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4.4.20 Contaminated Materials and Hazardous Substances

4.4.20.1 Introduction
Contaminated materials and hazardous substances are frequently encountered during transportation projects and other Department activities. Petroleum-contaminated soil and groundwater are particularly common, given the integral relationship between the transportation infrastructure and fuel; however, encountered substances are by no means limited to petroleum products. The mishandling of contaminated materials and hazardous substances can result in diminished environmental quality, health and safety hazards, as well as civil and/or criminal penalties. It is, therefore, of paramount importance to manage these materials appropriately.

The guidance in this TEM Section should be followed when any of the following activities will occur:

- Acquisition of any new right-of-way (ROW), whether temporary or permanent easement or in fee;
- Excavation or other disturbance of the soil;
- Relocating utilities; or
- Demolishing or substantially modifying bridges, other infrastructure, or buildings (especially commercial or industrial buildings).

Even projects of limited scope that do not involve these activities are typically screened for contamination to ensure that potential problems are identified as early as possible. Contaminants such as petroleum products, fuels, and solvents can migrate into rights-of-way from leaking tanks or drainage on adjacent properties, or from traffic accidents or spills on the roadway. Current and previous activities and surrounding land use must always be considered when screening projects for contaminated materials.

This and other Sections of the Environmental Manual and many other guidance materials referenced within can be found on the [NYS DOT’s website](#).

<table>
<thead>
<tr>
<th>Table 1: Applicability</th>
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<tr>
<td>NYSDOT Region</td>
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<tr>
<td>All</td>
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</table>

Relationship of TEM Section 4.4.20 and ASTM Methodology
The procedures in this Section generally follow the steps outlined in ASTM E 1527-05, “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment [Phase I ESA] Process” and are also consistent with ASTM E 1528-06, Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process and ASTM E 1903-97 (reapproved in 2002), Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process (except as noted below). These processes are adapted to more closely meet the needs of NYSDOT projects.

NYSDOT guidance differs from the ASTM approaches in five specific ways which are listed below.
The standard search distances in ASTM 1527-05 may be modified, and are generally shorter to reflect the linear geometry of NYSDOT’s facilities.

Soil vapor intrusion (SVI) studies are rarely performed because NYSDOT typically acquires buildings to demolish them to expand transportation networks. SVI studies may be performed if a structure will be subsequently leased, sold, or used for commercial or residential purposes after the project is completed.

Formal data validation (an extra QA/QC step in addition to the normal laboratory QA/QC procedures) is rarely required for NYSDOT projects.

NYSDOT may opt to perform only limited due diligence and not attempt to qualify for the landowner liability protections available under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), especially when acquiring residential rather than commercial real estate. Thus, the procedures described here may more closely resemble a transaction screen process rather than a full Phase I environmental site assessment.

NYSDOT has a process for acquiring real estate that includes final approval from the New York State Office of the Attorney General’s (NYSOAG) Bureau of Real Property. For this reason a search for environmental liens is not typically required as part of a Phase I environmental site assessment.

Levels of Investigation

Different types of projects warrant different levels of investigation. Complex projects, such as EIS or EA projects, will generally require a full Phase I ESA. Simple projects such as signal/sign installation, and minor utility projects generally warrant a more informal screening for contamination, using tools readily available at the desktop of most NYSDOT environmental staff. For projects of intermediate complexity, staff from the Regional Environmental Unit will need to determine the appropriate level of investigation based on project variables. Staff from the Main Office Environmental Science Bureau is available to assist in making this determination, if needed.

4.4.20.2 Section Objectives

This guidance is intended for New York State Department of Transportation (NYSDOT) designers, project managers, consultants, and construction, maintenance, and environmental staff who design and build projects that expand, enhance and maintain New York’s transportation networks. Following the steps in this guidance document will:

- Aid in the identification of potentially-contaminated ROW prior to acquisition;
- Reduce exposure risks to Contractor and Department staff during investigative and remedial activities; and
- Comply with current Federal and State laws and regulations for identifying, classifying, handling, treating, storing and disposing of contaminated materials and hazardous wastes.

4.4.20.3 NYSDOT and Federal Policies

NYSDOT Policy

It is the policy of NYSDOT to manage contaminated materials and hazardous substances in accordance with State and Federal laws and regulations so as to minimize the risks of employee
exposure, to protect the public, to prevent further environmental degradation due to the contaminants, and to the extent possible, to reduce Departmental liability for contamination.

Federal Policies
The most complete discussion of how hazardous wastes and contaminated materials affect transportation projects was given in an Aug. 5, 1988 Memorandum from the Federal Highway Administration (FHWA) entitled, “Interim Guidance – Hazardous Waste Sites Affecting Highway Project Development.” That document applied to Federal-aid highway and bridge projects and included many of the steps in this Section. The guidance stressed that “contaminated sites should be avoided if at all possible,” (p. 19) but laid out the circumstances under which Federal aid could be used in the acquisition and cleanup of contaminated parcels.

The FHWA updated that guidance on January 16, 1997 by issuing another Memorandum entitled; “Supplemental Hazardous Waste Guidance.” This memo addressed the difficulties in obtaining access for preconstruction testing and studies, but also “emphasized avoidance and minimization of contaminated properties where possible and appropriate…” (p. 3)

This emphasis on avoiding contaminated sites was reversed in a subsequent FHWA Memorandum issued March 4, 1998 on the subject: “Policy Revision to Support the Brownfields Economic Redevelopment Initiative.” The impetus for this change was the Brownfields Economic Redevelopment Initiative administered by the USEPA and several provisions in ISTEA, the Intermodal Surface Transportation Enhancement Act. This revision stated that FHWA would now encourage acquisition and/or clean-up of land within brownfields for transportation purposes where “such actions are feasible, reasonable, within acceptable limits of liability exposure, when cooperating partners are available, and when parties legally responsible for the contamination are pursued to the maximum extent practicable.” (p. 2) This policy recognizes the key role that transportation plays in brownfields projects, and encourages state and local transportation officials to pay for the cleanup of environmental contamination that lies in the path of, or on the site of, a transportation project.

4.4.20.4 Legal Basis

Resource Conservation and Recovery Act (RCRA): The Resource Conservation and Recovery Act set national goals for protecting human health and the environment from the potential hazards of waste disposal by reducing the volume of waste generated and ensuring that wastes are properly managed in an environmentally sound way.

RCRA Subtitle C provides ways to identify and classify hazardous wastes, and establishes a system of control from the time that a hazardous waste is generated until final disposal, from “cradle to grave.” The Federal RCRA regulations can be found at 42 USC §6901 et. seq. and in New York State in 6 NYCRR Parts 370-374.

RCRA Subtitle D:
- encourages states to develop comprehensive plans to manage nonhazardous industrial and municipal wastes;
• sets criteria for municipal solid waste landfills and disposal facilities for other types of nonhazardous wastes such as construction and demolition debris, medical waste, and scrap tires; and,
• promotes the safe disposal of solid waste and encouraged source reduction and recycling of wastes, were possible and feasible.

New York State was authorized to run its own Subtitle D program in October 1992. Similar to RCRA-C, State programs that implement RCRA Subtitle D must be at least as stringent as the Federal requirements. The Federal regulations that control nonhazardous wastes can be found at 40 CFR Parts 257 and 258, and in New York at 6 NYCRR Part 360.

**Beneficial use determinations (BUDs)**

Some materials are not treated as solid wastes in New York if they are beneficially used in specific ways. A number of pre-determined beneficial use determinations (BUDs) are listed in 6 NYCRR Part 360-1.15(b). These include:

- compost
- uncontaminated glass used as a substitute for conventional aggregate in asphalt or in subgrades
- tire chips used in road construction that follows the NYSDOT specifications, and
- recognizable, uncontaminated concrete, concrete products, asphalt pavement, brick, glass, soil and rock that are placed in commerce for service as a substitute for conventional aggregate.

The New York State Department of Environmental Conservation (NYSDEC) can also grant case-specific BUDs for materials that are not pre-determined. BUD requests are evaluated on a case-by-case basis and often involve a waste material used as a substitute in manufacturing, for a specific commercial product, or as an alternative fuel source. An example of a case-specific BUDs that has been granted for a transportation project was the use of marginally-contaminated sand as road subbase.

**Construction and demolition (C & D) debris**

Construction and demolition (C & D) debris is a special type of nonhazardous solid waste that is commonly encountered during NYSDOT projects and activities. The definition in 360-1.2(b)(38) states that C & D debris is:

> “uncontaminated solid waste resulting from the construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste resulting from land-clearing.”

Solid waste that is not C & D debris, even if generated by construction, repair of utilities, structures, roads or land clearing includes: friable asbestos waste, garbage, corrugated container board, electrical fixtures containing hazardous liquids such as fluorescent light ballasts or transformers, fluorescent lights, carpeting, furniture, appliances, tires, drums, containers greater than ten gallons in size, any containers having more than one inch of residue remaining on the bottom, and fuel tanks.

Some C & D debris is exempt from landfill permit and other requirements under 360-7.1(b). A site that is exempt would contain only recognizable uncontaminated concrete and concrete.
products (including steel or fiberglass reinforcing rods that are embedded in the concrete), asphalt pavement, brick, glass, soil and rock. “Uncontaminated” means that the C & D has not been mixed with petroleum products, or hazardous or industrial wastes. Asphalt or concrete pavements that have come into contact with petroleum products through normal vehicle use of a roadway are not considered “contaminated” [360-7.1(c)(4)]. An exempt C&D site could also contain “clearing and grubbing” wastes that include only trees, stumps, yard waste and wood chips, as long as the site is owned by the generator of the waste (this ownership provision ONLY applies to clearing and grubbing waste).

