Subsequent manifested shipments of the same hazardous waste stream to the same TSD facility do not require a LDR form, though generators are used to attaching these forms to their manifests. The LDR states that the generator is aware that specific wastes must meet specific standards prior to being disposed upon the land

General Rules for Employees:

- When materials arrive at the facilities, the containers must be inspected for integrity (e.g. non-leaking, closed, not under pressure) and proper labeling. Also, the shipping document must coincide with the quantity & type of materials received at the facility.
  The required labeling includes:
  a) Hazardous (or Universal) Waste Label.
  b) Date received.
  c) A description of the contents of each container.
  (The Generator's Name and Address, and Manifest Number may also be present).

- Tracking (Manual or via Wixel): Tracking of wastes received, wastes processed and waste inventories vary among the three facilities. It is a standard operating procedure to keep the various wastestreams in specific storage areas so that an inventory of the wastes may be obtained at any given time. This is valuable since the facilities are permitted/limited to the amounts of the specific wastes that they may have onsite at any one time vis-a-vis the permit bond.
- Manifests and other shipping documents are required to be completed, posted to generators and/or regulatory agencies, stored onsite and made available to regulatory agency inspectors upon demand.
- Container Storage Areas must be inspected and recorded daily on the appropriate Inspection Logs.
- Training records and emergency/contingency plans must be kept up-to-date.
- Analytical testing of inbound wastes and outbound wastes and/or recyclable materials must be performed and documented in the operating record.
- Closure plans, closure cost estimates and insurances must be kept current.
- All containers must be kept closed (i.e. bungs, drum rings, box flaps) at all times except when inspecting the internal contents of the container, or when it is necessary to add or remove waste from the container.
- Satellite accumulation - A generator of hazardous waste may accumulate up to 55-gallons of hazardous waste (or 1 quart of acutely hazardous waste listed in 40 CFR 261.33(e)) at any point of generation. Upon reaching the limit of 55 gallons (or 1 quart), the generator has three days in which to move the generated waste to a permitted storage area. Though the regulations state that the generator should also place an accumulation date on the container at this time, it is the policy of AERC to date a container upon placing the initial amount of hazardous waste into the container.
- All containers should be shrink-wrapped, when appropriate, while in storage.
- All liquid materials must have secondary containment (i.e. spill pallets) during storage and processing. These spill pallets must be able to hold either 100% of the volume of the largest container on that pallet, or 10% of the volume of all the containers.
- Containers of hazardous and universal wastes must be stored in the specific storage areas as outlined in the facility permit application.
- The inspection aisles between rows of waste must be of a minimum width as outlined in the permit application (usually 18" to 24" in width). The aisles must not be blocked by obstructions. Lines and row numbers painted on the floors of the storage areas are helpful.
- Containers must be placed on pallets so that labels face toward the aisles. Labels are required to be “visible for inspection” in order to determine contents, accumulation dates and “date received” at the facilities.
- Accumulation dates must be entered on hazardous waste labels of all generated wastes, e.g. on plant scrap boxes.

- Storage limits - it is a general practice of LQGs to arrange quarterly pickups of waste from their facilities so that they are within their 90-day storage time limits. LQGs that are also permitted storage facilities may store up to the limits specified in their permits (usually one year), though our facilities tend to operate by the 90-day "rule of thumb".
- All containers of hazardous waste generated by AERC (e.g. plant scrap boxes) must be sampled prior to storage. The samples will be analyzed before being returned to the appropriate container. See your supervisor regarding the sampling and chain-of-custody procedures.
- Hazardous/universal waste labels, accumulation dates and content listings must be present on all containers of waste.
- All generated hazardous wastes destined for offsite shipment must be labeled with the appropriate red/yellow hazardous waste labels and USDOT labels. Universal wastes destined for offsite facilities must bear universal waste labels and possibly USDOT labels.
- Personal Protective Equipment (e.g. booties, gloves, & ear plugs) must be deposited into the appropriate waste container (e.g. not on the ground or in the recycling containers). The parking lot should be regularly swept of pieces of litter (e.g. wood, aluminum end caps, plastic shrink-wrap and glass).
- Operators must remove residual glass particles and labels from DF containers prior to placing the containers in storage. These containers are re-used by the AERC/MTI customers.

ATTACHMENT 9

EXHIBIT D.7.1

Corporate Safety and Health Procedures

SAFETY AND HEALTH PLAN
Corporate Safety Policies and Procedures

AERC.Com, Inc.
2591 Mitchell Avenue
Allentown, PA 18103

AERC.Com, Inc.
30677 Huntwood Avenue
Hayward, CA 94544

AERC.Com, Inc.
4317 – J Fortune Place
West Melbourne, FL 32904

NOTE:
Revisions to the Plan will be adopted for ALL AERC.com, Inc. operating locations – implementing program elements as appropriate to the location business activities, i.e., Hazardous/Universal Waste Management vs. E-Scrap Management. In other words, AERC Recycling Solutions locations vs. Com-Cycle locations.
9-09

Table of Contents

1.0 Purpose

In order to establish and organize good safety practices, this General Safety Policies and Procedures Written Plan summarizes information regarding safety policies and procedures at AERC.Com,Inc. The Regulatory Affairs Department has overall responsibility for the review of applicable regulations and the associated development of health & safety policies. The management of each operating facility, under the charge of the Facility and/or Operations Manger is responsible for implementing the requirements noted here-in. This plan, in addition to any related health & safety plan elements as required by the state, is to be kept in the Operations Office at each AERC Recycling Solutions location.

2.0 Safety Philosophy Statement

Our safety philosophy has been developed to reflect and communicate the proactive safety attitude maintained at AERC.Com,Inc.

Aerc.Com, Inc. will comply with appropriate safety and health laws and regulations such as those established by:

- The California Occupational Safety and Health Act (Cal/OSHA)
- The Occupational Safety and Health Act (OSHA)
- The EPA (Environmental Protection Agency)
- The DOT (Department of Transportation)
- All other applicable federal, state, and local safety and health regulations.

In addition, our corporate safety philosophy includes the following vision statements:

We believe that the safety of our employees is of utmost importance, along with quality, production, and cost-control. Maintenance of safe operating procedures at all times is of both monetary and human value, with the human value being far greater to Aerc.Com, Inc. our employees, and the community. The following principles support this philosophy:

- All injuries and accidents are preventable through the establishment and compliance with safe work practices and procedures.
- The prevention of bodily injury and safeguarding of health are the first considerations in all workplace actions and are the responsibility of every employee at every level.
- Written safety plans describing the safe work practices and procedures to be practiced in all workplace actions are an essential element of the overall workplace safety program. All employees at every level are responsible for knowing and following the safety practices described in our written safety plans.
- Off the job, all employees should be similarly safe and demonstrate awareness of potential hazards.

3.0 Types of Written Safety Plans In Place

Because we care about our employees and strive to provide a safe work place, we have put into place a number of written safety plans. These written plans provide guidance and direction for the safety issues they cover. The topics covered in written safety plans at AERC.Com,Inc. include the following:

- Hazard Communication
- HAZWOPER
- Emergency Action Plan
- Emergency Response Plan (Allentown, PA only)
- Hearing Conservation
- Lock out / Tag out
- Personal Protective Equipment
- Bloodborne Pathogen (Allentown, PA only)
- Fire Prevention
- Medical Surveillance
- Respiratory protection
- Laboratory Safety Standard (Allentown, PA only)

4.0 Employer/Employee Responsibilities

This section lists responsibilities of employers and employees. These responsibilities are to be taken seriously at all times.

It is the policy of AERC.Com,Inc. to provide a place of employment free from hazards which may cause illness, injury, or death to our employees. It is also Aerc.Com, Inc.'s policy to establish an effective and continuous safety program incorporating educational and monitoring procedures maintained to teach safety, correct deficiencies, and provide a safe, clean working environment. All supervisors, managers, directors, and officers are responsible for the enforcement of safety policies and practices. They must ensure that:

- Their staff members are trained in appropriate safety procedures, including chemical-specific training as required. Individual training files are maintained in the Human resource office for all employees.

- They notify the Manager of Facilities, Safety and Industrial Hygiene and complete the necessary forms if an accident or work-related health problem occurs in their department.

- Equipment and property within their area of responsibility is maintained in a safe, hazard-free condition.

All employees have a responsibility to themselves and to Aerc.Com, Inc. for their safety and the safety of the coworkers. All employees are required to:

- Comply with all federal, state, local and Aerc.Com, Inc. rules and regulations relevant to their work.
- Observe all company rules and regulations related to the efficient and safe performance of their work.
- Integrate safety into each job function and live by this philosophy in the performance of job duties.
- Report or correct unsafe equipment and practices.
- Report any accidents that occur while on the job.

The current organizational structure of the Regulatory Affairs Department is presented in the enclosed figure.

5.0 Disciplinary Policy

All safety rules, procedures, and plans in effect at Aerc.Com, Inc. are intended to be followed. Upon violation of any company safety rule, the violating employee will be penalized. The severity of the penalty will be in direct correlation to the severity of the safety violation.

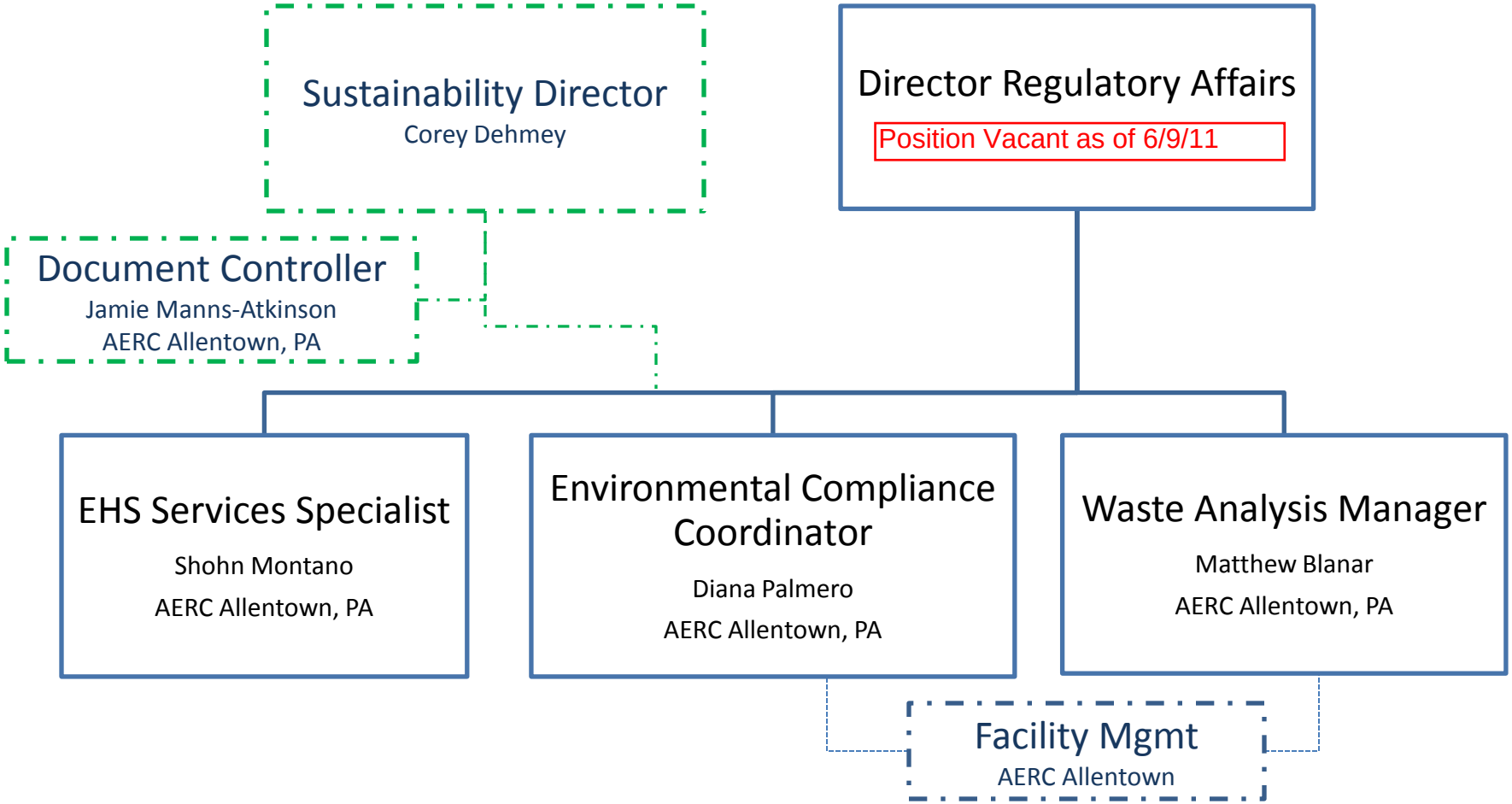
6.0 Health & Safety Program Procedures

The list presented on the next page details the Environmental, Health & Safety procedures, procedures and/or policies to be implemented at AERC.com, Inc. operating facilities. This list is currently being updated as part changes in the corporate structure of the regulatory affairs department as well as the implementation of the Quality, Environmental, and Health & Safety Management System (QEHSMS).

AERC.com, Inc.

Regulatory Affairs Department

[Reporting to the VP Operations – Mark Kasper]



NOTE: The Regulatory Affairs Department works in direct contact with individual Operations/Facility Managers to administer compliance programs . As such, the Department provides overall support to all operations from the Mitchell Ave, Allentown, PA facility.

ATTACHMENT 9

EXHIBIT D.7.2

HS02002 - Hazard Communication Procedure

Hazard Communication	Document #: HS-02002	Revision Date: 7-29-09	AERC RECYCLING SOLUTIONS
2591 Mitchell Ave, Allentown, PA 18103 APPLIES TO ALL OPERATING LOCATIONS	Department: Regulatory Affairs	Revision #: B	Page: Page 1 of 6

1.0 Purpose

1.1 To protect the health and safety of employees that may be exposed to chemicals at AERC.com, Inc. (AERC) and to train employees in the proper use, storage, labeling and disposal of chemicals found in the workplace.

1.2 To establish compliance program elements in agreement with the applicable federal and state regulations as set forth by the Occupational Safety and Health Administration's (OSHA), including:

1.2.1 29 CFR 1910 1200 - Federal *Hazard Communication Standard,* and

1.2.2 Title 8 CCR 5194 – CAL OSHA *Hazard Communication Regulation*.

2.0 Scope

2.1 This program applies to all personnel including employees and contractors working at AERC facilities.

2.2 The program is based upon applicable requirements (as noted above) with regard to the broad scope of hazardous substances that have the potential to be found within AERC operating facilities. Furthermore, it details additional activities as may be required by associated regulatory standards for individual hazardous substances to which employees may be exposed. Most notably, CAL OSHA requirements set forth in Title 8 CCR 5198 (l) [lead]; CCR 5207 (m) [cadmium]; and 5214 (m) [arsenic].

3.0 Prerequisite Tools and Information

3.1 None specified.

4.0 Definitions

4.1 "*Hazardous and/or toxic substances*" are defined as those chemicals present in the workplace which are capable of causing harm. In this definition, the term *chemicals,* includes dusts; mixtures; and common materials such as paints, fuels, and solvents. OSHA currently regulates exposure to approximately 400 substances.

4.1.1 NOTE: Other regulating authorities, e.g., Cal/OSHA, may broaden the scope of the definition by also including other materials or more strictly classify the hazards of certain chemicals. Specifically, Proposition 65 requires employers in California to notify employees and provide a clear and reasonable warning of the hazards from those chemicals that may be found in the workplace which cause cancer, birth defects and/or reproductive harm.

5.0 Responsibilities

5.1 The Director of Regulatory Affairs is responsible for:

5.1.1 Issuing and maintaining this program and ensuring the program satisfies the requirements of all applicable federal, state and local hazard communications (HAZCOM) standards.

5.2 The Health, Safety and Environmental (HSE) Coordinator and/or HSE Services Specialist is responsible for:

5.2.1 Assisting the Director of Regulatory Affairs in maintaining this program and ensuring the program satisfies the requirements of all applicable federal, state and local HAZCOM standards.

5.2.2 Providing initial training and retraining (through supervisors assistance) to all employees as per OSHA guidelines detailed here-in.

5.2.3 Acting as a consultant to supervisors on any interpretation of the HAZCOM standards.

5.2.4 Reviewing the safe use of new chemicals in our benches which are introduced at AERC – Allentown and at customer sites.

5.2.5 Maintaining and updating the MSDS Master File and Index at AERC Regulatory Affairs Department offices in Allentown PA.

5.3 The Facility Managers or Designee is responsible for:

5.3.1 Ensuring all employees authorized to work in the facility receive initial and annual training on appropriate HAZCOM procedures. Initial training must be completed before an employee works on equipment with chemicals.

5.3.2 Immediately responding to any employee concerns and requests for information.

5.3.3 Ensuring MSDS files are updated periodically and are consistent with current chemicals used in the workplace.

5.4 Employees are responsible for:

5.4.1 Consulting an applicable MSDS, supervisor or the Health, Safety & Environmental Coordinator if they have a question regarding chemical handling/labeling.

5.4.2 Knowing the locations of MSDS books in the workplace.

5.4.3 Using PPE as required; and

5.4.4 Knowing how to interpret and understand an MSDS.

6.0 Container Labeling

6.1 All chemical containers and material shipments will be properly labeled from the manufacturer to include at a minimum: identity of the product hazard warnings and the name and address of the manufacturer or other responsible

party. All labels will be written in English. If an employee discovers an unlabeled container, notify supervisor and the HSE Coordinator immediately.

6.2 There is no uniformly accepted system for labeling containers at this time, however several systems and standards for labeling hazards exist. Common labeling systems used by AERC our chemical manufacturers/suppliers and customers include: Department of Transportation (DOT) Hazard Labeling System; Hazardous Materials Information System (HMIS); and National Fire Protection Association (NFPA) 704.

6.3 The Department of Transportation (DOT) Hazard Labeling System uses a color-coded diamond in which there is a symbol and a term describing the major hazard of the material. DOT hazard classes include explosives, gases (flammable, non-flammable, corrosive and poison), flammable liquids, flammable solids, oxidizers, poisons, radioactive materials and corrosives. Most chemicals are rated by what the DOT considers to be the single major hazard, but many chemicals have subsidiary hazard categories as well. The DOT system is used for the transportation of hazardous materials.

