

WASTE MANAGEMENT GUIDANCE MANUAL FOR PROJECT DELIVERY

PREFACE

Publication 611 – Waste Management Guidance Manual (Pub. 611/2011) was developed with the intent to provide the Pennsylvania Department of Transportation (PennDOT) personnel with a reference tool for the management of hazardous and non-hazardous wastes generated through routine Department operations. In 2017, Pub 611 was modified by establishing separate manuals: Volume I directed to Project Delivery and Volume II for Maintenance Operations.

Pub. 611 briefly summarizes the applicable U.S. Environmental Protection Agency (EPA) and Pennsylvania Department of Environmental Protection (PADEP) regulations, and addresses PennDOT policy related to the implementation of waste management and supports activities identified in Pub 408 – Highway Construction Specifications. There is no intent on the part of PennDOT to give the procedures in this guidance weight or deference. This guidance is for informational purposes only; it is not regulatory.

Although the provided information is as current and reliable as possible, all wastes must be characterized, managed and disposed of as required per Title 25 Chapters 260-299 of PADEP Codes and Regulations. If any questions arise after reading this guide, please contact the Strategic Environmental Management Program (SEMP) Section of the Bureau of Maintenance and Operations or the appropriate regulatory agency.

Publication 712A – PennDOT’s Green Plan Policy requires PennDOT to plan, design, build, operate and maintain a statewide transportation system that protects the environment, prevents pollution and uses resources efficiently. PennDOT contributes to economic vitality and quality of life by applying sound environmental management practices which address the requirements of the public, users, carriers, industry, and labor.

The Green Plan Policy includes the following objectives:

- Comply with all applicable environmental laws and regulations.
- Commit to source reduction, reuse, recycling of waste generation through research, design, and field operations.
- Reduce costs and liability associated with the management and disposal of regulated materials/waste.
- Promote cooperation and coordination between government and the public toward the shared goal of preventing pollution and conserving our environment.

TABLE OF CONTENTS

1.0 INTRODUCTION..... 1

1.1 VOLUME I – A PROJECT DELIVERY TOOL..... 1

1.2 VOLUME I – ORGANIZATION 1

2.0 CLASSIFICATION OF WASTE MATERIALS 1

2.1 WASTE DETERMINATION PROCESS..... 1

2.1.1 HAZARDOUS WASTE DETERMINATION 2

2.1.2 NON-HAZARDOUS WASTE DETERMINATION..... 2

2.2 MUNICIPAL WASTE..... 3

2.2.1 MUNICIPAL WASTE DEFINITION 3

2.2.2 MUNICIPAL WASTE EXAMPLES 3

2.2.3 MUNICIPAL WASTE MANAGEMENT AND LABELING..... 3

2.2.4 MUNICIPAL WASTE RECORD KEEPING 3

2.3 RESIDUAL WASTE 4

2.3.1 RESIDUAL WASTE DEFINITION..... 4

2.3.2 RESIDUAL WASTE EXAMPLES 4

2.3.3 RESIDUAL WASTE GENERATOR CATEGORIES 7

2.3.4 RESIDUAL WASTE MANAGEMENT AND LABELING 8

2.3.5 RESIDUAL WASTE RECORDKEEPING 8

2.3.6 RESIDUAL WASTE DISPOSAL..... 8

2.3.7 TRANSPORTATION OF RESIDUAL /MUNICIPAL WASTE 8

2.3.8 BENEFICIAL USE PROGRAM 9

2.4 HAZARDOUS WASTE MANAGEMENT 10

2.4.1 HAZARDOUS WASTE GENERATOR CATEGORIES 10

2.4.2 OBTAINING A HAZARDOUS WASTE EPA IDENTIFICATION NUMBER..... 10

2.4.3 HAZARDOUS WASTE GENERATOR REQUIREMENTS..... 11

2.4.4 HAZARDOUS WASTE MANAGEMENT AND LABELING 11

2.5 UNIVERSAL WASTE MANAGEMENT..... 13

2.5.1 UNIVERSAL WASTE DEFINITION 13

2.5.2 UNIVERSAL WASTE EXAMPLES 14

2.5.3 UNIVERSAL WASTE MANAGEMENT AND LABELING..... 15

2.5.4 RECORDKEEPING AND REPORTING..... 16

2.6 RECYCLING POLICIES 17

2.6.1 RECYCLING DIRECTIVE..... 17

2.6.2 RECYCLABLE MATERIALS IN ROAD PROJECTS..... 17

2.6.3 NEW PRODUCT DEVELOPMENT 17

3.0 PROJECT WASTE 17

3.1 BACKGROUND AND ROLES..... 17

3.1.1 ANTICIPATED PROJECT WASTE..... 18

3.1.2 UN-ANTICIPATED PROJECT WASTE..... 18

3.2 CONTAMINATED SOIL..... 18

3.3 CONTAMINATED GROUNDWATER 19

3.3.1 PRE-CONSTRUCTION PHASE PLANNING 19

3.3.2 DISPOSAL..... 19

3.3.3 CONTRACTOR AGREEMENTS 20

3.4 TANKS..... 20

3.4.1 UNDERGROUND STORAGE TANKS..... 21

3.4.2 ABOVEGROUND STORAGE TANKS 21

3.5 MILLINGS..... 21

- 3.5.1 OVERVIEW OF MILLINGS AND REUSE 21
- 3.5.2 COPRODUCT DETERMINATION 22
- 3.5.3 RAP / SOIL MIXTURES 23
- 3.5.4 HANDLING REQUIREMENTS RELATED TO RAP 23
- 3.5.5 RAP RECYCLING / REUSE RECORDKEEPING 24
- 3.6 ASBESTOS-CONTAINING MATERIALS 24
 - 3.6.1 BACKGROUND AND APPLICABILITY 24
 - 3.6.2 CLASSIFICATION OF ASBESTOS MATERIALS 24
 - 3.6.3 INSPECTIONS 25
 - 3.6.4 MOBILE HOMES AND TRAILERS 25
 - 3.6.5 NOTIFICATIONS 25
 - 3.6.6 ASBESTOS PERMITS 27
 - 3.6.7 ASBESTOS DEMOLITION AND WASTE DISPOSAL 28
 - 3.6.8 RECORD KEEPING 28
- 3.7 LEAD-BASED PAINT 28
 - 3.7.1 BACKGROUND AND DEFINITION 28
 - 3.7.2 LEAD-BASED PAINT REMOVAL 29
 - 3.7.3 MANAGEMENT OF LEAD-BASED PAINT WASTE 29
- 3.8 LAND CLEARING, GRUBBING AND EXCAVATION WASTE 29
 - 3.8.1 CLEARING, GRUBBING AND EXCAVATION DEFINITION 29
 - 3.8.2 MANAGEMENT OF CLEARING, GRUBBING AND EXCAVATION WASTE 29
- 3.9 DEMOLITION WASTE 30
 - 3.9.1 DEMOLITION WASTE DEFINITION 30
 - 3.9.2 MANAGEMENT OF CONSTRUCTION AND DEMOLITION WASTE 30
- 3.10 MISCELLANEOUS DEBRIS 31
 - 3.10.1 OVERVIEW 31
 - 3.10.2 WASTE DRUMS & PAILS 31
 - 3.10.3 WASTE LIQUIDS 32
 - 3.10.4 RECYCLABLE MATERIALS 32
 - 3.10.5 TRASH / LITTER 32
 - 3.10.6 ELECTRONIC WASTES 33
 - 3.10.7 INFECTIOUS OR CHEMOTHERAPEUTIC WASTE (ICW) 33
 - 3.10.8 UNEXPECTED WASTE 34
- 4.0 FILL MANAGEMENT 34**
 - 4.1 BACKGROUND AND ROLES 34
 - 4.2 CLEAN FILL 35
 - 4.3 REGULATED FILL 35
 - 4.4 HISTORIC FILL 36
 - 4.5 ACT 2 GUIDANCE 36
 - 4.6 NATURALLY OCCURRING CONTAMINANTS 36
 - 4.7 OTHER FILL MANAGEMENT STRATEGIES 37
 - 4.8 NON-COAL RECLAMATION FILL 38
 - 4.9 SLAGCRETE AND SLAG AGGREGATE 38
- 5.0 SPILL MANAGEMENT 38**
 - 5.1 BACKGROUND 38
 - 5.2 SPILL RESPONSE AND REPORTING REQUIREMENTS 39
 - 5.2.1 SPILL OR RELEASE RESPONSE 39
 - 5.2.2 SPILL REPORTING 39

5.3 HAZARDOUS MATERIALS SPILLS..... 40

5.4 RESIDUAL WASTE FROM SPILLS..... 40

6.0 BY-PRODUCTS OF CONTRACTOR ACTIVITIES..... 41

6.1 RESPONSIBLE PARTY 41

6.2 TYPICAL CONTRACTOR WASTES 42

 6.2.1 TEMPORARY OFFICE WASTES 42

 6.2.2 RESIDUAL WASTES 42

 6.2.3 EMPTY AEROSOL CANS..... 42

 6.2.4 EQUIPMENT CLEANING 43

 6.2.5 CONCRETE SLURRY 43

7.0 EXAMPLE PROJECT DELIVERY SCENARIOS 44

7.1 PETROLEUM CONTAMINATION – ENCOUNTERING
 UNKNOWN UNDERGROUND STORAGE TANK
 (UST)DURING ROAD WIDENING 44

7.2 UNEXPECTED NON-PETROLEUM CONTAMINATION 46

7.3 BUILDING DEMOLITION 47

7.4 REPAVING OPERATIONS 48

7.5 BRIDGE REPAIR / REPLACEMENT PROJECT 49

LIST OF ATTACHMENTS

- Appendix A – Acronyms and Definitions
- Appendix B – Regulatory Contact Information
- Appendix C – Hazardous Waste Determination Reference Documents
- Appendix D – Pennsylvania Residual Waste Disposal and Reporting Forms
- Appendix E – Hazardous Waste Generator Requirements
- Appendix F – Hazardous Waste Disposal and Reporting Forms
- Appendix G – Fluorescent Bulb Recycling Vendors
- Appendix H – Special Handling Waste Forms
- Appendix I – Management of Fill Policy
- Appendix J - Demolition and Construction Hazardous Waste Table
- Appendix K– Project Delivery Spill Notification Form
- Appendix L – EPA Guidance – Concrete Washout

1.0 INTRODUCTION

1.1 VOLUME I – A PROJECT DELIVERY TOOL

The Pennsylvania Department of Transportation is committed to managing its waste streams in a safe and effective manner, and in accordance with all applicable environmental regulations. Publication 611 is divided into two volumes: Volume I (presented herein) focuses on waste issues associated with PennDOT Project Delivery efforts, and Volume II outlines procedures related to waste stream associated with the PennDOT Maintenance operations.

Volume I is intended as a resource document to provide an overview of the regulatory framework and basic procedures for management of hazardous and non-hazardous waste streams typically identified and generated by PennDOT during Project Delivery (design and construction) activities.

1.2 VOLUME I – ORGANIZATION

Section 2.0 guides the user in making a correct determination for waste characterization.

Sections 3.0 and 4.0 provides information on specific types of wastes that may be generated during Project Delivery including definitions, examples of the various types of waste and information on the management of the waste.

Sections 5.0 provides information on Spill Management including spill prevention and planning as well as emergency response.

Section 6.0 reviews the by-products of contractor activities, particularly wastes that are generated from day to day contractor activities that are not otherwise identified in Sections 3.0 and 4.0.

Section 7.0 provides example scenarios of typical projects and the situations that may arise during the Project Delivery activities.

Appendices A and B provide information on the acronyms utilized in the document, and contact information for the state and federal regulatory agencies applicable to the Pub 611 content. Other appendices are referenced in Volume I or pertain to Volume II.

Where applicable, other PennDOT publications are referenced throughout this publication for more detailed protocols and guidelines. This Publication is not intended to be a substitute for training programs provided by the Department.

2.0 CLASSIFICATION OF WASTE MATERIALS

2.1 WASTE DETERMINATION PROCESS

Making a waste determination can be a complex task. This section provides an overview of the process to determine whether the waste material is subject to hazardous and/or non-hazardous waste regulations. Ultimately, determining whether a waste is subject to regulatory requirements for hazardous waste is of key importance.

The Resource Conservation Recovery Act (RCRA) hazardous waste identification process involves three primary steps, in this order:

1. Determining whether the material in question is a solid waste
2. Determining whether that solid waste is excluded from regulation
3. Determining whether that solid waste is a hazardous waste

Is the waste a solid waste? Note that the term “solid” does not refer to the physical state of the waste. Solid waste can be a solid, liquid, or a contained gas. The Resource Conservation and Recovery Act (RCRA) provides the framework for the proper management of hazardous and nonhazardous solid waste. Under these regulations, a solid waste is any material that will no longer be used for its originally intended purpose or a

material that must be reclaimed before reuse. In order for any material to be a hazardous waste, it must first qualify as a solid waste. Not all RCRA solid wastes are considered hazardous wastes.

Is the waste excluded or exempted from hazardous waste regulation? Only after determining that a solid waste is not somehow excluded from hazardous waste regulation should the analysis proceed to evaluate the actual chemical or physical hazard that a waste poses.

Does the waste pose a chemical or physical hazard as outlined in the hazardous waste regulations? (See section 2.1.1)

2.1.1 HAZARDOUS WASTE DETERMINATION

Once a waste has been determined, first to be a solid waste, and secondly is not exempt or excluded from hazardous waste regulations, the third step in the hazardous waste identification process is determining whether a waste actually poses a sufficient chemical or physical hazard to merit regulation under RCRA. This third step involves evaluating the waste in light of the regulatory definition of hazardous waste and is accomplished by doing one or more of the following:

- Identifying the process that generated the waste (Is it a “listed” waste?)
- Determining if the waste is a characteristic waste
- Applying knowledge of typical waste composition and/or
- Conducting waste testing or analysis.

A more in-depth process for waste classification is contained in Pub 611 Volume II. Additional resources are also contained in **Appendix C** (Hazardous Waste Determination Reference Documents).

Hazardous Wastes that are sometimes encountered or generated during transportation improvement projects include:

- Lead-Based Paint blasting residues
- Paint filters, fuel filters, air filters, unpunctured aerosol cans, and spent solvents from construction activities
- Universal Waste removed from buildings to be demolished (see Section 2.5 for details)
- Electronic waste that cannot be recycled
- Illegally dumped drums, lead-acid battery casings, and other solid waste
- Contaminated soil from spills and industrial sites

2.1.2 NON-HAZARDOUS WASTE DETERMINATION

If, after going through the three-step process of determining whether a waste is classified as a hazardous waste, it is determined that the waste is **not** hazardous, then the waste material is classified as non-hazardous waste.

Non-hazardous waste from a Project Delivery site is further identified as residual or municipal waste. Pennsylvania is unique compared to other states in that it has separate waste management regulations for three different waste categories: municipal waste, residual waste, and hazardous waste.

Municipal wastes are regulated under the Municipal Waste Management Regulations adopted in April 1988 (Article VIII, with regulations 25 Pa. Codes Chapters 271-273, 275, 277, 279, 281, 283-285).

Residual wastes are regulated under the Residual Waste Management Regulations adopted on 2 July 1992 (Article IX, 25 Pa. Code Chapters 287-291, 293, 295, 297-299).

2.2 MUNICIPAL WASTE

2.2.1 MUNICIPAL WASTE DEFINITION

Municipal waste is defined as garbage; refuse; industrial lunchroom or office waste and other materials, including solid, liquid, semi-solid, or contained gaseous materials resulting from operation of residential, municipal, commercial, or institutional establishments, and from community activities; and sludge not meeting the definition of residual or hazardous wastes from a municipal, commercial, or institutional water supply treatment plant, wastewater treatment plant, or air pollution facility. (Municipal waste may also be viewed to include "special handling waste" and "construction/demolition waste" generated by non-industrial establishments.)

2.2.2 MUNICIPAL WASTE EXAMPLES

Wastes that are a result of the activities on a project delivery site that would be classified as municipal wastes include:

- Refuse from food related products
- Office wastes such as paper, cardboard, and other typical office refuse (excluding electronics)
- Construction and Demolition Waste (See Section 3 for further clarification)
- Clearing, Grubbing and Excavation Waste (See Section 3 for further clarification)

2.2.3 MUNICIPAL WASTE MANAGEMENT AND LABELING

Municipal wastes must be stored in containers that:

- can be easily handled for collection
- are rust and corrosion resistant
- are equipped with a tight-fitting lid or cover or are otherwise sealed
- are designed to prevent leaks
- are clearly labeled: **MUNICIPAL WASTE**, or as the specific type of municipal waste

Municipal wastes may not be stored for more than 1 year unless:

- For waste that is recyclable or resalable, the Department has approved, in writing, a longer period, prior to the end of 1 year of storage based on a rate of recycling or resale of stored waste that is reasonably proportional to the rate of accumulation for storage.
- For other municipal waste, the Department has approved, in writing, a longer period prior to the end of 1 year of storage.