Long Island (Nassau and Suffolk Counties) has additional restrictions associated with disposal of C&D Debris. Consultation with the Region 10 Environmental Unit is recommended in association with any planned handling and/or disposal of C&D Debris.

**Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or “Superfund”)**

CERCLA sets Federal requirements for responding to spills of hazardous substances, establishing liability for persons responsible for releases of these hazardous substances, and cleaning up abandoned hazardous waste sites. The plan is flexible and allows for a case-by-case determination of the appropriate extent of site cleanup and subsequent monitoring and maintenance.

CERCLA defines “hazardous substances” very broadly by including:

- all toxic pollutants and hazardous substances under the Federal Clean Water Act,
- hazardous wastes as defined in RCRA,
- any hazardous air pollutant of the Federal Clean Air Act, and
- chemicals designated as “imminently hazardous” under the Toxic Substances Control Act (TSCA).

Any person or entity can be held liable for response and cleanup costs if they sent these substances or wastes to a Superfund site, or were involved in the sites’ present or past operation, including people who either arranged for, or performed the actual transport or disposal.

The Superfund Amendments and Reauthorization Act (SARA) implemented several important changes and additions to CERCLA:

- stressing the importance of permanent remedies and innovative treatment technologies,
- requiring Superfund actions to consider the standards and requirements found in other State and Federal environmental laws and regulations
- including new enforcement authority and settlement tools,
- increasing involvement of the States in every phase of the CERCLA program
- increasing the focus on human health problems caused by hazardous waste sites,
- encouraging more citizen participation in making decisions about site cleanup; and
- increasing the size of the trust fund to $8.5 billion.

The original funding mechanism for CERCLA has expired, but most states still face problems with contaminated properties, now frequently referred to as “brownfields” The USEPA and several states, including New York (through NYSDEC), have implemented programs to fund,
facilitate, and coordinate the remediation of brownfields; however, NYSDOT has a very limited role in brownfields projects because state agencies are not eligible to receive brownfields credits.

**RCRA Subtitle I: Petroleum Bulk Storage (PBS) Requirements**
Subtitle I of RCRA (40 CFR Part 280) regulates fuels and chemicals stored in underground storage tanks (USTs) and includes technical requirements to prevent, detect, and clean up releases from underground storage tanks and establish performance and operation requirements that focused on proper installation, corrosion protection, spill and overfill protection, and leak detection systems.

**NYS Bulk Storage Regulations**
New York State’s PBS regulations, which are more detailed than Federal PBS regulations, are found in 6 NYCRR Parts 613. Similarly, New York State’s Chemical Bulk Storage (CBS) regulations are found in 6 NYCRR Parts 596 through 599.

**New York State Navigation Law**
Article 12 of the Navigation Law is the legislation that applies to oil spills and defines a discharge as: *any intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of petroleum into the waters of the state or onto lands from which it might flow or drain into said waters, or into waters outside the jurisdiction of the state when damage may result to the lands, waters or natural resources within the jurisdiction of the state.*

**Alert!**
A spill or release within New York must be reported to the New York State Spills Hotline at 1-800-457-7362 within two hours of discovery, or as soon as possible UNLESS it meets all of the following criteria:

1. the quantity is less than 5 gallons;
2. the spill is contained and under the control of the spiller;
3. the spill can not reach the State’s water or land (i.e. occurs on pavement) and;
4. the spill is cleaned up within two hours of discovery.

For additional information on spill reporting, please refer to Appendix D-1.

The Navigation Law is also the source of the State’s authority to hold spillers responsible for cleaning up an oil spill and to seek reimbursement of costs when a spiller refuses or is unable to clean up the spill. Section 181.1 of the Navigation Law states: *Any person who has discharged petroleum shall be strictly liable, without regard to fault, for all cleanup and removal costs and all direct damages, no matter by whom sustained ...* This law authorizes the NYSDEC to engage contractors to respond to emergency spills and also clean up releases when the discharger is unable or unwilling to do so. The NYSDEC’s regulations that apply to the storage, handling, and cleanup of petroleum discharges can be found in 6 NYCRR Parts 610-614.

**Toxic Substances Control Act (TSCA):**
The Toxic Substances Control Act of 1976 gives USEPA authority to require reporting, record-keeping, testing requirements, and restrictions relating to chemical substances and mixtures.
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TSCA also addresses the production, use and disposal of specific chemicals including polychlorinated biphenyls or PCBs, asbestos, and lead-based paint.

OSHA 1910.120 Requirements
Designing, building and maintaining transportation systems in contaminated areas can require additional health and safety measures beyond those listed in §107-05 Safety and Health Requirements of the NYSDOT’s Standard Specifications. These measures are mandated by the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard of the Occupational Safety and Health Administration (OSHA) in their Federal regulations found in 29 CFR §1910.120.

The objectives of the HAZWOPER training are:
• to educate workers about potential health and safety hazards they may encounter,
• to provide employees with the knowledge and skills necessary to perform their jobs with minimal risk to their safety and health,
• to provide training in the proper use and limitations of safety and personal protective equipment (PPE); and
• to understand when the level of risk exceeds an employee’s training and preparation, and when the worker should avoid or escape from the situation.

Routine Site Workers: such as equipment operators, drillers, laborers, and supervisors engaged in hazardous substance removal should have the initial 40-hour off-site HAZWOPER training which includes both classroom instruction and “hands on” experience working with field instruments and PPE. In addition, they should also have 24 hours of field experience.

Occasional On-Site Workers: who perform limited tasks such as sampling ground water monitoring wells or surveying, and are unlikely to be exposed to hazardous substances above the permissible exposure limits (PELs), are required to have a minimum of 24 hours of off-site (preferably classroom) instruction and a minimum of 8 hours of field experience.

Workers Regularly On-Site: who work in areas where the exposure levels are monitored and determined to be below the PELs, and where no other health or atmospheric hazards exist, must receive a minimum of 24 hours of off-site instruction and a minimum of one day (8 hours) of actual field experience under the direct supervision of a trained, experienced supervisor.

Managers and Supervisors: are required to receive the same amount of training as the employees they supervise plus 8 additional hours of specialized training in managing hazardous waste operations. Supervisors have a responsibility to understand and ensure compliance with the health and safety program (HASP), the PPE program, the medical surveillance program, and the emergency response plan.

Visitors to the site are not required to complete any specific training in health and safety, although they should be informed about on-site hazards, decontamination procedures, and the emergency plan. They may not enter any areas where they could be exposed to hazardous substances, such as the exclusion (“hot”) zone or decontamination zone without proper training.
In most cases, NYSDOT employees who visit or “walk” the project or corridor during any of the six phases of Design would fall into this category. Exceptions would be those employees visiting the project area to conduct activities such as soil borings or geophysical studies, or if they are directly involved in removing underground fuel storage tanks (USTs).

**All Employees:** must receive 8 hours of annual refresher training to maintain competencies and ensure a safe work environment. This annual training can include attendance at applicable seminars and training courses, and must be properly documented in the employee’s personnel file.

**Project Locations Contaminated by Petroleum Spills:** The most common contaminant on transportation projects involves petroleum-contaminated soil and ground water from products spilled and released from USTs within or adjacent to the right-of-way. Petroleum products are covered by 29 CFR §1910.120 under the definition of “hazardous substance” which references hazardous materials under the USDOT’s regulations in 49 CFR §172.101 where petroleum products are listed. As such, HAZWOPER applies to NYSDOT employees and contractors involved in determining the type and extent of contamination, or removing USTs or associated contaminated soil and ground water. The HAZWOPER standard applies to both known spills and petroleum contamination encountered unexpectedly during project construction.

Working in these kinds of areas is different from cases where NYSDOT employees may be required to clean up a “minor” or an “incidental” spill of a known petroleum product. Minor spills are generally those where:

- The quantity of product discharged is small, usually less than 5 gallons
- Discharged material is easily stopped and controlled at the time of discharge
- Discharged material is localized near the source
- Discharged material cannot reach bare soil or water, but is contained on a paved or impermeable surface
- There is little risk to human health and safety
- There is little risk of fire or explosion

A minor or incidental spill can become a “major” spill if it cannot be controlled or cleaned up by facility employees. 29 CFR §1910.120(q)(6)(i) of the HAZWOPER standard states, "First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release." For a fuller explanation of when and how an incidental release can become an emergency response, see “Releases of Hazardous Substances that Require an Emergency Response.”

**NEPA, SEQRA and Permits**
Compliance with Federal or State requirements pertaining to hazardous substances and contaminated materials does not change with the funding source of the project, and the same requirements apply whether the project is subject to New York’s State Environmental Quality
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Review Act (SEQRA), or whether it is also subject to the National Environmental Policy Act (NEPA) [42 USC 4321 et. seq.].

4.4.20.5 General Methodology: Analysis and Evaluation

Phase I Environmental Site Assessments (ESA’s)

Phase I ESA’s have become the standard and customary approach for determining the likelihood of encountering petroleum products or a range of contaminants regulated under CERCLA. Phase I’s are now routinely used in the banking, investment, and real estate fields to limit liability and demonstrate that “all appropriate inquiry” into the previous uses and ownership of the property has been performed in a way that meets the requirements of CERCLA liability and defenses in 42 USC Section 9601(35)(B).