6.4 The National Fire Protection Association (NFPA) has developed a color-coded system called NFPA 704. The system uses a color coded diamond with four quadrants in which numbers are used in the upper three quadrants to signal the degree of emergency for health hazard (**blue**), fire hazard (**red**), and reactivity hazard (**yellow**). The bottom quadrant (**white**) is used to indicate water reactivity, radioactivity, biohazards or other special hazards. The NFPA 704 System is used primarily by emergency response personnel and for emergency planning and as such does not adequately signal occupational hazards or precautionary information. The NFPA system is good for alerting personnel to the degree of hazard of the chemical and helpful in drawing attention to storage needs and emergency equipment

7.0 Material Safety Data Sheets (MSDS)

7.1 Chemical manufacturers and importers must develop or obtain MSDS for each hazardous chemical they produce or import. Each MSDS will be written in English and will contain at least the following:

7.1.1 The identity of the chemical used on the label; If the hazardous chemical is a single substance, its chemical and common name(s); If the hazardous chemical is a mixture, which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to any known hazards and the common name(s) of the mixture itself; and If the hazardous chemical is a mixture which has not been tested as a whole:

7.1.2 The chemical and common name(s) of all ingredients which have been determined to be health hazards, which comprise 1 percent or greater

of the composition, except that chemicals identified as carcinogens shall be listed if the concentration is 0.1 percent or greater;

7.1.3 The chemical and common name(s) of all ingredients which have been determined to be health hazards which comprise less than 1 percent (0.1 percent for carcinogens) of the mixture, if there is evidence that the ingredient(s) could be released from the mixture in concentrations which would exceed the OSHA PEL or ACGIH TLV or could present a health risk to employees;

7.1.4 The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture.

7.1.5 The physical and chemical characteristics of the hazardous chemical (i.e. flashpoint, vapor pressure, etc.);

7.1.6 The physical hazards of the hazardous chemical, including the potential for fire, explosion and reactivity;

7.1.7 The health hazards of the hazardous chemical, including signs and symptoms of exposure and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

7.1.8 The hazardous chemical primary route of entry (i.e. inhalation, ingestion, absorption) and the OSHA PEL or ACGIH TLV;

7.1.9 Whether the hazardous chemical is listed in the National Toxicology Program (NTP) annual report on carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) monographs (latest edition) or by OSHA;

7.1.10 Precautions for safe handling and use including hygienic practices, protective measures during repair and maintenance of contaminated equipment and procedures for cleanup of spills and leaks;

7.1.11 Chemical exposure control measures including engineering controls, administrative controls and PPE requirements;

7.1.12 The date of preparation of the MSDS or the latest revision;

7.1.13 The name, address and telephone number of the chemical manufacturer, importer or other responsible party preparing the MSDS, who can provide additional information on the hazardous chemical and emergency procedures, if necessary, and

7.1.14 If no relevant information is found for any given category on the MSDS, the chemical manufacturer or importer preparing the MSDS, the MSDS shall be marked to indicate that no applicable information is found.

7.2 Notification must be made to the Regulatory Affairs Department for the use of any new chemicals. The HSE Coordinator shall be given a copy of MSDS or chemical data sheet and provide for an update to the MSDS Master File.

8.0 Inventory of Materials

8.1 AERC will have all MSDS's in a master file in the HSE Coordinator's office.

8.2 An MSDS book will be developed and maintained at each location where chemicals are either used or stored.

8.3 Due to the nature of AERC's waste management activities, MSDS are not received prior to receipt of each individual universal or hazardous waste. As such, representative data sheets shall be maintained for the types of materials commonly received, e.g., fluorescent lamps or lead-acid batteries.

8.4 Those chemicals for which an MSDS is not required, a chemical component of a manufactured universal waste article, a summary data sheet will be secured and placed into the facility MSDS book.

8.5 The chemical listing for each location shall be maintained as Attachment 1 to this procedure.

9.0 Employee Training

9.1 All AERC employees will receive initial and annual Hazard Communication (HAZCOM) training in their corresponding training courses.

9.2 Training will be updated when a new process is introduced or the employee shows a deficiency in the area of HAZCOM.

9.3 Employee training will consist of:

- 9.3.1 Chemicals and gasses found in the workplace;
- 9.3.2 Physical and health hazards of the chemicals in the work area;
- 9.3.3 Measures employees are to take to protect themselves;
- 9.3.4 How to read and interpret an MSDS;
- 9.3.5 How to read and interpret the different labeling systems in use; and
- 9.3.6 Locations of MSDS books and files.
- 9.3.7 Emergency procedures for working with chemicals.

10.0 Hazards of Non-Routine tasks

10.1 Presently, we do not have non-routine tasks involving the potential to expose workers to hazardous chemicals. If a non-routine task should arise, the Health, Safety and Environmental Coordinator and the Facility/Operations Manager will review the non-routine task and train accordingly.

11.0 Outside Contractors

11.1 Outside contractors performing work on company property will be notified of the hazardous chemicals that are present on site and the locations of MSDS books throughout the facility.

11.2 Outside contractors will be required to provide MSDS's for the hazardous chemicals they intend to bring into our facilities.

12.0 Program Review

12.1 The HSE Coordinator shall review this Plan at least annually for necessary changes. Adjustments shall be reviewed with the Director of Regulatory Affairs & Compliance as well as Facility Management prior to implementation. Retraining on the Plan will be done as necessary (as noted above).

13.0 Referenced Documents

13.1

14.0 Documentation & Record Keeping

14.1

15.0 Change Record

Rev	Date	Responsible Person	Description of Change
NA	8-16-02	William Bogari	Previously Created & Released Version
A	8-6-08	Jane Rodgers	Updates Specifically for Virginia Compliance. Additional Updates to Follow for All Locations.
B	7-29-09	Jeff Smith	Conversion to New Formatting and Overhaul of Previously Released Components. Addition of discussion to broaden scope to more clearly include state requirements, e.g., Cal/OSHA.

16.0 Approvals

Approved:

TITLE: *Director of Regulatory Affairs* **Jeffery Smith** 7/29/09 **Date**

17.0 Distribution List

- Regulatory Affairs – Electronic and Master Hard Copy
- Individual Locations – Hard Copy with site specific Attachment 1

ATTACHMENT 9

EXHIBIT D.7.3

Mercury MSDS

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Trade Name: **Mercury, Elemental**

Synonyms: Quicksilver; Colloidal Mercury

Supplier: AERC.com, Inc. dba, AERC Recycling Solutions
2591 Mitchell Avenue, Allentown, PA 18103
Phone: (610) 797-7608 Fax: (610) 797-7696

INFOTRAC Chemical Emergency Response System: 800-535-5053

II. HAZARDOUS INGREDIENTS

			Exposure limits in Air (mg/M^3)	
Chemical Name	CAS Number	% by wt.	ACGIH|NIOSH (TWA)	OSHA (PEL)
Mercury (Hg)	7439-97-6	99-100	0.025	0.10^{CL}

CL - Ceiling Limit

III. HAZARDS IDENTIFICATION

Emergency Overview:

DANGER! CORROSIVE. CAUSES BURNS TO SKIN, EYES, AND REPIRATORY TRACT. MAY BE FATAL IF SWALLOWED OR INHALED. HARMFUL IF ABSORBED THROUGH SKIN. AFFECTS THE KIDNEYS AND CENTRAL NERVOUS SYSTEM. MAY CAUSE ALLERGIC SKIN REACTION.

HMIS (USA)**:** 3 – 0 – 0 **NFPA Rating** (USA)**:**

Contact Rating: Corrosive | **POISONOUS GASES ARE PRODUCED IN FIRE**

Lab Protective Equip.: GOOGLES & SHIELD, LAB COAT & APRON, VENT HOOD, PROPER GLOVES

Potential Health Effects

Inhalation:

Mercury vapor is highly toxic via this route. Causes severe respiratory tract damage. Symptoms include sour throat, coughing, pain, tightness in chest, breathing difficulties, shortness of breath, headache, muscle weakness, anorexia, gastrointestinal disturbance, ringing in the ear, liver changes, fever, bronchitis and pneumonitis. Can be absorbed through inhalation with symptoms similar to ingestion.

Ingestion:

May cause burning of the mouth and pharynx, abdominal pain, vomiting, corrosive ulceration, bloody diarrhea. May be followed by a rapid and weak pulse, shallow breathing, paleness, exhaustion, tremors and collapse. Delayed death may occur from renal failure. Gastrointestinal uptake of mercury is less than 5 % but its ability to penetrate tissues presents some hazard. Initial symptoms may be thirst, possible abdominal discomfort.

Skin Contact:

Causes irritation and burns to skin. Symptoms include redness and pain. May cause skin allergy and sensitization. Can be absorbed through the skin with symptoms to parallel ingestion.

Eye Contact:

Causes irritation and burns to eyes. Symptoms include redness, pain, blurred vision; may cause serious and permanent eye damage.

Chronic Exposure:

Chronic exposure through any route can produce central nervous system damage. May cause muscle tremors, personality and behavior changes, memory loss, metallic taste, loosening of the teeth, digestive disorders, skin rashes, brain damage and kidney damage. Can cause skin allergies and accumulate in the body. Repeated skin contact can cause the skin to turn gray in color. A suspected reproductive hazard; may damage the developing fetus and decrease fertility in males and females.

Aggravation of Pre-existing Conditions:

Persons with nervous disorders, or impaired kidney or respiratory function, or a history of allergies or a known sensitization to mercury may be more susceptible to the effects of the substance.

IV. FIRST AID MEASURES

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

V. FIRE FIGHTING MEASURES

Fire:

Not considered to be a fire hazard.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Undergoes hazardous reactions in the presence of heat and sparks or ignition. Smoke may contain toxic mercury or mercuric oxide.

VI. ACCIDENTAL RELEASE MEASURES

Ventilate area of leak or spill. Clean-up personnel require protective clothing and respiratory protection from vapor.

Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate misting. Sprinkle area with sulfur or calcium polysulfide to suppress mercury. Do not flush to sewer. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800)424-8802.

VII. HANDLING AND STORAGE

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Do not use or store on porous work surfaces (wood, unsealed concrete, etc.). Follow strict hygiene practices.

Keep container tightly closed when not in use. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

VIII. EXPOSURE CONTROLS / PERSONAL PROTECTON

Airborne Exposure Limits:

- OSHA Acceptable Ceiling Concentration: Mercury and mercury compounds: 0.1 mg/m3 (TWA), skin
- ACGIH Threshold Limit Value (TLV): Inorganic and metallic mercury, as Hg: 0.025 mg/m3 (TWA) skin, A4 Not classifiable as a human carcinogen.
- ACGIH Biological Exposure Indices: Total inorganic mercury in urine (preshift): 35 ug/g creatinine; Total inorganic mercury in blood (end of shift): 15 ug/l.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half-face respirator with a mercury vapor or chlorine gas cartridge may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with a mercury vapor or chlorine gas cartridge may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Silver-white, heavy, mobile, liquid metal

Odor: Odorless

Solubility: Insoluble in water

Density: 13.55

Mol Wt: 200.59 g/mole

pH: No information found

% Volatiles: 100 [by volume @ 21C (70^F)]

Boiling Point: 356.7C (675F)

Melting Point: -38.87C (-38F)

Vapor Density (Air =1): 7.0

Vapor Pressure (mm Hg): 0.0018 @ 25C (77F)

Evaporation Rate (BuAc=1): 4

X. STABILITY AND REACTIVITY

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
At high temperatures, vaporizes to form extremely toxic fumes.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Acetylenes, ammonia, ethylene oxide, chlorine dioxide, azides, metal oxides, methyl silane, lithium, rubidium, oxygen, strong oxidants, metal carbonyls.
Conditions to Avoid:
Heat, flames, ignition sources, metal surfaces and incompatibles.

XI. TOXICOLOGICAL INFORMATION

Toxicological Data:
Investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity:
All forms of mercury can cross the placenta to the fetus, but most of what is known has been learned from experimental animals. See Chronic Health Hazards.
Carcinogenicity:
EPA / IRIS classification: Group D1 – Not classifiable as a human carcinogen.

----------\Cancer Lists \----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Mercury (7439-97-6)	No	No	3

XII. ECOLOGICAL INFORMATION

Environmental Fate:

This material has an experimentally-determined bioconcentration factor (BCF) of greater than 100. This material is expected to significantly bioaccumulate.

Environmental Toxicity:

This material is expected to be toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l.

XIII. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be handled as a hazardous waste and sent to a RCRA approved waste facility. Applicable waste codes include (but may not be limited to): D009 and U151 – confirmation of applicable waste codes required by the Generator. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

XIV. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)

Proper Shipping Name: RQ, MERCURY
Hazard Class: 8
UN/NA: UN2809
Packing Group: III
Information reported for product / size: 1LB
NAERG: 172

XV. REGULATORY INFORMATION

Federal, State & International Regulations

	SARA 302		SARA 313	
Ingredient	RQ	TPQ	List	Chemical Category
Mercury (7439-97-6)	No	No	Yes	PBT[1]

	CERCLA	RCRA[2]	TSCA[3]
Mercury (7439-97-6)	1	U151	No

[1] PBT - Persistent bioaccumulative toxic chemical
[2] 40 CFR 261.33
[3] 8 (d)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

XVI. OTHER INFORMATION

NFPA Ratings: Health: **3** Flammability: **0** Reactivity: **0**

Label Hazard Warning:

DANGER! CORROSIVE. CAUSES BURNS TO SKIN, EYES, AND RESPIRATORY TRACT. MAY BE FATAL IF SWALLOWED OR INHALED. HARMFUL IF ABSORBED THROUGH SKIN. AFFECTS THE KIDNEYS AND CENTRAL NERVOUS SYSTEM. MAY CAUSE ALLERGIC SKIN REACTION.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

DISCLAIMER:

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Issue Date: March 9, 2009 [Revision #01] | June 16, 2009 [Revision #2]

Prepared by: AERC.com, Inc., Regulatory Affairs & Compliance Department | (610) 797-7608

ATTACHMENT 9

EXHIBIT D.7.4

HS02007 - Daily Air Monitoring Procedure

Daily Air Monitoring

Document #: HS02007

Facility Health and Safety Program Documentation
Prepared in Agreement with

NIOSH Pocket Guide to Chemical Hazards &
OSHA Guide for Mercury Vapor

AERC.com, Inc., dba AERC Recycling Solutions
2591 Mitchell Ave, Allentown, PA 18103

Revision #: D | Revision Date: 09/01/10

Prepared By: Regulatory Affairs Department
AERC.com, Inc.
2591 Mitchell Ave, Allentown, PA 18103
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Daily Air Monitoring Procedure	Document #: HS-02007	Revision Date: 09/01/10	AERC RECYCLING SOLUTIONS
2591 Mitchell Ave, Allentown, PA 18103 APPLIES TO AERC RECYCLING SOLUTIONS LOCATIONS	Department: Regulatory Affairs	Revision #: D	Page: Page 1 of 7

1.0 Purpose

1.1 The purpose of this plan is to protect all personnel at AERC sites from exposure to mercury vapor.

2.0 Scope

2.1 This plan applies to all AERC locations that process fluorescent lamps and mercury containing devices or materials. Specifically, these locations include: 02, 04 and 05.

3.0 Tools/Equipment Required

3.1 Jerome Mercury Vapor Analyzer (Typical Equipment: Model X-431)

3.2 Daily Air Sampling Log

3.3 Writing Utensil

3.4 Regeneration Equipment – Jerome Operations Manual; AC Power Cord; Zero Air Filter

4.0 Definitions

4.1 **Air Monitoring Points** – Designated locations throughout the facility where Air Sampling is done at a minimum of every two hours at predetermined times.

4.2 **Air Sampling/Monitoring** – The collection and analysis of samples of air to measure the amounts of various pollutants or other substances in the air, or the air's radioactivity.

4.3 **Corrective Action** – The response to air monitoring measurements found to be above defined action levels. Activities are taken to eliminate the cause of a detected nonconformity and to prevent recurrence, e.g., shutdown of operations; removal of a source of the elevated readings; inspection and/or repair of engineering controls.

4.4 **Daily Air Sampling Log** – A daily log where all mercury readings are recorded for each location as performed throughout the facility.

4.5 **Functional Test** – A periodic procedure conducted to verify the Jerome Mercury Vapor Analyzer functionality. The test, which does not calibrate the instrument, generated a measured result that is compared to an expected concentration range for mercury vapor. If the results of this test fall within the expected range – the instrument if functioning properly.

4.6 **Jerome Mercury Vapor Analyzer** – A portable, hand-held, device that detects and measures the level of toxic mercury vapor in the air (commonly called a Jerome Meter).

4.7 **OSHA PEL** – Permissible Exposure Limit as per an 8 hour work shift as designated by the Occupational Health and Safety Administration (OSHA) as found in 29 CFR 1910 Subpart Z, *Toxic and Hazardous Substances*.

4.8 **NIOSH TWA** – Time Weighted Average per an 8 hour work shift that is allowable for employees to be exposed to each day of their working life without irreversible health affects as designated by the National Institute of Occupational Safety and Health.

5.0 Responsibility

5.1 The **Director of Regulatory Affairs** is responsible for:

5.1.1 Providing support of efforts by AERC staff in the effective implementation of all safety and health programs within AERC.com, Inc. and its operating facilities.

5.2 The **Health, Safety and Environmental Coordinator** is responsible for:

5.2.1 Managing this program to ensure it satisfies the requirements of all applicable federal, state, and local requirements.

5.2.2 Overseeing the calibrations of the Jerome Meters including follow up with supervisors to ensure completion and maintaining documentation.

5.2.3 Ensuring employees receive training on this procedure.

5.3 **Operations Managers or Supervisors** is responsible for:

5.3.1 Supporting and enforcing this procedure.

5.3.2 Ensuring the Jerome Meter is calibrated per the manufacturer on an annual basis and providing proof of calibration to the HSE Coordinator.

5.3.3 Ensuring employees within their department have received proper training and are familiar with these procedures.

5.4 **All Employees** are responsible for:

5.4.1 Following the proper instructions when completing Air Monitoring Samples in order to achieve accurate results.

6.0 General Information

6.1 OSHA PEL for mercury is 0.100 mg/m^3 as total mercury (TWA).

6.2 NIOSH TWA for mercury is 0.050 mg/m^3 [skin].

6.3 California's Division of Occupational Safety and Health (DOSH or Cal/OSHA) has a Permissible Exposure Limit of 0.025 mg/m3 as total mercury (TWA). In addition Cal/OSHA has a ceiling limit of 0.1 mg/m3. This must never be exceeded for any period of time.

6.4 AERC's Action Level is ½ of NIOSH's and DOSH's Level and ¼ OSHA's PEL for all AERC locations with the exception of the Retort Prep Room (Mitchell Ave Site, PA).

6.5 The AERC Retort Prep Rooms action level shall be the same as OSHA's PEL. However, investigation of elevated readings shall be initiated if levels in the area exceed ½ of the OSHA PEL or .050 mg/m^3

6.5 Additional action levels may be needed for certain personnel as indicated by medical needs such as pregnancy or illness. In the case of illness, unless otherwise directed by a physician, the action level is ½ of AERC's determined action level, i.e., 0.0125 mg/m^3. Based on physician recommendation for pregnancy, AERC shall not allow pregnant women to enter the primary plant area and shall limit potential exposures to mercury vapor based on the action level of 0.010 mg/m^3.

6.6 Air Sampling will be conducted every two hours in established locations throughout the facility called "Air Monitoring Points".

6.7 Supplemental information regarding the operation for the Jerome Meter can be found in the Operation Manual by Arizona Instrument LLC.

7.0 Mercury Vapor Air Sampling Procedure

7.1 **Step 1 – Daily Operations of Jerome Meter**

7.1.1 Follow these steps each day prior to use.

7.1.2 Press the power button to ON.

7.1.2.1 The digital meter displays 000.

7.1.2.2 Disregard initial reading.

7.1.2.3 Recharge or replace battery pack if LO BAT indicator REMAINS ON. Refer to manual for battery changing instructions.

7.1.2.4 Allow 1 minute before beginning the next step. This will ensure the instruments electronics have stabilized.

7.1.3 Use the Zero Air Filter to equilibrate the instrument to ambient air temperature.

7.1.3.1 Install the Zero Air Filter in the instrument's intake.

7.1.3.2 Sample continuously until the readings stabilize.

7.1.4 Perform Sensor Regeneration.

7.1.4.1 Refer to page 12 of the Operating Manual.

7.1.5 Zero the instrument 30 minutes after sensor regeneration.

7.2 Step 2 – Taking a Direct Reading

7.2.1 After completing all the steps required in the daily operations section of this procedure, press the sample button.