2.2.4 MUNICIPAL WASTE RECORD KEEPING

Accurate operational records that are sufficiently detailed to clearly and convincingly demonstrate to PADEP that municipal waste is being stored for less than 1 year or for the reasons noted in Section 2.2.3.

REGULATION REFERENCE:

**25 Pa. Code Chapters
§271-273, §275, §277, §279, §281, §283-285.**

2.3 RESIDUAL WASTE

2.3.1 RESIDUAL WASTE DEFINITION

Defined as garbage, refuse, other discarded materials or other waste, including solid, liquid, semisolid or contained gaseous materials resulting from industrial, mining and agricultural operations; and sludge from an industrial mining or agricultural water supply treatment facility, wastewater treatment facility or air pollution control facility, if it is not hazardous.

During Project Delivery, residual wastes may be generated by the project or discovered during advancement of the project.

2.3.2 RESIDUAL WASTE EXAMPLES

Residual wastes that might be generated on a project delivery site could include the following. Due diligence must still be performed to identify contaminants that could require the waste to be managed as hazardous.

- empty containers from oils or other vehicle fluids
- discarded equipment parts from equipment maintenance
- used absorbent
- waste tires
- waste oil that is not hazardous
- waste antifreeze
- oil/fuel filters
- air filters
- used shop rags
- mixed millings and soil
- “slagcrete” / slag aggregate
- asphalt / tar
- dredged material
- certain construction wastes
- asbestos-containing wastes (see Section 3.6 for details)
- contaminated soil (if not identified as hazardous)

WASTE OIL

All waste oil generators must evaluate the waste oil to determine whether it is hazardous. Waste oil may exhibit characteristics of a hazardous waste. Typically, waste oil contains impurities because of the presence of heavy metal contaminants and may test hazardous. If waste oil exhibits one of the hazardous waste characteristics (ignitability, corrosivity, reactivity, or toxicity), it must be managed in accordance with all applicable hazardous waste management practices.

Waste oil containing more than 1,000 parts per million total halogens is presumed to be a hazardous waste. This may be rebutted by demonstrating the waste oil does not contain significant concentrations of halogenated hazardous constituents. This is also known as Rebuttable Presumption for Waste Oil, as defined in 25 Pa. Code 298.10 (b)(1)(ii). Excluded from the Rebuttable Presumptions for Waste Oils are: Reclaimed Metalworking oils/fluids; and waste oil contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units.

- When the waste oil is not hazardous, the waste oil is required to be recycled or burned for energy recovery in boilers and industrial furnaces.

- Do not mix waste oil with other hazardous waste – such as spent solvents, gasoline, pesticides, etc. Such mixtures are regulated as hazardous waste whether they are recycled or not.

OFF-SPECIFICATION WASTE OIL

Waste oil exceeding any of the specifications below is subject to requirements for “off-specification” waste oil fuel. Special requirements apply for waste oil burned for energy recovery in boilers and industrial furnaces. Such waste oil is termed “waste oil fuel”. Persons who market off-specification waste oil fuel must notify EPA Regional Administrator and keep copies of analyses. On-specification used fuel may be sold to anyone.

<u>Contaminant/Property</u>	<u>Allowable Levels</u>
Arsenic	5 ppm, maximum
Cadmium	2 ppm, maximum
Chromium	10 ppm, maximum
Lead	100 ppm, maximum
Flash Point	100 °F, minimum
Total Halogens	4,000 ppm maximum (e.g. chlorine) for industrial uses 1,000 ppm maximum for residential and commercial uses

OIL FILTERS

Oil filters are removed from vehicles during normal vehicle maintenance activities. Used oil filters may contain residual used oil. There are two types of oil filters, terne-plated and non-terne-plated. Terne-plated oil filters exhibit the toxicity characteristic for lead. PADEP requires that used terne-plated oil filters be managed as hazardous waste. Used non-terne plated oil filters are subject to residual waste regulations if properly drained and recycled.

Proper management of used oil filters includes:

- Puncturing the filter anti-drain back valve or the filter dome end and hot-draining (draining at near-engine operating temperature).
- Hot-draining and crushing.
- Dismantling and hot-draining; or
- Any other equivalent hot-draining method that will remove used (motor) oil

FUEL FILTERS

Used fuel filters are potentially hazardous waste due to the presence of high levels of lead and/or benzene. Gas filters should be drained. Waste determination of the fuel filters can be performed by contacting the manufacturer to inquire about the waste classification, or by testing of filters. If determined to be hazardous, they must be managed as a hazardous waste. If fuel filters are determined to be non-hazardous, the facility may recycle them with the oil filters, after notifying the recycler; or alternatively recycling them with scrap metal.

USED ASPHALT OR TAR

Used asphalt is generated by PennDOT during road maintenance activities. The PADEP Management of Fill Policy provides information on the possible reuse of asphalt. However, a milling/soil mixture that cannot be reused as Recycled Asphalt Pavement (RAP) or as shoulder backup is regulated as residual waste. Used asphalt is considered a residual waste stream and subject to residual waste regulations. See section 4.0 of this guidance manual for further clarification.

USED ABSORBENT

The used absorbent is typically generated from the cleanup of oil spills at maintenance facilities or during

construction activities. As oil products and used oil are not hazardous, used absorbent generated from the cleanup of oil spills is also not classified as a hazardous waste. If used absorbent is used for the cleanup of oil spills, it may be disposed of as a solid waste as long as there are no free liquids present. Certain types of oil absorbent may be used multiple times before disposal is necessary.

For cleanup of spills of hazardous materials or wastes (solvent, paint thinner, etc.), the used absorbent may be a hazardous waste and must be tested prior to disposal.

USED RAGS

Rags used to clean up spills or drips may be contaminated with cleaners or other products or waste (oil, gasoline, etc.) and may exhibit a hazardous waste characteristic. Rags contaminated with oil are considered used oil waste and are regulated as residual waste. Rags contaminated with solvents or other potentially hazardous materials may exhibit hazardous waste characteristics, subject to hazardous waste disposal requirements. Custodial dust rags are considered non-hazardous. All used rags that do not contain free liquids and are recycled through a commercial laundry service are exempt from hazardous waste regulations.

WASTE TIRES

Waste tires are generated through vehicle maintenance repairs and occasionally from clean-up activities. PADEP regulates waste tires to be handled as residual waste, and recycling of waste tires is mandatory in the Commonwealth. Waste tires should not be disposed of as municipal waste. Storage of waste tires is limited to less than 500 tires in open storage or 1,500 tires in enclosed storage. Above these limits notification to PADEP is necessary and waste tire siting and storage requirements apply. Accumulating excess waste tires represents a financial liability and potentially increases the risk of a fire hazard and breeding grounds for mosquitoes. Waste tires should not be stored longer than 1 year on-site, otherwise PADEP approval needs to be obtained (25 Pa. Code 299.113). The facility should keep records that sufficiently demonstrate that waste tires, as with other residual waste, are stored for less than 1 year on-site.

USED ANTIFREEZE

Antifreeze contains potentially hazardous chemicals such as ethylene glycol, propylene glycol, corrosion inhibitors, and other additives. Most antifreeze formulations need to be evaluated for the presence of hazardous waste characteristics prior to disposal. Occasionally, it may show toxicity characteristics due to elevated lead, cadmium, or chromium levels.

Used antifreeze that tests hazardous must be managed as a hazardous waste, if not recycled. If used antifreeze is recycled by the facility using an on-site recycling system, the filter residue must be occasionally disposed of. This residue could potentially show hazardous characteristics due to metal content, even if the used antifreeze is not hazardous. As such, the residue must be tested prior to disposal.

Because antifreeze is required for normal vehicle maintenance operations, opportunities to reduce the quantities are limited. Recycling used antifreeze is required by PennDOT.

CONSTRUCTION AND DEMOLITION WASTE

Construction and demolition (C&D) debris includes material and rubble resulting from construction, remodeling, repairs, and demolition of structures. Some typical construction/demolition waste include wood scrap, plaster, metals, asphaltic substances, bricks, block, and un-segregated concrete. The term does NOT include the following IF they are separate from other waste and are used as clean fill: uncontaminated soil, rock, stone, gravel, brick and block, concrete and used asphalt. Waste from land clearing, grubbing and excavation activities may be used as clean fill; however, it should not be reused as clean structural fill. The PADEP Management of Fill policy allows for use of some types C&D waste. (See Section 4 Fill Management)

ASBESTOS-CONTAINING WASTE

Asbestos-containing waste generated from demolition and restoration activities are considered a municipal waste but subject to residual waste regulations with additional special handling requirements. Section 3.6 of this publication provides regulatory guidelines for the management of asbestos-containing wastes.

CONTAMINATED SOIL

Contaminated soil is regulated under the PADEP Management of Fill Policy (MoFP). Soils impacted by evidence of releases are subject to PADEP's Management of Fill Policy and may be characterized as clean fill, regulated fill, or waste, based upon the concentration levels of regulated substances tested. Materials identified as regulated fill are still considered waste and must be managed in accordance with the PADEP Municipal or Residual Waste regulations. Regulated fill must be beneficially used under General Permit WMGR096 if the materials and the proposed activities for the fill meet the conditions of the permit. See PennDOT Publication 281, Section 5.1 for further details and procedures for regulated fill management. See Section 3.2 for additional information.

2.3.3 RESIDUAL WASTE GENERATOR CATEGORIES

This guidance is applicable to all PennDOT facilities that generate residual waste. Generators of residual waste in Pennsylvania are grouped into two categories according to the rate at which the facility generates residual waste and how much it accumulates on-site, as defined in 25 Pa. Code 287. The two residual waste generator categories and requirements are Small Quantity Residual Waste Generator and Large Quantity Residual Waste Generator as shown in the table below.

Residual waste excluded from the count towards these generator categories include:

- Waste from the collection of parts, machinery, vehicles, appliances and used oil and used antifreeze from the repair or replacement of the parts, machinery, vehicles, appliances.
- Waste created from a spill, release, fire, accident or other unplanned event.
 - (Contaminated soil does not count towards the generator category.)

Requirements	Small Quantity Residual Waste Generator (SQRWG)	Large Quantity Residual Waste Generator (LQRWG)
Monthly Generation Limit	≤2,200 pounds average generated per month	>2,200 pounds average generated per month
Accumulation Time Limit	One year	One year
Recordkeeping	Generator is required to maintain records of the types and amounts of residual waste generated, the dates waste was generated and disposed of for 5 years Records on transporters and disposal facilities (name, address, telephone numbers) must be maintained for 5 years [25 Pa. Code 287.55]	Generator is required to maintain records of the types and amounts of residual waste generated, the dates waste was generated and disposed of for 5 years Records on transporters and disposal facilities (name, address, telephone numbers) must be maintained for 5 years [25 Pa. Code 287.55]
Reporting	None	Biennial Reports and Source Reduction Strategy are required to be filed with PADEP for each waste stream generating in average or more than 2,200 lbs. of residual waste per month [25 Pa. Code 287.51]

2.3.4 RESIDUAL WASTE MANAGEMENT AND LABELING

Residual wastes must be stored in containers that:

- can be easily handled for collection
- are rust and corrosion resistant
- are designed to prevent leaks
- are clearly labeled: RESIDUAL WASTE, or as the specific type of residual waste.

Residual wastes storage piles (such as millings) shall be designed to:

- prevent dispersal of the waste by wind or water
- be stored separated (by 4 feet) from the seasonal high water table
- include berms around storage area to prevent run-on or runoff.

NOTE: Some non-industrial establishments, such as PennDOT, may generate “residual waste-like” materials (e.g., waste paint filters, etc.) and may be tempted to classify such wastes as “municipal” waste because the source is not an “industrial” establishment. However, PADEP considers that any municipal, commercial or institutional establishment which generates significant quantities of residual waste-like materials (e.g. empty raw material containers, rags, filters, etc.) is viewed as analogous to being an industrial establishment operation, and the wastes generated from this operation must be managed as a residual waste.

2.3.5 RESIDUAL WASTE RECORDKEEPING

Records shall be maintained in sufficient detail to clearly show that wastes are being stored for less than 1 year unless the specific residual waste (e.g. Millings determined to be subject to coproduct determination) has been identified by PADEP to be stored for more than 1 year.

If the facility cannot sufficiently demonstrate storage is less than 1 year (or 2 construction seasons for millings subject to coproduct determination), PADEP presumes the facility is operating a residual waste disposal facility.

2.3.6 RESIDUAL WASTE DISPOSAL

All PennDOT facilities and operations generating residual wastes must ensure that the wastes are shipped to and disposed of in an appropriate permitted residual or municipal waste disposal facility, whether this is done directly through PennDOT personnel or through a contractor. Most municipal landfills in Pennsylvania are permitted to accept municipal wastes only and are required to apply for a permit modification from the PADEP to dispose of residual wastes by completing the PADEP Form U and Form 25R. The generator is responsible for submitting Form U and 25R. Forms and instructions are provided in Appendix D (Pennsylvania Residual Waste Disposal and Reporting Forms).

The Source Reduction Strategy (SRS) is a reporting requirement for LQGs and details hazardous and residual waste categories and source reduction strategies employed by PennDOT. If it becomes necessary to prepare an SRS, please contact SEMP for guidance.

2.3.7 TRANSPORTATION OF RESIDUAL/MUNICIPAL WASTE

Typically, the contractor is responsible for handling transportation of residual and municipal wastes from a construction site. Vehicles that transport municipal or residual wastes (>17,000 lbs.) to processing or disposal facilities in Pennsylvania are required to have an active **Act 90 Authorization Sticker**, as required under Act 90 – Waste Transportation Safety Program. The disposal facilities have the authority to reject waste if the

transporter does not have valid Act 90 Sticker and signage. Application forms and instructions can be downloaded from PADEP's website at www.dep.state.pa.us, Keyword "DEP Permits."

Vehicles transporting municipal/residual waste must do the following:

1. Display proper signage
 - a. A sign that includes the name and business address of the vehicle owner. This address must include the city, state, and zip code. Districts should use the address where the vehicle is principally parked.
 - b. The sign must include the specific type of solid waste that is being transported. Mixed municipal and residual waste shall be designated: Municipal/Residual Waste.
 - c. The sign shall have lettering that is 6 inches in height. The required information shall be clearly visible and easily readable.
 - d. The sign may be permanent or detachable. It is suggested that magnetic signs be purchased for Department vehicles.
2. Transporters shall clean vehicles and equipment, and properly handle the wash water.
3. Transporters shall have safety equipment and have a contingency plan for emergencies and accidental releases.
4. The transporter must maintain an operational record for each day that residual waste is transported.

REGULATION REFERENCE:

25 Pa. Code 299.211-299.221

2.3.8 BENEFICIAL USE PROGRAM

The Beneficial Use Program was developed by PADEP with the intent to enhance opportunities for waste reclamation and energy recovery. Under the Beneficial Use Program, PADEP has issued general permits for the beneficial use of municipal and residual waste. Additionally, PADEP provides guidance on permitting and compliance monitoring of municipal and residual waste beneficial use facilities.

Recycling is encouraged by PADEP. Some materials, including some residual wastes, are excluded from the definition of waste when they can be shown to be recycled by being:

Used or reused as ingredients in an industrial process to make a product or employed in a particular function or application as an effective substitute for commercial product, provided the materials are not being reclaimed. Some sourced materials that contain reused ingredients are line painting beads using recycled glass, or utility line bedding with glass cullet in the aggregate.

Coproducts. A material generated by a manufacturing or production process, or a spent material, of a physical character and chemical composition that is consistently equivalent to the physical character and chemical composition of an intentionally manufactured product or produced raw material, if the use of the material presents no greater threat of harm to human health and the environment than the use of the product or raw material. Recycled Asphalt Pavement (RAP) is an example of this.

Material that is returned to the original process from which they are generated, without first being reclaimed or land disposed. The material shall be returned as a substitute for feedstock materials. When

the original process to which the material is returned is a secondary process, the materials shall be managed so that there is no placement on the land and the secondary process takes place on-site. Hot mix asphalt is one example.