The NYSDOT has adopted a modified form of these standard practices, which shall hereafter be referred to as Phase I ESA’s, when transportation projects require property acquisition, excavation, or soil disturbances in areas that are suspected of being contaminated, when relocating utilities in suspect areas, or when buildings or structures must be demolished or substantially modified. Phase I ESA’s provide site-specific information for the project or corridor, and include three components that typically happen more or less concurrently:

- a review of public and reasonably ascertainable records;
- a site reconnaissance or visit to the property or project corridor; and
- interviews with current and former owners, employees and occupants of the property, and local government officials such as firefighters, building codes enforcement officers, and local health department staff.

As stated in 4.4.20.1.2, Levels of Investigation, the level of investigation required for a project is generally dictated by the complexity and specific details of the project. Regional Environmental Unit will need to determine the appropriate level of investigation based on project variables. Staff from the Main Office Environmental Science Bureau is available to assist in making this determination, if needed.

Phase I ESA’s must be performed by an Environmental Professional as defined in 40 CFR §312.10. Many Regional Environmental Unit and Main Office Environmental Science Bureau staff meet the Environmental Professional criteria, and therefore, this work can often be done in-house. The decision of doing the work in-house vs. having a consultant perform the work is generally based on project complexity, Regional staff composition, and available staff time. Full Phase I ESAs are most often performed by consultants and the limited screenings for simpler projects are frequently performed in-house. Forms for documenting in-house Phase I ESAs are provided in Appendix D-2.

NYSDOT’s Base Scope of Services (See Environmental Studies, Sections 5200 through 5205) details the procedures to be followed for consultant-performed Phase I ESA’s.

Although Phase I ESA’s do not involve collecting or analyzing samples of soil or water or performing other invasive studies, they are used to help project staff determine if and where more investigation is warranted. Based on the results of the Phase I study, it may be determined that no additional investigation is necessary for minor projects or those in areas where the
possibility of encountering contamination is low. Regional Environmental Unit staff will generally determine when the information provided by a modified Phase I ESA is sufficient to conclude that no additional inquiry or investigation is necessary. Alternatively, staff may evaluate the results of the Phase I and determine that a limited Phase II investigation should be performed.

Review of Existing Public Records
A thorough records review conducted under the supervision or responsible charge of an environmental professional can help identify recognized environmental conditions (REC’s) that can affect the property and the transportation project. Table 2, below, provides some examples of the types of activities that are associated with contaminated materials and hazardous substances. Several Federal, State and local agencies maintain databases and records of known contaminated locations. Research into the histories of the underlying and adjacent properties can identify both the likelihood and the kinds of contaminants that may be encountered. This review should not be limited to parcels within the project corridor or those which may require easements, but should also include minimum search distances to determine if petroleum products or contaminated groundwater could have migrated into the project area. Although most environmental professionals use standard search distances that are listed in ASTM E 1527-05 such as one mile from any Federal NPL site or half a mile from any leaking storage tanks, the actual minimum search distances will vary based on topography, local geology and hydrogeology, distance from the sources of spills and releases, previous activities or uses of the property, and types of contaminants suspected. In urban and developed areas, staff may limit the search distance for underground storage tanks (USTs) to focus on immediate impacts to the project location or corridor. If right-of-way or a permanent easement will be taken less than one-eighth mile from an existing UST, the location, age, and date of the last inspection, tank compliance status and spill information should be examined to determine whether subsurface releases or contaminated soil are likely to be present, or if petroleum products could have migrated into the right-of-way.

Tip:
The search distances should be adjusted to conform to the dimensions of the project corridor and the topography in that area.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Contaminants</th>
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<tbody>
<tr>
<td>Auto Body or Repair Shops</td>
<td>Solvents, petroleum products, degreasers, antifreeze, lead-acid batteries, metals, random containers of what often might be characterized as &quot;household hazardous waste&quot;</td>
</tr>
<tr>
<td>Boat Yards</td>
<td>Metals, petroleum products, solvents</td>
</tr>
<tr>
<td>Chemical Spill Areas</td>
<td>Spilled material</td>
</tr>
<tr>
<td>Coal Storage Yards, Coal Gasification Plants, and Coke Plants</td>
<td>Semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs, coal gasification plants and coke plants) metals, petroleum products, cyanide, coal tar (coal gasification plants and coke plants)</td>
</tr>
<tr>
<td>Activities</td>
<td>Contaminants</td>
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<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>Dry Cleaners</td>
<td>Tetrachloroethylene (aka perchloroethylene, perk, PCE) and it's breakdown products, possibly trichloroethylene (TCE), newer solvents replacing PCE as primary dry-cleaning solvent, Stoddard Solvent (1950 or earlier), petroleum products (1920's or earlier)</td>
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<tr>
<td>Electroplating Factories</td>
<td>Solvents and metals</td>
</tr>
<tr>
<td>Foundries</td>
<td>Metals, phenols, SVOCs</td>
</tr>
<tr>
<td>Furniture refinishers</td>
<td>Solvents, thinners, metals</td>
</tr>
<tr>
<td>Gasoline Service Stations</td>
<td>Petroleum products, solvents, degreasers, antifreeze, batteries, metals</td>
</tr>
<tr>
<td>Incinerators</td>
<td>Metals, SVOCs, PCBs, potentially other contaminants</td>
</tr>
<tr>
<td>Landfills (municipal, spent product, other)</td>
<td>Various contaminants</td>
</tr>
<tr>
<td>Lumber Yards</td>
<td>Chromated copper arsenate (CCA), creosote, metals</td>
</tr>
<tr>
<td>Manufacturers</td>
<td>Solvents, metals, petroleum products, PCBs, various other contaminants (depending on specific industry)</td>
</tr>
<tr>
<td>Metal Fabrication/Finishing</td>
<td>Solvents, cyanide, metals, acids, cutting oils and other petroleum products</td>
</tr>
<tr>
<td>Print shop, photographic processors</td>
<td>Solvents, metals</td>
</tr>
<tr>
<td>Rail yards and Tracks</td>
<td>Polycyclic (aka Polynuclear) aromatic hydrocarbons (PAHs), metals, petroleum products, pesticides/herbicides, potential for spilled contaminants from rail cars</td>
</tr>
<tr>
<td>Reconditioners of drums, barrels, tanks, etc.</td>
<td>Various contaminants</td>
</tr>
<tr>
<td>Recyclers</td>
<td>Various contaminants</td>
</tr>
<tr>
<td>Scrap Yards and Salvage Yards</td>
<td>Metals, petroleum products, PCBs, solvents</td>
</tr>
<tr>
<td>Sludge management Area</td>
<td>Metals and other contaminants</td>
</tr>
<tr>
<td>Transformer Yards/Electrical Substations</td>
<td>PCBs</td>
</tr>
</tbody>
</table>

**Alert!**

Any NYSDOT project that involves excavation on property that is adjacent to an existing open NYSDEC spill must be assessed for contamination unless the topography and ground water flow directions make the chance of encountering contamination highly unlikely.

Publicly available records as well as records that can reasonably be obtained should be reviewed, with an emphasis on standard sources such as government agencies. Several commercial services now exist to perform this work quickly and cost-effectively by reviewing the databases listed here as well as other useful sources such as historic Sanborn insurance company maps (see Sanborn Fire Insurance Maps, below, for more information on these maps). Staff should consider using these services early in design to quickly identify any suspect or contaminated properties or areas early in the project. The following standard environmental record sources should be reviewed in all cases:
Alert!
You **CANNOT** screen a site for contamination using the Environmental Viewer or GIS without also checking current NYSDEC databases. The NYSDOT Environmental Viewer and GIS are very useful tools for simple site screenings; however, NYSDOT files for certain items, such as NYSDEC Spills and NYSDEC Remedial Sites are not as up-to-date (and due to the manner in which the data are available to us, will likely remain so) as what is available from a database search on the NYSDEC website.

Federal standard environmental record sources:
- List of National Priority List sites, for both active and delisted sites
- CERCLIS list and CERCLIS NFRAP site list
- RCRA CORRACTS facilities list
- RCRA non-CORRACTS TSD (transfer, storage & disposal) facilities list
- RCRA generators list
- Brownfields Cleanups
- Institutional control/engineering control registries
- USEPA’s Emergency Response Notification (ERNS) list for CERCLA hazardous substance releases above the reportable quantities

Tip:
The presence of a site on these lists does not mean that contamination exists, only that at some point in time a hazardous waste or contaminated material was generated, or that a specific quantity of hazardous substance was present. These sources only provide information about the potential release of these substances.

State standard environmental and historical record sources:
- NYSDEC Environmental Remediation Site Database
- Solid waste disposal or landfill sites
- NYSDEC Bulk Storage Database
- NYSDEC Spills Database
- NYSDOT’s Photolog files, if appropriate
- Sanborn fire insurance maps (when available, see Sanborn Fire Insurance Maps, below)
- Aerial photographs (when available, see Aerial Photography, below)
- NYSDOT State Highway As-built Record Plans (SHARP)

Some of this information may be available as data layers in the NYSDOT Environmental Viewer (see ALERT regarding the Environmental Viewer, above). NYSDOT employees should contact their regional GIS coordinator for information and assistance. Alternatively, most commercial database search firms include this information as a standard feature of their reports, and consultants should consider using this service when designing NYSDOT projects.

Descriptions of NYSDEC spills should include the spill date, material and quantity spilled (if known – often, the quantity provided in the database will be incorrect), and the closure date (if
applicable). For all spills being described, it should be noted if the spill is open or closed, and if closed, if the spill was closed meeting or not meeting standards.