7.2.1.1 During the sample cycle the digital meter displays bars (-, --, ---) to indicate the amount of sensor saturation.

7.2.2 At the end of the sampling cycle, read the digital meter.

7.2.2.1 The number shown on the digital meter is the Mercury Vapor concentration in mg/m^3.

7.2.2.2 The value remains on the digital meter until the next sample is taken.

7.2.2.3 The digital meter automatically zeros at the start of each sample.

7.3 Step 3 - Annotation of Direct Reading onto Sampling Log

7.3.1 Follow the instructions on the Daily Air Monitoring Log, to annotate the value of air samples taken at all locations listed on the log.

7.3.1.1 The Daily Air Monitoring Log is unique for each location. The forms are as follows: HS-02007-F1 (Pennsylvania), HS-02007-F2 (California), HS-02007-F3 (Virginia), or HS-02007-F4 (Florida).

7.4 Step 4 – Responding to High Readings

7.4.1 Corrective Actions need to be taken when air monitoring indicates a value above the aforementioned action levels, specifically:

- ≥ 0.025 mg/m^3 within primary plant and/or warehouse areas;
- ≥ 0.100 mg/m^3 within the Allentown facility Retort Prep Room (PA);

- ≥ 0.010 mg/m^3 in the working area of an employee that is either ill or pregnant.

7.4.2 Documentation of corrective actions shall be done as noted below:

7.4.2.1 Place a * in the same block as the reading to indicate a reference to the explanation and remediation protocol. The explanation and remediation protocol should be "spelled out" in the comments section of the Daily Air Monitoring Log.

- Supporting information in the comment section must clearly explain the reasoning behind the elevated reading. It is important to note if there was a change in protocol or if personnel not following protocol caused the high reading. It is also important to note equipment malfunctions or other causes to the high reading.

7.4.2.2 All personnel in the affected area(s) need to be notified and provided with a course of action. If employees need to be removed from the area, they must be given procedures as to their ability to return.

7.4.2.3 The facility manager must be notified of the reading and the determined course of action to remedy the situation.

7.4.2.4 Employees designated to remedy the situation will be briefed on the action plan and provided with the equipment necessary to perform the remediation.

7.4.2.5 Upon remediating the high reading, affected employees with be notified to return to their regular work status.

7.4.2.6 Annotation of remediation should be noted on the Daily Air Monitoring Log.

- A complete explanation of the remediation must be included in the comment section of the log. This includes when personnel were notified, the activities that took place to reduce the readings, proof the readings were brought back to acceptable levels and a time that employees returned to normal duties.

7.5 Step 5 – Storage of Completed Sampling Logs

7.5.1 Completed Sampling Logs are managed by the operations or Facility Manager.

7.5.2 The logs shall be stored in the operations area, but shall be accessible to management, the Regulatory Affairs Department and external regulatory agencies.

7.6 **Regular Maintenance and Periodic Meter Functional Testing**

7.6.1 Proper operation of the Jerome Meter requires maintenance and functional evaluation as detailed in the meter's Operation Manual. AERC commonly uses the Jerome® 431-X™ mercury vapor analyzer.

7.6.2 The suggested maintenance schedule is detailed within the Preventive Maintenance Calendar presented in Section 5.0, on page 18 of the current revision of the Operations Manual (Rev: March 2005). Key items of concern are summarized here:

- Change 0.25 inch fritware – Weekly or as needed (Ref: Pg 19)
- Functional testing – Monthly or as needed (Ref: Appendix A, Pg 37)

7.6.3 Functional testing must be done on a regular basis to ensure proper operation of the meter. Form HS-02007-F5, *AER Jerome Meter Function Test Log Sheet*, shall be used to document activities as detailed on pg 37 of the manual. Details on the use of the form are documented in associated work instruction WI-FA09001, *Completion of Jerome Meter Functional Tests - Use of MS Excel Data Form*.

8.0 Employee Training

8.1 Employees designated as operators of the mercury vapor analyzer must be trained on this procedure and the use of the sampling log. Demonstration of understanding is required prior to use.

9.0 Annual Review of Document

9.1 This procedure will be reviewed on an annual basis to ensure that the information stated complies with both the equipment used on site and with the manufacturer's operation manual.

10.0 Exhibits | Referenced Documents

10.1 Operation Manual for the Jerome 431-X Mercury Vapor Analyzer | Rev: March 2005.

10.2 Daily Air Monitoring Logs

- HS-02007-F1, *AERC Allentown Facility Daily Air Monitoring Log*
- HS-02007-F2, *AERC Hayward Facility Daily Air Monitoring Log*
- HS-02007-F3, *AERC Ashland Facility Daily Air Monitoring Log*

- HS-02007-F4, *AERC West Melbourne Facility Daily Air Monitoring Log*

10.3 HS-02007-F5, *AERC Jerome Meter Function Test Log Sheet*

10.4 Facility Jerome Meter Notebook – A copy of this procedure, the site specific log sheet and referenced Operations Manual are available at each location within a the Jerome Meter Vapor Analyzer Log Book. This book

11.0 Change Record

Rev	Date	Responsible Person	Description of Change
A	4-17-01	William Bogari	Initial Release of Document
B	3-01-09	Jane Rodgers | Health, Safety & Environmental Coordinator	Conversion to New Formatting and Overhaul of Previously Released Components.
C	4-14-09	Jeff Smith | Director of Regulatory Affairs	Inclusion of details on Functional Testing requirements and preventive maintenance, including reference to new form HS-02007-F5.
D	9-01-10	Jeff Smith | Director of Regulatory Affairs	Update Section 6.0 detailing updated Cal/OSHA PEL. Updated associated daily log form (HS-02007-F2) for Hayward facility.

12.0 Approvals

Approved:

TITLE: *Director of Regulatory Affairs* **Jeffery Smith** 9/1/10 **Date**

13.0 Distribution

13.1 Electronic Copies to be sent to all universal waste recycling location Facility Managers.

Date: _____ | _____ | _____
MM DD YY

Print Name 1st Shift: _____ Print Name 2nd Shift: _____ Print Name 3rd Shift: _____

Operators Initials													
Air Monitoring Locations		2:00	4:00	6:00	8:00	10:00	12:00	14:00	16:00	18:00	20:00	22:00	0:00
W0	Outside Front Office												
W3	Office												
W6	Break Room												
W7	Reception Area												
W14	Warehouse (Storage)												
W15	Loading Dock												
W17	Loading Dock												
W19	Storage Room												
W22	Storage Room												
W27	HID Processing Area												
W28	Storage Room												
W29	Processing Area												
W30	Shared Office												
W31	Storage Room												
W32	Donning/Doffing Area												
W34	West Warehouse												
W35	Outside Warehouse												
W36	AERC Break room												

Comment on any reading over 0.025mg/m3 and explain actions taken to reduce readings.	N/A = Not Applicable	N/O = Not Operating
COMMENTS:		

NOTE: PER MANUFACTURERS INSTRUCTIONS - THE SENSITIVITY OF THE AIR MONITORING INSTRUMENT FOR DETECTION OF MERCURY VAPOR IS 0.003MG/M3+20% UP TO 0.025MG/M3. THEREFORE READINGS BELOW 0.003MG/M3 ARE RECORDED AS "<0.003".

FORWARD THIS MONITORING LOG TO THE PRODUCTION MANAGER FOLLOWING EACH SHIFT. THE MANAGER IS REQUIRED TO IMMEDIATELY INVESTIGATE ANY UNUSUAL VALUES, REVIEW/SIGN AND FORWARD THE LOG TO THE OPERATIONS ASSISTANT BY 12:00 FOR THE SHIFT ENDING AT 6:00.

NAME OF SUPERVISOR REVIEWING DOCUMENT: _____ SIGNATURE: _____ DATE OF REVIEW: _____

ATTACHMENT 9

EXHIBIT D.7.5

Job Descriptions

AERC RECYCLING SOLUTIONS

Schedule A

Job Title :	Recycling Technician		
Department/Group:	20 – Production Lamps	Job Category:	Non-Exempt/ Hourly
Location:	All Locations	Position Type:	Full Time
Supervisor:	Shift Supervisor / Facility Manager		

General Summary:

Perform basic plant operations including material handling, hazardous waste handling, and equipment operation, working within company safety/environmental policies and procedures.

Essential Functions: Essential functions of position include, but are not limited to:

1. Placing hazardous waste into appropriate containers and close.
2. Placing dates on hazardous waste containers once container is full.
3. Complete and affix hazardous waste labels to appropriate hazardous waste storage containers.
4. Move hazardous waste containers within the facility using proper equipment.
5. Places hazardous waste containers into designated storage areas.
6. Unload trucks, unpack lamps and stage lamps for processing
7. Operate lamp recycling equipment in accordance with proper operating procedures
8. Document appropriate operation in logs
9. Operate fork truck, lifting mechanisms, drum dumpers, drum and pallet jacks
10. Reliable, regular attendance/punctuality is required to meet business need
11. Assure compliance with all applicable regulations related to storage (i.e., drum count, aisle space, labels, etc.)

NON-ESSENTIAL FUNCTIONS:

1. Maintain cleanliness of equipment and overall housekeeping in and around the facility.
2. Inventory incoming material and assist with customer deliveries/pickups
3. Perform other functions that may be assigned.

Working Conditions:

- Medium to heavy working conditions, possible exposure to mercury and/or phosphor powder.
- Ability to lift 50 pounds minimum on regular basis
- Ability to move 55-gallon drums
- Ability to use personal protective equipment: hardhat, goggles, respirator
- Ability to climb stairs and stand for 8 hours/day
- Ability to work overtime hours.

AERC RECYCLING SOLUTIONS

Schedule A

Background Requirements:			
• HS diploma or equivalent required. • Good mechanical ability required. • Ability to climb stairs stands 8 hours/day, lift 60 pounds, move 55-gallon drums required. • Ability to use personal protective equipment such as tyveks, goggles, hardhat, respirator			
Training:			
• Must complete 24-hour Orientation • Specific on-the-job training towards meeting established production standards • Must complete training on Hazardous Waste Management practices.			
Reviewed By:		Date:	
Approved By:		Date:	
Last Updated By:		Date/Time:	
Approvals: Management retains the discretion to add or change job duties at any time.			

AERC RECYCLING SOLUTIONS

Schedule A

Job Title :	Shift Supervisor		
Department/Group:	20 – Production	Job Category:	Non- Exempt/ Hourly
Location:	All Locations	Position Type:	Full Time
Supervisor:	Production Manager/ Facility Manager		

General Summary:

Maintain responsibility for overall shift operations, production performance, equipment maintenance and cleanliness, regulatory compliance, and hazardous waste practices.

Essential Functions: Essential functions of position include, but are not limited to:

1. Place hazardous waste into appropriate containers and close.
2. Place dates on hazardous waste containers once container is full.
3. Complete and affix hazardous waste labels to appropriate hazardous waste storage containers.
4. Move hazardous waste containers within facility using proper equipment.
5. Place hazardous waste containers into designated storage areas.
6. Perform/maintain daily and weekly inspection reports, associated records.
7. Ensure hazardous waste containers are stored so they may be inspected for integrity and markings.
8. Ensure hazardous waste is stored correctly (lids closed, labeled, and stored in proper location).
9. Manage and schedule manpower to assure timely production and reduction of unnecessary overtime
10. Assist in training and development of operations personnel.
11. Maintain operational/safety supply inventory.
12. Communicate to management: facility needs, difficulties, changes in operations.
13. Reliable, regular attendance/punctuality required to meet business need.
14. Assure compliance with all applicable regulations related to storage (i.e., drum count, aisle space, labels, etc.)

NON-ESSENTIAL FUNCTIONS:

1. Maintain cleanliness of equipment and overall housekeeping in and around the facility.
2. Perform other functions that may be assigned.

Working Conditions:

- Fast-paced environment; busy telephones.
- Sitting, speaking on phone for extended periods of time.

Background Requirements:

- Must have retort knowledge
- Attendance record and work history will be given strong consideration

AERC RECYCLING SOLUTIONS

Schedule A

- Flexibility required – may have to extend work hours or cover other shifts
- May be called in during off hours HS diploma or equivalent required.
- Min. 6 months production experience and plant health and safety awareness/knowledge required
- Strong written and verbal communications skills required
- Good mechanical ability required.
- Must meet all Recycling Technician criteria

Training:

- All recycling tech training
- Permit Training
- HM-126 – Full training

Reviewed By:		Date:	
Approved By:		Date:	
Last Updated By:		Date/Time:	

Approvals: Management retains the discretion to add or change job duties at any time.

AERC RECYCLING SOLUTIONS

Schedule A

Job Title :	Shipping & Receiving Coordinator		
Department/Group:	26 – Shipping & Receiving	Job Category:	Non-Exempt/ hourly
Location:	All Locations	Position Type:	Full Time
Supervisor:	Production Manager / Shift Supervisor		

General Summary:

Responsible for coordinating and overseeing all shipping and receiving activities while working closely with Service Coordinator to insure compliance and inventory control.

Essential Functions: Essential functions of position include, but are not limited to:

1. Coordinate all shipping and receiving activity at this location
2. Assure all paperwork (manifests, BOL's, etc.) is properly completed and piece counts match.
3. Complete receiving tickets for all incoming material, initiating the tracking process
4. Inspect all materials for conformance to approval codes. Note any discrepancies and segregate off-spec material until authorization has been given to either process or reject
5. Assign and move materials to appropriate storage area and notify appropriate supervisor of the storage location
6. Assure compliance with all applicable regulations related to storage (i.e., drum count, aisle space, labels, etc.)
7. Assure storage of end products in their appropriate areas.
8. Coordinate the shipment of products, end products, boxes, drums, plant scraps, etc. Complete associated paperwork and label each container or pallet
9. Reliable, regular attendance/punctuality required to meet business/customer needs
10. Assure compliance with all applicable regulations related to storage (i.e., drum count, aisle space, labels, etc.)

NON-ESSENTIAL FUNCTIONS:

1. Assist in the development and implementation of the waste analysis plan
2. Assist in developing and implementing policies and procedures for computerized tracking system

Working Conditions:

- Normal plant conditions with possible exposure to mercury and/or chemicals
- Work area may be excessively warm in summer months

Background Requirements:

- High school diploma, GED, or equivalent work experience required
- Must be able to lift 50-60 pound containers and stand for long periods of time
- Must be able to use personal protective equipment (tyveks, respirator, safety Glasses, etc.)
- Must be forklift certified and familiar with plant safety procedures
- Previous shipping/receiving experience will be given preference

AERC RECYCLING SOLUTIONS

Schedule A

- English fluency required for communication with truckers, customers and internal departments, and for completion of associated paperwork

Training:

- Must complete 24-hour Orientation
- Specific on-the-job training towards meeting established performance criteria
- Basic permit compliance

Reviewed By:		Date:	
Approved By:		Date:	
Last Updated By:		Date/Time:	

Approvals: Management retains the discretion to add or change job duties at any time.

ATTACHMENT 10
ITEM D.8
Quality Control Plan

TABLE OF CONTENTS

Description (including Part # | Item # as applicable) **Page #**

D.8.1. Applicability and Intent

This plan is intended to conform to 62-737.800(e) F.A.C. It begins with an overview of the Quality Assurance Plan. Total Quality Management includes more than the process efficiencies and materials testing covered in the Quality Assurance Plan. In order to demonstrate how the recovery and reclamation, and health and safety, emergency control and hygiene objectives are met, the plan is further separated into the following categories:

- Operations and Hygiene, Including Security, Preparedness and Hazard Prevention
- Container Management System
- Plant Configuration
- Air Monitoring

Quality Assurance

All materials will be received according to appropriate state or federal policy or regulation. There are differences between states' and federal policies and regulations with respect to the designation of some wastes as hazardous or non-hazardous, transportation and manifest requirements, etc. Some materials may arrive at the facility on a Hazardous Waste Manifest (Manifest) and some on a standard Bill of Lading (BOL) due to differences in policy interpretation and regulation. Some material may arrive on a BOL, and be shipped out on a Manifest due to other states' requirements. Other Quality Assurance Program elements include the use of control measures, operating checks, monitoring procedures, and record keeping to insure systems are performing as intended and that performance criteria are met. A summary of these items is provided in Attachment 14 | Item D.12 - *Inspection Plan*.

D.8.2. Description of Facility

AERC operates an integrated waste recycling facility located in West Melbourne Florida. The facility uses patented and proprietary processes to recover mercury lamp components and mercury containing devices, to remove for recycling metallic mercury from components and wastes, and to clean, purify and separate the hazardous and non-hazardous coproducts, and return the base materials to a usable form. The goal is to recover as many of the waste components as possible. Mercury-containing wastes created through the facility's recovery processes are shipped off-site for reclamation to a permitted TSDR facility (such as the permitted AERC facility located in Allentown, PA).

D.8.2a Quality Assurance- Process and Coproduct Testing

The West Melbourne facility and AERC's other U.S. facilities continue to perform and accumulate sampling data for mercury concentrations on processed lamp components. The sampling data is maintained at the West Melbourne facility and can be reviewed upon request. Testing is done by independent laboratories using state (per 62-160.500) and federal (SW 846) approved sampling and testing methods for these materials. These data are consistent with the results achieved by the company at all its locations in the U.S.

The company's history of operating these types of recycling systems will mean that not only will the Florida performance standards be met, but all other state's and federal treatment requirements for this type of waste are achieved. We are informed by the commercial testing laboratories we use that the analyses performed on waste and process materials will meet the Quality Assurance requirements of Rule 62-160 F.A.C. The facility maintains records of operations and test data for a period of at least three (3) years in accordance with 62-160.600. This is proprietary and confidential information but can be made available to regulatory agencies if needed.

AERC will operate as a 90-day generator for any hazardous wastes and coproducts. The company will follow all generator requirements in 40 CFR 262, including training, manifesting, and record keeping, and reporting requirements.

Categories of material

Table 2.A. outlines the expected levels of mercury in the materials processed at the facility, the types of testing and criteria used for hazardous/non-hazardous determination on wastes and process materials generated by AERC and their treatment, disposal or recycling options.

AERC can send hazardous plant scraps and other mercury-containing wastes to commercial licensed facilities, including AERC in Allentown, PA for mercury reclamation. AERC's goal is to recycle all hazardous waste material generated. Non-hazardous process materials are recycled locally or through the company's affiliation with manufacturing firms nationally. AERC has also instituted an office recycling program, which includes mixed ledger, beverage containers, newspapers, and corrugated cardboard.