This guidance is not intended to provide information on all applicable regulatory requirements but is intended to be a reference tool for PennDOT personnel to assist them to appropriately manage and dispose of Residual Wastes created from PennDOT Project Delivery sites throughout the Commonwealth. If more specific information is needed, District personnel may contact the Strategic Environmental Management Program (SEMP), or the appropriate regulatory agency.

REGULATION REFERENCE:

25 Pa. Codes §287-299

2.4 HAZARDOUS WASTE MANAGEMENT

2.4.1 HAZARDOUS WASTE GENERATOR CATEGORIES

If a PennDOT project generates any hazardous waste in a calendar year, the hazardous wastes must be properly managed to ensure environmental compliance. Compliance requirements vary based on the volume of hazardous waste generated. All facilities must determine what generator category they qualify for. The three steps to make this determination are:

1. Determine which wastes generated are hazardous, and which are non-hazardous;
2. Calculate the maximum quantity of hazardous waste generated per calendar month; and;
3. Determine the maximum quantity of all hazardous waste planned or expected to have on site at any one time.

Compare your quantities and expected storage times with the information provided in Appendix E (Hazardous Waste Generator Requirements) to determine if your facility is one of the following:

- Large Quantity Generator (LQG)
- Small Quantity Generator (SQG)
- Very Small Quantity Generator (VSQG)

2.4.2 OBTAINING A HAZARDOUS WASTE EPA IDENTIFICATION NUMBER

VSQG, SQG, and LQG of hazardous waste must file a Notification of Regulated Activity form to obtain an EPA Hazardous Waste ID number. Utilize EPA Form 8700-12, "Notification of RCRA Subtitle C Activity," to apply for the EPA ID #. SQG and LQG must re-notify EPA using EPA Form 8700-12.

- SQG – must re-notify starting 2021 and every four years thereafter.
- LQG – must re-notify by March 1 of each even-numbered year. The re-notification may be submitted as part of the Biennial Report.

Although the EPA Notification form requires information on the generator category (VSQG, SQG, LQG) EPA also recognized that some sites generate hazardous wastes as a result of a temporary event that is not related to normal production processes and provides an additional classification of **Short-Term Generator**.

For Project Delivery sites, when completing the Notification of Regulated Activity form, in addition to identifying the site as a VSQG, SQG or LQG, should also **select YES for being a Short-term generator**. An alternative is to apply for a Temporary Generator ID# as identified below.

Temporary Generator status may be obtained for projects that generate hazardous waste for a very short duration, e.g. for spill cleanups or one-time hazardous waste shipments. A Temporary Generator ID# may be obtained from the DEP Reporting and Fee Collection office at 717-783-9258. DEP has the option to renew this ID number after it expires at the end of 90 days.

2.4.3 HAZARDOUS WASTE GENERATOR REQUIREMENTS

Hazardous waste generators (LQG and SQG) regulated under RCRA must:

- Identify and count waste
- Obtain EPA ID number
- Comply with accumulation and storage requirements (including requirements for training, contingency planning, and emergency arrangements)
- Prepare waste for transportation
- Track the shipment and receipt of such waste
- Meet recordkeeping and reporting requirements.

VSQGs must:

- Obtain an EPA ID#
- Prepare waste for transportation
- Maintain waste records
- MAY consolidate waste in accordance with rules implemented in 2017. (See section

The full details of the hazardous waste generator regulatory requirements are provided in **Appendix E** (Hazardous Waste Generator Requirements).

NOTE: VSQG's are not subject to most generator requirements applicable to LQGs and SQGs, but they must identify their hazardous waste, comply with storage limit requirements, and ensure waste treatment or disposal.

2.4.4 HAZARDOUS WASTE MANAGEMENT AND LABELING

STORAGE AND ACCUMULATION

Storage is the holding of waste for a temporary period of time prior to the waste being treated, disposed of, or stored elsewhere. Storage and accumulation of hazardous waste on-site must be conducted within Department of Transportation approved containers according to RCRA Pre-Transport requirements [40 CFR 262.30].

- VSQGs storing hazardous waste may only do so for 180 days.
- SQGs storing hazardous wastes may only do so in tanks and containers for less than 180 days unless the waste is in a satellite accumulation area. If SQGs wish to accumulate waste in containment buildings or on drip pads, they must meet the LQG standards.
- LQGs may store hazardous waste in containers, tanks, and containment buildings for less than 90 days.

Prior to consolidation of a facility's waste accumulation area, a generator is allowed to accumulate hazardous waste at or near the point where it is initially generated and collected during daily operations, also referred to as the **satellite accumulation area**. A generator:

- May accumulate up to 55 gallons of hazardous waste or 1 quart of acute hazardous waste at each satellite accumulation area, and
- Must have the satellite accumulation area under the control of the person operating the process that generates the waste

- Must label and maintain the container in good condition
- Must, when the 55-gallon limit is reached, move the hazardous waste within three (3) days to the central accumulation area or it must be shipped off-site.

The waste accumulation time period starts when waste is first placed in or on the empty accumulation unit (container or tank). For LQGs, hazardous waste can be accumulated up to 90 days before shipment off-site, while SQGs can accumulate hazardous waste up to 180 days.

CONTAINERS

Containers must be kept in good condition. Containers that are deteriorating (e.g., cracked, rusted, or leaking) cannot be used. Waste stored in defective containers must be transferred to containers in good condition or managed in another type of container. To ensure that containers are being managed properly, facilities must visually inspect container storage areas at least weekly for leaking or deteriorating containers. Containers holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.

STORAGE TANKS

Tanks are stationary devices constructed of non-earthen materials used to store or treat hazardous waste. Tanks can be open-topped or completely enclosed and are constructed of a wide variety of materials including steel, plastic, fiberglass, and concrete. Tanks that store hazardous waste are regulated under RCRA Subtitle C requirements [40 CFR 265.190-265.202]. Requirements for storage, tank/waste compatibility, spill prevention, inspection, and closure are specified therein. Tanks storing ignitable or reactive waste must have the waste treated so that the waste does not meet the definition of ignitable or reactive.

LABELING

Hazardous wastes need to be labeled from the start of accumulation while stored on-site. Labels must include the words "**Hazardous Waste**", the hazards of the contents of the containers, and the start date of accumulation. The label for the hazards of the contents can be an OSHA hazard statement or pictogram, NFPA chemical hazard label, or RCRA characteristics (i.e. D001 ignitable). A Hazardous Waste label is preferred when labeling hazardous waste while on site.

MANIFESTING

As noted in Section 2.4.2, a Project Delivery site should notify the EPA of the hazardous waste activity and obtain a Short-Term Generator EPA ID Number or a Temporary Generator ID# depending on the circumstances. When hazardous wastes are shipped for disposal a manifest must be used. Additionally, it is forbidden to offer hazardous waste to any transporter and Treatment, Storage and Disposal Facility (TSDF) that does not have an EPA ID number.

- Use the Uniform Hazardous Waste Manifest (Form 8700-12). A sample form is provided in **Appendix F** (Hazardous Waste Disposal and Reporting Forms).
- Ensure that each party that handles the waste signs the manifest and retains a copy for themselves.
- Ensure that the facility that receives the waste returns a signed copy of the manifest to the generator which confirms that the waste has been received by the designated facility.

RECORDKEEPING AND REPORTING

The generator is required to keep copies of:

- All manifests (original and copy signed by disposal facility should be attached)
- Manifest exception reports as described below
- Biennial Report (LQGs only)

- Ensure that the PennDOT signatory has completed hazardous waste General Awareness training within the last 3 years, in accordance with 49 CFR 172 Subpart H.
- Waste determinations and any waste analyses supporting the waste determinations for a period of three years.

NOTE: At the completion of the project, all waste disposal records are to be kept indefinitely.

Manifest exception reporting: The RCRA regulations ensure that the transport of hazardous waste from its point of generation to its point of treatment, storage, or disposal is documented through the manifest system. The designated disposal facility is required to return a signed and dated copy of the manifest to the generator in order to acknowledge receipt of the waste.

If a generator has not received the manifest copy acknowledging receipt of the hazardous waste, additional steps are required to be taken in order to locate the waste.

- SQGs who do not receive confirmation of the delivery within **60 days** (counting from the day the initial transporter pickup of the hazardous waste) must submit a legible copy of the manifest to the EPA Regional Administrator. **The submission to EPA need only be a handwritten or typed note on the manifest itself, or on an attached sheet of paper, stating that the return copy was not received.**
- LQGs who do not receive a signed and dated copy of the manifest from the designated facility within **45 days** (from the date on which the initial transporter accepted the waste), must submit an exception report to the EPA Regional Administrator. **The exception report must describe the efforts made to locate the waste and the results of those efforts.**

REGULATION REFERENCE:

25 Pa. Code §260a – 270a

40 CFR 260, 261 and 262

2.5 UNIVERSAL WASTE MANAGEMENT

2.5.1 UNIVERSAL WASTE DEFINITION

Universal wastes are a subset of hazardous waste, but because they are generated by a large number of businesses in relatively small quantities, EPA issued the universal waste category. EPA also established this waste classification to promote recycling of these select categories. PADEP has incorporated the EPA rules for management of universal waste into 25 Pa. Code 266b.

The universal wastes are defined in the federal and state regulations and apply to four types of wastes:

- Batteries
- Lamps (fluorescent bulbs)
- Mercury-containing devices
- Pesticides

It is PennDOT's policy to **recycle all universal waste streams**. Universal waste handlers are prohibited from treating universal wastes without becoming subject to additional requirements as a destination facility (recycling or treatment facility). A list of fluorescent bulb recyclers is provided in **Appendix G** (Fluorescent

Bulb Recycling Vendors). Note that the material contained in this appendix may change over time; a recommended website for more up to date information is also provided in Appendix G.

Project Delivery sites will most likely generate very little universal wastes and will be subject to the regulations of a Small Quantity Handler of Universal Waste (SQHUW). An SQHUW accumulates less than 5000 kg (11,000 lb.) on site at any one time.

NOTE: Even if universal waste materials are recycled, they are still identified as universal waste.

REGULATION REFERENCE:

25 Pa. Code §266b

40 CFR 273

2.5.2 UNIVERSAL WASTE EXAMPLES

Universal waste batteries include:

- Nickel-cadmium
- Lithium ion
- Mercuric oxide
- Silver oxide

Pesticides:

- Used and unused excess pesticides
- Contaminated rinse water from empty containers

Mercury-containing equipment examples include:

- Electric relays or switches
- Thermostats
- Thermometers
- Thermocouples
- Gauges
- Barometers, hygrometers, and hydrometers
- Other devices containing elemental mercury

NOTE: Metallic mercury that has been spilled, along with cleanup materials and residues is not managed as universal waste, but rather as a hazardous waste.

LAMPS

According to the EPA, a **lamp**, also referred to as “universal waste lamp”, is defined as the bulb or tube portion of an electric lighting device. Universal waste electric lamps include, but are not limited to:

- Fluorescent bulbs
- High-intensity discharge bulbs

- Neon, mercury vapor, or high-pressure sodium bulbs
- Metal halide bulbs

Crushed or broken bulbs can release mercury into the air and expose employees to mercury inhalation.

NOTE: It is PennDOT's policy that all fluorescent bulbs will be recycled, including the newer green-capped, more environmentally friendly bulbs.

2.5.3 UNIVERSAL WASTE MANAGEMENT AND LABELING

A small quantity handler of universal waste may accumulate universal waste for no longer than one year from the date the universal waste is generated or received from another handler. The management and labeling for each of the four types of universal wastes is provided below.

BATTERIES

Manage the universal waste batteries in the following manner:

- Store waste batteries that have no cracks in a designated area indoors or protected by the elements.
- Battery Storage Area should be curbed (to provide secondary containment), non-reactive, and have an impermeable surface. Do not store in an area with a floor drain unless a battery storage container is used.
- Inspect regularly for cracks and leaks.
- Segregate used batteries from non-compatible material and waste.
- Place the batteries in a container marked or labeled with the earliest date that any universal waste in the container became a waste, or date the individual battery.
- Label used batteries (i.e. each battery) or container with any one of the following phrases:
 - **Universal Waste - Battery(ies)**
 - **Waste Battery(ies)**
 - **Used Battery(ies)**
- Recycle used batteries within ninety (90) days (recommended). Keep used batteries on-site no longer than one year, if more frequent recycling is not possible.

If a waste battery shows signs of **leaking, is cracked or damaged** immediately place damaged battery in acid-resistant, leak-proof, closed container; a five-gallon plastic pail or bucket with top is adequate. Contain and collect any spills with absorbent material, following proper safety procedures. **Spill waste** must be disposed of as a **hazardous waste unless the battery recycler accepts the waste.**

LAMPS

Manage the universal waste lamps in the following manner:

- Store used lamps in a designated storage area, in original boxes, in boxes of similar size, or in pre-paid recycling boxes. Do not break or crush lamps.
- Place lamps fully inside boxes with lids closed and placed in a manner to minimize breakage.
- The lamp storage containers must be marked or labeled with the date that the first lamp was placed in the empty container.
- Label used lamps storage containers with one of the following phrases:
 - **Universal Waste - Lamp(s)**
 - **Waste Lamp(s)**
 - **Used Lamp(s)**
- Dispose of used lamps using a reputable recycler.

If there is a breakage, immediately collect the contents to minimize release of potentially hazardous ingredients (mercury and other) and store in a closed, structurally sound compatible and properly labeled container. Broken bulbs must be managed as hazardous waste.

MERCURY-CONTAINING DEVICES

Manage the universal waste mercury-containing devices such as **thermostats, switches, thermometers, relays, manometers, barometers, thermocouples, and gauges** in the following manner:

- Store used waste mercury-containing equipment (items) in a closed, structurally sound container compatible with the contents of the equipment
- Place the device in a container marked or labeled with the earliest date that any universal waste in the container became a waste or was received.
- Label used waste mercury-containing equipment containers with anyone of the following phrases:
 - **Universal Waste - Mercury-Containing Device(s)**
 - **Waste Mercury-Containing Device(s)**
 - **Used Mercury-Containing Device(s)**

If mercury-containing items break, store the broken pieces in a sealed container. Place a hazardous waste label on the sealed container. In addition, label the container with a clear description of the waste—"Broken Thermostats," for example.

Mercury thermostats may be labeled, stored and managed separately. Label all containers that contain mercury thermostats or ampules removed from the thermostats with **UNIVERSAL WASTE-MERCURY THERMOSTAT(S)**.

PESTICIDES

Manage discarded pesticides in the following manner:

- Store waste pesticides in a closed, structurally sound container compatible with the pesticide or in an over-pack drum. Containers are to be stored on containment, protected from the elements, and away from flammable materials.
- Place the discarded pesticides in a container marked or labeled with the earliest date that any pesticide became a waste or was received.
- Label waste pesticides clearly with one of the phrases if the original label that was on or accompanied the product as sold or distributed is illegible:
 - **UNIVERSAL WASTE – PESTICIDE(S)**
 - **WASTE –PESTICIDE(S)**

The Pennsylvania Department of Agriculture (PDA) manages a waste pesticide collection program, called PDA Chemsweep Program, designated to provide free disposal to old, unusable or unwanted pesticide products. To participate in the program contact the regional PDA Regional office. For listings of the nearest offices consult the Pennsylvania Department of Agriculture website. The PDA also provides a free plastic pesticide container recycling program. Only Clean-rinsed #2 HDPE containers including drums up to 55 gallons are eligible for this program.

2.5.4 RECORDKEEPING AND REPORTING

Keep records of the quantity of universal wastes generated and disposed in order to:

- Be able to determine universal waste generator status,
- To demonstrate that universal waste is not stored longer than one year except if solely for the purpose of

accumulation of such quantities of universal waste as necessary to facilitate proper recovery, treatment, or disposal,

- Demonstrate that employees who handle or have responsibility for managing universal waste are **informed** of the proper handling and emergency procedures appropriate to the type(s) of universal waste handled at the facility.

REGULATION REFERENCE:

25 Pa. Code §266b

40 CFR 273

2.6 RECYCLING POLICIES

2.6.1 RECYCLING DIRECTIVE

The Commonwealth of Pennsylvania Governor's Office Management Directive establishes policy, responsibilities, and procedures for commonwealth agency recycling, waste reduction and procurement of environmentally preferable products. Project Delivery, in designing and executing projects, should adhere to the hierarchy of Reduce, Reuse, Recycle.