Depending upon the geographic location, scope and complexity of the project, some additional record sources should also be consulted. These sources may be included at the option of the NYSDOT project manager, designer or environmental staff.

**Optional local environmental record sources:**
- Planning, Zoning, or Building permit/inspection department, certificates of occupancy
- Fire department including Emergency Response Contingency Plans and Community Right-to-Know Emergency Response plans and sometimes material safety data sheets (MSDS') for chemicals used by local factories
- Local health department and water quality agency, if applicable
- Historical societies and local archives may have information about past manufacturing and industrial activities
- Citizens’ groups, local well drillers and municipal water suppliers

**Optional historical/environmental sources:**
- Digital Highway Images (formerly NYSDOT’s Photolog Unit; see Digital Highway Images, below)
- Property tax files
- Recorded land title records
- Environmental easements recorded with the deed
- Certificates of occupancy
- Topographic maps (preferably U.S. Geological Survey 7.5 minute topo maps)
- Local street directories
- Environmental permits (i.e. Petroleum Bulk Storage, SPDES, etc.)
- Previous assessments or investigation reports
- Notices of environmental or code violations
- Building department, zoning and land use records
- Miscellaneous sources such as community organizations, newspaper archives, local libraries, and historical societies or others

**Sanborn Fire Insurance Maps:**
A very useful source of information about a site's history is available through the Sanborn Map Company of Pelham, New York, which began in 1867 to produce large-scale maps of the commercial, industrial and residential sections of thousands of U.S. towns. These maps are helpful in identifying former industrial activities such as manufactured coal gas plants (MGPs) and in determining the locations of historic petroleum underground storage tanks (USTs). A Sanborn Fire Insurance Map Legend is provided in Appendix D-3.

A complete set of Sanborn maps can be viewed at the Library of the State University of New York - Binghamton, and the Archives of the New York State Museum in Albany has a nearly complete set for the State. Individual maps may be obtained by using the database search firm under contract to NYSDOT or by contacting EDR Sanborn, Inc. at (800) 352-0050.
Sanborn Maps (years 1867 through 1970) are also available to NYS Employees electronically, at no cost, through the NYS museum. NYS Employees need to apply for a library card. To get an application, call the Circulation Desk at (518) 473-7895.

**Aerial Photography:**
Reviewing aerial photographs of an area taken over a span of years will help identify previous land uses, filled areas, and structures that no longer exist. Aerial photographs must be of sufficient clarity and scale to be useful. The scale of black and white photos should be at least 1:40,000, where one inch on the photo equals 40,000 inches (roughly 1.6 miles) on the ground, but other scales may be useful as well.

Aerial photographs are available from many sources:
- The NYS Geographic Information Clearinghouse maintains high resolution statewide digital orthoimagery; NYSDOT employees can also check with their regional GIS coordinators
- The NYSDOT Environmental Viewer
- Cornell University’s Institute for Resource Information Sciences (IRIS)
- USDA Service Centers / County Soil and Water Conservation District Offices
- Cornell Cooperative Extension offices
- Town Clerk, Town Engineer, or other municipal offices.
- Multiple commercial sources
- Online sources such as Google Earth, Google Maps, Google Street View, Bing Maps “Bird’s Eye View”, etc. (photos from these sources are generally copyrighted and should be used for reconnaissance purposes only, not incorporated into reports)

**Alert!**
The review of online and GIS aerial photography should not be considered a thorough review of aerial photography unless several decades of photographs are available for review. Sources of hard-copy photographs, such as USDA Service Centers, will often have aerial photographs dating back as far as the 1930’s whereas online sources rarely provide photos older than the 1990’s (which are generally inadequate when looking for sources of contamination such as historic orchards).

**Digital Highway Images (DHIs)**
DHIs (aka Photologs) are a series of sequential photographs which show the road configuration, pavement conditions, and adjacent roadside development. The photos are taken from the driver's eye level of a moving vehicle with the camera aimed slightly down and to the right, and cover more than 16,000 miles of State highways and the Thruway. DHIs dating back to 1984 are available for public inspection, and reproductions can also be obtained. Information can be obtained from the Pavement Management Services in NYSDOT’s Main Office (518-457-1965). Some photos are also available electronically via NYSDOT's Visidata program (link available to internal NYSDOT users only). Where available, Google Maps “Street View” may also be helpful. Like other free online sources, the available images may be copyrighted and should be used for reconnaissance purposes only.
Project/Corridor Visit or Site Reconnaissance
The information obtained by following the steps described above and discussing the project with NYSDOT staff in the Regional Environmental Unit will provide a basis for determining if “areas of concern” are present within the project corridor and whether contaminated materials or hazardous wastes will be encountered on this project. A physical inspection of the area is still necessary to verify this information and will allow observers to note any RECs that have changed or were not identified beforehand. The physical inspection should be performed soon after the preliminary historical background and database search results are available, and the information should be evaluated by observers before the visit to reduce the risks of exposure to any hazardous or toxic materials (See 4.4.20.4.7, OSHA 1910.120 Requirements for recommendations on suitable levels of PPE and training requirements for various exposure scenarios.).

The features listed below may indicate problems with hazardous wastes or contaminated materials.

Field Evidence of Potential Contamination:
Some of these features may be warning signs of contaminated soil or groundwater:
- Stained or discolored soil
- Stressed or dead vegetation
- Spills, leaks, or leachate seeps (sometimes discharging from embankments at a lower elevation below the suspect area)
- Monitoring wells, sumps, drains, dry wells or pools of discolored water
- Surface impoundments or lagoons
- Odors, air emissions or smoke
- Evidence of previous fires

Visual Evidence of Potential Petroleum or Chemical Contamination:
- Underground or aboveground tanks, including vents and fill pipes
- Storage tanks or drums; chemical containers
- Pipelines or pipes
- Well casings or riser pipes from ground water monitoring wells
- Refueling or pump islands
- Past uses of property that can be observed (i.e. petroleum storage units)
- Any other areas suspected of containing contamination

Other Features Which Should Be Noted:
- Discarded transformers or evidence of former transformer pads
- Landfills or dumpsites
- Dumpsters, or bulk solid wastes (waste piles)
- Railroad tracks, rail yards or sidings
- Berms or dikes (associated with previous impoundments)
- Soil stockpiles or mounds
- Cuts/scarring in pavement indicative of excavation or borings
- Air stacks and vent pipes
• Previous water supply wells, cisterns, etc.
• Potential indications of PCBs such as electrical or hydraulic equipment
• Posted signs
• Sewers, floor drains and manholes
• Septic systems, cesspools and leach fields
• Drainage ditches, swales and culverts
• Physical obstructions (fences, locked gates, etc.)
• Stains and corrosion on utilities and plumbing
• Buildings, sheds, structures or storage areas
• Authorized storage of hazardous materials
• Current uses and conditions on the property and on adjoining parcels
• General direction of ground water flow, if this can be determined
• Any changes in conditions reported from records review

Lastly, partly-used products that may be stored in buildings and structures, or encountered within the proposed right-of-way should be noted. These should not be disturbed during the site reconnaissance, but their location should be noted and arrangements made for their disposal after the site visit is concluded.

Interviews
Reasonable attempts should be made to interview current and former occupants, owners and operators of property or structures to be acquired, demolished, or substantially modified. Questions should be structured to elicit information about RECs, and supply additional details about the activities and contaminant history of the parcel or structure. Site manager(s) or supervisor(s) of operations can provide details about waste generation and disposal practices at industrial facilities, and occupants of residential properties can typically fill in historical information about property use.

Interviews should also be sought with state and/or local government officials, including the local fire department, the State or local health department, and any agencies with jurisdiction for waste disposal or building permits.

The information obtained from these interviews should be included in the Environmental Site Assessment.

Conclusions and Recommendations
A Phase I ESA, whether it is a complete Phase I for a complex project or a simplified Phase I for a quick screening, should include conclusions that summarize the findings of the assessment and recommendations for dealing with each finding.

Phase II Environmental Site Assessments (ESA’s)
After reviewing the Phase I ESA and observing the project location or corridor regional environmental staff may determine that additional information is needed to adequately evaluate RECs, determine the contaminant levels at an area of concern (AOC), or fill in information gaps about possible or suspected contamination. A Phase II ESA can confirm the presence of hazardous substances or petroleum, and help determine the type(s), extent, and magnitude of
Contaminated Materials and Hazardous Substances

contamination and allow for an accurate estimate of costs that will be associated with the required remediation.

A Phase II ESA must be performed by an Environmental Professional as defined in ASTM E 1903-97, which is similar to the qualifications required for a Phase I ESA. If the work is being performed pursuant to one of several NYSDEC remedial programs, the work must be performed by a Qualified Environmental Professional as defined in 6 NYCRR §375-1.2, or be under the supervision of such a person.

Most often, NYSDOT Phase II ESAs are preformed by Term Agreement Consultants. Occasionally, Phase II ESAs of limited scope are performed in-house by NYSDOT’s Geotechnical Engineering Bureau with direction from Regional and/or Main Office environmental staff.