Table 2.A.
Materials and Process Recovery Rates

Categories of Materials Introduced into Processes	Components in Materials and Composition	Range of Mercury Concentration and Quantitative Limits	Effective Recovery Rate and Final Destination
1. Fluorescent and Mercury Lighting Devices	Whole Lamps	Mercury ranges from 10 ppm to over 250 ppm in standard fluorescent lamps, and up to several grams per lamp for many HID lamps. In fluorescent lamps mercury is mixed with powder and in HID lamps it is contained in separate capsules. Test methods do not make it possible to determine exact concentration, (mg/kg) without first removing these capsules.	Materials are processed into separate components as described below.
	Aluminum end-caps, metal filaments, harnesses and other metal parts	Processed end products range from non-detect to a few ppm. AERC maintains analytical data on coproduct testing at each of its facilities, available for agency review upon request.	Post processing tests to determine <0.2 mg/1 TCLP for Hg and ≤1ppm for 12 week ave. and ≤3ppm for weekly composite. Recycling or Disposal
	Glass	Glass cullet ranges from non-detect to a few ppm. AERC maintains analytical data on coproduct testing at each of its facilities, available for agency review upon request.	Post processing tests to determine < 0.2 mg/1 TCLP for Hg and ≤1ppm for 12 week ave. and ≤3ppm for weekly composite Recycling or Disposal
	Phosphor Powder	Untreated powder contains varying amounts of Mercury depending on manufacturer, age of lamp, and the fact that dosing lamps at manufacture is imprecise.	Powder containing mercury is shipped off-site to an authorized retort facility for mercury reclamation. Post processing tests

Table 2.A.
Materials and Process Recovery Rates

Categories of Materials Introduced into Processes	Components in Materials and Composition	Range of Mercury Concentration and Quantitative Limits	Effective Recovery Rate and Final Destination
		AERC maintains analytical data on coproduct testing at each of its facilities, available for agency review upon request.	are conducted by the retort facility to determine < 0.2 mg/1 TCLP for Hg and 99% Hg recovery.
2. Mercury-Containing Devices	Whole Devices	Untreated devices contain a wide range of mercury, from a few ppm in some to several ounces or even pounds in others. There is no way of determining exact concentration before the device is disassembled.	Devices are mechanically or manually taken apart, non-mercury portions removed and mercury components are shipped off-site to an authorized retort facility for further processing and reclamation. Processed materials are tested by the retort facility to determine < 0.2 mg/1 TCLP for Hg and 99% Hg recovery.
	Processed devices and component materials, such as casings, piping, non-metal parts, etc.	End Products range from non-detect to few ppm. AERC maintains analytical data on coproduct testing at each of its facilities, available for agency review upon request.	Processed materials are tested to determine < 0.2 mg/1 TCLP for Hg and 99% Hg recovery. Recycling, Retort or RCRA Off-Site Treatment
3. Non-Specific Mercury Bearing	Activated Carbon or other spent	Pre-treated filter media collects mercury from air in varying concentrations, from a few ppm	Material tested to determine < 0.2 mg/1 TCLP for Hg

Table 2.A.
Materials and Process Recovery Rates

Categories of Materials Introduced into Processes	Components in Materials and Composition	Range of Mercury Concentration and Quantitative Limits	Effective Recovery Rate and Final Destination
Wastes, including process and pollution abatement materials	filter media	to several thousand ppm.	Retort, Recycling, Disposal, or RCRA Off-Site Treatment
	Plant Scraps; Gloves, Tyveks, Booties, etc	Pre-treated materials can range from non-detect to a few ppm. AERC maintains analytical data on coproduct testing at each of its facilities, available for agency review upon request.	RCRA Off-Site Treatment at an authorized RCRA TSD Facility, Retort Facility or Recycler.
	Cardboard boxes	Containers are visually inspected and any phosphor powder is swept or vacuumed.	Recycling
	Process and cleaning liquids	Pre-treated materials can range from a few ppm to >260 ppm.	Authorized RCRA Off-Site Treatment, Retort Facility or Recycler.
Metallic Mercury	Elemental mercury received from generators	Mercury, contaminated with various impurities. May also be commodity grade, which is approximately 99% pure.	Resalable commodity grade Hg or ship off-site to an authorized Retort Facility or Recycler.

D.8.2b Processes Defined for West Melbourne Facility

The Facility receives materials from numerous private and public sources. Generators include institutions, hospitals, schools laboratories, manufacturing operations, electrical maintenance companies; both large and small businesses. Common materials received are physically solid devices, including fluorescent lamps, other mercury containing lighting devices, regulators, switches, and thermometers. Additionally, process wastes and coproducts, washwaters, soil and debris containing mercury are managed via 10-day operating activities. AERC waste profile documents (presented in **Exhibit D.8.1**) are used to gather water material characteristic information from generators prior to approval and processing by AERC facilities.

The facility is integrated so that materials entering any one process are separated into various coproducts, which can then be processed and reclaimed using one or more of the other processes at the facility, or at another facility operated by the company. Process capacities for all categories are found in Attachment 5 | Item D.3 – *Integrated Process Flow Diagram*. of this document and the operating parameters are found in Attachment 7 | Item D.5 – *Operations Plan*. A general process overview follows:

Category 1 - Mercury containing lighting devices (lamps) recycling:

This process involves the physical demanufacturing (crushing or separation) of mercury-containing lighting devices. In this process lamps are separated into their components of glass, metals, phosphor powders and mercury, which is contained in the powders. The glass and metal components are segregated from the others, rendered non-hazardous for the mercury characteristic, recovered and resold or recycled as product. The mercury-contaminated phosphor powder is accumulated in 55-gallon steel drums and shipped off-site to an authorized Retort facility for reclamation of the mercury. The retort facility performs testing to ensure that the retorted powder has TCLP values <0.2 mg/l and 99% Hg recovery.

Category 2 - High Intensity Discharge Lamps:

HID lamps are manually disassembled under a hooded area with excess airflow to an air filtration system. Operators segregate various lamp parts based on recyclability. Inner lamp capsules containing mercury are also separated from the rest of the HID lamp. Capsules are accumulated in 55-gallon steel drums and shipped off-site to an authorized Retort facility for reclamation of the mercury. The retort facility performs testing to ensure that the retorted powder has TCLP values <0.2 mg/l and 99% Hg recovery.

Category 3 - Mercury Containing Devices:

Mercury containing devices, such as electronic switches, thermometers, regulators, barometers, arc tubes, and various other objects which have mercury associated with them, are prepared for off-site mercury retorting in several different ways. Some objects are repackaged or disassembled; some have rubber and plastic components removed. Others are manually broken into smaller pieces, or separated into batches for processing. In all cases this processing is done in an area with air collection and filtration systems.

D.8.2c Sampling to Determine Effectiveness- Grab and Composite Sample Analyses from the West Melbourne Facility

Incoming materials all have some level of mercury in them. This is discussed in Table 2.A. and analytical data from random testing thousands of samples at several locations in the U.S. and from information provided by generators is available at the company facilities. Exact concentration of mercury intrinsic in incoming materials is not routinely tested, as it would be an impractical exercise, unnecessary expense and the data would not affect the quality of the material processed, the system used, or the end results. Processed materials are tested using both the TCLP and Total Mercury analyses. The methods used are as follows:

A. Chain of Custody Record
B. Sampling Equipment
C. Sample Containers
D. Sampling Equipment and Container Decontamination (Cleaning)
E. Sampling Methodology

The general sampling methods are:

Recovery of processed glass, end-caps, devices and metallic components-
A minimum 8 oz. sample is taken daily from point of generation. The sample is taken using pre-cleaned stainless steel collection tool or equivalent device. This sample stored in a container with a screw top lid (or equivalent) and is combined with other daily samples to make 1 gallon composite. Samples are labeled, maintained and handled in accordance with the SOP. Weekly, an 8 oz. sample is taken from the 1 gal. composite, and sent to a commercial laboratory for total mercury analysis. A standard chain of custody form is used by all parties handling and testing the samples. Periodically, additional 8 oz. samples are tested for mercury using TCLP test.

Sampling logs are maintained at the facility, with appropriate signatures, times and locations indicated. Sampling devices and containers are washed and stored in accordance with the SOP.

Samples from historical processing activities at the facility were sent to different commercial laboratories for testing. For easier understanding of the sampling data, the following abbreviations are used:

CGS - Processed glass sample.
ECS - End-cap sample.
HB - HID base sample.
SS - Shattershield (plastic coating) sample.

Records of actual processed material sample analyses are maintained at the facility and are available to the DEP upon request.

Testing Laboratories Utilized by the Company -

Each of these laboratories has been approved by the company and copies of the individual QA/QC plans can be made available upon request.

West Melbourne, FL:

Lab Central Inc./US BioSystems
2752 Cypress Head Trail
Oviedo, FL 32765
407-977-3998
ComQAP 980126

Accutest Laboratories Southeast, Inc.
405 Vinelad Road, Suite C-15
Orlando, FL 32811
407-425-6700
CompQAP 940304G/5

AERC uses its internal laboratory at its Allentown facility for R&D purposes only:

AERC
2591 Mitchell Ave
Allentown, PA 18103
610-797-7608
Matt Blanar – *Waste Analysis Manager*

D.8.2d QA Plan for Each Category and Process

Performance Standards

The State of Florida imposes specific performance criteria on recovery activities. The criteria are found in Florida Administrative Code Rule §62-737.800 *et seq*. Specifically, for mercury recovery operations the residual mercury levels are established at 3 ppm for weekly composite testing and 1 ppm of average mercury during each consecutive 12 week period (§62-737.840).

The company will continue to test all processed materials and components of lamps devices etc. to determine that anything recovered is free from hazardous levels of mercury, and that any hazardous materials are shipped either to a licensed treatment facility, disposal facility, or retort facility, or directly to another party who can use the material directly. Examples of the logs used for various media as well as historical data summaries are presented in **Exhibit D.8.2**.

D.8.3 Operations and Hygiene

The following is a description of the Technical Operational, and Industrial Hygiene procedures employed by AERC to recover the various components of fluorescent and mercury lamps and devices to protect our employees, the community and the environment.

Receiving Procedures

All incoming loads are subject to strict quality control (QC) procedures to ensure the load meets the AERC waste acceptance plan. Prior to shipment, customers inform AERC operational staff as to the nature and volume of the shipment. The load is then issued an AERC order / authorization number, which acts to track the load through the AERC recycling system.

Once the shipment arrives at the AERC facility, the incoming material is inspected for the following:

- Proper packaging
- Leaks or discharge
- Quantity discrepancies
- Paperwork completion and accuracy

All incoming material is unloaded and a piece count is made (and compared to the shipping papers). These notes, as well as the date of receipt, is documented on the AERC receiving ticket – presented as **Exhibit D.8.3**. AERC also applies barcode tracking labels to non-lamp

containers. Fluorescent lamps are moved to the work platform for processing. Contaminated cardboard is segregated and containerized for decontamination and recycling by end of shift. HID lamps are moved to the airflow system for disassembly. MCDs are moved to the designated storage area for segregation and / or repackaging / disassembly.

Lamp Processing Procedures

Pallets of intact lamps are immediately fed into the processing equipment by process technicians. Based on their job assignment, the technicians wear appropriate personal protective equipment (PPE), which could include: cotton work uniform, steel-toed boots, tyvek coveralls, face shield and safety glasses, hearing protection, nitrile and cotton/leather gloves. Lamp components are separated in the process equipment. Process technicians monitor glass, end caps, and powder flow, and perform visual spot checks on these materials to ensure equipment is functioning properly.

Samples of each coproduct are collected and consolidated. A grab sample of both glass and end caps is collected every shift of production and made into a composite sample. Composites are sent to a certified off-site laboratory every week. Samples are numbered and documented in an analytical log prior to being sent off-site. Analysis includes total mercury and TCLP for mercury. Production co-products are stored on-site until sufficient volumes are accumulated for shipment to recyclers and until analytical results are obtained. No coproducts have failed TCLP at AERC's Florida facility.

At the end of each days production, the equipment and the floor is cleaned. Both hazardous and non-hazardous wastes are generated on site as a result of daily operating procedures and recycling processes. Hazardous waste is shipped off-site on a hazardous waste manifest for treatment or retorting at an authorized RCRA TSD treatment facility of retort facility.

Vacuum / Air Cleansing System

This system provides the airflow and filtration needed by the crushing and separation systems to remove and isolate small size particulates and mercury from the other lamp components and provide the negative pressure to assure there are no dust of mercury emissions into the workplace. The system operates with high flow air movement and a series of various size particulate filters along with treated carbon for mercury removal.

Health and Safety

AERC considers the health and physical well being of its employees to be the most important factor in its approach to production. All employees received pre-employment physicals to both

verify ability to perform job function and establish base lines to which future testing can be compared. Any person leaving AERC employment receives an exit physical. Office staff receive follow-up physicals bi-annually while operations personnel receive annual physicals and quarterly blood and urine heavy metals screening, which is conducted by independent labs. The frequency of testing is designed to catch any potential exposures before they can become a long-term health hazard.

In order to insure that plant operations are safe from an employee-exposure standpoint, AERC implemented a comprehensive personnel monitoring program. AERC also checks plant worker exposure every quarter using Industrial-Hygiene-Personnel-Monitoring-Equipment, such as active dosimeter pumps worn while work is being performed. This information is kept in the employee personnel records at the facility. Industrial hygiene audits are performed annually by AERC's Corporate health and safety staff. Results of these audits are maintained at the facility and are available for agency review upon request.

Production workers are required to wear the proper PPE and disciplinary action is taken against any employee violating AERC's health and safety policy. Visitors are also required to follow AERC's safety policy, and to wear safety glasses, and shoe covers when touring the process area.

Security

The AERC facility can be operated up to 24 hours per day. During operating hours, there are several employees working in the office/administrative area, and in the process/operations areas. AERC will prevent the unknowing entry and minimize the possibility for the unauthorized entry into the active portion of the facility. The offices and facility are located on Fortune Place, with normal first shift operating hours from 7:00 a.m. to 3:30 p.m. Second shift operates between 3:00 p.m. and 7:30 a.m. Sunday night through Friday night. Normal office operating hours are 8:30 a.m. to 5:00 p.m., Monday through Friday.

The building is not open to the public, and any visits by customers, regulators, or other persons must be accompanied by company employees. Because all activities are conducted inside a single building, there is no unauthorized entry by anyone that would go unchallenged by company employees. Entrances to the facility are locked after hours and may only be accessed by AERC personnel.

Inside the process operations areas there are doors and walls, which separate the active portion of the facility from other areas. In some locations there are "clean-room/dirty-room" areas for employees and visitors to don and doff protective clothing and personal hygiene.

The facility is posted with signs as follows:

- At access doors to the process area- "Danger-Unauthorized Personnel Keep Out"
- Inside the storage and process areas- "Danger-Hazardous Materials Storage Area," and "Caution-Hazardous Waste Storage Area- Unauthorized Personnel Keep Out".

The legend of the warning signs is printed in English and is legible from a distance of at least twenty-five (25) feet.

Preparedness and Prevention
The AERC Contingency Plan is included in Attachment 8 | Item D. 6.

The facility has been designed and constructed to minimize the possibility of fire, explosion, or any unplanned release of hazardous materials or hazardous materials constituents that could threaten human health or the environment. Internal communications such as a telephone and walkie-talkies have been installed for the purpose of alerting personnel in the event of an incident. There is also an intercom system to supplement the existing emergency communication devices.

Emergency response phone numbers are placed near telephones at the facility in the event the local police, fire, or state departments have to be notified. Portable fire extinguishers are located in designated areas. Additional emergency response equipment such as spill kits and assorted hand held tools (i.e. shovels, brooms) are located in the storage area.

The emergency equipment is inspected on a monthly basis by the AERC personnel and is documented on the Monthly Inspection Log. This report is used to indicate that supplies are adequate and equipment has been determined to be in working order. The types of materials and equipment inspected for this report include the following:

- Fire protection equipment
- Personnel protective apparel
- Spill clean-up materiel (vermiculite, pads, booms, lime)
- General housekeeping

Presently, AERC has the appropriate arrangements with the local authorities as outlined in the facility Contingency Plan, including the police and fire departments. These arrangements are kept on file at the Fortune Place facility.

The local fire department will be requested to participate in drills and inspect the facility on an annual basis. In the event these arrangements cannot be made, AERC will document the refusal or declination of the respective departments.

Hazard Prevention

In order to insure worker safety and compliance with OSHA regulations, AERC has periodic safety meetings. These meetings can cover any safety or health related topic affecting the operations and employees and the group works with facility management to insure that corrections and improvements are implemented. AERC also performs daily monitoring of mercury vapor. Material handling is not exposed to weather conditions. Hazardous containers are kept indoors in the processing area in covered boxes. Non-hazardous material may be stored outside in covered containers.

Personnel are required to wear their supplied work uniforms while on duty. Personnel are required to shower at the end of each day. The uniforms are then collected and sent off site to be laundered. In addition to the uniforms, all material handlers are trained in the use of personal protective clothing, respiratory protection, and air monitoring requirements in order to reduce exposure to hazardous waste.

AERC employs a “non-smoking” policy throughout the company. Personnel, visitors, or contractor are not permitted to smoke in the building.

Containers are stored and managed at the facility to prevent the following hazards or releases from occurring.

- Generation of extreme heat or pressure, fire or explosion, or reaction
- Production of toxic dust in quantities that may threaten human health or the environment
- Production of flammable vapors or gasses in quantities that pose a risk of fire or explosion
- Damage to the structural integrity of the containers
- Threat to human health or the environment

D.8.4 Container Management System

AERC receives and uses containers of many types, ranging from small to large boxes, and poly and metal drums of up to 55 gallons. In some cases the containers may be packed in 85-110 gallon overpack-type drums. These containers are shipped by the waste generators, and some of the materials received in containers are not regulated by USDOT. Examples include lamps or objects with low levels of mercury that are shipped in cardboard or wooden boxes. The containers used for regulated quantities of hazardous materials meet the USDOT requirements for the material they contain. (AERC incorporates the requirements found in 40 CFR §173, 178 and 179 pertaining to the specifications of containers.) While this is not a complete listing, additional examples include:

1) Cardboard Boxes
2) Wooden Boxes/Crates (15-A type)
3) Steel Drums (17-H, 17-C, 17-E)
4) Poly or Plastic Drums/Buckets (21-C, 6-D)
5) Fiber Drums and Boxes (21-C, 12-A, 12-B)

All containers meet USDOT requirements or are UN approved and tested meeting the approved specifications for wastes contained therein. Since many wastes received are lab-packs, all non-bulk, DOT, UN approved specification containers may be received from sizes ranging from 1-gallon capacity through 55 gallon to pallet-sized boxes. All DOT non-bulk specification container numbers are acceptable.

Materials of Construction

The containers used for solids materials storage and processing are made of materials, which are compatible with and will not react with the wastes they contain. In no case is the container's ability to contain the waste impaired.

Container Management Practices

In order to ensure container integrity and to protect human health and the environment, the following container management procedures will be employed:

AERC and its customers use both Certified Hazardous Waste Transporters and common carriers for lamps and non-regulated Mercury Containing Devices. AERC also utilizes its own transportation vehicle within the state to transport universal waste lamps, devices, batteries and electronic scrap. Materials from other transporters will be subject to the same quality control procedures performed by the company as outlined herein.

At the generator's site, each container is inspected by the generator, making certain there are no leaks, ruptures, or other defects, which detract from the ability of the container to hold its contents. The containers will be further checked to ensure proper closure and compatibility of container construction materials with the waste. If a container holding hazardous waste is not in good condition or if it begins to leak, it will be transferred from the defective container to a container that is in good condition, overpack the defective container, or manage the waste in some other way that complies with the regulations.
At the facility AERC receives and temporarily stores lamps and all other materials in several types of boxes and containers. During processing, various lamp components, process materials and coproducts are contained and stored in any one of the containers discussed herein. Upon arrival at the AERC facility, each container will again be inspected to ensure container integrity. This inspection will be performed by site personnel, who will also check to ensure the containers have been properly labeled and listed on the manifest or Bill of Lading documents. If a container is not in good condition, or if it begins to leak, facility personnel will transfer the material from the defective container to a container that is in good condition, overpack the defective container, or manage the material in some other way that complies with the regulations.