2.6.2 RECYCLABLE MATERIALS IN ROAD PROJECTS

Broadly, there are three types of recyclable materials involved in road projects:

- Recycled materials that are purchased for the project. Examples include crumb rubber asphalt and glass cullet for utility line bedding.
- Materials that are recovered for use within the project such as RAP. Other reuse opportunities may become available in the future, following the successful completion of pilot projects and the development of specifications.
- Materials that are recovered for use outside of the project. Examples include millings, large rock, and guiderail & impact attenuators.

2.6.3 NEW PRODUCT DEVELOPMENT

The New Product Development Section at the Materials & Testing Lab evaluates new products for use in PennDOT construction projects. Prospective suppliers may request PennDOT evaluation of proposed new products by following the application procedures outlined in instructions at http://www.dot.state.pa.us/public/pdf/BOCM_MTD_LAB/eCAMMS/npets.pdf. Once approved, a prequalified product is listed in the Bulletin 15 (Publication 35) section that corresponds to the applicable Publication 408 specifications section.

3.0 PROJECT WASTE

3.1 BACKGROUND AND ROLES

3.1.1 ANTICIPATED PROJECT WASTE

By their nature, transportation improvement projects must address a variety of waste types that are encountered during construction activities. Waste materials such as contaminated soil and groundwater, storage tanks, asbestos-containing materials and lead-based paint are identified during the environmental due diligence process and are usually identified and addressed in a Waste Management Plan, contract special provisions, and in many cases a construction-phase site work plan. The District may choose to forgo the Waste Management Plan and site work plan for routine, easily-managed wastes that may be adequately addressed in contract special provisions.

Other types of anticipated project wastes are generated by the contractor during normal construction activities. Small amounts of operational wastes for which the contractor is routinely responsible, such as empty product containers, Universal Waste, and wastes generated by the maintenance and cleaning of equipment, need not be identified in the Waste Management Plan, contract special provisions, or Site Work Plan. Larger amounts of construction wastes that require special handling should be identified and addressed in the contract special provisions and/or site work plan, as appropriate. Concrete slurry generated by the saw cutting, grinding or hydro blasting of roadway or bridge concrete (see section 6.2.5) is one example of this type of waste.

It is the responsibility of the PennDOT Project Manager or PennDOT Construction Inspector to oversee the project contractor(s) management of anticipated wastes in accordance with the Waste Management Plan, contract provisions and/or site work plan.

3.1.2 UN-ANTICIPATED PROJECT WASTE

During the course of a project, there may be unexpected discoveries or an incident that results in wastes that were not known and planned for. These unknown wastes may be discovered in soil or groundwater during construction, typically through visual evidence of a release (oil residue or sheen), associated odors emanating from impacted soil or groundwater, or the presence of buried debris, tanks or otherwise unidentified material that was not identified in the Environmental Site Assessment report(s), Waste Management Plan, contract special provisions or Site Work Plan.

In the event that unknown wastes are discovered during the project, it is the responsibility of the PennDOT Project Manager or PennDOT Construction Inspector to promptly halt work in order to evaluate the contaminants encountered. This is critical to ensure worker health and safety once construction continues in the area or to establish if separate remediation of the impacted material in the construction pathway must be conducted using trained personnel prior to resuming construction. PennDOT and its contractors must coordinate efforts to make a proper waste determination. Once the type of waste is identified, there are proper handling, containment/storage and disposal requirements for these excess materials.

3.2 CONTAMINATED SOIL

In most cases, the nature and extent of contaminated soil is investigated during the Design phase in accordance with the environmental due diligence procedures of Publication 281, the Waste Site Evaluation Procedures Handbook. Contaminated soil and groundwater management is performed in accordance with construction contract special provisions, and if contamination is extensive, a Site Work Plan developed by the construction contractor in accordance with special provisions and a design-phase waste management plan.

As with fill, the management and disposal of contaminated soil and groundwater is the responsibility of the construction contractor. Contaminated soil management and disposal must follow residual or hazardous waste procedures, as appropriate, that are described in Sections 6.0 and 4.0 of this publication, respectively.

The following are several contaminated soil management tips:

- If sample results were collected during Design phase more than one year ago, check with the landfill to see if the test results are acceptable.
- If heavily contaminated soil is to be stockpiled in a Temporary Construction Easement (TCE), place the contaminated soil stockpile on a liner, and consider performing baseline sampling of TCE soil beforehand to guard against later site contamination claims by the TCE property owner.
- The project erosion and sediment (E&S) control plan should include provisions to prevent uncontrolled sediment migration from contaminated soil stockpiles.
- Contaminated soil that classifies as a hazardous waste is uncommon. High levels of lead are usually

responsible for causing contaminated soil to fail Toxicity Characteristic Leaching Procedure (TCLP). Soil that is characteristically hazardous for lead (D008) can be rendered non-hazardous through lime stabilization, allowing disposal of lead-contaminated soil as residual rather than hazardous waste at less than half the disposal cost. However, at least 6-12 months of advance planning is usually required, and there must be sufficient room in the project area to mix lime into the contaminated soil stockpile.

3.3 CONTAMINATED GROUNDWATER

3.3.1 PRE-CONSTRUCTION PHASE PLANNING

Highway construction projects may encounter contaminated groundwater where excavations are sufficiently deep to encounter groundwater. The only excavations that commonly encounter groundwater are those for foundations or other structural support elements. Understanding groundwater quality when it is encountered is important for two primary reasons. The first is worker health and safety. Construction workers involved with excavation activities may be exposed to contaminants. The second reason is that excavation dewatering fluids impacted by contaminated groundwater often require treatment or disposal.

The likelihood of encountering contaminated groundwater during excavation activities is normally addressed during the Design phase in accordance with Publication 281 waste site assessment procedures. In most cases, excavation fluids suspected of contamination must be contained and tested prior to disposal. Test parameters will depend on the contaminants of concern and the selected disposal method.

As part of the planning phase for a PennDOT project, considerations for the disposal of contaminated water should include:

- Anticipated fluid volume;
- Proximity to a stream, especially for large or long-duration excavation;
- Dewatering and treatment duration

ANTICIPATED FLUID VOLUME

- Off-site disposal – along with discharge to municipal sewer, usually the best option for fluid volumes less than 3,500 – 5,000 gallons, depending on disposal price per gallon.
- On-site treatment and discharge – often the most cost-effective option for fluid volumes greater than 5,000 gallons.

DEWATERING AND TREATMENT DURATION

- Two months or more – a National Pollutant Discharge Elimination System (NPDES) permit is required.
- One month or less – a DEP approval letter is required; a permit is not required. DEP turnaround time for the approval request is normally 2-3 weeks. Often a 2-3 page letter describing the activities including referencing the project's E&S control plan is sufficient for the approval.
- 1-2 months – contact the appropriate DEP regional office for guidance.

3.3.2 DISPOSAL

The following methods are commonly used for the disposal of contaminated dewatering fluids:

- **Off-site disposal** – for fluid volumes less than 5,000 gallons, it is typically the most cost-effective to containerize and dispose of contaminated fluids at a permitted off-site treatment facility (depending on disposal price per gallon). Any floating petroleum product that is present should be removed from excavation pit water for separate disposal.

- o See Pub 611 Sections 2.3 and 2.4 for residual waste and hazardous waste disposal requirements.
 - o The disposal facility will require test parameters consistent with the facility's operating permit.
 - o The facility must be permitted to accept the contaminated fluids being offered by the PennDOT contractor.
 - o Regulatory compliance by the Transporter is the responsibility of the Contractor.
- **On-site treatment and discharge** – typically, fluids are pumped into a frac tank to settle sediments out, run through a heavy metal and/or activated carbon treatment unit, then discharged to a stormwater system, surface water body, or municipal sewer.
 - o A PAG-03 permit is required for discharge durations of 2 months or more. If the larger construction project requires an individual NPDES permit, it may be possible to include treated water discharge in the individual permit.
 - o For a discharge duration of one month or less, DEP letter approval is required. Though not an NPDES permit, DEP usually requires at least two rounds of effluent testing.
 - o For a discharge duration of 1-2 months, some DEP regions prefer the use of the PAG-03 permit, whereas others prefer letter approval followed by renewal if the discharge lasts longer than one month. Contact the appropriate DEP regional office for guidance.
 - **On-site microfiltration and discharge** – in the vicinity of historic leaded gasoline UST release sites, groundwater test results sometimes show contamination for total lead but not for dissolved metals. Standard E&S control measures such as filter socks will not remove suspended lead contamination, and microfiltration may be necessary to meet water quality criteria for discharge. Tip: the frequency of microfiltration bag change-out will be greatly reduced if water is allowed to settle in a frac tank (or other container) overnight. The settled material in the vessel will have to be appropriately addressed once dewatering activities are completed.

As a finer-mesh version of the standard E&S filter bag, PennDOT does not consider microfiltration to be a type of treatment specifically requiring DEP approval or NPDES permitting. The need for microfiltration of dewatering fluids should be mentioned in the project E&S control plan, however.

NOTE: Groundwater disposal methods may generate contaminated frac tank solids requiring disposal as solid waste, once the dewatering activities are completed.

3.3.3 CONTRACTOR AGREEMENTS

The construction-phase Site Work Plan should specify the following:

- Contaminants of concern
- Test parameters
- Estimated volume of contaminated water that will require disposal
- The selected disposal method, which should be the most cost-effective method for the volume of fluids requiring disposal
- The contractor will be responsible for preparing waste disposal documents, and for all regulatory permits, certifications, licenses, and approvals. PennDOT will usually be required to sign some of the documents. PennDOT will be provided with fully executed disposal proofs such as bills of lading, hazardous waste manifests, etc.

Laboratory analytical parameters should be limited to the contaminants of concern and whatever test parameters are required by DEP and the disposal facility.

3.4 TANKS

Aboveground storage tanks (ASTs) and underground storage tanks (USTs) may be encountered during

highway construction projects. ASTs, by virtue of their definition, are visible as they are located aboveground and may be addressed early in the construction process (clearing/grubbing), thereby minimizing impact on the construction schedule. USTs are commonly encountered during excavation activities associated with construction and are thus more disruptive to the schedule of the roadway project.

3.4.1 UNDERGROUND STORAGE TANKS

Upon encountering an underground storage tank (UST) all activity around the UST should be halted to avoid damaging the UST or causing a release of its contents. Proceed with the following:

- The UST and surrounding area should be secured to avoid movement of the tank while a certified UST closure consultant/contractor is engaged to evaluate the situation.
- If necessary, arrange to have tested, as directed by the UST closure consultant/contractor, any liquid or sludge found in the underground tank prior to its removal to determine if it contains hazardous substances.
- Prior to commencing tank removal operations, obtain the required underground storage tank removal permits and approvals from the Federal, state, and local agencies, which have jurisdiction over such work.
- Empty the UST of any liquids or flowable sludge with a vacuum truck or other vacuum system and dispose of the contents at an appropriate permitted facility.
- Remove the UST from the ground and stage on plastic cover unless it is loaded immediately for transport to a recycling facility.
- Following the tank removal, the consultant should collect soil samples in accordance with Pub 694 using DEP's Systematic Random Sampling procedure.
- The underground storage tank, any liquid and/or sludge found within the tank, and all contaminated substances and hazardous substances removed during the tank removal shall be transported to disposal facilities permitted to accept such waste under manifest/bill of lading.

3.4.2 ABOVEGROUND STORAGE TANKS

When an aboveground storage tank (AST) is encountered, determine if it contains any liquids and conduct a cursory investigation of the tank in order to determine the type of liquid within the AST. Proceed with the following steps:

- Have any liquid in the AST removed and disposed of at a disposal facility permitted to receive such liquid wastes.
- If necessary, collect a sample of the liquid to be submitted to a certified laboratory to identify its composition prior to evacuation and disposal of the liquid.
- Once empty, clean the interior of the AST with absorbent material and recycle the steel tank at an approved recycling facility.

3.5 MILLINGS

3.5.1 OVERVIEW OF MILLINGS AND REUSE

Millings generated roadway work may be reused in creating Recycled Asphalt Pavement (RAP). PADEP has issued an Industry-Wide Coproduct determination for the use of RAP. The coproduct determination covers both:

- RAP; and
- Mixtures of RAP and clean fill from the milling of the edge of roadway during shoulder widening work, provided that the mixture is still usable as RAP.

A millings-soil mixture that cannot be reused either as RAP or for shoulder backup is considered residual waste.

The PADEP definition of Coproduct is a material generated by a manufacturing or production process, or a spent material, of a physical character and chemical composition that is consistently equivalent to the physical character and chemical composition of an intentionally manufactured product or produced raw material, if the use of the material presents no greater threat of harm to human health and the environment than the use of the product or raw material.

To meet PADEP's Coproduct Determination, RAP must meet the following definition:

"Material, typically less than one inch in size, consisting of asphalt pavement and inorganic (soil and rock) materials produced by the mechanical grinding of bituminous pavement surfaces that have not been impacted from spills or mixed with other solid waste."

3.5.2 COPRODUCT DETERMINATION

PADEP has approved the use of RAP, including mixtures of RAP and clean fill from the milling of the edge of roadway shoulders, as a coproduct for the specific uses listed as follows:

- As an aggregate, a subgrade or a sub-base material for roadway construction, when used alone or blended with other materials in a manner that complies with Department of Transportation specifications as outlined in Publication No. 408 for roadway construction directly beneath and contained by a road surface paved with Portland cement concrete or bituminous pavement.
- As a construction material for compacted roadway shoulder applications, including compacted shoulder pothole patching material in roadway or driveway apron applications as long as the material is covered with a thin bituminous coating (sealer) prior to the end of the construction season that placement occurred. The bituminous coating must comply with Department of Transportation specifications as outlined in Publication No. 408.
- As a construction material for compacted shoulder backup applications (the compacted area adjacent to the shoulder).
- As a construction material to construct or repave needed roadway or vehicle use areas such as parking lots or driveways if such application is performed when the RAP contains enough asphalt or additional binder to keep the material in place after compaction by mechanized rolling.
- As a hot or cold mix product meeting applicable industry hot or cold mix product specifications.

The coproduct determination rules do not allow for the storage of millings for potential reuse in RAP for longer than two (2) construction seasons. Therefore, prior to the project starting, careful consideration should be given to identifying a non-PennDOT facility that can appropriately utilize the millings for RAP.

Construction site contracts may vary with regard to identifying responsibility for RAP. Some contracts require the contractor to take ownership of RAP, and some contracts instruct the contractor to turn over the RAP to PennDOT. When it is turned over to PennDOT, it is typically delivered to a nearby maintenance facility. If RAP is turned over to PennDOT, it is PennDOT's responsibility to ensure that the RAP can be used within 2 seasons.

3.5.3 RAP / SOIL MIXTURES

RAP containing soil may be used as a construction material for compacted shoulder backup applications (the compacted area adjacent to the shoulder). If this use is unavailable, or the mixture does not meet use specifications, then disposal of the RAP/soil mixture as a residual waste is required.

3.5.4 HANDLING REQUIREMENTS RELATED TO RAP

Although RAP and mixtures of RAP and clean fill have been granted a coproduct determination, it shall be managed according to the conditions specified as follows. The use of RAP includes its transportation, placement, and storage incidental to use.

- In a manner that complies with the Solid Waste Management Act, the Air Pollution Control Act (35 P. S. §§ 4001–4015), The Clean Streams Law (35 P. S. §§ 691.1—691.1001), 25 Pa. Code Part I, Subpart D, Article IX (relating to residual waste management) and any other applicable environmental laws and regulations promulgated thereunder;
- **In a manner that does not involve storage of RAP for more than TWO (2) construction seasons prior to use.**
- In a manner that does not create a nuisance or is harmful or presents a threat of harm to the public health, safety or the environment.
- In a manner that prevents wind and water dispersal.

NOTE: Stormwater seepage from RAP stockpiles has been observed to possess an oily sheen in some instances. Care must be taken to prevent RAP stockpile runoff from entering stormwater channels or reaching surface water bodies or wetlands.

3.5.5 RAP RECYCLING / REUSE RECORDKEEPING

STORAGE RECORDKEEPING

The project manager must maintain documentation to demonstrate that RAP is not stored on site for more than 2 construction seasons. Minimum information to be maintained is:

- The quantity of RAP generated
- The date it is generated
- The amount recycled on the job site
- The amount shipped to an outside contractor/recycling facility

At the completion of a project, RAP should not be left on site.

TRANSPORTATION RECORDKEEPING

RAP is considered a residual waste. If it is transported by PennDOT the vehicle must be registered as a waste transported with PADEP. Additionally, an operational record for each day that residual waste is collected and/or transported must be kept in the cab of each registered vehicle and include:

- The types or classifications of residual waste transported.
- The weight or volume of the types of wastes transported.
- The name, mailing address, telephone number, county, and state of each generator of transported waste.
- The name and location of a transfer facility that has received, or will receive, the material. (If a transporter other than PennDOT delivers the material to contractor/facility who will utilize the RAP).
- The name and location of the solid waste processing or disposal facility where the waste will be ultimately disposed or processed.