Any Phase II ESA should be relevant to the specific project, whether or not there will be any excavation/soil removal, and the history of the subject property. In the workscope development process, NYSDOT staff should consider their reasons for choosing sampling locations and testing parameters, as shown in the example below:

### Table 3: Phase II Workscope

<table>
<thead>
<tr>
<th>Location</th>
<th>Concerns/Rationale</th>
<th>Type of Testing Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embankment at north end of EB ramp</td>
<td>Regrading/lowering profile will require 500 m³ soil removal. Any reuse restrictions? If disposal is necessary, is this “clean soil,” solid industrial waste or hazardous waste?</td>
<td>Composite samples for metals in soil, petroleum parameters, PCBs &amp; pesticides throughout depth of soil to be removed</td>
</tr>
<tr>
<td>Former utility company transformer pad</td>
<td>Turning lane requires strip taking of adjacent parcel. Any contaminants present in soil? Some patches of “oil-stained soil?” Worker exposure &amp; possible excavation/disposal of contaminated soil in this area or project is a concern</td>
<td>Samples of surficial soil (0 – 2 ft) tested for standard metals, petroleum compounds, PCB’s and pesticides in soil</td>
</tr>
<tr>
<td>Mary’s Sub Shop/ former gas station</td>
<td>Property was a gas station from 1940 – 1998; any tanks remaining in place or petroleum-contaminated soil or ground water during deep utility work in this area? If yes, estimate extent &amp; volume of contaminated material to be disposed</td>
<td>Geophysical survey to I.D. any remaining tanks; full scan of petroleum parameters (volatile organic compounds) &amp; metals in soil and ground water samples</td>
</tr>
<tr>
<td>Mrs. Murphy’s House (built 1895)</td>
<td>Preconstruction baseline water quality testing for resident who claims project will contaminate her water well</td>
<td>Drinking water standards for metals, organics, pesticides, salt &amp; sanitary parameters</td>
</tr>
</tbody>
</table>
Contaminated Materials and Hazardous Substances

<table>
<thead>
<tr>
<th>Location</th>
<th>Concerns/Rationale</th>
<th>Type of Testing Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tasty Apple Orchards</td>
<td>A new highway alignment requires bisecting a large apple orchard dating back to the early 1900’s.</td>
<td>Soil and groundwater sampling for arsenic and lead</td>
</tr>
</tbody>
</table>

The methods chosen must be capable of assessing RECs and tailored to meet the project’s needs. **NYSDOT’s Base Scope of Services** (See Environmental Studies, Sections 5210 through 5228) lists tasks commonly used to identify contaminated materials and hazardous substances, and includes geophysical and soil gas surveys, soil borings, excavating test pits, installing groundwater monitoring wells, and collecting soil and water samples for analysis. Soil vapor monitoring can also be used when the suspected spill is difficult to access or within the footprint of a building. Both field and laboratory parameters should be detailed in the workscope, and any special requirements or restrictions should also be noted, such as the need for a track-mounted drill rig in very steep terrain.

Analytical tests should be chosen from standard, industry-accepted methods whose detection limits are consistent with regulatory requirements for the suspected contaminants and the intended uses of the data. The NYSDEC’s **Analytical Services Protocol** contains test methods accepted for various regulatory programs in New York, and the USEPA’s **Test Methods for Evaluating Solid Waste, Physical/Chemical Methods** which is also known as publication SW-846, describes more standard test methods. These documents also describe sample collection procedures including the use of sample preservatives (see Appendix D-4, Sample Preservation Table), holding times, collecting duplicate and replicate samples, field blanks, and preparing and using a chain-of-custody form.

Generally, a Phase II investigation will follow the steps outlined in chapters 2 and 3 of the **NYSDEC’s DER-10 guidance document**, **Technical Guidance for Site Investigation and Remediation**. This guidance document was developed for specific remedial programs administered by the NYSDEC; NYSDOT’s procedures for Phase II investigations differ in the following specific ways:

- **NYSDOT** does not generally require analytical data to follow Category B laboratory deliverables as defined in the NYSDEC’s **Analytical Services Protocol (ASP)**, unless we expect that the lab data will be used in litigation (See DER-10, Section 2.2, Reporting Requirements). In most cases NYSDOT does not need this high level of quality assurance for our project work.
- **NYSDOT** does not require formal data validation; when a higher level of quality assurance is necessary, a Data Usability Summary Report (DUSR) may be requested from the lab.
- **NYSDOT** does require that all environmental sample analyses be conducted by a laboratory accredited by the NYSDOH Environmental Laboratory Approval Program (ELAP) for the analyses being performed.
- **NYSDOT** generally does not require analysis of Tentatively Identified Compounds or TICs. Depending on suspected contaminants, NYSDEC may request that analysis for TICs be performed while investigating an oil spill.
- **NYSDOT** does encourage water samples to be collected with care, in such a way that the turbidity is less than 50 nephelometric turbidity units (NTU).
• When ground water samples will be analyzed for metals' content, NYSDOT recommends splitting the sample, field-filtering one aliquot, and analyzing both portions. Aqueous samples that will be analyzed for metals must be preserved with acid until the sample has a pH below 2. Laboratory-provided sample bottles will normally contain the required preservative (HNO₃). Any suspended clay or silt in the water sample will be digested by the acid, yielding inaccurately high metals concentrations that do not represent the actual concentrations of dissolved metals in the water. Comparing the results for the field-filtered and unfiltered samples allows a reviewer to identify the concentrations of dissolved metals from those potentially introduced by suspended sediment.

• Soil vapor intrusion (SVI) studies are not performed on buildings slated to be demolished. SVI should be considered if the structure will be occupied after the project is complete and if petroleum or solvent contamination is identified in the subsurface. Subslab vapor samples are sometimes used as a quick, inexpensive way to determine if volatile organic compounds (VOCs) have contaminated the subsurface beneath a building.

• Analytical results are not typically forwarded to the NYSDEC for most projects. If contamination is confirmed, however, consideration should be given to sending a copy of the results to regional NYSDEC staff for their review. If petroleum contamination is found, for example, the NYSDEC can assign a spill number and contact the spiller to perform additional investigation and cleanup.

• NYSDOT does encourage the use of geophysical surveys using magnetometers, electromagnetic conductivity and resistivity, and ground penetrating radar to identify piping, tanks, water lines, abandoned fuel lines or buried drums in the subsurface.

• NYSDOT encourages the review of Sanborn Fire Insurance maps should be reviewed prior to Phase II investigation, as a screening tool for underground storage tanks and other potential sources of contamination, in the event that this source was not reviewed during the Phase I investigation, or there was no Phase I performed.

• Some projects are located in areas where the background concentration of specific contaminants in the soil or ground water is high, and "remediating" a project location is not feasible. Comparing contaminant concentrations within the project area with background concentrations in these areas is an acceptable approach for limiting the scope of investigation and remediation. (See 3.5.3 Soil Background Evaluation, 3.7.3 Groundwater Background Evaluation, and 3.8.3 Sediment Background Evaluation in DER-10.)

Alert!
NYSDOT is not required to completely delineate the horizontal and vertical extent of a subsurface contaminant plume if it is suspected that the contamination has migrated into the proposed project limits or right-of-way from an adjacent property. Contamination should be “mapped,” if possible to determine if and how it will affect the proposed project, and the results of the NYSDOT’s investigation can be forwarded to NYSDEC staff to continue the investigation on adjacent areas.

Site-Specific Health and Safety Plans (HASPs)
Anyone conducting environmental sampling during a Phase II Environmental Site Assessment or subsequent remediation of contaminants must prepare and implement a site-specific health and
safety plan (HASP) that addresses the contaminants likely to be encountered within the project site, and which is followed by all on-site personnel involved with the investigation or remediation. The HASP should be tailored to the contaminants and hazards anticipated at the subject site. For projects that are in construction, these requirements are in addition to the safety and health requirements of §107-05, Safety and Health Requirements of the Standard Specifications, and must be prepared by a qualified health and safety professional with specific knowledge of the contaminants at the site pursuant to 29 CFR §1910.120.

Most of the tasks in a Phase II ESA are typically performed by specialized environmental consultants who follow a workscope or sampling plan that they developed with input from NYSDOT staff. Staff in the Environmental Science Bureau or Regional Environmental Unit can answer specific questions and assist in developing workscopes for unusual circumstances or when new or innovative methods are proposed or required.

Utility markouts must also be performed in the proper time frame to ensure that markouts are complete and correct prior to starting work at the subject site. Additionally, a private utility locating firm may be needed to ensure that sub-grade work can be performed safely on complex sites.

Based upon the types and concentration of some contaminants, work plans for some intrusive activities may also require a site-specific community air monitoring plan (CAMP). The CAMP describes a fugitive dust/particulate and/or organic vapor monitoring (depending on the site characteristics) program to ensure that the public living and working nearby as well as employees and visitors to the site are protected from exposure during subsurface work or remedial actions. Specific elements of a CAMP can be found in the NYSDEC guidance, DER-10, Technical Guidance for Site Investigation and Remediation, and Appendix 1A and 1B include a NYS Dept. of Health Generic CAMP.

If this work is being done during project design, copies of the HASP should be included with the project documents; if this work is being performed during construction then a copy should be retained by the EIC.

Interpreting Environmental Site Assessment Results
The results from well-designed ESA’s can identify whether contaminated materials will be encountered within the project’s limits, determine how to safely and legally manage the material, and whether it must be disposed as a hazardous or nonhazardous solid waste, or (if only marginal contamination exists) whether it can be used beneficially for backfill without posing a risk to workers, public health or the environment. These procedures also help limit NYSDOT’s liability for cleaning up pollutants within transportation corridors and project limits, especially when the contamination was caused by the actions of others.

The analytical results from testing soil and water samples must be compared to current standards and guidance to make proper determinations of whether to reuse or dispose of materials, soil and water. Some Phase II ESA results may indicate that petroleum contamination exists in the subsurface. The Regional Environmental Unit should be consulted as to whether or not a report should be called into the NYSDEC Spills Hotline (800-457-7362). See also Appendix D-1 for
spill reporting information. Any subsequent work such as contacting the owner of the adjacent property if that property appears to represent the source of the contamination (i.e. a gasoline station, auto repair business, etc.) should be left to the NYSDEC to pursue.