All containers holding hazardous wastes are kept closed during storage, except when it is necessary to add or remove waste or perform a corrective action. Containers are not opened or handled in such a manner which may rupture or cause a leak. Containers are properly labeled for the material which they contain.

Material handling will be performed either manually or with the use of a drum dolly, pallet jack, or forklift, depending on the container size and weight. All personnel involved with waste handling at the facility will be trained in proper waste handling procedures.

Facility personnel will inspect areas where containers are stored on a daily basis. The inspections will be recorded on the appropriate inspection form and the following noted:

--lamp breakage
--leaks or deterioration of containers caused by corrosion or other factors
--open containers
--swollen or bulged containers
--unidentified containers
--spills in containment systems
--cracks, gaps, or corrosion of containment areas

Remedial or corrective actions as well as any notifications made, if required, will also be noted.

Remedial or corrective actions include, but are not limited to:

--transferring material to another like container
--overpacking the leaking or corroded container into a larger container
--cleanup of spills using sweeping or vacuuming equipment, absorbents, pads, etc.
--closing the container
--properly identifying and/or labeling the container
--remediating any spilled material
--sealing cracks, gaps, or repairing corroded areas.

Container Storage Areas and Secondary Containment

AERC provides secondary containment for all liquid materials in storage or processing inside the facility.

Secondary Containment

Mercury containing lighting devices are enclosed lamps and therefore, intrinsically, they are containers of mercury and other potentially hazardous constituents. Lamps are received and stored in boxes, drums, bins, totes or other containers to hold them prior to processing. These containers could be considered "primary containment". Additionally, the concrete floor of the facility serves as secondary containment for any glass or other lamp breakage in the building. Upon arrival, lamp containers are restacked, stretch-wrapped, if necessary, and placed on pallets. Pallets and containers are stored in rows with adequate aisle space for access and cleaning. All boxes and other containers are inspected for breakage and spillage when they are unloaded and any spillage is cleaned up immediately.

Spill kits are maintained at the facility, including absorbent and neutralizer material for corrosives, and salvage drums (85 gallon overpack drums) are used to recontainerize any liquid containers which may be leaking. In the case where multiple containers are stored on one pallet, each pallet is shrink-wrapped to prevent individual containers from tipping or falling off the pallet.

Additionally, the entire plant floor is inspected throughout the course of each operating day and any breakage is swept and cleaned as soon as it is detected. The company uses specially designed filtered vacuum systems for the clean up of any broken glass and phosphor powder throughout the facility.

As described above, the other storage areas of the facility use some form of commercially available secondary containment tray, pan, containment pallet or similar device. We have included literature from a manufacturer of these devices, including a chemical compatibility guide, to exemplify the secondary containment throughout the facility.

No standing liquids

There are no standing liquids, run-on or run-off at the facility because everything is contained inside the building. As such there are no drainage areas, sumps or collection systems, other than the container and the secondary containment system themselves. The capacity of each containment system, e.g. floor, poly-spill pallets, or trays, is such that they will contain 100% of the volume of the largest single container, or 10% of the volume of all the containers. These are all inspected daily by facility employees. If any liquids are present they are removed immediately.

Containment Capacity

As stated above, all liquids are stored inside secondary containment devices which can contain >100% of the largest container or >10% of all the containers. This is also true for non-liquids. There is a secondary containment area walled under and around the oil heating unit located outside the rear of the building.

For the dry solid objects and materials, the floor and walls of the building serve as secondary containment. The usable portion of the building floor surface is approximately 10,000 square feet. Non-hazardous process materials may be stored outside the building in the truck dock and parking areas, which comprise approximately 24,000 square feet.

The capacities of the storage areas vary depending on the materials being stored. Volumes of materials in temporary storage are all stated in "drum or pallet equivalents", because of the differing size, shape and composition of the wastes. So, while each storage area has different capacity for different material, the combined storage areas can accommodate the total "drum equivalent" volume stated in Attachment 5 | Item D. 3 – *Integrated Process Flow Diagram* and Attachment 6 | D. 4 – *Storage Area Capacity Table*

Container storage configuration

A floor plan of the facility, showing all container storage areas is provided as Figure D.2.-2. Aisles are generally comprised of rows of drums or drum equivalents, 2 to 4 drums wide (approx. 4ft) by the length of the storage area, by one or two drums high (less than 9 feet). There is a minimum 18” aisle space and adequate room to inspect any container. Additionally, AERC may store recycled materials which are non-hazardous, e.g., glass and metallic parts of lamps, in enclosed containers or trailers outside the building.

Weighing or measuring facilities

The AERC facility is not required to have weighing facilities, because all wastes are delivered by pre-arrangement only. All loads are visually inspected and volumes are compared to the manifest or other shipping documents. Lamps are recounted upon arrival at the time of processing.

D.8.5 Plant Configuration

All materials inside the facility are stored in aisles with appropriate aisle space. Drums and boxes are stored on pallets, either singly or doubly stacked, so that the maximum height of 12 feet is not exceeded. Cartons, boxes or other wooden containers of lamps are stored in a similar fashion.

Separated by a concrete block and poly-curtain wall, adjacent to the plant processing area is a workshop/maintenance area where spare parts are stored, equipment is machined, repaired or welded as needed.

Fire Safety-
The building has automatic fire sprinklers, and has fire extinguishers mounted on the wall in seven locations in the facility. There is also appropriate aisle space maintained on each side of the facility, and between all rows of stored materials. Attachment 1 of the facility Contingency Plan details Evacuation Routes, i.e., exit doors, and the locations of extinguishers. Medical, ambulance or other emergency services can be reached by dialing 911. Telephones are also located at various places in the operation; in the office, conference room, operations office, maintenance area, shipping area, laboratory, etc., and there is a Public Announcement type intercom system accessible through the telephones from the front office to the operations areas.

Storage of Materials-
The following storage procedures are followed for the temporary storage of crushed glass and hazardous waste. Similar handling and storage methods will be used on the phosphor powder containing mercury. Unprocessed phosphor powder still containing mercury is collected in sealed containers and labeled for storage prior to shipment off-site.

Storage will be in the general area but will be separate from the work area. The drums of powder are stored with their lids tightly bolted on, on pallets, single or double stacked, with adequate of aisle space.

Crushed Glass-
Since the processed crushed glass and end-caps do not contain hazardous materials in excess of the TCLP limits, storage can be inside or outside the building in covered containers. Adequate precautions are taken to prevent any carryover during drum change out.

Lamp storage and treatment areas

Fluorescent lamps contain 25-150 mg of metallic mercury. They are not reactive, ignitable, or incompatible. The main exposure potential occurs when the lamps are broken in an uncontrolled manner or location. To minimize this potential exposure, AERC uses the following procedures:

Broken Lamp and Powder Clean-up Procedure

Within 5 minutes from the time when lamps are discovered broken or powder is seen on the floor, clean-up shall be undertaken by plant operators as follows:

The operator shall collect any breakage, using a broom or dust mop and dustpan, or vacuum system, removing large pieces carefully. Large pieces of lamps should be collected and processed as soon as possible. Very small size breakage and powder residues should be vacuumed with the HEPA/Carbon filtered system in the plant. The area vacuumed should include at least 25 square feet around the area where the breakage occurred. This will vary with the type and location of the breakage.

Debris, used carbon, mop heads, and other material from the vacuum collection container should be placed in a drum for hazardous wastes, and stored in the plant for later processing or shipment to an approved disposal facility.

Powder from the lamp processing system which spills on the floor should be cleaned up by vacuuming, per the Operations Plan. Respirators with mercury filter cartridges must be used when cleaning any powder spills. Floor and flat surface areas are wiped and/or swept on a weekly basis, a mercury absorbing solution (a commercially available product such as HgX®) is used to wipe surfaces.

D.8.6 Air Monitoring

The following discussion summarizes air monitoring activities. The current corporate AERC procedure is presented as Exhibit D.7.4 within Attachment 9 of the application.

Air Emission and Process Controls

The method used to detect any mercury emissions throughout the plant operations, including container areas where lamps are stored, equipment processing areas, or process air filtration exhaust are discussed here.

At periodic times during each operating shift measurements are taken using a Jerome Direct Reading Mercury Vapor Analyzer Model Number 431 (or equivalent). This instrument has a sensitivity of 0.001 mg/m3 (OSHA's PEL for mercury is 0.100 mg/m3). The locations sampled include administrative offices, storage areas, and predetermined locations throughout the process areas. During production, air monitoring are performed every two hours. Air sampling consists of 18 sampling points inside and outside the facility. 6 sampling locations are in the office areas, 2 outside the facility, with the rest in the production and warehouse area. During production, air monitoring includes additional sampling of the air filtration system to assure that is functioning properly.
Mercury concentrations are logged in the air monitoring log. The OSHA standard for indoor work place concentration of mercury is 0.100 mg/m^3. AERC has established its own action level at approximately one quarter of the OSHA PEL, or 0.025 mg/m^3. Whenever process vents or other ambient room air exceeds the action level AERC requires the use of carbon filtered, half-mask or full-face respirators by plant workers until the source of the mercury has been detected and mitigated. At this level, AERC workers upgrade their level of PPE and establish the source of mercury vapor in order to neutralize or eliminate it. AERC employees are trained to Level C protection which includes air-purifying respirators. The most common sources of elevated mercury concentration levels are boxes received with crushed lamps. If levels of mercury vapor exceed concentrations appropriate for Level C protection, operations are immediately halted and Onyx Environmental Services is called in for emergency response. Operations are not resumed until the AERC emergency coordinator determines that it is safe to do so as described in the AERC Contingency Plan.

Normal emissions from plant operations range from 0.000-0.024 mg/m^3. Our "action-level" is 0.025mg/m^3, or approximately one-quarter of the PEL. When there are any spikes, or localized mercury emissions that exceed the action level, the cause is found and appropriate remedial action is taken. Spikes tend to indicate excess lamp breakage in shipments, an equipment malfunction or system leak. Air filtration media is considered "saturated" and is replaced when mercury emissions reach one half of the PEL. Frequent testing in multiple locations, as outlined on AERC's *Air Monitoring Log*, during all operations insures that any malfunctions are corrected promptly.

AERC has accumulated data, which includes equipment development and plant operations throughout the company, representing over 10,000 sampling events. A typical cross-section taken from this database indicates routine emissions are below OSHA's indoor PEL.

AERC also has an extensive floor maintenance program to minimize potential contamination of the plant floor. Any areas potentially contaminated through lamp breakage are cleaned

immediately upon breakage or daily. AERC also sweeps its plant floors weekly using a combination of a floor sweeping compound and mercury vapor absorbent/suppression liquid. In order to check the effectiveness of its floor maintenance program, AERC conducts periodic wipe sampling of its plant, lab and office area floors.

AERC also utilizes a Bootie policy to further minimize potential contamination. Any office staff or visitors to the facility must wear protective dust-resistant booties while inside the plant operating areas. Likewise, plant workers must don the booties when entering the office areas. All work clothing and boots remain at the facility.

In addition to monitoring personnel exposure, AERC has developed an extensive air filtration program to eliminate the potential environmental releases from its processes. The air filtration system is comprised of two sources of carbon filters and a series of monitoring locations to ensure that mercury is not released from the building. This system of checks has proven to be very successful. AERC's plans are to use similar systems for all new mercury processes proposed in this permit.

ATTACHMENT 10

EXHIBIT D.8.1

AERC Waste Profiles

AERC.com, Inc.
2591 Mitchell Ave
Allentown, PA 18103
610-797-7608 | Fax: 610-797-0938
www.aercrecycling.com
EPA ID# PAD987367216

AERC RECYCLING SOLUTIONS

Approval #:

(AERC Use Only)

AERC Waste Information Profile

Date Received:

(Please type or print in ink)

Waste Name/Description:	
Process Generating Waste (Be Specific):	
Physical Description of Waste:	
Generator:	**EPA ID #:**
Shipping Address (Street, City, State, Zip):	
Generator Contact:	E-Mail Address:
Phone:	Fax:
Billing Information (Company,Street, City, State, Zip):	
Billing Contact:	E-Mail Address:
Phone:	Fax:

DOT/EPA Information

DOT Hazardous Material Basic Description: Specify the **Identification Number**, the **Proper Shipping Name**, the **Hazard Class** and the **Packing Group** | **ISHP**

RQ:	ERG#:	RCRA and/or State Waste Codes: ☐ N/A (List All Codes that Apply)

Waste Material Characterization Chemical Composition | Constituents (Must Account for 100%)	**Total %**		**Concentration** [mg/L or mg/kg]	**Add'tl Information | Potential UHCs** (Known | Suspected | Estimated – ppm or mg/L)	
	Low (%)	High (%)		Constituent	Concentration & UOM
				Antimony	
				Arsenic	
				Barium	
				Beryllium	
				Cadmium	
				Chromium	
				Copper	
				Cyanide	
				Lead	
				Mercury	
				Nickel	
				Nitrates	
				Organics	
				Selenium	
				Silver	
				Sulfates	
				Sulfide	
				Thallium	
				Vanadium	

AERC Recycling Solutions | Waste Information Profile

Halogens	Layers	Solids	Odor	Physical State:
☐ « 2% ☐ Cl ☐ 2-5% ☐ F ☐ 5-10% ☐ Br ☐ 10-30% ☐ I ☐ » 30% ☐ Measured: _____	☐ Multilayered ☐ Bi-Layered ☐ Single Phase Color: _____	☐ Suspended _____% ☐ Settleable _____% ☐ Dissolved _____% Color: _____	☐ None ☐ Mild ☐ Strong Describe: _____	☐ Solid ☐ Flowable Powder ☐ Semisolid ☐ Pumpable ☐ Liquid Viscosity ☐ High (Syrup) ☐ Medium (Oil) ☐ Low Water ☐ Gas
pH	**Specific Gravity**	**Flash Point (^{O}F)**	BTU/LB _____ % ASH _____ Water Solubility _____	
☐ « 2 ☐ 2-5 ☐ 5-9 ☐ 9-12.5 ☐ » 12.5 ☐ Exact _____ ☐ N/A ☐ Not Specified/Determined	☐ < 0.8 ☐ 0.8-1.0 ☐ 1.0 ☐ 1.0-1.2 ☐ > 1.2 ☐ Measured: _____ ☐ Not Specified/Determined	☐ < 80 ☐ 80-100 ☐ 101-140 ☐ 141-200 ☐ > 200 ☐ No Flash ☐ Measured: _____ ☐ Not Specified/Determined	**Hazardous Characteristics (Potential or Known)** ☐ Reactive Material – Specify: _____ ☐ Radioactive ☐ Explosive ☐ Biohazard [Certificate of Sterilization/Disinfection **REQUIRED**]	

Container Information:

		Type	Size
Packaging:	Present Container:	_____	_____
	Shipping Container:	_____	_____
	Shipping Frequency:	Units: _____	[Check One] | One Time ☐ | Per Day ☐ | Per Wk ☐ | Per Mth ☐ | Per Qtr ☐ | Per Yr ☐
		UOM: _____ [e.g., Drums, Boxes, Totes, etc..]	Other Description: _____

Additional Information:

	Yes	No
Is this waste subject to subpart CC regulations (i.e. contains >500 ppm volatile organic compounds)?	☐	☐
Are there underlying hazardous constituents, other than mercury listed in 40CFR268.48?	☐	☐
Does the waste contain >500 ppm of any 40CFR Part 261 Appendix VIII Constituents?	☐	☐

If any of the above items were answered yes, explain below:

_____

Addt'l Comments: _____

Generator Certification:

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed.

_____ _____

Signature *Date*

_____

Print Name/Title

TSDF Notification to the Generator: *If approved for management, AERC.com, Inc., dba AERC Recycling Solutions, has all the appropriate permit(s) for, and will accept, the waste that has been characterized and identified by the Generator within this profile document.*

Qtrly | Annual Reporting Information:

NAICS|SIC Code(s):	Source Code:	Form Code:	Mgmt Method Code:	Module #:

AERC RECYCLING SOLUTIONS
AERC.com, Inc.
2591 Mitchell Ave
Allentown, PA 18103
(800) 949-1553 | Fax: (610) 797-7696 | (610) 797-0938

Approval #:

(AERC Use Only)

Date Received:

Location: ☐ Allentown | 02 ☐ West Melbourne | 04 ☐ Hayward | 05 ☐ Houston | 06 ☐ Ashland | 07

AERC Profile for Recycling of Batteries

(Please type or print in ink)

Customer No:	
Waste Name/Description:	
Generator:	EPA ID #:
Shipping Address (Street, City, State, Zip):	
Generator Contact:	E-Mail Address:
Phone:	Fax:
Billing Information (Company,Street, City, State, Zip):	
Billing Contact:	E-Mail Address:
Phone:	Fax:
Process Generating Waste-Be Specific:	

Waste Description/Characterization & DOT Information (Describe material and designate appropriate category and type of battery(ies)):

Reference 40 CFR and 49 CFR for applicable requirements. Complete all sections as appropriate for ALL categories of batteries expected to be managed under this approval. Generator must follow applicable waste handling and transportation requirements as set forth in 40 CFR and 49 CFR. See AERC's *Guidelines for Shipping & Packaging Batteries* for specific guidance and recommended practices.

Physical Description of Waste: ☐ Intact or Incidentally Broken Batteries | Manage as Universal Waste (40 CFR Part 273)
☐ Leaking/Damaged Batteries | Manage in Agreement with Hazardous Waste Mgmt Requirements[1] (40 CFR 261 | 262, et. Al.) Applicable EPA Waste Codes: _____

Category 1 | Lead Acid Battery	Proper DOT Shipping Description[2] — CHECK ALL THAT APPLY
☐ Lead Acid	UN2794, Batteries, wet, filled with acid, 8, III (Used lead acid batteries for recycling)(ERG #154)
☐ Sealed Lead Acid | VRLA	UN2800, Batteries, wet, non-spillable, 8, III (Used sealed lead acid batteries for recycling)(ERG #154)
Is material being managed as:	☐ Universal Waste (40 CFR Part 273) ☐ Lead Acid for Reclaim *(Exemption per 40 CFR part 266 subpart G)*

Category 2 | Corrosive Metal Battery	CHECK ALL THAT APPLY
☐ Alkaline – Dry cell | **1.5-volt | 9-volt | Not-Mixed with other chemistries/DOT descriptions.**	Batteries, dry, sealed, n.o.s. (Used alkaline batteries for recycling)
☐ Alkaline – Wet cell	UN2795, Batteries, wet, filled with alkali, 8, III (Used alkaline batteries for recycling)(ERG #154)
☐ Zinc Carbon (non-Hg) | Zinc Air | **6-volt | Not-Mixed with other chemistries/DOT descriptions.**	Batteries, dry, sealed, n.o.s. (Used zinc carbon batteries for recycling)
☐ NiCd – Dry cell **| 9-volt | Not-Mixed with other chemistries/DOT descriptions.**	Batteries, dry, sealed, n.o.s. (Used nickel-cadmium dry-cell batteries for recycling) NOTE: NiCd batteries rated > 9-volts must meet SP 130 requirements.
☐ NiCd – Wet cell	UN2795, Batteries, wet, filled with alkali, 8, III (Used nickel-cadmium batteries for recycling)(ERG #154)
☐ Nickel Iron Batteries	UN2795, Batteries, wet, filled with alkali, 8, III (Used nickel-iron batteries for recycling)(ERG #154)
☐ Nickel Metal Hydride (NiMH)	Batteries, dry, sealed, n.o.s. (Used NiMH batteries for recycling) NOTE: NiMH batteries rated > 9-volts must meet SP 130 requirements.