- A description of handling problems or emergency disposal activities.
- The license plate number of the trailer transporting the waste if applicable.

NOTE: Records must be retained for at least 5 years.

3.6 ASBESTOS-CONTAINING MATERIALS

3.6.1 BACKGROUND AND APPLICABILITY

This guidance is intended to be a quick reference tool for PennDOT Project Delivery project managers to assist them understanding the necessary measures required for asbestos-related projects, as established by the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations.

Asbestos-containing materials (ACM) are subject to specific federal regulatory requirements related to notifications, work practices, waste disposal and recordkeeping. Detailed definitions of the classification of ACM is provided in Section 3.6.2.

This guidance generally is applicable for bridge demolition/renovation projects where the presence of regulated asbestos-containing materials (RACM) is documented and where ACM is suspected as identified by the Bridge Management System (BMS), in accordance with PennDOT's NESHAP inspection program.

REGULATION REFERENCE:

40 CFR Part 61

3.6.2 CLASSIFICATION OF ASBESTOS MATERIALS

Friable asbestos-containing material (ACM) is defined by the Asbestos NESHAP as any material containing more than one percent (1%) * asbestos that, when dry, *can* be crumbled, pulverized, or reduced to powder by hand pressure.

Nonfriable ACM is any material containing more than one percent (1%) * asbestos that, when dry, *cannot* be crumbled, pulverized, or reduced to powder by hand pressure. EPA also defines two categories of nonfriable ACM, Category I and Category II

- Category I nonfriable ACM is any asbestos-containing packing, gasket, resilient floor covering, or asphalt roofing product which contains more than one percent (1%) * asbestos.
- Category II nonfriable ACM is any material, excluding Category I nonfriable ACM, containing more than one percent (1%) * asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

***Determination of the percent of asbestos in ACM** is normally determined using polarized light microscopy (PLM) according to the method specified in 40 CFR Part 763, Subpart E. A suspect material with any asbestos detections using PLM analysis is considered to be ACM unless re-analysis using PLM Point Count or Transmission Electron Microscopy (TEM) demonstrates its asbestos content to be less than or equal to 1%.

Non-Friable Organically Bound (NOB) asbestos-containing materials contain an opaque organic binder that may interfere with PLM analysis. For laboratory analysis, it is strongly recommended that PLM analysis of suspect NOB ACM should be preceded by sample preparation using procedures specified in New York State Department of Health Item 198.6, Sections 4.1 through 4.4, colloquially known as "PLM NOB." Rebuttal of

PLM NOB detections to demonstrate an asbestos content of less than or equal to 1%, if desired, requires re-analysis using TEM rather than PLM Point-Count NOB.

Commonly encountered NOB suspect materials include asphaltic roofing materials, vinyl floor tiles, and bituminous expansion joint spacers, crack sealers, and utility wraps, especially those manufactured before 1980.

Regulated Asbestos-Containing Material (RACM) is (a) friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

For detailed guidance and examples refer to EPA's website / Asbestos-Containing Materials <https://www.epa.gov/large-scale-residential-demolition/asbestos-containing-materials-acm-and-demolition>

3.6.3 INSPECTIONS

PA DEPARTMENT OF LABOR AND INDUSTRIES CERTIFIED INSPECTORS

Certified inspectors may be found in the District Right-of-Way or Environmental Units. The Strategic Environmental Management Program staff of the Bureau of Maintenance and Operations also include certified asbestos inspectors and are available for inspections.

Additionally, if these resources are not available, Districts may use certified inspectors from environmental and design consultants, or the Agency-wide Remediation Services contract.

NOTE: The City of Philadelphia requires asbestos inspections to be performed by a city-certified asbestos investigator.

3.6.4 MOBILE HOMES AND TRAILERS

For PennDOT construction projects that plan to properly dispose of mobile homes or structures intact, NESHAP requirements do not apply. Mobile homes and mobile trailers are regulated facilities under NESHAP and require inspection and abatement. Mobile homes or mobile trailers are considered single residential structures (residences). The exception to this requirement is when a PennDOT construction project involves the demolition of only a **single** mobile home or mobile trailer. Demolition of **two or more** mobile homes or trailers within the same project limits are regulated under NESHAP and require inspections and notifications, as described in more detail in USEPA letter provided in **Appendix H** (Special Handling Waste Forms).

However, if PennDOT utilizes the option to remove the mobile home or trailer **intact** and **dispose properly** (i.e. through sale or direct disposal at an ACM approved disposal facility), a NESHAP inspection and abatement are not required.

3.6.5 NOTIFICATIONS

The USEPA has agreed to allow PennDOT's bridge demolition/renovation project notifications to be performed through a Consolidated Annual Notification to satisfy the NESHAP notification requirements. A formal notification to the appropriate regulatory agencies is required if the project let date changes or the project is inadvertently left off the Annual Notification list. The re-notification must follow the required NESHAP notification requirements, as specified below. This re-notification may be made a special provision of the project contract.

Additionally, in accordance with PennDOT's NESHAP systematic approach, all bridges identified as List B bridges are not covered under the Consolidated Annual Notification and must make the required NESHAP notification, as these bridges are "suspected" of containing regulated ACM due to the presence of utilities on the structure and/or that they span railroad tracks.

Re-notifications (or notifications not satisfied through the Annual Consolidation Notification program) must be submitted to all appropriate agencies by mailing a completed PADEP Asbestos Abatement and Demolition/Renovation Form (Form 270-FM-AQ0021) with one original signature within 10 working days (including holidays) before commencement of the demolition, renovation, or abatement work.

Information related to the Asbestos Abatement and Demolition/Renovation Form and the instructions are provided as Appendix H. <http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-9101>

For projects in all areas except Allegheny County and the City of Philadelphia, this notification and subsequent revisions (one original signature only, no fax or copies) must be submitted to the following address:

REGULAR MAIL

ASBESTOS NOTIFICATION
DEP BUREAU OF AIR QUALITY
PO BOX 8468
HARRISBURG, PA 17105-8468

OVERNIGHT/EXPRESS MAIL/HAND DELIVERY

ASBESTOS NOTIFICATION
DEP BUREAU OF AIR QUALITY
400 MARKET STREET
HARRISBURG, PA 17101

If the project qualifies as a **NESHAP regulated asbestos project** (asbestos renovations and all demolition projects that meet the > 260 linear feet on pipes or 160 square feet on other facility components), the notification form must be submitted within 10 working days of the start of the project to US EPA Region III, address follows:

ASBESTOS NESHAP COORDINATOR (3WC32)
US EPA REGION III
ASBESTOS SECTION
1650 ARCH STREET
PHILADELPHIA, PA 19103

For projects in Allegheny County only, the notification form in two copies (one original signature) must be submitted within 10 working days of the proposed project start date directly to the following address: A copy of the facility inspection survey must be included for all demolition projects.

ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM
BUILDING 7
301 39TH STREET
PITTSBURGH, PA 15201-1891
ATTN: ASBESTOS ABATEMENT PERMITTING

For Major, Minor asbestos projects in the City of Philadelphia, this notification form must be submitted to the following address.

Minor asbestos projects in the City of Philadelphia, defined as involving more than 12 square feet, but less than 80 square feet and more than or equal to 3 linear feet but less than 40 linear feet of piping), notification to

the City of Philadelphia (see above address) must be submitted within **5 calendar days** prior to the proposed start date of project. Workplace preparation and abatement procedures described in Section VII of the City of Philadelphia Asbestos Control Regulations must be followed for a minor asbestos project. **No permits are required.**

Major asbestos projects in the City of Philadelphia, defined as involving 80 square feet or 40 or more linear feet or 35 cubic feet of friable ACM, a permit application must be submitted within 10 calendar days prior to the start of the project to the Department of Licenses and Inspections. Workplace preparation and abatement procedures described in Section VI of the City of Philadelphia Asbestos Control Regulations must be followed for a major asbestos project. **Permits are required (see next section).**

The City of Philadelphia requires three copies (one original signature) for either a minor or major project. Do not send these documents directly to PADEP. A copy of the facility inspection survey must be included for all demolition projects.

CITY OF PHILADELPHIA
DEPARTMENT OF PUBLIC HEALTH
AIR MANAGEMENT SERVICES
ASBESTOS CONTROL UNIT, 3RD FLOOR
321 UNIVERSITY AVENUE
PHILADELPHIA, PA 19104-4597

3.6.6 ASBESTOS PERMITS

Asbestos permits may be required for projects in Allegheny County and City of Philadelphia.

ALLEGHENY COUNTY PERMITS

Permits are required for asbestos projects involving more than 260 linear feet or 160 square feet of any ACM (Allegheny County treats all ACM as friable). Permit application must be submitted at least 10 working days prior to the proposed start date and permit application must be approved prior to the start of the project. Send two copies of Permit Forms to:

ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM
BUILDING 7
301 39TH STREET
PITTSBURGH, PA 15201-1891
ATTN: ASBESTOS ABATEMENT PERMITTING

CITY OF PHILADELPHIA PERMITS

For **Major Projects**, defined as involving 80 square feet or 40 or more linear feet of friable ACM, a permit application must be submitted within 10 calendar days prior to the start of the project to the Department of Licenses and Inspections. Approval of permit application by the Department of Public Health must be obtained prior to the proposed start date of project. An Asbestos Inspection Report is required to be submitted with the permit application, prepared by a certified Asbestos Investigator. Send two copies of Permit Forms to:

CITY OF PHILADELPHIA
DEPARTMENT OF PUBLIC HEALTH
AIR MANAGEMENT SERVICES
ASBESTOS CONTROL UNIT
321 UNIVERSITY AVENUE
PHILADELPHIA, PA 19104-4597

For **Minor Projects**, defined as involving more than 12 square feet, but less than 80 square feet and more than or equal to 3 linear feet but less than 40 linear feet of piping), notification (hard copy) to the City of Philadelphia must be submitted (address noted above) only. No permits are required.

3.6.7 ASBESTOS DEMOLITION AND WASTE DISPOSAL

Waste generated as a result of asbestos abatement is divided into the following categories;

- **Non-friable, non-regulated ACM**, which is not required to be removed prior to demolition or renovation activities. All debris may be disposed of as municipal C&D waste.
- **Friable ACM that meet the NESHAP threshold quantities** (> 260 linear feet on pipes or > 160 square feet on other components) is regulated and must be disposed of:
 - o In a leak-tight container while wet,
 - o Labeled, and
 - o Disposed of properly in a landfill qualified to receive asbestos waste. Landfills have special requirements for handling and securing the asbestos-containing waste to prevent releases of asbestos into the air.
 - o Transportation vehicles that move the waste from the point of generation to the asbestos landfill have special labeling requirements and waste shipment recordkeeping requirements.
- **Friable ACM under the NESHAP threshold quantities** does not need to be abated according to NESHAP; *however*, the solid waste management act and OSHA regulations still apply. If the friable ACM is not abated prior to demolition/ renovation, all debris commingled with the friable ACM must be disposed of as residual asbestos-containing waste.
- **The city of Philadelphia** requires all asbestos building material, friable or non-friable that could be rendered friable by demolition, to be removed prior to demolition. There are no threshold limits set below which friable ACM is unregulated.

3.6.8 RECORD KEEPING

Project Delivery, as an asbestos waste generator, must meet the NESHAP requirements for record keeping. As a waste generator, you must:

- Retain copies of all Waste Shipment Records (WSR), including WSRs signed by the owner or operator of the waste disposal site where the waste was deposited, for at least 2 years.
- Keep the WSRs in chronological order in a secure, water-tight file.
- Provide copies of WSR's upon request of the responsible agency and to make the WSR file available for inspection during normal business hours.

For other recordkeeping requirements, see PennDOT Records Management Policy in reference to PennDOT's record retention requirements.

3.7 LEAD-BASED PAINT

3.7.1 BACKGROUND AND DEFINITION

Lead-based paint waste is generated when paint is blasted from bridges. Recyclable steel shot blast abrasive is typically used. Lead-based paint waste from shot blasting activities must be managed as a hazardous waste, per Department policy, regardless of the Toxicity Characteristic Leaching Procedure (TCLP) test results.

3.7.2 LEAD-BASED PAINT REMOVAL

In accordance with PennDOT Pub, there are important steps for the planning and preparation for lead-based paint removal.

- Containment systems are required to control, below harmful levels, exposures of dust, lead, and other toxic metals that may be present in the paint being removed. The design and use of a containment system should control project emissions for the protection of the workers, public, and environment (Refer to PennDOT Standard Special Provision c10751)
- Monitoring of project emissions during paint removal or repair is required. Requirements include: monitoring fugitive air emissions and releases, conducting ambient air monitoring, and developing an environmental compliance plan. [Refer to PennDOT Standard Special Provision b10791, *Section 1079, Environmental Protection*, which may be accessed using the Construction Projects dropdown box in ECMS]

3.7.3 MANAGEMENT OF LEAD-BASED PAINT WASTE

In order to ensure compliance with regulations and Department policy, manage the waste as follows:

- Establish a waste handling plan that addresses the proper handling and disposal of the waste from a paint removal operation.
- Ensure transporters of the waste meet regulatory requirements and maintain documentation as noted in Sections 2.3.6 and 2.4.4.
- Dispose of spent abrasive waste (paint chips) from lead-based paint bridge removal projects as hazardous waste.
- Dispose of paint chips from non-lead based paint bridge removal operations as residual waste.
- Segregate different spent abrasive waste streams to minimize cross-contamination.
- Utilize DOT approved containers for the hazardous wastes generated.
- Provide containers for non-hazardous municipal/construction waste that are free of loose debris when brought on site.
- Retain recycling/disposal records according to PennDOT's Records Management Policy.

3.8 LAND CLEARING, GRUBBING and EXCAVATION WASTE

3.8.1 CLEARING, GRUBBING AND EXCAVATION DEFINITION

Land clearing, grubbing, and excavation (LCGE) operations may be conducted in an environmentally responsible manner if proper management methods are practiced. LCGE waste is classified as a municipal waste; however, it may be reused as clean fill or as a soil amendment if it is managed properly. LCGE waste should never be reused as structural fill under MoFP because it is decomposable. PADEP has prepared a manual for the management of waste from land clearing, grubbing, and excavation, including trees, brush, stumps and vegetative material which identifies best management practices and may approve additional best management practices on a case-by-case basis.

3.8.2 MANAGEMENT OF CLEARING, GRUBBING AND EXCAVATION WASTE

The applicable Municipal Waste regulations are found at 25 Pa. Code Section 271.101(b)(4).

Section 271.101(b)(4) requires that a person managing waste from land clearing, grubbing and excavation shall implement best management practices as outlined in a manual prepared by the Department. The PADEP document # 254-5400-001 titled "Best Management Practices (BMP) for the Management of Waste from Land Clearing, Grubbing and Excavation (LCGE)"

<http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-49033/254-5400-001.pdf> provides information helpful to Project Delivery.

The PADEP Manual includes more detailed information on the following:

- Accumulation and storage of LCGE plant materials in excess of one year constitutes disposal and would require a permit or approval from PADEP.
- LCGE plant materials must be processed (shredded, ground, chipped, etc.) prior to distribution and disposal at the site.
- LCGE materials may not be used to fill in larger-scale, low-lying areas or where future construction activities will occur.
- Mounds or a permanent pile of LCGE materials, which raise the prevailing grade of the land, may not be constructed.
- Prohibition of burning without a permit.
- Run-on and run-off controls

Refer to the Best Management Practices Manual for additional topics and details.

3.9 DEMOLITION WASTE

3.9.1 DEMOLITION WASTE DEFINITION

Construction/demolition waste is defined as the solid waste resulting from the construction or demolition of buildings and other structures, including, but not limited to, wood, plaster, metals, asphaltic substances, bricks, block and unsegregated concrete.

The term does not include the following if they are separate from other waste and are used as clean fill:

- Uncontaminated soil, rock, stone, gravel, brick and block, concrete and used asphalt; and
- Waste from land clearing, grubbing and excavation, including trees, brush, stumps and vegetative material.