Remedial Objectives
NYSDEC’s Remedial Program Soil Cleanup Objectives regulations (6 NYCRR §375-6) became effective in December 2006. Acceptable “soil cleanup objectives” were established for five scenarios depending upon the type and concentration of contaminants present:

- When the concentration of contaminants is so low that the soil requires no additional measures to protect public health, ground water or ecological resources, it is classified safe for “unrestricted use.” The concentrations of contaminants in this soil are unlikely to harm young children who play in the soil during warm weather and who consume vegetables grown here.

- Soils containing some contaminants at levels low enough to protect public health are classified as acceptable for “residential use.” These soils can be used for single-family housing where vegetable gardens may exist but raising livestock for human consumption is prohibited in these locations.

- “Restricted-residential” use soils are acceptable in locations where there is common control of the property, as in townhouses or apartment complexes. Private vegetable gardens are prohibited but community gardens may be allowed with NYSDEC approval.

- “Commercial use” soils are acceptable at locations where the primary land use is buying and selling of merchandise or services. Exposure to contaminated soil could occur for short periods of time at picnic tables or at park benches, but areas outside the parking lots are grass-covered or landscaped.

- “Industrial use” soils are acceptable where the land is used for manufacturing, production, fabrication or assembly processes and related services. Visits by young children would be rare or infrequent, and would likely occur under the supervision of an adult. Most occupants of the site are adult visitors, workers, or customers.

For most applications, “Unrestricted Use” RSCOs should be considered first. However, the RSCOs that apply for a particular project are largely dependant on the specifics of the individual project and project location.

In addition NYSDEC’s Commissioner’s Policy (CP) #51, which became effective on December 3, 2010, replaced older RSCOs for gasoline, diesel/heating oil, and other contaminants.

Remedial objectives for groundwater are generally found in NYSDEC Technical & Operations Guidance Series (T.O.G.S.) 1.1.1 and related addendums. Often, NYSDEC and NYSDOT will negotiate site-specific remedial objectives for groundwater, based on site location and what is reasonably achievable at the site.

Acceptable Contaminant Levels in Soils for NYSDOT Projects
Results from the Phase I and Phase II ESA should be compared to the project-appropriate RSCOs to establish whether soil can be reused for projects off-site, reused on site, reused on-site
with some restrictions that are known as “institutional controls,” or disposed offsite as nonhazardous solid waste. Some contaminated soils can be left in place but public exposure is eliminated by covering them with an environmentally “clean” barrier soil cover that is two feet in thickness. Contaminated soils can also be segregated from “cleaner” soils based on proposed uses so that soils for a bicycle/pedestrian path contains lower concentrations of contaminants than soil proposed for use as sub-base material beneath a paved highway. As a general rule, the NYSDEC soil cleanup objectives do not apply to materials and soils 15 feet below final grade or deeper.

Some of NYSDOT’s infrastructure lies within very highly contaminated areas that have been listed on New York’s Registry of Inactive Hazardous Waste Sites or on the Federal National Priorities List (NPL), or a portion of the project area lies within an existing environmental easement that is known to be highly contaminated. A great deal of information is available about the types and contaminants at these locations, but regulatory agencies can require subsurface investigation or construction to follow far stricter procedures than those summarized in this Section. Soils from these sites are typically ineligible for reuse unless the cleanup work is being conducted under a Consent Order, Stipulation Agreement, or some form of enforcement action. In addition, NYSDOT would be required to prevent exposure to contaminants left on-site after the project is completed, or file an environmental easement if some contamination will be left behind.

Analytical results from the ESA’s should be reviewed by staff in the Regional Environmental Unit. Environmental Science Bureau staff are also available to provide further assistance if needed.

**Historic Fill**

In many urban centers former low areas and wetlands were once filled using construction and demolition waste, coal or wood ash, and “inert” industrial waste to create land for development. This pattern of historic landfilling explains why some contaminants are found at very high concentrations in older, urban centers.

Although NYSDOT is not required to remove and replace this soil-like material when projects are located in these areas, excess “soil” should not be moved and reused offsite. Historic fill can generally be used at the same site or sites with similar contaminants, under pavement, or with a clean soil “cap” to protect the public and the environment. Any subsequent use should be done in a manner that would not increase the chances for human or biological exposure.

**4.4.20.6 Interagency Coordination and Agreements**

The most common contaminant encountered during NYSDOT projects is petroleum-contaminated soil and water from spills and releases from underground fuel storage tanks located within the right-of-way or on adjacent properties. These contaminants can migrate through the subsurface and must be properly identified, handled and disposed of.

NYSDOT coordinates with NYSDEC staff in several ways when petroleum contamination is found during project design or during construction projects. First, information about the location, type, and extent of petroleum or chemical contamination that will be included in a
Design Report or Design Report/Environmental Assessment should be forwarded to the NYSDEC Regional Oil Spill Engineer. NYSDEC staff will then evaluate the information and determine what further action, if any, is required. The Regional Environmental Unit should be involved in any subsequent discussions, and Environmental Science Bureau staff can help resolve specific technical issues and questions.

When petroleum or chemical contamination is discovered unexpectedly during construction, the incident must be reported to the NYSDEC Spill Hotline at 1-800-457-7362 within two hours of discovery, or as soon as possible.

**Alert!**
When reporting a spill to NYSDEC, be as clear as possible regarding all known details of the spill, especially whether or not the spill appears to have originated from NYSDOT ROW or from an adjacent property. NYSDOT is frequently misidentified as a responsible party due to inadequate spill reporting. To the extent possible, be prepared with the following information when reporting a spill:

- Correct street address, or location information that is as specific as possible
- Product spilled (if known)
- Quantity spilled (if known)
- How the spill was discovered
- Responsible party (if known)

For additional spill reporting information, please refer to Appendix D-1

Because the source of petroleum contamination is typically outside State right-of-way, NYSDEC staff have sometimes asked NYSDOT’s contractors to continue excavating contaminated soil beyond the project limits to “chase” plumes of subsurface contamination back to their source.

**Alert!**
NYSDOT cannot perform work on private property that has not been acquired through an easement or in fee, and cannot comply with this request.

Information about the type and known extent of contamination can, however, be turned over to the NYSDEC who can call upon their spill response contractors to continue the excavation or remediation on private property beyond the NYSDOT limits of responsibility.

### 4.4.20.7 Project Development and Construction Guidance

**Project Scoping**
A Phase I ESA, and a Phase II if one is needed, should be performed during the Scoping Phase by consultants or by NYSDOT staff who meet the criteria as qualified environmental professionals. When the type(s) and extent of contamination is discovered early in project development, many options are available for managing it in an efficient, cost-effective way. NYSDOT may even be able to have one of their remediation contractors remediate the site prior to construction, and possibly before NYSDOT acquires a property. A Phase I ESA can take
from several weeks to several months, depending on the size and complexity of the project area. A Phase II ESA can require several additional months depending upon the level of effort, extent and depth of sampling, types of laboratory analysis, and report compilation.

**Alert!**

On some projects the results of the Phase II ESA can lead to modifications in the design. Highly contaminated locations can sometimes be avoided by changing or reducing the project footprint. Therefore, it is important to schedule these tasks so that they may be completed in a timely manner relative to other parts of the design process.

On projects where additional right-of-way must be acquired, the results of the Phase I and Phase II ESA should be forwarded to the Real Estate Officer as soon as the reports are completed. NYSDOT Office of Right-of-Way staff will use the information in these reports in appraising these properties and proceeding with acquisition, if necessary.

Phase II ESA’s are typically performed by consultants after the workscope is developed with assistance from the Regional Environmental Unit and/or Environmental Science Bureau staff. The Consultant Management Bureau will also be involved, if the work is being performed via one of the hazardous waste term agreements, which are also used in emergency or quick-response situations. Staff in the Environmental Science Bureau is available to assist the Regional Environmental Unit in developing workscopes for unusual circumstances or when new or innovative methods are proposed or required.

**Design Approval Document**

The results of the Phase I ESA, and the Phase II if one was performed, should be summarized in the Design Approval Document (DAD). The summary should include the following items:

- Maps showing the types, concentrations, and extent of contaminants within the project boundaries, and tables that compare the contaminant concentrations identified within the project corridor to recommended standards, reuse criteria, and guidance levels;
- Options and suggestions for avoiding, handling, disposing or treating contaminants that are likely to be encountered;
- Potential exposure for worker health and safety, and any recommendations about the level of training and PPE required by workers in specific areas, if this can be determined from the data;
- Estimates of the quantities of contaminated material that must be handled as nonhazardous solid waste, or hazardous waste in rare cases; and,
- Any long-term remediation commitments;
- Recommended disposal options if the contaminated soil and material cannot be reused within the project boundaries, or if it requires disposal as a specialty or hazardous waste (i.e. contains PCBs or asbestos and must be sent to a TSCA-approved landfill).

The Final DAD should summarize the results in language that is understandable to the general reader, and avoid specialized acronyms and jargon. The summary should explain how the results of the ESA’s apply to that specific project rather than offering generalizations about
contaminated soil or groundwater. The Phase I and Phase II ESAs should be included as technical appendices.