Category 3 | Mercury Bearing Battery

CHECK ALL THAT APPLY

☐ Zinc Carbon (w/Hg) * ☐ Mercury | Mercuric Oxide* ☐ Silver Oxide (w/Hg) * * Containers of > ≈2 ½ Lbs these batteries meet the definition of a hazardous material (RQ Hg - 1 Lb). Use the alternative DOT Description →	Batteries, dry, sealed, n.o.s. (Used mercury-containing batteries for recycling) Batteries, dry, sealed, n.o.s. (Used silver oxide mercury-containing batteries for recycling) RQ, UN2809, Mercury contained in manufactured articles, 8, III (Used mercury batteries for recycling)(ERG #172)
☐ Silver Oxide	Non-DOT Regulated | RCRA-Regulated Universal Waste (Used silver oxide batteries for recycling)
☐ ATON	UN2795, Batteries, wet, filled with alkali, 8, III (Used ATON batteries for recycling)(ERG #154)

Category 4 | Reactive Metal Battery

CHECK ALL THAT APPLY

☐ Lithium Metal (Primary) ☐ Li-Ion | Li-Polymer ☐ Li-Thionyl Chloride | Li-Co Alternative Shipping Descriptions may be used: (As per 8/25/09 PHMSA *Notice of Approval*)	UN3090, Lithium battery, 9, II (Used lithium batteries for recycling)(ERG #138) – *Also, to be more descriptive, use*: (Used Li-Ion *or* Li-Polymer *or* Li-Thionyl Chloride batteries for recycling)(ERG #138) UN3090, Lithium metal batteries, 9, II (Used lithium metal batteries for recycling)(ERG #138) UN3480, Lithium ion batteries, 9, II (Used lithium ion polymer batteries for recycling)(ERG #138)
☐ Magnesium Metal	Batteries, dry, sealed, n.o.s. (Used magnesium batteries for recycling)
☐ Sodium | NaNiCl	UN3292, Batteries, containing sodium, 4.3, II (Used sodium batteries for recycling)(ERG #138)

NOTES:

(1) Materials to be managed under this approval are assumed to meet the requirements of the universal waste standard (40 CFR Part 273 & associated applicable state regulations). Management under the full hazardous waste standard **REQUIRES SUBMITTAL OF A SEPARATE HAZARDOUS WASTE PROFILE**. Shipment must be completed on a hazardous waste manifest using an alternative shipping description than noted above and may require management alternate processing/charges. Contact AERC Customer Service representative and/or Regulatory Affairs Department staff.

(2) Specified DOT Shipping Description for management of batteries that are **not** classified for management under the full hazardous waste requirements. Specify "RQ" upon reaching hazardous substance threshold(s) as detailed within 49 CFR §172.101 Appendix A, Table 1 and Table 2.

Alternative DOT Description Not Specified Above:

DOT Hazardous Material Basic Description: Specify the **Identification Number**, the **Proper Shipping Name**, the **Hazard Class** and the **Packing Group** | **ISHP**		
Reportable Quantity:	ERG#:	EPA Waste Codes if Applicable:

Estimated Quantity of Waste for Management:

☐ Event/One-Time ☐ Base/On-going (Check One)

Estimated Quantity: _____ ☐ Lbs ☐ Tons ☐ Cu Yd ☐ DM/DF ☐ Other (specify):_____ (Check One)

Shipping Frequency: _____ Units per ☐ Mth ☐ Qtr ☐ Yr ☐ Other (specify):_____ (Check One)

Annual Report Information (Codes)

SIC Code(s):			Source Code(s):			Form Code(s):		
			Mgmt Method Code(s):					

Certification

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed. As Authorized Representative for the Generator, I hereby certify that material offered for management will meet applicable waste handling and transportation requirements as set forth in 40 CFR and 49 CFR. Materials offered for shipment and management that are not prepared in accordance with the applicable requirements will be subject to rejection and/or notice of discrepancy (and surcharge). I understand that batteries will be managed by AERC according to the appropriate regulatory standards, i.e., Universal Waste Standards 40 CFR 473, unless otherwise agreed upon and authorized between the Generator and AERC.

_____
Signature

_____
Date

_____
Print Name/Title

I have received a copy of the AERC guidance for shipping & packaging of batteries. _____ *(Initial)*

ATTACHMENT 10

EXHIBIT D.8.2

Sampling Information and Historical Data Summaries

Sample Log - Lamp Glass

Sample Project Number : _____ Week of: _____

Sample Number: _____

First Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Second Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Third Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Composite Sample						
Date	Time	Sampler	Container	Lab	Chain-of-Custody #	Test

Sample Log - End Caps

Sample Project Number : _____ Week of: _____

Sample Number: _____

First Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Second Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Third Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Composite Sample						
Date	Time	Sampler	Container	Lab	Chain-of-Custody #	Test

Sample Log - HID Bases

Sample Project Number : _____ Week of: _____

Sample Number: _____

First Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Second Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Third Shift					
Day	Date	Time	Name of Sampler	Container Type	Drum #s *
Sun.					
Mon.					
Tues.					
Wed.					
Thur.					
Fri.					
Sat.					

*** Record all drum/bag/hopper numbers for each sample as clearly as possible.**

Composite Sample						
Date	Time	Sampler	Container	Lab	Chain-of-Custody #	Test

WEEKLY COMPOSITE SAMPLES
TWELVE WEEK MOVING AVERAGE

Week	Matrix	Sample#	Total Hg	Average
2010-Week 01 JUL	Glass	CGS100701	0.600	0.756
2010-Week 02 JUL	Glass	CGS100702	0.680	0.815
2010-Week 03 JUL	Glass	CGS100703	0.370	0.840
2010-Week 04 JUL	Glass	CGS100704	0.280	0.756
2010-Week 01 AUG	Glass	CGS100801	0.680	0.691
2010-Week 02 AUG	Glass	CGS100802	1.100	0.713
2010-Week 03 AUG	Glass	CGS100803	0.550	0.663
2010-Week 04 AUG	Glass	CGS100804	1.600	0.699
2010-Week 05 AUG	Glass	CGS100805	0.470	0.660
2010-Week 01 SEP	Glass	CGS100901	1.100	0.696
2010-Week 02 SEP	Glass	CGS100902	0.630	0.733
2010-Week 03 SEP	Glass	CGS100903	1.300	0.796
2010-Week 04 SEP	Glass	CGS100904	0.660	0.795
2010-Week 01 OCT	Glass	CGS101001	0.680	0.823
2010-Week 02 OCT	Glass	CGS101002	0.600	0.852
2010-Week 03 OCT	Glass	CGS101003	0.400	0.826
2010-Week 04 OCT	Glass	CGS101004	1.100	0.826
2010-Week 01 NOV	Glass	CGS101101	1.200	0.885
2010-Week 02 NOV	Glass	CGS101102	0.940	0.825
2010-Week 03 NOV	Glass	CGS101103	0.450	0.824
2010-Week 04 NOV	Glass	CGS101104	1.200	0.833
2010-Week 05 NOV	Glass	CGS101105	1.100	0.875
2010-Week 01 DEC	Glass	CGS101201	1.800	0.921
2010-Week 02 DEC	Glass	CGS101202	2.300	1.070
2010-Week 03 DEC	Glass	CGS101203	0.420	1.046
2010-Week 04 DEC	Glass	CGS101204	0.460	1.034
2011-Week 01 JAN	Glass	CGS110101	1.400	1.125
2011-Week 02 JAN	Glass	CGS110102	0.620	1.081
2011-Week 03 JAN	Glass	CGS110103	0.580	1.025
2011-Week 04 JAN	Glass	CGS110104	1.500	1.075
2011-Week 01 FEB	Glass	CGS110201	0.340	1.065
2011-Week 02 FEB	Glass	CGS110202	1.200	1.065
2011-Week 03 FEB	Glass	CGS110203	1.600	1.111
2011-Week 04 FEB	Glass	CGS110204	1.500	1.084
2011-Week 05 FEB	Glass	CGS110205	0.390	0.910
2011-Week 01 MAR	Glass	CGS110301	1.600	1.017
2011-Week 02 MAR	Glass	CGS110302	0.710	1.040
2011-Week 03 MAR	Glass	CGS110303	1.300	1.031
2011-Week 04 MAR	Glass	CGS110304	1.200	1.084
2011-Week 01 APR	Glass	CGS110401	1.100	1.131
2011-Week 02 APR	Glass	CGS110402	0.140	1.007
2011-Week 03 APR	Glass	CGS110403	0.760	1.045
2011-Week 04 APR	Glass	CGS110404	1.100	1.036
2011-Week 01 MAY	Glass	CGS110501	0.210	0.910
2011-Week 02 MAY	Glass	CGS110502	0.790	0.845
2011-Week 03 MAY	Glass	CGS110503	1.300	0.928
2011-Week 04 MAY	Glass	CGS110504	0.490	0.827
2011-Week 05 MAY	Glass	CGS110505	0.980	0.852
2011-Week 01 JUN	Glass	CGS110601	0.310	0.762
2011-Week 02 JUN	Glass	CGS110602	0.270	0.677
2011-Week 03 JUN	Glass	CGS110603	0.200	0.595

WEEKLY COMPOSITE SAMPLES
TWELVE WEEK MOVING AVERAGE

Week	Matrix	Sample#	Total Hg	Average
2011-Week 04 JUN	Glass	CGS110604	0.780	0.654
2011-Week 01 JUL	Glass	CGS110701	0.280	0.610

WEEKLY COMPOSITE SAMPLES
TWELVE WEEK MOVING AVERAGE

Week	Matrix	Sample#	Total Hg	Average
2010-Week 01 JUL	Endcaps	ECS100701	0.110	0.278
2010-Week 02 JUL	Endcaps	ECS100702	0.470	0.315
2010-Week 03 JUL	Endcaps	ECS100703	0.069	0.314
2010-Week 04 JUL	Endcaps	ECS100704	0.190	0.312
2010-Week 01 AUG	Endcaps	ECS100801	0.011	0.309
2010-Week 02 AUG	Endcaps	ECS100802	0.300	0.295
2010-Week 03 AUG	Endcaps	ECS100803	0.290	0.310
2010-Week 04 AUG	Endcaps	ECS100804	0.013	0.279
2010-Week 05 AUG	Endcaps	ECS100805	0.033	0.148
2010-Week 01 SEP	Endcaps	ECS100901	0.240	0.167
2010-Week 02 SEP	Endcaps	ECS100902	0.220	0.171
2010-Week 03 SEP	Endcaps	ECS100903	0.038	0.165
2010-Week 04 SEP	Endcaps	ECS100904	0.280	0.180
2010-Week 01 OCT	Endcaps	ECS101001	0.010	0.141
2010-Week 02 OCT	Endcaps	ECS101002	0.017	0.137
2010-Week 03 OCT	Endcaps	ECS101003	0.610	0.172
2010-Week 04 OCT	Endcaps	ECS101004	0.110	0.180
2010-Week 01 NOV	Endcaps	ECS101101	0.039	0.158
2010-Week 02 NOV	Endcaps	ECS101102	0.320	0.161
2010-Week 03 NOV	Endcaps	ECS101103	0.170	0.174
2010-Week 04 NOV	Endcaps	ECS101104	0.220	0.190
2010-Week 05 NOV	Endcaps	ECS101105	0.250	0.190
2010-Week 01 DEC	Endcaps	ECS101201	0.210	0.190
2010-Week 02 DEC	Endcaps	ECS101202	0.059	0.191
2010-Week 03 DEC	Endcaps	ECS101203	0.270	0.190
2010-Week 04 DEC	Endcaps	ECS101204	0.009	0.190
2011-Week 01 JAN	Endcaps	ECS110101	0.045	0.193
2011-Week 02 JAN	Endcaps	ECS110102	0.340	0.170
2011-Week 03 JAN	Endcaps	ECS110103	0.120	0.171
2011-Week 04 JAN	Endcaps	ECS110104	0.021	0.170
2011-Week 01 FEB	Endcaps	ECS110201	0.190	0.159
2011-Week 02 FEB	Endcaps	ECS110202	0.220	0.163
2011-Week 03 FEB	Endcaps	ECS110203	0.390	0.177
2011-Week 04 FEB	Endcaps	ECS110204	0.390	0.189
2011-Week 05 FEB	Endcaps	ECS110205	0.320	0.198
2011-Week 01 MAR	Endcaps	ECS110301	0.160	0.206
2011-Week 02 MAR	Endcaps	ECS110302	0.370	0.215
2011-Week 03 MAR	Endcaps	ECS110303	0.034	0.217
2011-Week 04 MAR	Endcaps	ECS110304	0.320	0.240
2011-Week 01 APR	Endcaps	ECS110401	0.160	0.225
2011-Week 02 APR	Endcaps	ECS110402	0.068	0.220
2011-Week 03 APR	Endcaps	ECS110403	0.140	0.230
2011-Week 04 APR	Endcaps	ECS110404	0.035	0.217
2011-Week 01 MAY	Endcaps	ECS110501	0.110	0.208
2011-Week 02 MAY	Endcaps	ECS110502	0.030	0.178
2011-Week 03 MAY	Endcaps	ECS110503	0.120	0.156
2011-Week 04 MAY	Endcaps	ECS110504	0.098	0.137
2011-Week 05 MAY	Endcaps	ECS110505	0.026	0.126
2011-Week 01 JUN	Endcaps	ECS110601	0.150	0.108
2011-Week 02 JUN	Endcaps	ECS110602	0.420	0.140

WEEKLY COMPOSITE SAMPLES
TWELVE WEEK MOVING AVERAGE

Week	Matrix	Sample#	Total Hg	Average
2011-Week 03 JUN	Endcaps	ECS110603	0.320	0.140
2011-Week 04 JUN	Endcaps	ECS110604	0.014	0.128
2011-Week 01 JUL	Endcaps	ECS110701	0.008	0.123

WEEKLY COMPOSITE SAMPLES
TWELVE WEEK MOVING AVERAGE

Week	Matrix	Sample#	Total Hg	Average
2010-Week 01 JUL	HID Bases	HB100701	0.210	0.584
2010-Week 02 JUL	HID Bases	HB100702	0.200	0.593
2010-Week 03 JUL	HID Bases	HB100703	0.130	0.597
2010-Week 04 JUL	HID Bases	HB100704	0.150	0.559
2010-Week 01 AUG	HID Bases	HB100801	0.250	0.571
2010-Week 02 AUG	HID Bases	HB100802	0.460	0.571
2010-Week 03 AUG	HID Bases	HB100803	0.250	0.575
2010-Week 04 AUG	HID Bases	HB100804	0.370	0.568
2010-Week 05 AUG	HID Bases	HB100805	0.710	0.502
2010-Week 01 SEP	HID Bases	HB100901	0.460	0.357
2010-Week 02 SEP	HID Bases	HB100902	1.700	0.447
2010-Week 03 SEP	HID Bases	HB100903	0.370	0.438
2010-Week 04 SEP	HID Bases	HB100904	0.850	0.492
2010-Week 01 OCT	HID Bases	HB101001	1.500	0.600
2010-Week 02 OCT	HID Bases	HB101002	0.450	0.627
2010-Week 03 OCT	HID Bases	HB101003	0.300	0.639
2010-Week 04 OCT	HID Bases	HB101004	0.530	0.663
2010-Week 01 NOV	HID Bases	HB101101	0.410	0.658
2010-Week 02 NOV	HID Bases	HB101102	1.800	0.788
2010-Week 03 NOV	HID Bases	HB101103	0.720	0.817
2010-Week 04 NOV	HID Bases	HB101104	1.000	0.841
2010-Week 05 NOV	HID Bases	HB101105	1.300	0.911
2010-Week 01 DEC	HID Bases	HB101201	0.180	0.784
2010-Week 02 DEC	HID Bases	HB101202	0.680	0.810
2010-Week 03 DEC	HID Bases	HB101203	0.130	0.750
2010-Week 04 DEC	HID Bases	HB101204	0.600	0.675
2011-Week 01 JAN	HID Bases	HB110101	0.560	0.684
2011-Week 02 JAN	HID Bases	HB110102	0.150	0.672
2011-Week 03 JAN	HID Bases	HB110103	0.150	0.640
2011-Week 04 JAN	HID Bases	HB110104	0.400	0.639
2011-Week 01 FEB	HID Bases	HB110201	0.360	0.519
2011-Week 02 FEB	HID Bases	HB110202	0.230	0.478
2011-Week 03 FEB	HID Bases	HB110203	0.250	0.416
2011-Week 04 FEB	HID Bases	HB110204	0.260	0.329
2011-Week 05 FEB	HID Bases	HB110205	0.066	0.320
2011-Week 01 MAR	HID Bases	HB110301	0.320	0.290
2011-Week 02 MAR	HID Bases	HB110302	0.190	0.295
2011-Week 03 MAR	HID Bases	HB110303	0.120	0.255
2011-Week 04 MAR	HID Bases	HB110304	0.370	0.239
2011-Week 01 APR	HID Bases	HB110401	0.170	0.241
2011-Week 02 APR	HID Bases	HB110402	0.079	0.235
2011-Week 03 APR	HID Bases	HB110403	0.440	0.238
2011-Week 04 APR	HID Bases	HB110404	0.250	0.229
2011-Week 01 MAY	HID Bases	HB110501	0.097	0.218
2011-Week 02 MAY	HID Bases	HB110502	0.800	0.264
2011-Week 03 MAY	HID Bases	HB110503	0.610	0.293
2011-Week 04 MAY	HID Bases	HB110504	0.130	0.298
2011-Week 05 MAY	HID Bases	HB110505	0.120	0.281
2011-Week 01 JUN	HID Bases	HB110601	0.130	0.276
2011-Week 02 JUN	HID Bases	HB110602	0.110	0.276
2011-Week 03 JUN	HID Bases	HB110603	0.240	0.265

WEEKLY COMPOSITE SAMPLES
TWELVE WEEK MOVING AVERAGE

Week	Matrix	Sample#	Total Hg	Average
2011-Week 04 JUN	HID Bases	HB110604	0.018	0.252
2011-Week 01 JUL	HID Bases	HB110701	0.540	0.290

AERC
RECYCLING SOLUTIONS

April 27, 2006

Ms. Tracy DePaola
AERC.com, Inc.
4317-J Fortune Place
West Melbourne, FL 32904

RE: Reclamation Demonstration

Dear Ms.DePaola:

Attached you will find the AERC reclamation verification report for the wastestreams shipped from your facility in the first half of 2006 which were retorted at AERC in Allentown. This report is being prepared to meet the requirements of Rule 62-737.840 (4) F.A.C.

All testing was conducted using an independent N.E.L.A.C. certified laboratory using EPA-approved methodology for analyzing total mercury content and as required under Rule 62-737.860 (4) F.A.C.

The report concludes that an effective reclamation rate of at least 99 percent of the mercury introduced into the process was achieved.

Should you have any questions on this report, do not hesitate to contact me at (610) 797-7608, ext. 124.