REGULATION REFERENCE:

25 Pa. Code §271

PADEP Guidance:

<http://www.dep.pa.gov/Business/Land/Waste/SolidWaste/MunicipalWaste/Construction-Demolition-Waste/Pages/default.aspx>

EPA Guidance:

<https://www.epa.gov/hwgenerators/typical-wastes-generated-industry-sectors>

3.9.2 MANAGEMENT OF CONSTRUCTION AND DEMOLITION WASTE

PennDOT construction/demolition wastes are typically handled by contractors. PennDOT should monitor the contractor waste disposal practices to ensure that proper disposal practices are being employed.

In addition, every PennDOT facility or operation contemplating any project involving the demolition and/or removal of materials must determine whether any materials to be removed contain friable asbestos. See Section 3.6 for more details on regulatory requirements concerning asbestos waste.

HAZARDOUS WASTES

During the process of demolition or construction of forms, temporary staging areas or other activities associated with the project site, hazardous wastes may be generated. By-products of the demolition/construction process may be classified as hazardous waste and will need to be properly classified. Refer to **Appendix J** (Demolition and Construction Hazardous Waste Table).

SALVAGING

By definition, materials salvaged for use in their intended function are not wastes. Examples include bathroom fixtures, ceiling panels, doors, flooring, lighting fixtures, windows, etc.

Source separated recyclable materials are also not wastes. For construction, renovation and demolition activities, this includes cardboard, glass, metals, paper, and plastics.

MANAGEMENT AS CLEAN FILL – See Fill Management Section 4.0

The **use of uncontaminated** soil, rock, stone, gravel, brick and block, concrete and used asphalt as clean fill does not require a permit, unless the fill activities are anticipated to have an impact on the environment, such as in areas involving streams or wetlands.

The **use of waste from land clearing, grubbing and excavation**, (LCGE) including trees, brush, stumps, and vegetative material as clean fill does not require a permit; however, careful management of the materials is needed. On-site utilization of processed LCGE plant materials is strongly encouraged by PADEP. Additional information on the on-site management of these materials can be found in the following PADEP documents.

- Best Management Practices for the Management of Waste from Land Clearing, Grubbing, and Excavation (PDF) 254-5400-001
<http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-49033/254-5400-001.pdf>
- Use of Waste from Land Clearing, Grubbing and Excavation (LCGE) and the Use of Concrete or Other Clean Fill Materials Containing Protruding Rebar or Other Metal as Clean Fill
<http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-49222/254-2000-715.pdf>

NOTE: Accumulation and storage of LCGE materials in excess of one year constitutes disposal and would require a permit under PADEP municipal waste regulations.

3.10 MISCELLANEOUS DEBRIS

3.10.1 OVERVIEW

Even with pre-construction due diligence, it is difficult to predict what might be found at a project site. The more likely materials that may be found or uncovered at a project site are identified below with important information to consider when addressing the items.

3.10.2 WASTE DRUMS & PAILS

If drums and pails are properly emptied of residue, they can be disposed of as residual waste. The definition of “empty” depends on the type of residue that was in the container.

Containers with residues of acute hazardous waste, (defined in 40 CFR 261.31 and 261.33(e)), containers are empty if:

- The container is triple rinsed, or
- The inner liner of the container is removed, or

- The container has been cleaned by another method shown by scientific literature or tests conducted by the generator

Containers with residues of hazardous waste are empty if:

- All wastes have been removed that can be removed by common practices, and
- Less than 1 inch of material left, or
- Less than 3 percent by weight remains in the container IF the container is \leq 119 gallons in size.

Containers that held a compressed gas are empty when the pressure in the container approaches atmospheric.

Key issues are:

- Empty drums as much as possible by pouring, pumping, and scraping in order to remove as much of the remaining material, as possible.
- Dried paint or paint sludge is not likely to be hazardous waste unless it is lead or chromium-based paint. Use Safety Data Sheets (SDSs) on the product to make determination, or alternatively have it tested for characterization. If hazardous, it must be managed in full accordance with hazardous waste regulations.
- Do not dispose of any empty drums/containers with free liquids in the trash.

3.10.3 WASTE LIQUIDS

When a product is considered excess or outdated and the intent is to discard the product, use the Safety Data Sheets (SDSs) to determine if it contains hazardous substances that would classify the 'discarded' product as a hazardous waste. Safety Data Sheets can be accessed through PennDOT's intranet site. PADEP specifically lists certain commercial chemical products, when discarded to be classified as hazardous waste. However, if the product is recycled, it will not be considered a waste and will not be regulated as per the hazardous waste regulations.

Key issues are:

- If a chemical is disposed of as a waste, check the SDS for instructions. If labels have remained on the product and it is unopened, disposal can usually be done without testing. If the product has been opened or product identification has been lost, then the chemical would be considered an unknown and have to be tested.
- Seal product container to minimize potential for spills or releases. If hazardous, label appropriately and store in hazardous waste storage area.

3.10.4 RECYCLABLE MATERIALS

Statewide recycling in Pennsylvania began in 1988 with the Municipal Waste Planning Recycling and Waste Reduction Act (Act 101).

Plastic, scrap metal, and tires are commonly generated recyclable materials that may be generated at a Project Delivery job site and should be recycled. As part of setting up the work site and making waste disposal arrangements, the opportunities and potential recycling locations should be identified. PADEP provides a Recycling Markets Search Database to assist Pennsylvania companies, institutions, organizations, and individuals locate outlets for various recyclable materials:

http://www.ahs.dep.pa.gov/Recycle_Markets/search.aspx

3.10.5 TRASH / LITTER

A wide range of trash items may be found discarded on a project site. If items are discovered during the

project work that were not identified during the pre-construction phase, cleanup of the materials should be done. The removal of the trash should proceed with caution.

Key issues are:

- Safety of personnel handling trash/litter
- Containers with liquids
- Identifying hazardous materials
 - o Needles/Syringes
 - o Hazardous waste/substances
- Separating trash – separate municipal, residual and recyclables

3.10.6 ELECTRONIC WASTES

Many consumer electronic products contain heavy metals such as lead, cadmium, and mercury, as well as other materials that are to be kept out of the environment.

The Covered Device Recycling Act (Act 108 of 2010), or CDRA, a Pennsylvania state law passed in November 2010, addresses the recycling and disposal of certain “covered” electronic devices in Pennsylvania.

“Covered Devices” include:

- desktop and laptop computers,
- monitors,
- computer peripherals,
- tablets,
- televisions,
- E-readers that have a browser and internet connectivity.

All of these devices are required to be properly recycled, treated as hazardous waste, or tested (EACH device) for proper hazardous waste classification. PADEP posts on its website and makes available via its toll-free recycling hotline (800-346-4242) an up-to-date list of all covered device collection opportunities offered to consumers, including those offered by manufacturers and retailers. The PADEP link to Electronics Collection Programs is:

<http://www.dep.pa.gov/Business/Land/Waste/Recycling/Electronics/Pages/ElectronicsCollectionPrograms.aspx>

3.10.7 INFECTIOUS OR CHEMOTHERAPEUTIC WASTE (ICW)

During a construction project, infectious or chemotherapeutic waste may be discovered if it was dumped or was previously abandoned on site. The following guidelines apply for handling infectious or chemotherapeutic waste generated from spill cleanup or abandonment scenarios:

- PennDOT Project Manager or designated representative must contact PADEP (Central or Regional Office) to obtain approval for transporting and disposing of ICW waste to an approved residual or municipal waste handling facility. See **Appendix B** for PADEP contacts.
- EPA Form 2540-FM-BWM0240, also referred to as the ICW Form, must be filled out to accompany the shipment of waste. A special note must be made in the ICW Form, Block 24, indicating the ICW waste was

generated from a spill emergency and not by PennDOT, along with citing 25 Pa. Code 284.632(c). (See **Appendix H** Special Handling Waste Forms)

- Use a licensed ICW transporter to transport the waste to an approved disposal facility and provide a copy of the ICW Form to the licensed ICW transporter to ensure proper disposal.

If a licensed ICW transporter is not used to transport waste:

- Utilize a PennDOT vehicle that has an Act 90 registration sticker. (Note, unless special approval is provided by PADEP, under residual regulations, the disposal facility should only accept waste from a valid Act 90 registered vehicle (Waste Transportation Safety Program registration sticker transporter).

3.10.8 UNEXPECTED WASTE

During the project excavation, a variety of materials may be exposed that were not previously identified during the pre-construction planning. The materials may be anything from discarded common household items to hazardous waste drums or tanks. When buried materials are encountered it is the responsibility of the Project Manager to:

- Stop work
- Project Management should develop a plan for addressing the materials. This may include:
 - o Adjusting the rate/tools of excavation
 - o Involving a qualified contractor experienced in hazardous material handling in the event that hazardous materials are exposed.
 - Classifying the materials in accordance with Section 2 of this Pub document
 - o Arranging for waste disposal
 - o Developing a health and safety plan

PennDOT employees are instructed to avoid exposure to unknown, potentially hazardous materials. Examples of these situations include: discovery of buried drums or USTs, soil-like materials with a strong odor or odd appearance, closed waste containers with unknown contents, and possible illegal drug manufacturing waste.

NOTIFICATIONS

If unexpected materials are identified on the Project Delivery site:

- Contact the site Project Manager and District Environmental Manager.
- PADEP should be notified if the materials are regulated.
- Clearly explain and document that the materials were not generated by PennDOT but were found on the job site.
- Utilize the same notification form identified in Section 6 (Appendix K Construction Projects Spill Notification Form).

4.0 FILL MANAGEMENT

4.1 BACKGROUND AND ROLES

DEP's Management of Fill Policy (MoFP) (**Appendix I** PADEP Management of Fill Policy) and the Land Recycling and Environmental Remediation Standards Act (Act 2) both regulate the reuse of fill following excavation. The regulation of construction site fill depends upon whether the fill will remain within the right-of-way (ROW), or will be exported for off-site reuse.

- Fill that is exported from the ROW for off-site reuse, or imported into the ROW as borrow fill, is regulated by DEP's MoFP. An exception is mine reclamation fill, which is regulated under DEP mining program regulations and guidance.
- Characterization of fill that is reused on-site is regulated by the Land Recycling and Environmental Remediation Standards Act 2. This includes fill that is moved to a Temporary Construction Easement, but whose final placement remains within the ROW.

Compliance with MoFP and Act 2 only satisfies waste management requirements. Additional water quality requirements apply to erosion and sedimentation (E&S) control, and to placement in surface water bodies, wetlands, and floodplains. Regulatory and policy requirements are provided in Design Manual 2 (Publication 13M), and related engineering guidance is addressed in PennDOT's Drainage Manual (Publication 584).

Publication 281 provides the process that PennDOT uses to satisfy MoFP environmental due diligence requirements. Management of Fill Policy divides fill into three categories:

- Clean Fill
- Regulated Fill
- Historic Fill

4.2 CLEAN FILL

Clean Fill is defined as fill that is uncontaminated, non-water-soluble, non-decomposable inert solid material, and includes soil, rock, stone, dredged material, used asphalt [not millings], and brick, block or concrete from construction activities that separate from other waste. Clean Fill contaminant levels cannot exceed values found in MoFP tables FP-1a and FP-1b.

Water-soluble examples – soil containing large amounts of salt or fertilizer.

Decomposable examples – clearing and grubbing waste should not be used as structural fill, but may be chipped, mulched, composted, etc. for agricultural use.

Reactive example – acid-forming rock is addressed in PennDOT's Geotechnical Engineering Manual (Publication 293).

Notes:

- **Historic Fill, as identified in Section 4.4, and fill showing an odor nuisance is ineligible for Clean Fill status.**
- **Staining from normal vehicular use does not disqualify used asphalt from Clean Fill or Regulated Fill status.**

4.3 REGULATED FILL

Regulated Fill is a type of residual waste, and is defined as soil, rock, stone, dredge material, used asphalt, Historic Fill, and brick, block or concrete from construction and demolition activities that is separate from other waste and has been affected by a spill or release of a regulated substance (including comingling with a waste). The import or export of Regulated Fill for reuse under MoFP is performed in compliance with Regulated Fill General Permit WMGR096, and contaminant levels cannot exceed values found in WMGR096 tables GP-1a and GP-1b.

4.4 HISTORIC FILL

Historic Fill, as defined by MoFP, is material used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as wood or coal ash, incinerator ash, and slag, excluding iron or steel slag managed as a coproduct or under a beneficial use permit, and coal ash reused beneficially under DEP regulations.

There is no clear DEP guidance concerning the amount of waste in soil required for Historic Fill status, but a good rule of thumb is that there must be enough waste to show up in a geotechnical boring log description. As always, the receiving property owner is entitled to make the final decision concerning fill status.

4.5 ACT 2 GUIDANCE

Act 2 contaminant concentration limits, a.k.a. Medium-Specific Concentrations, or MSCs, are applicable to the reuse of excavated fill on-site when the fill has been impacted by a spill or release. Act 2 MSCs are provided in a series of tables in Act 2 regulations, and are grouped by exposure pathways:

- Direct Contact MSCs, as the name implies, address soil exposure via dermal contact, ingestion, and inhalation. The Direct Contact exposure pathway is not applicable (i.e. is eliminated) when engineering controls will be maintained to bury fill under pavement or 2 feet of clean cover soil.
- Soil-to-Groundwater MSCs address the leaching of soil contamination into groundwater. This exposure pathway may be eliminated by encapsulation of contaminated fill under an impermeable surface. Alternatively, leachability testing of fill using Synthetic Precipitation Leaching Procedure (SPLP) can be used to replace MSC values for individual samples.
- For each exposure pathway, there are separate MSC values for residential and non-residential settings. Most PennDOT ROWs are non-residential in nature, but a residential exposure setting may be applicable to projects such as rails-to-trails.

REGULATION REFERENCE:

**25 Pa. Code §250
PADEP Guidance:**

**Act 2 Medium-Specific Concentrations
are found in the above referenced
regulations:**

**Appendix A Table 3 - MSCs for Organics
Appendix A Table 4 – MSCs for Inorganics**

4.6 NATURALLY OCCURRING CONTAMINANTS

Soil may contain naturally occurring levels of certain heavy metals in excess of DEP regulatory standards. Specifically, nearly all soil exceeds an Act 2 vanadium soil standard, and on occasion soil is known to exceed Act 2 standards for strontium, cadmium, or one of the trace elements. Under present MoFP guidance, soil occasionally exceeds MoFP Clean Fill standards for cobalt, arsenic, and, in the Pittsburgh area, boron.

Under DEP policy, DEP does not consider fill that is unaffected by a spill or release to be ineligible for management as Clean Fill. DEP only requires that naturally contaminated fill should be reused in a location with similar levels of the metals of concern. However, elevated levels of metals carry a stigma that may lead a property owner to refuse to accept the affected Clean Fill.

There are several strategies to limit the impact of naturally contaminated fill on the project:

- Test fill only for the contaminants of concern. Testing of petroleum-impacted soil for metals should be limited to lead in most cases. Soil suspected of heavy metals contamination should at most be tested for Priority Pollutant metals or the similar “RCRA 8” metals list. **Under no circumstances should soil be tested for Target Analyte List (TAL) metals without the approval of the District or SEMP Section.**
- Under some circumstances, the Investigator or Construction Contractor may be compelled to test soil for TAL metals, and elevated levels of naturally occurring metals are found. Alternately, Priority Pollutant metals analysis may show arsenic above Clean Fill standards. If the property owner is not likely to accept the fill, one option is to demonstrate Clean Fill status is to perform leachate testing of soil using the Synthetic Precipitation Leaching Procedure, SW-846 Test Method 1312, in accordance with MoFP Appendix A. This works well for arsenic and cobalt, but the contractor will need to balance the added cost against disposal cost savings. The PennDOT project manager is encouraged to explore this option for large volumes of soil, e.g. more than 1000 CY. Important points:
 - For on-site reuse, SPLP is a permissible option for addressing Act 2 exceedances.
 - For any contaminant exceedances, SPLP retesting is no guarantee of success. In particular, SPLP may not work well for lead exceedances.
 - On a sample-by-sample basis, run SPLP analysis only for those metals exceeding Clean Fill standards. Of particular concern, it has been shown that soil can fail SPLP for lead even when total lead levels are far below Clean Fill standards.