**Right-of-Way Acquisition**

Transportation projects frequently require the acquisition or “taking” of real property through eminent domain. Expenses associated with acquiring, remediating or removing contaminated soil or material can greatly affect the project costs. Real property that is known or suspected to be contaminated, such as former gas stations, dry cleaners, or properties listed on the New York State Registry of Inactive Hazardous Waste Sites are examples of types of property that may be encountered. NYSDOT should try to limit the State’s liability for pollution remediation, and avoid using taxpayer funds intended for transportation purposes to be spent cleaning up pollution that NYSDOT did not cause.

When contemplating the need for new right of way which is known to be, or suspected of being contaminated, the Office of Right-of-Way should be engaged as early as possible. Acquisition of a property can take 1-2 years, with additional time required if the property may be contaminated.

Prior to the take-line meeting, Regional Environmental staff should alert Regional Right-of-Way staff to parcels that are known or suspected to be contaminated and provide them with an as-accurate-as-possible estimate of potential impacts. Alternatively, Regional Environmental staff may wish to attend the take-line meeting. If a determination is made at the take-line meeting that a taking from the subject property is necessary, a discussion should take place in an effort to limit the acquisition to only those rights which are absolutely necessary in an effort to limit the State’s liability.

**Acquisition of Contaminated Properties**

The Real Estate Specialist’s preliminary property inspection and initial interview with the property owner, prepared as a “Report of Physical Inspection” or “RPI”, may be a useful source of information and uncover potential problems such as leaking fuel storage tanks, pesticide storage areas, or other sources of contamination that may have been overlooked previously. The review of the RPI together with the title documents reviewed by NYSOAG will ultimately provide the legal basis to move ahead with the property acquisition and is the critical path to clearing any parcel with contamination issues.

Each property can present unique circumstances, however, Regional and Main Office Acquisitions Management staff should be consulted for further advice before commencing any activity associated with a contaminated property acquisition.

**Appraisals of Contaminated Properties**

Cleanup costs can easily exceed the fair market value of the parcel and appraising real estate known to be or suspected of being contaminated is problematic. Appellate Court decisions have established statutorily that appraisal of suspected or known contaminated property be considered “as if remediated,” which does not have the same meaning “as if clean.” A more complete description of this issue can be found in the Office of Right-of-Way Instruction Manual at: [internal NYSDOT link only].
Plans and Specifications
NYSDOT has several standard specifications that are part of every contract involving contaminated materials. §107-10, Managing Surplus Material and Waste is written to closely follow the waste classifications in 6 NYCRR Part 360. §107-10 includes definitions for, and steps to manage excess soil and rock, “spoil,” construction and demolition debris, non-hazardous solid waste, non-hazardous industrial waste, and hazardous waste.

NYSDOT also has several special specifications (203.98080015 and 203.99320015) that can be used for treating/disposing of contaminated groundwater during dewatering operations associated with contaminated soil and tank removal work. These specifications can be found at:


Section 205 – Contaminated Soil General: Section 205 covers the special procedures, handling, safety precautions, testing and disposal requirements and costs incurred by the Contractor due to the presence of contaminated soils. Special material handling, health and safety provisions, transportation and disposal accountability apply for all contaminated soil regardless of regulatory waste classification. The appropriate disposal item(s) can be selected based on the nature of the contamination. Field monitoring and/or sampling and laboratory analysis shall be included as appropriate for the situation. The primary use for these specifications is for situations where contaminated soil that will require handling and removal has been identified during the project design following the procedures outlined previously in this guidance. In such situations, information is available on the types of contamination and it is expected that special handling and disposal of contaminated soil will be needed. The specifications can also be used when contaminated soil is unexpectedly encountered with the need for negotiation of the indicated lead times and the time frames for submittals and notifications. The Contaminated Materials Assessment Report and/or Soil Characterizations Information as available for the project shall be included in a Special Note.

Since this is a specialized area of work, the Regional Environmental Units will typically have the lead in contamination determinations, recommendations for use of the appropriate items, and assistance in development of quantities and prices to be included in the Engineer’s estimate.

Section 205 – Contaminated Soil Unit Items/Modular Approach: The specifications include discrete items of work that can be used independently and combined as needed. The “Segregation and Storage of Contaminated Soil” item is to be used for all contracts with contaminated soil to provide for the Contractor’s efforts during excavation and for the handling of contaminated soil within the project. Field monitoring shall be included or omitted if not applicable if that service will be provided by alternate means such as by in-house staff testing, consultant expertise of the Department’s declaration that soil within a defined area must be handled as contaminated. Laboratory analysis items are provided and shall be selected and included as appropriate for a specific project. If analysis parameters are not specifically required and specified within the contract, the contractor is still responsible for all testing required for any disposal by the disposal facility under the disposal item. Disposal items are selected based on the regulatory classification of the waste soil.
Section 205 – Contaminated Soil Serialized Pay Items: The Segregation and Storage (205.02), Disposal (205.0501 and 205.0502) and Reuse (205.06) Items are serialized pay items that can be used for each discrete contaminated area of property as indicated on project plans. The serialized items allow for different plans and different disposal procedures and costs for discretely different areas and nature of contamination.

Section 205 – Contaminated Soil Excavation: Soil Excavation is not included in the Section 205 pay items; The Section 203 Unclassified Excavation pay item will need to be used in conjunction with Section 205. Section 205 is intended to compensate the Contractor for the special handling and additional efforts above what are required for the same work involving non-contaminated soil. The excavation quantities for the project should include the total amount for excavation including the quantities with potential contamination which will otherwise be addressed by Section 205.

Section 205 – Contaminated Soil Contaminated Material Handling Plan, Other Plans and Other Advanced Preparation: The Contractor’s Contaminated Material Handling Plan (CMHP) details all the procedures and methods that will be used to properly address all aspects of handling the contaminated materials. Information describing operations to be used to excavate, field identify, move, and dispose of contaminated soil which addresses personnel safety and environmental considerations is required in the CMHPs. The health and safety training requirements of the workers documenting compliance with OSHA regulations shall be provided in the CMHP. Additional information on the disposal method, stockpiling locations, facility and transporter selected for off-site disposal, and sampling and analyses procedures are required in additional plans (Field Organic Vapor Monitoring, Sampling and Disposal Plans), as applicable.

The purpose of the plans is to have all of the details agreed to in advance of the work, allowing the Contractor flexibility to accomplish the job while keeping the Department informed and providing the opportunity to reject unacceptable procedures. The Plans must be accepted by the Engineer-in Charge (EIC) prior to start of any work associated with these items.

Section 205 – Contaminated Soil Field Organic Vapor Monitoring: The field organic vapor monitoring of potentially contaminated soil areas provides for field testing during excavation by observations and by organic vapor monitoring using a photo-ionization detector (PID) or flame-ionization detector (FID) field instrument. PID/FID readings measure the presence of volatile organic compounds (VOCs) that vaporize into the air in contact with the soil, but are not a direct quantification of contaminants within the soil or an identification of specific compounds. It is used, in combination with other observations, to assist in determining the extent of an area that is contaminated with VOCs typical of certain contamination situations such as gasoline releases to the soil. The monitoring can also assist in determining the general degree of contamination to allow for the segregation of contaminated soil into either low or high contamination stockpiles. Although field vapor readings are a useful tool to assist in identifying the extent of contamination, laboratory analysis is the certified means to determine actual concentrations and declare suspect soil to be “non-contaminated”.

Organic vapor monitoring would not be appropriate in situations where contaminants in the soil do not emit measurable organic vapors that are detectable with a PID/FID. The PID/FID measurements and corresponding results obtained during a site assessment can be
reviewed to verify that the type of contaminants present will be detected by a PID/FID.

Contamination of soils with metals, for example, would not be effectively measured by a PID/FID and this item should not be included for that purpose.

Section 205 prescribes 25ppm as the stated screening vapor level at which soil is preliminarily considered contaminated. This threshold is provided as a reasonable value used by many entities and has been suggested by NYSDEC staff in the oil spills program for identifying soil contaminated by gasoline, but is not directly applicable for diesel or used oil mixtures. An advisory letter from Regional NYSDEC staff in Avon is provided in Appendix D-5. If during project development, an alternative value is known to be more appropriate for the nature of the contamination expected, the alternative threshold value shall be clearly indicated within a Special Note. If it is determined during construction that alternative thresholds are more effective, the alternative value should be provided to the EIC who has the means within the specification to alter the threshold as appropriate. Such determinations and changes are directed by the EIC to ensure clear direction to the Contractor. The EIC may order changes based on such determinations and requested alterations as directed by NYSDEC personnel, the Regional Environmental Unit, and/or the Regional Construction Group, as appropriate. In addition to vapor monitoring, this field monitoring section also provides for the determination of any nuisance odors which could also designate the soil as contaminated. If any other field screening techniques are determined on a case by case basis to be appropriate for the specific contamination suspected, the requirements for their use shall be clearly included within the special notes. Any additional monitoring and disposal costs that result from applied alternative value(s) will be paid for by respective and applicable Section 205 pay items.

Preliminary segregation aids in accurate future classification and prevention of both dilution of highly contaminated material and contamination of negligibly contaminated material. If laboratory analyses are conducted, the results will determine the actual contamination classification.

Section 205 – Contaminated Soil Laboratory Analysis: Sampling and laboratory analysis items are available for the contaminant parameters that are typically encountered. The items can be selected based upon the potential contamination present to verify and document the levels of contaminants of concern. Where laboratory analysis is prescribed, the status of the soil as “non-contaminated” or “contaminated” will be determined by the representative sampling and analysis and the disposal classification determined by the analysis results. If laboratory analysis items are not included in the contract, The Contractor is responsible to conduct all necessary analyses needed to obtain approval at the accepting facility for disposal under the Disposal Items.