Sincerely,

Doris L. Farley
Director of Regulatory Affairs

AERC.com, Inc. dba AERC Recycling Solutions
2591 Mitchell Avenue, Allentown, PA 18103
800-554-2372 ♦ 610-797-7608 ♦ Fax: 610-797-7696

RECLAMATION VERIFICATION DATA
01/01/2006 TO 06/30/2006

CONTAINER / SAMPLE NUMBER	DATE RECEIVED	MANIFEST NUMBER	WASTE STREAM DESCRIPTION	TEST	RESULT	UNITS	PERCENT RECOVERY
060201-0047B	2/13/2006	PAH223506	PHOSPHOR POWDER BEFORE RETORT	TOTAL MERCURY	1390	MG/KG	
060201-0047A	2/13/2006	PAH223506	PHOSPHOR POWDER AFTER RETORT	TOTAL MERCURY	5.69	MG/KG	99.59
060201-0040B	2/13/2006	PAH223506	PHOSPHOR POWDER BEFORE RETORT	TOTAL MERCURY	1550	MG/KG	
060201-0040A	2/13/2006	PAH223506	PHOSPHOR POWDER AFTER RETORT	TOTAL MERCURY	5.93	MG/KG	99.62
060201-0028B	2/13/2006	PAH223506	GLASSWARE / METALWARE BEFORE RETORT	TOTAL MERCURY	64.5	MG/KG	
060201-0028A	2/13/2006	PAH223506	GLASSWARE / METALWARE AFTER RETORT	TOTAL MERCURY	0.1	MG/KG	99.84
051025-0029B	2/13/2006	PAH223506	GLASSWARE / METALWARE BEFORE RETORT	TOTAL MERCURY	84.2	MG/KG	
051025-0029A	2/13/2006	PAH223506	GLASSWARE / METALWARE AFTER RETORT	TOTAL MERCURY	0.122	MG/KG	99.86
	`						

ATTACHMENT 10

EXHIBIT D.8.3

Receiving Ticket

[redacted]

AERC Master Receiving Form

Generator/Customer Name: National Weather Service **Date Received** 5-03-06 **Preparer**_____

Manifest Document#: 28545 **Pik Tik#** 103034 **Total Container Count:**_____ **RT2**

E-Scrap	Number of Containers	Total Weight	Component Type	Piece Count	Total Weight
Televisions			E-Scrap		
Monitor			Mouse		
Keyboard			Miscellaneous		
Printer			CPU		
TOTAL		**TOTAL**			

BATTERIES	Container Info						Total Weight
BAT 1	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord	x PALLET			
BAT 2	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord	x PALLET			
BAT 3	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord	x PALLET			
BAT 4	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord	x PALLET			

Mercury & Devices	Container Info						Total Weight
Liquid Hg	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord				
Hg & Water	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord				
Gw/Mw	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord				
Debris	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord				
Soil	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord				
Switches-Communication	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 20-gal	
	x 30-gal	x 55-gal	x gaylord				
Compounds/Salts	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 30-gal	
Type	x 55-gal	x 55-gal	x	x	x	x	
Solutions / C.O.D.	x 1-gal	x 2-gal	x 5-gal	x 10-gal	x 15-gal	x 30-gal	
Type	x 55-gal	x 55-gal	x	x	x	x	
TOTAL							

Comments:_____

[redacted]

AERC Master Receiving Form

Generator/Customer Name: National Weather Services Date Received 5-03-06 Preparer _____

Manifest Document#: 28545 Pik Tik# 103034 Total Container Count: _____ RT1

Lamp Length	Number of Containers	Lamp Count	Other Lamps	Number of Containers	Lamp Count
1-foot			HIDS --- Boxes		
2-foot			**Drums**		
3-foot			Compacts		
4-foot -- 32 count			Neon		
39 count			Biaxle / Earth		
69 count			Incandescent		
85 Small DF			Arc		
185 Large DF			UV		
5-foot			U-Tube		
6-foot			LPS (by weight)		
7-foot			Halogen		
8-foot -- 15 count			Circle		
32 count					
39 count					
69 count					
85 Small DF					
185 Large DF					
4-foot SS- 32 count					
39 count					
69 count					
8-foot SS- 32 count					
39 count					
69 count					
TOTAL					

Crushed Lamps	x 1 gal	x 2 gal	x 5 gal	**Total Weight**
	x.10 gal	x 15 gal	x 20 gal	
	x 30 gal	x 55 gal		
Ballast-NON	x 1 gal	x 2 gal	x 5 gal	
	x 10 gal	x 15 gal	x 20 gal	
	x 30 gal	x 55 gal	x Gaylord	
Ballast-PCB	x 1 gal	x 2 gal	x 5 gal	
	x 10 gal	x 15 gal	x 20 gal	
	x 30 gal	x 55 gal	x Gaylord	

Comments: _____

ATTACHMENT 11
ITEM D.9
Closure Plan

TABLE OF CONTENTS

Description (including Part # | Item # as applicable) **Page #**

D.9.1 Closure of AERC.com, Inc.: West Melbourne, FL

AERC.com, Inc. (formerly Advanced Environmental Recycling Company, L.L.C. / Mercury Technologies International L.P.) is located on Fortune Place, West Melbourne Florida. The facility specializes in the recycling of mercury lamps and various mercury containing materials and wastes to remove the hazardous mercury constituent or characteristic, purify the materials, recover the mercury, and render the original material suitable for reuse as reclaimed material. Unprocessed and process materials are temporarily stored at the facility until they can be processed and/or shipped to another off-site treatment, recycling, or disposal facility.

Examples of materials handled by AERC.com, Inc. includes: fluorescent and mercury- containing lighting devices, mercury-containing and contaminated materials, objects, devices and other manufactured items.

This closure plan is prepared to meet the closure standard of 62-737,FAC (and is modeled after the requirements specified in 40 CFR §264, Subparts G and H).

D.9.1a Closure Procedures

There will be no partial closure of the facility. It is anticipated that the operations of the facility will be conducted indefinitely. Minor changes may occur in the operation or equipment, but would not effect the scope of the plan. However, for final closure the following procedures will be implemented:

- Notification to the Florida Department of Environmental Protection (FLDEP) of intent to close the facility will be made at least 30 days prior to initiation of any closure activities.
- Cease acceptance of hazardous materials at the facility by redirecting them to an authorized hazardous waste or recycling facility for ultimate handling.
- Continue to process existing inventory of lamps and devices in the recycling, recovery system. For closure cost estimating however, it is assumed that all this material will be shipped off-site.
- Transport any inventory of remaining waste materials not processed by facility, co-products and recovered materials to appropriate outlets, customers and authorized off-site treatment, recycling, or disposal sites.
- Visually inspect containment systems, concrete floor storage areas inside facility, pads, trenches, storm water containment pond, and all equipment surfaces, lockers, cabinets, and shelf areas for evidence of contamination. If no visual contamination is evident, the hazardous materials containment systems will be steam washed. The resulting wash water from this activity will be sampled, analyzed, and disposed of in accordance with applicable regulations.
- All permanently mounted warning signs will be removed.
- AERC.com, Inc. will submit appropriate certification of closure to FLDEP.

D.9.1b Maximum Inventory Estimate

The maximum inventory to be stored at the facility will be estimated in drum equivalents (although, there may be whole lamps in boxes, broken lamps, and hazardous and non-hazardous lamp components, solid objects and parts of devices and plant debris that is not in drums, but is in some other type of container). We have used drum equivalents to simplify describing the maximum inventory in the facility because there is no way of knowing the number of containers or size of each object, so the regulatory storage limits based on physical space limitations have been used to estimate the drum equivalents for each type of waste or material. This volume is summarized below:

Material[1]	Volume Estimate[2]
1. Lighting Devices	
Fluorescent and Mercury Lamps (assume 75% of plant inventory max. of 244,800 lamps)	183,600 lamps 230 drum equivalents
Phosphor powders (assume approximately 8% of the plant inventory max. of 1632 drums)	128 drums
2. Mercury Containing Materials	
Mercury Devices (assume approx 5% of plant inventory)	84 drums
Metallic Mercury	minor component, included above
3. Lighting Ballasts	
(assume approximately 1% of plant inventory)	20 drums
4. Other	
Universal Waste Batteries and Recyclable Electronic Scrap (assume approximately 11% of plant inventory)	180 drums
Cleaning materials generated during closure	2 drums
Empty drums or other containers (used for storing devices, etc.)	50 containers

[1] Includes both unprocessed and processed material, assumed to be about 60% and 40%, respectively.

[2] Estimate as drum equivalents.

MAXIMUM INVENTORY ESTIMATE	644 drum equivalents and 50 empty containers

Drum Equivalent Conversion Factors for estimates:

1 drum	=	750 lbs, powdered material
1 gal	=	8.3 lbs
1 lamp	=	0.6 lbs per 4ft lamp
1 pallet	=	900 whole lamps, most lamps are stored this way.
1 day	=	24 operating hours; facility operated 300 days per year.

D.9.1c Decontamination Procedures

During decontamination activities associated with closure, documentation, including use of field logs, will be done in accordance with section IV of the May 21, 1996 draft SOP for sampling.

- If contamination is not observed, the storage areas will be cleaned using the best available method for proper decontamination. The lamp processing and storage areas will be cleaned using a combination of wiping with water and vacuuming with a treated carbon system. Walls, floors, shelves cabinets, and counter surfaces, surfaces of electrical panels, electrical conduits, light switches, electrical outlets and tops of suspended lighting fixtures will be wiped swept, vacuumed and water or steam washed. if needed, solutions of dilute nitric acid, bleach, or degreasing compound will be used. The rinsate from washing will be collected, sampled, analyzed, and disposed of in accordance with applicable regulations.

- Process equipment from the lamp recycling systems, materials disassembly areas, and associated components will be disassembled, cleaned, using the methods described above, and either sold to third parties for reuse, or as recycled scrap materials. Any contaminated systems or components that cannot be decontaminated or are not reused will be disassembled and shipped to an appropriate hazardous waste processing facility.

- Wipe tests from various locations throughout the facility will be analyzed. If there are hazardous levels of Hg, a solution of water or nitric acid and mercury cleaning chemicals will be used for additional wiping and mopping. Similar procedures will be used for the other process equipment and storage areas of the facility, e.g. wiping, testing, additional cleaning if needed. If there are contaminants other then mercury present in hazardous levels, appropriate cleaning materials will be used to wash and remove them.

Confirmation of Sampling Plan for Structures, Equipment, Buildings and Outdoor Areas

Sampling and testing will be performed in accordance with the procedures outlined in the SOP for Sampling dated May 21, 1996 draft, Section IV.

To ensure the process and storage area has been completely decontaminated, a series of wipe tests will be performed. A complete "scope of project" for closure, which includes methods of

sampling and analysis, can be submitted to the Department prior to beginning the actual closure procedures, if requested.

> **The "scope of project" will consist of a sampling grid for nitric acid wipe samples. At a minimum, ten (10) 100 sq. cm. samples will be taken from various locations and analyzed for Hg to ensure the site is not contaminated prior to final closure.**

Confirmation of Soil and Surface Water Sampling-

Collection and analysis of the final FLDEP (NPDES) water discharge sample will be done and AERC.com, Inc. will submit a report to the appropriate agencies.

Soil sampling confirmation is not applicable since no activities or hazardous materials storage occur outside the building, there is no run-off from hazardous materials storage areas, and there are no soils within several feet of where any of the facility activities occur.

Analytical Test Methods/Standards-

Analytical methods for testing mercury or other contamination are the EPA (RCRA- SW 846) recommended methods.

If any wash water or rinsate is to be discharged to surface waters, the DEP 6/94 Groundwater Guidance Concentrations of 2ppb (ug/l) total Hg will be used.

For other indoor and outdoor areas the standard of Total Hg:BDL or not greater than baseline will be used.

- If, after cleaning the facility, analysis still indicates contamination, the concrete or other storage container will be cleaned again, or removed and shipped off-site for treatment and disposal.
- After decontamination, all process equipment, vehicles, drums, other containers will be removed from the building, and any waste materials, hazardous or non-hazardous will be managed in accordance with applicable regulations.

D.9.1d Closure Schedule

It is anticipated that the operations at the facility will continue indefinitely. However, for the purpose of this plan, January of 2020 has been selected as the date when the appropriate agencies will be notified that the facility will be closed. The following schedule outlines the activities and the dates of completion.

Activity	Date of Completion
Notification to FLDEP that the facility will be closed	January 2020
Final volume of wastes received	July 2020

Begin closure procedures	September 2020
Final volume of products and materials removed from the facility	October 2020
Complete inspection of equipment, storage and process areas decontamination, and removal of any contamination, conduct sampling and analysis at various locations within the facility	November 2020
Submit appropriate certification to FLDEP	January 2021

The total time for closure activities has been estimated at 180 days with the first 90 days primarily utilized for the removal of inventory from the site. Due to the operations of the facility, it is anticipated that the actual time needed for the removal of inventory would actually be less than the time frames established by the regulations. Therefore, the facility does not foresee any problems complying with the time frames required.

D.9.1e Closure Cost Estimate

The closure cost estimate for the West Melbourne facility has been prepared based on the worst case conditions, which is the maximum storage of 644 - 55 gallon drums of processed and unprocessed materials and up to 50 empty containers used by the facility. As explained in **b.** above, drums also means drum equivalents, including up to 244,800 whole lamps or processed lamp components. No disposal activities will be conducted at this facility. The estimate, therefore, is based on a worst-case of having to ship the materials off-site to a third party treatment, recycling, or disposal facility, and not the cost to the operator supplying its own equipment and labor.

The closure cost estimate will be adjusted annually for inflation using an inflation factor. This factor is derived from the annual implicit price deflator for Gross National Product as published by the U.S. Department of Commerce in its survey of current business.

The closure cost estimate will not incorporate any salvage value from the sale of hazardous wastes, structures, or equipment. Materials with potential economic value are not assumed as zero costs for the closure estimate. All unprocessed materials remaining on site will be treated as hazardous and disposed of according to regulations.

The closure cost estimate may also be amended whenever there are changes in operating plans or facility design that may affect the closure plan.

Material and Activity	Cost Estimate
1. Lighting Devices	
Mercury Lamps-	$26,966.
Assume disposal and transportation to remove inventory of 183,600 lamps or 230 drum equivalents, unprocessed and processed, including glass and end-caps @ $117.24/drum.	
Phosphor powders-	
Assume disposal and transportation of 128 drums unprocessed @ $169.23/drum	$21,662.
2. Mercury Containing Materials	
Mercury Devices-	$14,216.
Assume disposal and transportation of 84 drums unprocessed and processed @ $169.23/drum	
Metallic Mercury	Incl.
3. PCB Lighting Ballasts	
Assume disposal and transportation of 20 drums PCB lighting ballasts @ $.0.34/lb and 750 lb / drum.	$5,100.
Materials generated during closure-	
Wash water and dirt collected during plant and equipment decontamination- disposal and transportation of 2 drums @ $395.41/drum	$791.
Decontaminated process equipment- transportation and disposal	$1,106.
Disposal and transportation costs to remove inventory of 50 empty drums @ $17.70/drum	$885.
Labor costs to decontaminate facility 80 hours @ $33.18/hour	$2,655.
Supervision of labor 20 hours @ $39.82/hour	$796.

Sampling and analytical	$5,088.
SUBTOTAL	$79,264.
Contingency costs @ 20 percent	$15,853.
Administrative costs @ 10 percent	$ 7,926.
Independent professional engineer certification	$2,212.
TOTAL CLOSURE COST	**$105,256.**

Financial Mechanism

Presently, financial assurance established for the closure of the facility is an Irrevocable Standby Letter of Credit. This will be included in this section as Attachment D.9., Financial Assurance, after DEP reviews the closure plan and at the time the permit is issued. During the life of the facility, a revised Letter of Credit will be updated in accordance with permit modifications or changes in the closure cost estimate.

Post-closure care will not be included in the closure cost estimate because AERC.com, Inc. is operating a storage and recycling facility. Therefore, no waste residues or contaminated soils will remain at the facility after the closure activities are completed.

Florida Department of Environmental Protection

Bob Martínez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Sent Via E-Mail June 15, 2011
JSmith@AERCRecycling.com

Mr. Jeffrey Smith
AERC.com, Inc.
4317-J Fortune Place
West Melbourne, Florida 32904-1509

Re: FLD 984 262 782
AERC.com, Inc.
4317-J Fortune Place
West Melbourne, Florida 32904-1509

Subject: **Financial Responsibility Compliance for 2011**

Dear Mr. Smith:

The department has received the documentation submitted to demonstrate financial responsibility. The seventh amendment to La Fayette Ambassador Bank letter of credit number S080045 effective July 16, 2010 indicates an amount of **$110,000** to cover the inflation adjusted closure cost. The corresponding standby trust fund agreement was established on May 2, 2002 between AERC.com, as Grantor, and Salem Trust Company, as Trustee. In addition, a certificate of liability insurance effective June 1, 2011 shows the required coverage for general liability (policy number GEC001869406) and pollution liability (policy number PEC001869506).

Therefore, AERC.com is in compliance with the hazardous waste facility financial responsibility requirements of 40 CFR Part 264 Subpart H as adopted by reference in Rule 62-737.800 of the Florida Administrative Code.

If you have any questions, please contact me at 850-245-8793.

Sincerely,

Edgar Echevarría

Edgar Echevarría
Environmental Specialist II
Hazardous Waste Regulation Section

EE

Copy: Stewart.RobertG@EPAmail.EPA.gov
Tom.Lubozynski@DEP.State.Fl.US
FDEP File

Lafayette Ambassador Bank

DATE: May 1, 2003

BENEFICIARY

Florida Department of Environmental Protection
Twin Towers Office Building MS-4560
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
Attn: Financial Officer

APPLICANT

AERC.com, Inc.
2591 Mitchell Ave.
Allentown, PA 18103

EXPIRY DATE: May 1, 2004
At: Lafayette Ambassador Bank
P.O. Box 25091
Lehigh Valley, PA 18002-5091

LAFAYETTE AMBASSADOR BANK LETTER OF CREDIT NO: S-10473

We hereby establish our irrevocable Standby Letter of Credit No. S-10473 in your favor, at the request and for the account of AERC.com, Inc., 2591 Mitchell Ave., Allentown, PA 18103 up to the aggregate amount of Ninety Two Thousand Nine Hundred Eighty Five and NO/100 United States Dollars ($92,985.00), available upon presentation of:

(1) Your sight draft drawn on us, bearing reference to this Letter of Credit No. S-10473, and

(2) Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Resource Conservation and Recovery Act of 1976 as amended, as adopted by reference in Rule 62-730. 180, Florida Administrative Code."

This Letter of Credit is effective May 1, 2003 and shall expire on May 1, 2004, but such expiration date shall be automatically extended without amendment for a period of one more year on May 1, 2004 and on each successive expiration date, unless at least one hundred twenty (120) days before the then current expiration date, we notify both you and AERC.com, Inc. in writing by certified mail that we have decided not to extend this Letter of Credit beyond the current expiration date. In the event you are so notified any unused portion of this Letter of Credit shall be available upon presentation of your sight draft as specified above on or before the then current expiration date.

We certify that the wording of this Letter of Credit is substantially identical to the wording specified in 40 CFR 264.151(d), as adopted by reference in Rule 62-730.180, Florida Administrative Code, as such regulations were constituted on the date shown above.

Whenever this Letter of Credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall remit payment of the amount of the draft into the Standby Trust Fund Agreement of AERC.com, Inc. in accordance with your instructions.

This Letter of Credit is subject to the Uniform customs and Practice for Documentary credits (1993 Revision), International Chamber of Commerce Publication No. 500 ("UCP500") and any subsequent amendments.