4.7 OTHER FILL MANAGEMENT STRATEGIES

- For on-site reuse of lightly contaminated fill that exceeds Act 2 standards, pay attention to which Act 2 standards are exceeded, and develop an appropriate mitigation strategy. Direct Contact exceedances can be addressed using engineering controls such as 2 feet of clean cover fill, or a pavement cap, both of which must be maintained. Soils exceeding Act 2 Soil-to-Groundwater standards usually require landfill disposal once excavated, but with marginal exceedances, DEP might be willing to approve on-site encapsulation within impermeable materials. DEP might also allow contaminated soil to be reburied on-site in locations where fill will be re-contaminated, for example by contaminated groundwater migrating from an adjacent 3rd party UST corrective action site.
- Otherwise clean fill showing an odor nuisance can be buried under pavement or 2 feet of cover soil to eliminate the odor nuisance.
- Where relatively uncontaminated Historic Fill is to be excavated, avoid landfill disposal costs by reusing as much Historic Fill as possible on-site, and sending Clean Fill off-site for reuse instead.
- During excavation, segregate known Regulated Fill and waste from Clean Fill, and from suspect fill that may or may not be Clean Fill.
- Where the TCE is too small to provide adequate stockpiling room for excavated soil, conduct MoFP fill characterization in situ before commencing excavation activities and include any additional test parameters required by the receiving property owner or landfill. This will allow soil or waste fill to be directly loaded into trucks for disposal, thereby minimizing the need for stockpiling in the TCE.
- Where acid-forming materials may affect the replacement of a subgrade concrete structure (such as a bridge), the District Environmental Unit should coordinate with the District Geotechnical Unit, in order to ensure that testing of fill includes analytical parameters specified in Chapter 10 of Publication 293, the Geotechnical Engineering Manual. Special formulations are required for concrete that will be in contact with soil or water with low pH or high sulfate.

4.8 NON-COAL RECLAMATION FILL

Fill materials from PennDOT projects may be able to be used as reclamation fill at active non-coal sites. PADEP may permit the use of the fill materials by the noncoal site operator if the fill material qualifies as Reclamation Fill in accordance with PADEP guidance. The guidance, Use of Reclamation Fill at Active Noncoal Sites Document # 563-2000-301 describes:

- The standard criteria for approving reclamation fill at an active non-coal site
- What material is appropriate
- For which sites it can be used
- How it can be used

<http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-110130/563-2000-301.pdf>

4.9 SLAGCRETE AND SLAG AGGREGATE

Pre-2007 slag aggregate and concrete containing slag (“slagcrete”) are considered a type of residual waste and are typically managed as historic fill as part of the project. Uncontaminated slag aggregate and slagcrete containing Current Generation Slag (CGS), with no other residual or hazardous waste, is exempt from residual waste status. As provided in Act 7 of 2018, CGS is defined as uncontaminated iron or steelmaking slag generated on or after January 1, 2007 that has been sold and reused as a commodity and has not been comingled with residual or hazardous waste.

5.0 SPILL MANAGEMENT

5.1 BACKGROUND

This section provides guidance on properly managing wastes generated from spills or emergencies at PennDOT facilities and PennDOT right-of-ways. PADEP must be contacted in most spill incidences, whether they occur at PennDOT facilities or PennDOT right-of-ways. Three major laws require PADEP to be notified of a spill or release of material to the environment:

- PA Clean Streams Law- Regulations require that when any pollutant is discharged into surface or groundwater, including sewers, drains, and ditches, the person spilling the substance or person owning the premises from which the substance is spilled must notify the PADEP immediately.
- Solid Waste Act - Requires the generator or the transporter to notify the PADEP immediately if there is a spill of hazardous waste that affects surface water or groundwater, regardless of the amount. If there is no effect on water, quantities spilled in excess of a reportable quantity (5-gallons as noted below) must be reported.
- PA Storage Tank Act - Requires releases from underground and aboveground storage tanks be reported to the PADEP by the owner/operator.

Some examples of accidental release events might include:

- Equipment hydraulic line break or drip
- Spill of fuel while refilling small equipment fuel tanks
- Release of liquids or solids from job site raw materials in stored containers

- Release of municipal or residual wastes due to waste storage containers being knocked over
- Inappropriate cleaning of equipment resulting in contaminated wash water discharge

Some spills and resultant waste from the cleanup of these spills may result in hazardous conditions that should be handled only by emergency response trained personnel. PennDOT maintenance personnel are not trained in containment and cleanup of hazardous material spills, nor should they attempt to manage the cleanup.

5.2 SPILL RESPONSE AND REPORTING REQUIREMENTS

5.2.1 SPILL OR RELEASE RESPONSE

Numerous federal and state regulations specify extensive requirements for the prevention of spills and leaks of hazardous substances at facilities. In addition, many federal state, and local agencies must be immediately notified of a hazardous substance release. Severe penalties and fines are often imposed for failure to notify. Spill response should be followed by spill reporting, if applicable.

The steps to be taken for spill response are:

1. Contain the spill and stabilize the situation by following the methods described in the facility's PPC Plan. Each PennDOT facility should use its facility-specific PPC plan, located on-site.
2. Notify the appropriate agencies listed in the Combined Facility Response Plan (CFRP). Notify the reporting agencies if there is a doubt of the reporting requirement. **If a report is not required, you will be so advised by agency.**

Spills/leaks cleanups that are beyond the capabilities of the County Maintenance personnel (First Responders) should be effectively contained and then turned over to the emergency spill response contractor. Use the existing District-Wide Contract for the inventory, collection, removal, and proper disposal of hazardous waste generated by the Project Delivery Contract, with provisions for emergency response (24-hour) for hazardous spill cleanup.

5.2.2 SPILL REPORTING

The person (organization/company) responsible for the discharge is required to report a release as stated in the PADEP regulations. *It is not the responsibility of the local emergency response community or emergency response contractor.* While regulations are not specific about release notifications for releases less than 5-gallon releases, it is generally accepted that reporting is required upon confirmation of the release (the interpretation of confirmation varies from visual to review of analytical data). The incident commander (reporting person) is encouraged to voluntarily report the spill and conditions in the following situations:

- All spills in excess of five (5) gallons of any hazardous substance.
- All petroleum spills of five (5) gallons or more with potential to pollute.
- Incidents involving illegal/improper disposal of any material.

WHAT GETS REPORTED?

PADEP prefers that notifications be made to the appropriate regional office – provided in **Appendix B** of this manual. PADEP also maintains a statewide toll-free telephone number to report the release (1-800-541-2050).

Callers reporting spills should be prepared to provide the following information related to the spill:

- Name, title, affiliation, address, and telephone # of person reporting discharge;

- Location of the discharge, with as much detail as PADEP requests, including:
 - o Land discharges: name of the site, street address, municipality, and county.
 - o Discharges on, under or into water: name of water body, location of discharge with reference to fixed points, and a description of the area the discharge may reach.
- Common name of the hazardous substance(s) discharged;
- An estimate of the quantity of each hazardous substance discharged;
- Date/time at which discharge began, discovered, and ended (if possible);
- Actions person proposes to take to contain, clean up and remove the hazardous substance(s) discharged;
- Name and address of any person responsible for the discharge.

RECORDS OF REPORTING A SPILL

Spill Notification Form provided as Appendix K should be used to record the call made to PADEP. A copy of the completed notification form should be placed with the Spill Plan.

5.3 HAZARDOUS MATERIALS SPILLS

Typical spill scenarios at a construction site might include:

- **Fueling areas** resulting in gasoline spill
- **Chemical storage** areas with leaking container(s) or spills during transfer of liquids
- Improper handling of **concrete washout** resulting in a spill of wastewater with $\text{pH} \geq 12.5$
- **Vehicle accident**
- **Release from damage to abandoned waste**

The following guidelines apply for handling hazardous waste generated from spill cleanup scenarios.

- Use job site Short Term EPA ID # or, if there is none, then obtain Temporary EPA ID Number.
- Use Uniform Hazardous Waste Manifest (UHWB) must be filled out to accompany the shipment of waste.
- Use emergency response contractor for transport of hazardous waste to appropriate disposal facility.

NOTE: The terms “Hazardous Material” and “Hazardous Waste” are different terms, each with a specific regulatory meaning. Hazardous Material is a waste transportation term defined under federal Hazardous Materials regulations, 49 CFR Parts 171-177, and covers a broad range of substances. Hazardous Waste is a waste management term defined in RCRA and is just one type of hazardous material while in transport.

5.4 RESIDUAL WASTE FROM SPILLS

The management of residual wastes that are generated from accidental spills or emergencies is defined in 25 Pa. Code 299.218 (residual) regulations. The regulations cover the reporting requirements to PADEP prior to disposal or processing of wastes; obtaining PADEP approval for storing or transporting the wastes; decontamination of waste-handling equipment, and management of decontamination wastewater (residual waste citation only).

PennDOT personnel handling the cleanup waste generated as a result of an accident, spill or emergency must:

- Contact the appropriate PADEP Regional office to inform them of the accidental and/or emergency spill and type of waste generated.

- Request from PADEP an emergency storage or transportation approval of the waste to prevent or mitigate harm to the public health, safety or environment. It is important to stress that this is a **“waste from emergency.”** PADEP has the authority to approve or deny this request.

If approval is **granted** by PADEP:

- Prepare bill of lading for cleanup waste. The bill of lading should clearly state **“waste from emergency.”**
- Transport emergency cleanup waste to appropriate disposal facility.
 - Use Act 90 registered vehicle, unless this requirement is waived by PADEP. If waived, make sure the disposal facility is also informed of the emergency circumstances.
 - Signs should read (as applicable):
 - **“Infectious/Chemotherapeutic Waste”**
 - **“Residual Waste”**
- Decontaminate equipment used to handle the waste, including storage containers, processing equipment, trucks, and loaders, before returning the equipment to service. Contaminated wash water, waste solutions and residues generated from washing or decontaminating equipment are deemed to be a residual waste and shall be collected and disposed or processed in compliance with applicable laws and regulations.

If approval or emergency waiver is **not granted** by PADEP:

- Prepare bills of lading for cleanup waste. The bill of lading should clearly state **“waste from emergency.”**
- Contact waste haulers and spill/or response contractors who have valid Act 90 authorization stickers.
- In addition to standard records entered in written vehicle logs that are used for transport of municipal or residual wastes (See Section 2.2 and 2.3 for details), PennDOT should also **document** the employed emergency and waste handling and disposal activities, including information on responsible parties, waste haulers/transporter, and disposal facility. This information may be needed for payment collection related to cleanup costs by third parties.

6.0 BY-PRODUCTS OF CONTRACTOR ACTIVITIES

6.1 RESPONSIBLE PARTY

Based on the pre-construction site investigations, a Work Plan has been developed for site remediation work which is incorporated in the Construction Contracts. The Construction Contracts will also include a Special Provisions section which provides a means for contractors to bid on special work that may come up during the project, such as the unexpected discovery of wastes or a spill.

Additionally, the contractors should be held responsible for the waste materials generated by their day to day activities to support the identified site remediation or special provision actions that are identified. The contractor is to be held responsible for the wastes generated by their activities. Contractors should be informed and requested to adhere to the PennDOT recycling policies and all regulatory requirements for waste disposal. The PennDOT PM should ensure that the information is provided to the contractor and the necessary recycling/waste containers are provided. Providing the appropriate containers will depend on the available waste and recycling services at the project location.

NOTE: It is imperative that NO regulated wastes (hazardous, universal, and residual) are improperly disposed of.

6.2 TYPICAL CONTRACTOR WASTES

6.2.1 TEMPORARY OFFICE WASTES

Temporary office wastes may include:

- Recyclable paper and cardboard
- “Lunchroom” type wastes
- Recyclable beverage containers (plastic or aluminum)

6.2.2 RESIDUAL WASTES

Residual wastes will be generated as by-products of the project activities. The items may be a result of maintaining equipment, empty containers from materials used in the operation of equipment or unused raw materials that the contractor should choose to discard. The contractor is the generator of these items and should be held responsible for proper disposal. These items should not be left on site for their “potential reuse”. Examples of residual wastes not otherwise discussed in further detail below include:

- Empty containers – small maintenance fluids (e.g. motor oil), 5-gallon pails, and drums (containers should have less than one inch of material in them)
- Equipment maintenance parts – hoses, filters, rags & residue from cleaning equipment
- Speedy dry and spill pads used during equipment maintenance

6.2.3 EMPTY AEROSOL CANS

Empty aerosol cans and their remaining contents must be managed appropriately. Used aerosol cans may be a hazardous waste depending on what type of material the can contain. Empty aerosol cans may be recycled or disposed of under the following conditions:

RECYCLING AS SCRAP METAL

- Used aerosol cans must no longer contain significant amounts of liquid
- Puncture and drain any liquid or aspirate can (some recyclers will only accept punctured cans)

NOTE: Liquid from draining an aerosol can must be properly collected, stored and disposed of.

- Place empty cans in a container clearly marked **EMPTY AEROSOL CANS for RECYCLING, SCRAP METAL**
- Residues collected from can puncturing and draining must be characterized and managed appropriately.

HANDLING AND DISPOSAL OF AEROSOL CANS (IF NOT RECYCLED)

Characterize the waste can based on contents – paints, thinners, and solvents are typically products which may be hazardous due to possible reactivity or ignitability of the can itself (e.g. the cans will detonate under pressure)

CANS CONTAINING OIL PRODUCTS (E.G. WD-40, SPRAY LUBRICANTS)

- Store in sealed containers
- Labeled as WASTE OIL – RESIDUAL WASTE
- Dispose within one year with a bill of lading

CANS CLASSIFIED AS HAZARDOUS WASTE

- Store in sealed containers
- Label as HAZARDOUS WASTE
- Must be disposed of within 1 year if the project site is classified as a hazardous waste VSQG, or 180 days if the site is an SQG for hazardous waste.

6.2.4 EQUIPMENT CLEANING

The Pennsylvania Clean Streams Laws states that “the discharge of sewage or industrial waste or **any substance** into the waters of this Commonwealth, which causes or contributes to pollution as herein defined or creates a danger of such pollution is hereby declared not to be a reasonable or natural use of such waters, to be against public policy and to be a public nuisance.” The definition of pollution in the Pennsylvania Clean Streams Law includes “...contamination by alteration of the physical, chemical or biological properties of such waters, or change in temperature, taste, color or odor thereof, or the discharge of any liquid, gaseous, radioactive, solid or other substances into such waters.

Oil distributor trucks and other paving equipment are typically cleaned using solvents such as citrus-based cleaners. Spent solvents must be collected for reuse or disposal, and not discharged to the ground surface. Solvents used for cleaning paving equipment should comply with the regulatory consumer product VOC limit for “bug and tar remover” found in 25 Pa. Code Chapter 130. It is PennDOT’s policy not to use diesel fuel as a tar removal solvent.

Cleaning mixers and other equipment of cement, latex and other materials used in the mixer is important to maintaining the equipment, however, the wash water cannot be discharged to the surface waters of the state. Particulate sediment, oil, and grease, caustic/corrosive materials found in concrete are all contaminants.

Contractors should be notified to clean equipment off-site whenever possible or develop an appropriate wash water collection device to prevent wash water and contaminants from entering surface or groundwater. Section 6.2.5 below discusses concrete equipment washing and references processes and guidance that can be applied to most types of equipment washing.

Note: The selection of the cleaning agent will also impact the classification of the wastewater generated and therefore the waste disposal method.

6.2.5 CONCRETE SLURRY

Concrete is a mixture of cement, water, and aggregate material. Portland cement is made by heating a mixture of limestone and clay containing oxides of calcium, aluminum, silicon and other metals in a kiln and then pulverizing the resulting clinker.

Concrete washout water (or wash water) is a slurry containing **toxic metals**. It’s also **caustic and corrosive**, having a pH near 12. Caustic wash water can harm fish gills and eyes and interfere with reproduction. The safe pH ranges for aquatic life habitats are 6.5 – 9 for freshwater.

Concrete wash water must be collected to prevent it entering surface water or groundwater. EPA has produced a guidance document identifying best management practices (BMPs) for concrete wash water. The BMPs include:

- Filter out the solids
- Reuse the filtered water

- Recycle the filtered solids
- Send wash water off-site to remove metals and reduce pH prior to discharge at a wastewater treatment plant
- Recycle hardened concrete

The EPA Guidance Document <https://www3.epa.gov/npdes/pubs/concretewashout.pdf> provides information on containers for washout, including how to build a hay bale and plastic washout pit. See **Appendix L- EPA Guidance - Concrete Washout**.

7.0 EXAMPLE PROJECT DELIVERY SCENARIOS

7.1 PETROLEUM CONTAMINATION – ENCOUNTERING UNKNOWN UNDERGROUND STORAGE TANK (UST) DURING ROAD WIDENING

During the course of a road widening project, a contractor encountered an unknown UST while excavating a utility trench. The UST was recognized when the machine operator noticed a jagged piece of metal in the trench he was excavating. Upon inspection, it was identified that part of the top of a steel UST was ripped open with one of the bucket teeth and there was liquid filling approximately half of the UST. Close inspection revealed that the tank and liquids therein had a petroleum-like odor and soil immediately surrounding the tank was stained and had a similar odor.