Lafayette Ambassador Bank

By: _____
Mark P. Jobes,

Title: Vice President

MPJ/dmp

ATTACHMENT 12
ITEM D.10
Certificate of Insurance

AERC6-1 OP ID: EC

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 05/31/11

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Gerrity, Baker, Williams Inc.
3 Gold Mine Road
Flanders, NJ 07836
Gerrity, Baker, Williams Inc.
973-426-1500
973-426-9545

CONTACT NAME: Elizabeth C. Cicak, CIC, CPIW
PHONE (A/C, No, Ext): 973-426-1500 FAX (A/C, No): 973-426-9546
E-MAIL ADDRESS: lcicak@gbwmail.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Greenwich Insurance Company	22322
INSURER B : XL Specialty Ins. Co.	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
AERC.com, Inc t/a
AERC Recycling Solutions
Advance Electronics Technology
Co. LLC, t/a Com Cycle
2330 SW 26th Street
Allentown, PA 18103

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X CG 0001 12/07 X CG 2026 07/04 GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC			GEC001869406	06/01/11	06/01/12	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
B	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS / SCHEDULED AUTOS X HIRED AUTOS / X NON-OWNED AUTOS X MCS-90/CA X CA-9948			AEC001869206	06/01/11	06/01/12	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $ $
A	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED X RETENTION $ 10000			UEC001869306	06/01/11	06/01/12	EACH OCCURRENCE AGGREGATE excl PLL	$ 5,000,000 $ 5,000,000 $
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WEC00200940905	02/16/11	02/16/12	X WC STATU-TORY LIMITS / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
A	Pollution Legal on/offsite of ins.			PEC001869506 CLAIMS MADE	06/01/11	06/01/12	Per Claim Aggregate	5,000,000 11,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
RECORD PURPOSES ONLY

CERTIFICATE HOLDER

AERC.FL

AERC.com, Inc.
4317-J Fortune Place
West Melbourne, FL 32904-1509

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Elizabeth C Cicak

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ATTACHMENT 13
ITEM D.11
List of Destinations Facilities & Uses

Material	Facility Name	City	State	ID#	Type of Facilty
Aluminum	Fortune Metals	Tampa	FL	NA	Recycler
Ballast - Non-PCB	Fortune Metals	Tampa	FL	NA	Recycler
Ballast - PCB Ballast	Lighting Resources	Phoenix	AZ	AZD983476650	Incinerator
Batteries - Category 1	Exide Technologies	Reading	PA	PAD990756089	Lead Smelter
Batteries - Category 2	Toxco/Kinbursky	Baltimore	OH	OHD101614907	Recycler
Batteries - Category 3	AERC.com, Inc.	Allentown	PA	PAD987367216	Recycler
Batteries - Category 4	Toxco/Kinbursky	Baltimore	OH	OHD101614907	Recycler
Cardboard	East Coast Paperstock	Rockledge	FL	NA	Recycler
Copper	Fortune Metals	Tampa	FL	NA	Recycler
E-Scrap	Com-Cycle	West Melbourne	FL	FLR000122655	Recycler
Glass from Fluorescent lamps	Brevard County Landfill	Cocoa	FL	NA	Landfill
Hard Drives	Com-Cycle	West Melbourne	FL	FLR000122655	Recycler
Intact CRT's	Com-Cycle	West Melbourne	FL	FLR000122655	Recycler
Lamps	AERC.com, Inc.	West Melbourne	FL	FLD984262782	TSDF
Light Steel	N/A for AERC - FL	NA	NA	NA	NA
Mercury Containing Devices/Debris	AERC.com, Inc.	Allentown	PA	PAD987367216	Recycler
Medical Equipment	Com-Cycle	West Melbourne	FL	FLR000122655	Recycler
Used Oil(motor, hydraulic)	EQ of Florida	Tampa	FL	FLD981932494	Recycler
Parts & Rebuilds (As is Sales)	N/A for AERC - FL	NA	NA	NA	NA
Plastics	Fortune Metals	Tampa	FL	NA	Recycler
Precious Metals	N/A for AERC - FL	NA	NA	NA	NA
Precious Metals	N/A for AERC - FL	NA	NA	NA	NA
Phosphor Powder	AERC.com, Inc.	Allentown	PA	PAD987367216	Recycler
Printers	Com-Cycle	West Melbourne	FL	FLR000122655	Recycler
Silicon Oil (Other Liquids)	N/A for AERC - FL	NA	NA	NA	NA
Sodium Hydroxide (from Batteries)	EQ of Florida	Tampa	FL	FLD981932494	Recycler/Incineration
Sulfuric Acid Solution (from Batteries)	EQ of Florida	Tampa	FL	FLD981932494	Recycler/Incineration
Toners & Inks	Com-Cycle	West Melbourne	FL	FLR000122655	Recycler

INFORMATION CONSIDERED BUSINESS CONFIDENTIAL

ATTACHMENT 14
ITEM D.12
Inspection Plan

TABLE OF CONTENTS

Description (including Part # | Item # as applicable) **Page #**

This section includes samples of the various checklists, forms, and monitoring logs that the company uses to keep track of relevant information and insure that its employees are performing the inspections when needed. All of the forms are subject to periodic revisions, and in addition, there are process-specific forms and logs used for maintenance, quality control or equipment monitoring which are not included here. When completed, these forms are kept in the company's operating records. They can be made available to regulatory agencies on an as-needed basis.

Daily inspections of several portions of the operation are conducted by facility personnel, including the containers, materials inventory storage areas, and emergency equipment. Containers in inventory are stored indoors in designated areas to prevent exposure of the waste material to the weather. The facility inspection daily log contains the following information:

- The volume and condition of the incoming materials
- The number and condition of the containers and storage areas
- The process systems' operating characteristics, and performance standards
- Equipment and worker safety items
- Employee health related items
- Housekeeping and appearance items
- Administrative and regulatory compliance items
- Containers that may be leaking, corroded, swollen, or bulged
- Containers that may be improperly labeled
- Fire protection and control equipment
- Security check
- Initials of inspector

Remedial and corrective actions include, but are not limited to, the following:

- Transferring material to another like container
- Cleanup of spills or releases
- Repairing and/or sealing of cracks and gaps in the shipping/receiving area and processing areas

The written inspection checklist is maintained in an inspection log at the facility for a minimum of three (3) years. In addition to the daily inspections, monthly facility and safety inspections are performed by facility personnel. The safety inspections include containers, personnel protective equipment, fire extinguisher, emergency lighting, unloading equipment, and general

working conditions. The monthly inspection includes available equipment, protective clothing, and general facility housekeeping. A Monthly Log is maintained at the facility.

Corporate regulatory, technical, and safety departments also perform audits of the facility on a periodic basis to ensure that operations are in compliance with applicable regulations, operating permits, and company policies.

ATTACHMENT 14

EXHIBIT D.12.1

Industrial Hygiene Monitoring Log & Sampling Location Map

AERC.com, Inc. Industrial Hygiene Monitoring Log

Industrial Hygiene Log

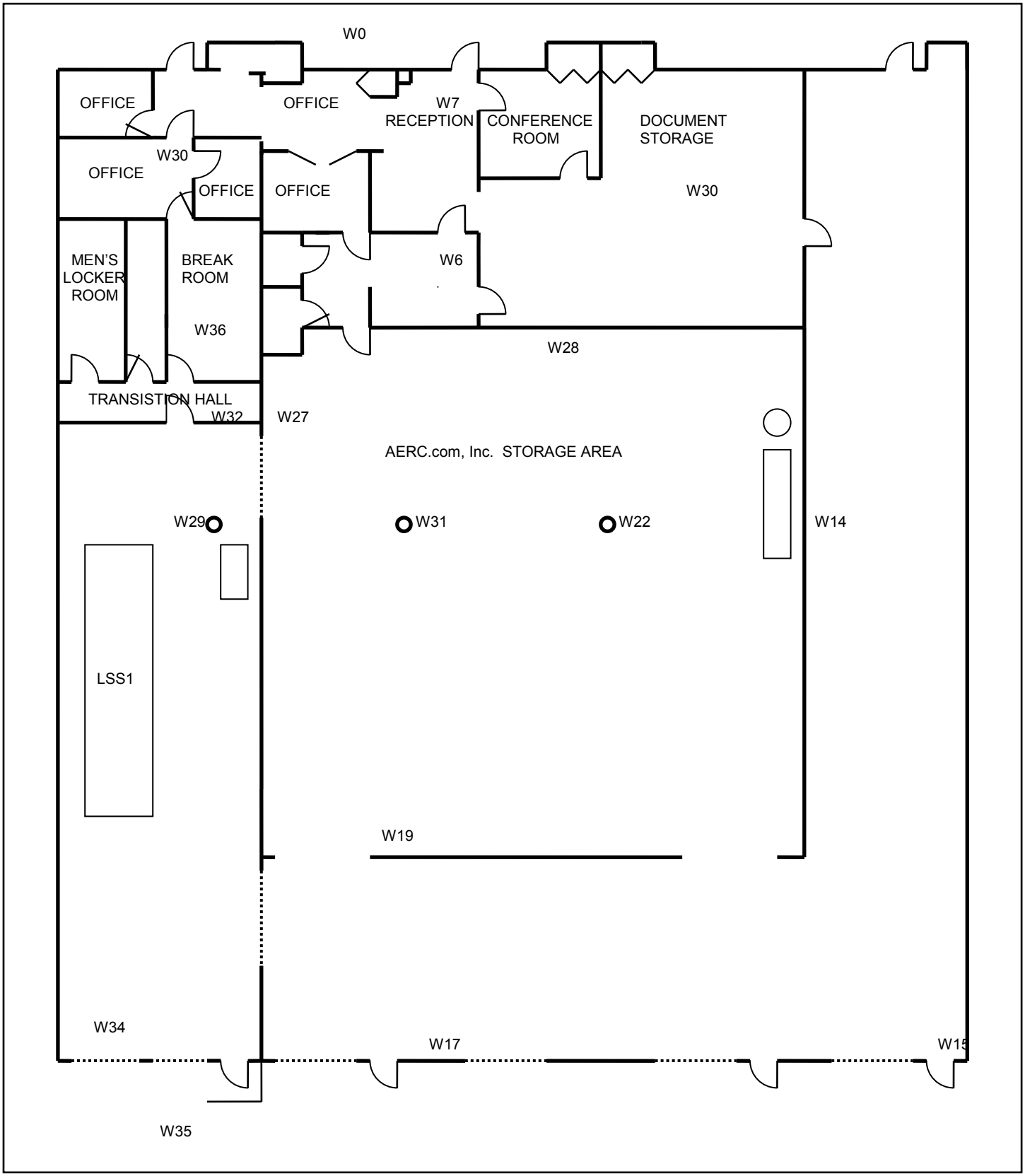
Date:___/____/_____ Initials 3rd Shift_____ Initials 1st Shift_____ Initials 2nd Shift_____
mm/dd/yyyy

Locations		12 a.m.	2 a.m.	4 a.m.	6 a.m.	8 a.m.	10 a.m.	12 p.m.	2 p.m.	4 p.m.	6 p.m.	8 p.m.	10 p.m.
W0	Outside Front Office												
W3	Office												
W6	Break Room												
W7	Reception Area												
W14	Warehouse (storage)												
W15	Loading Dock												
W17	Loading Dock												
W19	Storage Room												
W22	Storage Room												
W27	HID Processing Area												
W28	Storage Room												
W29	Processing Area												
W30	Shared Office												
W31	Storage Room												
W32	Donning/Doffing Area												
W34	West Warehouse/												
W35	Outside Warehouse												
W36	AERC Breakroom												

Note: These readings are points readings, not time weighted averages, and are measured in mg/m^3.

Please note any comments on the back of this form.

AIR MONITORING SAMPLING LOCATIONS



ATTACHMENT 14

EXHIBIT D.12.2

Air Permit Compliance Logs

Air General Permit Compliance Log

Permit #0090124-001-AC

All readings are point sample measured in mg/m^3 while specified equipment is operating.

Year: _____

Month:_____

Day	Time	Recovery Primary Discharge	HID Primary Discharge
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Month:_____

Day	Time	Recovery Primary Discharge	HID Primary Discharge
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
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23			
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25			
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27			
28			
29			
30			
31			

NOTE: All Samples are point readings at the recovery system's primary discharge before the secondary air filtration system.

Air Permit Log

Permit #0090124-001-AC

All readings are point sample measured in mg/m^3 while specified equipment is operating.

Year: _____

Month:_____

Day	Time	Secondary Air Handler Port 1	Secondary Air Handler Port 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Month:_____

Day	Time	Secondary Air Handler Port 1	Secondary Air Handler Port 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
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30			
31			

NOTE: Secondary Air Handler Port 1 is downstream of first carbon filter
Port 2 is after all carbon filtration

ATTACHMENT 14

EXHIBIT D.12.3

Recovery Facility Permit Inspection Log

AERC DAILY INSPECTION REPORT - West Melbourne

WEEK BEGINNING: _____/_____/_____
MM / DD / YYYY

NAME: _____
(PRINT)

		MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
	INITIALS OF INSPECTOR							
	Time of Inspection							
1	NUMBER OF CONTAINERS							
2	ARE CONTAINERS CLEARLY MARKED WITH ACCUMULATION DATES AND VISIBLE FOR INSPECTION (I.e. FACING TOWARD THE AISLES)?							
3	ARE HAZARDOUS WASTE CONTAINERS IN GOOD CONDITION?							
4	ARE HAZARDOUS WASTE CONTAINERS COMPATIBLE WITH THE CONTENTS?							
5	ARE CONTAINERS OF HAZARDOUS WASTE KEPT CLOSED?							
6	ARE HAZARDOUS WASTES MANAGED TO PREVENT LEAKS?							
7	ARE HAZARDOUS WASTES LABELED TO ACCURATELY IDENTIFY THE CONTENTS?							
8	ARE CONTAINERS OF LIQUID HAZARDOUS WASTE STORED IN OR ON AN APPROVED SPILL CONTAINMENT DEVICE?							
9	IS THE STORAGE OF HAZARDOUS WASTE LESS THAN 9 FEET IN HEIGHT?							
10	ARE AISLES AND WALKWAYS UNOBSTRUCTED?							
11	IF REQUIRED, ARE ALL CONTAINERS SHRINK-WRAPPED?							
12	ARE HAZARDOUS WASTES STORED IN PERMITTED AREAS?							
13	ARE ALL EMPLOYEES IN PROPER SAFETY ATTIRE?							
14	IS THE JEROME METER IN PROPER WORKING ORDER?							
15	IS SECONDARY AIR FILTRATION WORKING PROPERLY?							
16	ARE THE EMERGENCY EYE WASHES/SHOWERS CLEAN AND UNOBSTRUCTED?							
17	ARE ALL FIRE EXTINGUISHERS, FIRE EXITS AND ELECTRICAL PANELS UNOBSTRUCTED?							
18	ARE THE SPILL KITS (Hg AND LIQUID) FULLY STOCKED AND ACCESSIBLE?							
19	IS ALL REQUIRED SAFETY AND FIRST AID EQUIPMENT IN STOCK AND ACCESSIBLE?							
20	ARE TOOLS AND EQUIPMENT IN GOOD WORKING ORDER?							
21	ARE THE FLOORS AND EQUIPMENT CLEAN?							
22	IS THE FACILITY SECURE?							
23	IS THE BUILDING DAMAGED (NOTE IN "COMMENTS")?							
24	IS THE STORAGE AREA ARRANGED ACCORDING TO FLOOR PLAN?							
25	ARE NON-HAZARDOUS CONTAINERS PROPERLY LABELED?							
26	ARE ANY GENERATED HAZARDOUS WASTES ON SITE FOR MORE THAN 90 DAYS?							
27	ARE ANY UNIVERSAL WASTES GREATER THAN 1-YEAR OLD?							
28	ARE ANY 10-DAY INTRANSIT WASTES ON SITE FOR MORE THAN 10 DAYS?							

EMPLOYEES MUST ENTER ALL COMMENTS and REQUIRED CORRECTIVE ACTIONS on the REVERSE of this FORM!

REVISED 13 May 2005

COMMENTS - CORRECTIVE ACTIONS - SUPERVISOR REVIEW

INSPECTION DATE (MM/DD/YYYY)	COMMENT & REQUIRED CORRECTIVE ACTION	SUPERVISOR REVIEW DATE (MM/DD/YYYY)	RESOLUTION? (YES / NO)	SUPERVISOR COMMENT	SUPERVISOR SIGNATURE

Facility Operator Certification

APPLICATION FOR A MERCURY-CONTAINING LAMP OR DEVICE MERCURY RECOVERY OR MERCURY RECLAMATION FACILITY PERMIT

Part II - CERTIFICATION

TO BE COMPLETED BY ALL APPLICANTS

Facility Name: AERC.com, Inc. EPA ID# FLD 984 262 782

1. Operator

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, I agree to comply with the provisions of Chapter 403, Florida Statutes, Chapter 62-737, F.A.C., and all rules and regulations of the Department of Environmental Protection. It is understood that the permit is only transferable in accordance with Chapter 62-737, F.A.C., and, if granted a permit, the Department of Environmental Protection will be notified prior to the sale or legal transfer of the permitted facility.

Robert W Landmesser

Signature of the Operator or Authorized Representative*

Robert W. Landmesser, Chairman, CEO

Name and Title (Please type or print)

Date: 26 July 11 Telephone :(610) 797-7608

*** If authorized representative, attach letter of authorization.**

Facility Owner Certification

2. **Facility Owner**

This is to certify that I understand that this application is submitted for the purpose of obtaining a permit to construct, or operate a mercury-containing lamp or device mercury recovery or mercury reclamation facility . As owner of the facility, I understand fully that the facility operator and I are jointly responsible for compliance with the provisions of Chapter 403, Florida Statutes, Chapter 62-737, F.A.C. and all rules and regulations of the Department of Environmental Protection.

Robert W Landmesser

Signature of the Facility Owner or Authorized Representative*

Robert W. Landmesser, Chairman, CEO

Name and Title (Please type or print below signature)

Date: 7/26/11 Telephone: (610) 797-7608

*** If authorized representative, attach a letter of authorization**

Land Owner Certification

3. **Land Owner**

This is to certify that I, as land owner, understand that this application is submitted for the purpose of obtaining a permit to construct or operate a mercury-containing lamp or device mercury recovery or mercury reclamation facility on the property as described.

W. Robert Anderson Jr.

Signature of the Land Owner or Authorized Representative*

W. ROBERT ANDERSON JR. - PRESIDENT

Name and Title (Please type or print)

Date: 7/26/11 Telephone: (321) 723-3400

* **If authorized representative, attach letter of authorization.**

Professional Engineer Certification

4. Professional Engineer Registered in Florida

[Complete when not exempted by Chapter 62-737, F.A.C.]

This is to certify that the engineering features of this mercury-containing lamp or device mercury recovery or mercury reclamation facility have been ~~designed and~~ examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, this facility, when properly constructed, maintained and operated, or closed, will comply with all applicable statutes of the State of Florida and rules of the Department of Environmental Protection.

Joseph L. Tessitore
Signature

Joseph L. Tessitore / Ecology & Environment, Inc.
Name (please type)

Florida Registration Number: 23374

Mailing Address: 801 W. Highway 436
Street or PO. Box

Altamonte Springs FL 32712
City State Zip

Date: 07/27/2011 Telephone(407) 862-5220

[PLEASE AFFIX SEAL]

APPLICATION FEE