All work in the immediate vicinity of the UST was halted, and the construction inspector was notified of the finding. To avoid any additional damage to the UST and to prevent any additional release, the area was taped (cordoned) off and plastic was secured over the open portion of the tank to prevent anything from falling into the tank. Barricades were placed around the tank. The construction inspector notified the PM. The PM worked with the site contractor to start a plan for investigation and cleanup in accordance with Publication 408 Specifications.

The contractor's environmental consultant arrived at the site early the next morning to inspect the UST and decide what steps would need to be taken to allow construction to proceed in the area. Upon inspection, it was determined that the UST had the capacity of approximately 1,000 gallons and was about half full with an oil/water mixture. Based on the contents, the consultant contacted a contractor with a vacuum truck to come to the site and empty the contents of the tank. The consultant notified PADEP about the presence of the UST and the release.

In addition, the consultant checked the local ordinances and determined that notification to the local fire inspector was required. The inspector was contacted and informed of the discovery of the UST. The inspector requested an inspection of the tank for mid-afternoon when the tank would be out of the ground.

When the vacuum truck arrived, the operator positioned the truck close to the tank and hooked up the appropriate hoses to remove the contents of the tank. Upon removal of the liquid contents, a small amount of sludge was observed at the bottom of the tank. The contractor had a pressure washer on his work truck and proceeded to loosen up the sludge so that the vacuum truck could remove all the contents of the UST. The equipment used to clean out the UST precluded entry into the tank for final cleaning so no confined space entry was required. Once clean the vacuum truck operator and consultant prepared a waste manifest and the liquid was transported to a disposal facility permitted to accept residual petroleum liquid wastes.

An equipment operator with 40-hour OSHA training was engaged to excavate soil from adjacent to the UST in order to loosen it. Once one side of the UST was free of soil and one end was free, the operator rocked the UST back and forth to loosen the grip the surrounding soil had on the tank. Once free, the operator used the bucket

to lift the UST out of the tank grave and position the tank on plastic out of the way of the proposed utility trench. The soils removed from the excavation were also placed on plastic. The resulting excavation was approximately 12 feet long by 6 feet wide with a total depth of 7 feet.

Once the tank was removed, and secured to avoid it from moving, the consultant examined the entire tank for holes (other than those caused by the excavator). The consultant then directed the excavator operator to use the bucket to grab soil samples from along the bottom of the tank grave and utilized a photoionization detector (PID) to check for volatile compounds in the soil. No staining or significant odors were observed in the open excavation after the tank and surrounding soil was removed. The consultant identified the number of samples to be taken based on Act 2 requirements. The samples were placed in laboratory supplied glassware and stored in an ice-filled cooler for transportation to the PADEP-certified lab. The post-excavation samples collected from the tank grave were analyzed per Act 2 requirements, which are based on the contents of the tank.

Upon receipt of favorable post-excavation soil sampling results, the excavation was backfilled with quarry process to grade.

In the meantime, the local fire inspector arrived at the site and inspected the tank. Several corrosion holes were identified on the tank and the inspector issued a failed inspection sticker. Based on the observations of soils immediately surrounding the tank, a storage tank release was reported to PADEP. Arrangements were made to transport the tank to a metal recycling facility and the construction project continued after this short delay. Sampling of excavated soils was also conducted to determine whether the soil could be reused on site or required disposal at a PADEP permitted facility. All documents related to the removal of the tank, including sampling and analysis and waste disposal, were retained in the project files.

SUMMARY POINTS

- Stop construction activities in the vicinity of UST.
- Inspect UST for any liquids within the tank.
- Notify PennDOT representative of the presence of the UST.
- Cordon off area immediately surrounding UST, secure if needed, and temporarily cover to prevent anything from falling into the tank.
- Contact local authority (generally the fire inspector) about the tank for inspection if required by local ordinances.
- Arrange for environmental consultant/contractor to visit the site to inspect UST condition.
- Environmental consultant removes all fluids and sludge from the UST.
- Arrange for 40-hour (OSHA) trained operator to excavate adjacent to UST to allow removal of the UST without further damage.
- Secure the UST adjacent to roadway or transport immediately off-site to metal recycler.
- Excavate any impacted soil as directed by consultant, place on and cover with plastic for waste characterization and ultimate off-site disposal.
- Environmental consultant collects post UST removal soil samples from tank grave and from the excavated soil stockpile. Collect fluid samples from excavation if present.
- Repeat excavation and sampling process for any contaminated soil remaining in excavation.
- If excavated soil is impacted, confirm with central office that release is to be called into PADEP and whose responsibility that would be.

7.2 UNEXPECTED NON-PETROLEUM CONTAMINATION

During the initial excavation work for a new highway exit ramp, solvent odors were encountered. The pre-construction environmental due diligence investigations had not identified any site contamination. The excavation contractor stopped the excavation work and notified the project construction inspector and PM. The construction inspector and PM visited the site and also identified a solvent-like odor. Additionally, they noticed what appeared to be a 55-gallon drum partially buried in the same area. The area was taped off to prevent anyone or anything from inadvertently falling into the partially excavated area.

The PM worked with the site contractor to start a plan for investigation and cleanup in accordance with Publication 408 Specifications. The contractor's environmental and safety consultant (consultant) arrived at the site on the same day as discovery to inspect the area. Levels of volatile organic compounds (VOCs) were checked with a Photoionization Detector (PID) and, based on the findings, a zone around the problem area was established and taped off. The consultant notified the construction inspector that the construction crew could work outside the controlled area. The consultant arranged for a ground penetrating radar investigation to determine if more buried drums were present. Additionally, based on the PID readings, the consultant suspected that there was most likely a small leak of solvent from the drum. The PennDOT PM notified PADEP about the presence of the drum, and the suspected contamination found in soil on the project site.

The consultant mobilized its 40-hour OSHA trained emergency response crew, including a backhoe operator, to begin excavation around the drum. The soil removed from around the drum was staged on plastic. Prior to moving the drum, a drum thief (glass tube) sampler was used to collect a representative sample of the contents. Then the drum was resealed and carefully removed and placed in an overpack drum which was also placed on plastic. Throughout the excavation work, PID monitoring was conducted to assist in identifying solvent impacted soil. The impacted soil which was removed from the excavation area was covered after removal. Sampling of the excavated soils was conducted to determine whether the soil could be reused on site or required disposal at a PADEP-permitted facility.

Post-excavation soil samples were then collected from each side and the bottom of the excavation. Samples were collected in accordance with Act 2 regulatory requirements. The samples were placed in laboratory supplied glassware and were stored in an ice-filled cooler for transportation to the PADEP-certified lab. Upon receipt of the sampling results, a review of the analytical data indicated that no additional excavation was required.

Ancillary disposable equipment and the personal protective equipment utilized by the emergency response crew was also containerized and disposed of as residual waste.

All documentation from the investigation and cleanup were placed in the Project Management files.

SUMMARY POINTS

- Halt all construction activities in the immediate vicinity of identified solvent odor.
- Notify PennDOT representative of the suspected contamination.
- Cordon off area immediately surrounding the suspected contamination.
- Notify PADEP of suspected contamination.
- Arrange for Environmental Professional to investigate, clean up, and arrange for laboratory analysis.
- Arrange for 40-hour (OSHA) trained operator to excavate area.
- Allow consultant to collect post-excavation soil samples from the excavation, the stockpile of excavated soil, and the drum contents.

- Place contaminated soil on and cover with plastic for off-site disposal or reuse as fill, pending laboratory analytical results from soil sampling.
- Leave excavation open until favorable post-excavation soil sample results are obtained.

7.3 BUILDING DEMOLITION

A road widening project involves the demolition of a concrete and steel building. As part of the pre-construction planning, due diligence was conducted and it was identified that:

- The building history did not include industrial use.
- There was a heating oil tank which had been properly removed prior to PennDOT purchase of the property and there had been no reported leaks or signs of contamination.
- The structure contained some asbestos.

During the project delivery planning phase, a licensed contractor was engaged to assess the site structures, collect necessary building material samples, and to determine the conditions and the kind, quality, and quantity of demolition work required. Regarding the potential presence of asbestos-containing materials (ACM), an Asbestos Inspector, licensed by the PA Department of Labor & Industry, assessed the site structures for the potential presence of ACM and collected requisite bulk building material samples for analysis. The contractor was responsible for the coordination of all necessary utility / service shut-offs prior to demolition, and the acquisition of all necessary municipal, State and Federal permits required to perform the demolition work. The contractor was also responsible for developing a pollution prevention and dust control plan outlining the methods for dust control, noise control and maintaining the surrounding area in a clean condition during demolition, and the plan for regulated and non-regulated waste removal.

The project manager completed a USEPA NESHAP Regulated Asbestos Project Notification Form and arranged for a licensed asbestos abatement contractor to remove the ACM (location and quantity confirmed by the contractor's Asbestos Inspector) in accordance with USEPA NESHAPS and OSHA requirements. The building demolition activities did not take place until 10 days following receipt of the approved NESHAP notification form from the regulators. Following removal of the asbestos, and collection and analysis of post-abatement clearance air samples, the properly bagged and documented asbestos waste was transported to and disposed of at a landfill permitted to accept asbestos.

Following completion of the asbestos abatement activities, the building demolition area was prepared by isolating work zones and wetting down the area in order to reduce nuisance dust and the generation of other airborne contaminants. All recyclable building materials, including metal, copper tubing, copper wire, and other building components that were determined to have historical value, were removed and placed in a designated staging area. Fluorescent light fixtures (containing mercury lamps and PCB ballasts), thermostats (containing liquid mercury ampules) and emergency exit lights (containing lead-acid batteries) were removed and properly packaged and disposed of off-site as universal or hazardous waste, as appropriate.

Concrete block was determined to be non-hazardous and was set aside to be further processed and used on site as clean fill. However, after the unexpected discovery of heavily stained concrete foundation floor material, samples of the stained concrete were collected and sent for hazardous waste analysis in order to determine the appropriate disposal method (later determined to be non-hazardous, residual waste). Wood framing, insulation, and ceiling tiles were inspected and disposed of as residual waste. After building demolition was completed, remaining underground utilities were excavated to the property boundaries and properly cut and capped by the contractor under the direction of the local municipal utility authority.

SUMMARY POINTS

- Investigation and research of historic property uses are an important part of the pre-planning phase.
- Inspect for the presence of asbestos-containing building materials, lead-based paint, and Universal Wastes and plan for proper handling.
- Identify what building materials can be recycled and/or reused.
- Complete proper NESHAP notifications, removal, air sampling, handling and disposal of asbestos materials.
- Building demolition cannot take place until 10 days after regulators receive the NESHAP notification form, whether or not asbestos is found during the asbestos inspection. (See Pub 611 Section 3 for further details)
- Reduce airborne contaminants by working in staged work zone areas and wetting down building debris as necessary.
- Determine the proper classification of wastes that cannot be recycled or reused on-site and arrange for proper disposal.

7.4 REPAVING OPERATIONS

A roadway repaving project has been planned for 5 miles of rural roads. The shoulders of the roads have eroded significantly from the spring rains. During the design phase, Project Delivery calculated the tonnage of millings to be generated from the preparation of the 5-mile stretch. Additionally, they estimated the amount of fill needed to stabilize the eroded shoulders. The project plan identifies that the millings that are contaminated with soil should be used to stabilize the shoulders however only 10% of the millings will be used in this manner and any excess milling/soil mix will need to be disposed of as residual waste.

The PennDOT PM of the repaving project learns that another 10-mile paving project will be occurring in the same county concurrent with this repaving project. The PM contacts his counterpart running the 10-mile paving project to discuss possible reuse of the excess millings in Recycled Asphalt Pavement (RAP). The 10-mile project can use 50% of the millings generated from the 5-mile project. The PM also contacts his project contractor to ask if they can utilize the remaining millings. The contractor agrees to take the remaining 40% of the millings. The PM's goal is to avoid contributing excess millings to a stockpile of millings in the county because portions of the stockpile have been stored for greater than two (2) construction seasons, which is not consistent with the PADEP Recycled Asphalt Coproduct Determination rules.

Arrangements are made to stage the millings from the 5-mile project in an area on the PennDOT right-of-way. As identified during the project design phase, 10% of the staged millings are used for compacted shoulder back up material and the excess of the milling/soil mix are disposed of as residual waste. As previously agreed, 50% of the millings are reused on the 10-mile paving project. As the project continues, the PM reassesses the number of excess millings and also learns that his contractor will not, in fact, be able to use the remaining 40% of the excess material. As a result, the PM identifies and contacts PennDOT sites within the District to find a suitable place to store the millings for future use as RAP. During the search for a suitable place to store the material, the PM asks questions about the number of millings currently stored and whether the site maintains records to show that the millings are reused as RAP within two (2) construction seasons in accordance with DEP's RAP coproduct requirements.

The PM arranges for transportation of the excess millings to a PennDOT site. A PennDOT truck and trailer registered to transport residual waste is used. The truck cab contains an operational log showing quantities, dates, and destinations of deliveries.

Lastly, the PM completes his records related to the quantity of millings generated, and where they were recycled. The information will be provided to the SEMP Section Recycling Coordinator.

SUMMARY POINTS

- During Project Development, make a plan of where millings and waste materials from the repaving project will be staged and disposed of.
- Utilize milling/soil mixture as shoulder backup if possible and dispose of excess mix as residual waste.
- Find recycling options outside of PennDOT to avoid stockpiling an excessive amount of millings for possible recycling.
- Verify vehicles/trailers transporting the materials are registered with PADEP to transport residual waste.
- Verify vehicles/trailers transporting the materials maintain appropriate transportation logs.
- Keep careful records of waste materials generated and recycled for submittal to the SEMP Section Recycling Coordinator.
- If millings are placed on a PennDOT site already staging millings, verify that the site records demonstrate that previously generated material has not been stored longer than 2 construction seasons.

7.5 BRIDGE REPAIR / REPLACEMENT PROJECT

A roadway project included a bridge that was in need of rehabilitation. A Phase I Environmental Site Assessment was conducted during the design phase of this Design-Build project. After the roadway project had commenced, it was discovered that the steel beam bridge and abutments had deteriorated past the point of rehabilitation and the bridge required a full replacement. The project had been planned and coordinated as a rehabilitation project with no in-stream work. As a full replacement, additional structural and site investigation needed to be done, based upon the re-established environmental footprint.

During the project planning phase the existing bridge, with painted steel components, had tested positive for lead paint, and a cleaning and painting strategy including air monitoring, containment, and proper waste handling had been specified as part of the project. Since the project was modified to include demolition of the bridge, OSHA lead-safe work practices had to be followed during the cutting of the steel structure. The OSHA lead-safe work practices resulted in some lead paint being removed where cuts were made in the steel. The waste generated from removing the lead was collected for disposal as hazardous waste, along with any loose, peeling paint from the structure. The lead painted steel would not be classified as a hazardous waste and would be sent off for recycling.

During the additional investigations, Asbestos-Containing Materials were also identified, within the bearing pad components of the bridge. In addition, historic fill containing broken/shredded lead battery casings were identified behind the abutments. In accordance with Publication 408 Specifications, it was the contractor's responsibility to satisfactorily remove and dispose of all existing highway structures which were not to remain in place or to be used in the new construction. The project Waste Management Plan was modified to include the contaminated materials of concern including the ACMs, contaminated soils and lead paint waste generated during the demolition of the steel beam bridge.

The stream that was impacted by the bridge replacement had an aquatic life classification of High-Quality Cold Water Fishery (HQ-CWF) and was also listed as a naturally reproducing wild trout stream. Therefore, in-stream construction restrictions of March 1 through June 15, and October 1 through December 31 applied. A wetlands delineation was conducted in the environmental footprint to determine the absence or presence of regulated wetlands and waterways. Due to the extent of the in-stream work, the project required a PADEP Chapter 105 Water Obstruction and Encroachment General Permit, and due to the area of disturbance for the abutment replacement activities, a Chapter 102 National Pollutant Discharge Elimination System (NPDES) permit for construction was required as well. The NPDES permit required a post-construction stormwater management plan including protection, conversion or establishment of the riparian buffer.

SUMMARY POINTS

- Bridge reconstructions may require investigation in the area around the abutments.
- Proper investigation and planning for lead paint is necessary.
- Proper disposal of contaminated material found on site.
- Additional permit requirements must be met for stream disturbance, wetlands or other environmental factors.
- Segregation and disposition/ disposal of steel and loose debris contaminated with lead.