Quantities of samples should be estimated to representatively characterize each stockpile or area of contamination.

Section 205 – Contaminated Soil Disposal and/or Reuse of Contaminated Soil: Most contaminated soil encountered on NYSDOT projects is classified as non-hazardous contaminated soil. Common situations such as petroleum-contaminated soil present at current or former gasoline stations, contaminated soil associated with former manufactured coal-gas plant facilities, or soils contaminated with low levels of metals generally do not meet the thresholds of hazardous wastes. Although they are encountered less frequently, some soil contaminated with certain heavy metals or other constituents can meet the criteria of hazardous wastes requiring more stringent tracking and disposal standards. Subsection 4.4.20.5 of this manual provides
guidance on identifying hazardous wastes and contaminated materials during site assessments, 
asessing the nature and extent of contamination, and understanding how to properly manage 
contamination identified with project limits.

The reuse item is intended for those situations where soil will be reused in areas 
containing similar contaminants at the same site, meets the engineering criteria for that use, and 
is considered acceptable by the Regional Environmental Unit and NYSDEC, specifically the 
Regional NYSDEC Environmental and Remediation/Spills staff. Project designers that receive 
pre-bid approval for reuse shall include conditions and locations on plans in the proposal 
documents. Typical reuse applications may qualify for a certain generic beneficial use 
determination (BUD) where non-hazardous contaminated soil which has been excavated as part 
of a construction project is used as backfill for the same excavation or excavations containing 
similar contaminants at the site. The Designer/Project Manager and the Regional Environmental 
Unit, in consult with NYSDEC, shall determine allowable embankment or fill locations, estimate 
the quantity of contaminated soil that is suitable for inclusion under the embankment/fill item, 
and designate on the plans those embankments or fill areas that will be constructed with 
anticipated contaminated soil (these requirements are especially important in association with 
Job Order Contracts, Emergency Contracts and Design Build Contracts where there might be a 
greater possibility of them being overlooked). All other estimated quantities of contaminated 
soil in excess of that intended for on-site reuse would be disposed of under item 205.0502nn.

The entire quantity to be excavated that can be expected to be contaminated and will 
require off-site disposal shall be included in the quantities for the applicable disposal item. In 
the absence of more specific bulk density or weight information, a conversion factor of 1.5 tons 
per cubic yard can be used to estimate weight quantities.

A flowchart is provided in Appendix D-6 that outlines the criteria for soil classification 
and the appropriate disposal or reuse specifications expected for the different contaminated soil 
situations.

Section 629 – Petroleum Storage Tank Closure General: Section 629 covers the procedures for 
petroleum storage tank closure. Tank Closure involves emptying, inverting, cleaning, removal, 
and disposal of petroleum storage tanks; endpoint sample collection and analysis (if determined 
to be necessary); proper documentation of the work; and the submission of a tank closure report 
to NYSDEC. Incomplete tank closure often results in additional work and expense, particularly 
when closure must be obtained well after construction has been completed.

To the greatest extent possible, the capacities and contents of tanks shall be determined 
during the design process through the review of Contaminated Materials Assessments, records 
review (i.e., spill reports, petroleum bulk storage registrations, etc.), subsurface investigations, 
geophysical surveys, and Sanborn Fire Insurance maps.

Subsurface investigation is normally conducted during the design process. If an 
unreported petroleum spill is discovered, NYSDEC should be contacted on their Spills Hotline 
(1-800-457-7362) within two hours of discovery of the spill.

Prior to the acquisition of any property that is known or suspected to contain petroleum 
storage tanks, a reasonable effort shall be made to determine the number of and size of tanks, 
specific tank locations, and the presence or absence of petroleum contamination. This will 
significantly reduce the Department’s liability for the investigation and remediation of tank-
related petroleum spills.
Section 629 – Petroleum Storage Tank Closure Removal/Disposal of Liquids: The volume of liquid in tanks should be determined during design. If a determination cannot be made during design, the volume of liquid should be assumed to be 25% of the tank capacity. The capacities of tanks should be confirmed by records review or calculated based on data derived through geophysical analysis. A contractor will not be paid for removing a volume of liquid that is greater than a tank’s capacity.

Section 629 – Petroleum Storage Tank Closure Unit Items/Modular Approach: The new specification includes discrete items of work that can be used independently and combined as needed. The removal/disposal of liquids item would not be required in instances where tanks do not contain liquids. In addition, NYSDEC personnel (if on-site), can waive the requirement for endpoint sample collection in order to obtain official tank closure.

Section 629 – Petroleum Storage Tank Closure Monitoring: All tank closures will involve tank atmosphere monitoring. The atmosphere in the tank must be continually monitored for levels of explosive gas oxygen (see “inerting”, below). Additionally, if contaminated soil is present, there is a potential for nuisance petroleum odors; if the work is being performed in close proximity to residences, schools (or other sensitive receptors), the work requires field organic vapor monitoring in accordance with §205.03 Field Organic Vapor Monitoring and the appropriate pay items shall be included in the bid documents.

Section 629 – Petroleum Storage Tank Closure Tank Purging/Inerting: The atmosphere within the tank must be made inert; otherwise the possibility of a violent explosion exists. The fuel and/or oxygen sides of the “fire triangle” (third side being an ignition source) must be eliminated and the potential for ignition minimized to the greatest extent possible before tank removal can begin. Fuel vapors and oxygen are purged out of the tank using crushed dry ice, carbon dioxide (CO₂) gas, or Nitrogen (N₂) gas. A fourth option, positive ventilation, is available to the contractor only with prior written approval from the EIC. Prior approval is required for this option because it can be extremely dangerous if performed improperly, and it is not well suited for use in urban environments. The decision as to whether or not this option will be permitted will be made on a site-specific basis and noted by the designer in the plans and via special note.

Section 629 – Petroleum Storage Tank Closure Endpoint Sample Collection/Laboratory Analysis: In order to select the appropriate laboratory analysis for endpoint samples, the current/former tank contents must be determined. To the greatest extent possible, this determination shall be made during design. Section 629 provides the appropriate laboratory analyses for endpoint samples associated with gasoline, #2 fuel oil/diesel, and waste oil, as well as a provision for products other than gasoline, #2 fuel oil/diesel, or waste oil. In instances when the appropriate analyses cannot be determined during design, a determination shall be made in the field, preferably through consultation with on-site NYSDEC personnel. If NYSDEC personnel are not present, the endpoint samples should be analyzed according to the #2 fuel oil/diesel tank parameters. In all cases, the tank product (if known) and analyses to be used shall be specified in the contract documents. If unknown, all Section 629 Endpoint Sample Collection and Analysis unit price pay items shall be included in the contract.
Alert!

Water that collects in excavated depressions in contaminated areas or within the “tank graves” created when USTs are removed cannot be handled in the same way as routine construction dewatering. Special specifications, as referenced above, have been approved for general use and can be included in the contract documents in these situations.

Construction Considerations

Hazardous Bridge Coatings:

The two hazardous bridge coatings most likely to be encountered during bridge replacement or rehabilitation projects are asbestos and lead-based paint (LBP).

Asbestos - Asbestos has been used historically in two common bridge coating applications. These include protective coatings for both structural steel and masonry surfaces. Disturbance/removal of asbestos-containing material is regulated under State and Federal regulations. For guidance related to asbestos inspection, abatement design and construction support associated with bridge replacement or rehabilitation work, refer to Section 4.4.19 – Asbestos Management of The Environmental Manual (TEM).

LBP Non-Hazardous and Hazardous Paint Waste Designation - Section 571 – Treatment and Disposal of Paint Removal Waste includes non-serialized pay items for both hazardous and non-hazardous paint waste associated with historic lead paint application. Designers assess projects that include structural steel painting, steel rehabilitation and demolition involving steel-constructed bridges for both hazardous and non-hazardous waste designation. This designation cannot be made based on paint chip sample analysis from the bridge. This initial design designation can only be based on the following criteria:

- Bridges constructed of Weathering Steel – Non-Hazardous
  Bridges constructed post 1988 – Non-Hazardous
- Bridges previously 100% abrasively blasted to a surface preparation standard of SSPC SP-10 Near White Metal – Non-Hazardous
- All other painted steel bridges – Hazardous

Ultimate waste designation during construction is the responsibility of the contractor based on the requirements of the selected disposal facility and is based on representative sample analysis collected from the waste containers. This ultimate construction designation cannot be made based on paint chip sample analysis from the bridge.

Designers shall make every effort to select and group steel bridges in painting, steel rehabilitation and demolition projects so as to be exclusively hazardous paint removal waste or a mix of both hazardous and non-hazardous paint removal waste. Include the following pay items:

- Contracts exclusively containing hazardous waste bridges - Item 571.03
- Contracts containing both hazardous and non-hazardous waste bridges - Items 571.03 and 571.04
LBP Selection of Containment Level - Section 570 – Paint Removal Operations includes three containment levels associated with steel structure paint removal work. These include Environmental Ground/Waterway Protection, Class B Containment and Class A Containment.

*Environmental Ground and/or Water Protection* – This containment level protects either ground surfaces or water bodies from being impacted by potential waste material deposition. This level of containment is typically specified for localized paint removal work associated with repair, rehabilitation and demolition work using manual scraping methods and/or shrouded power tools in project locations with no immediate nearby public receptors (occupied residential, commercial or municipal facilities). Shrouded power tools can include shrouded grinder, needle scaler and vacuum-blast equipment.

*Class B Containment* – In addition to protecting either ground surfaces and/or water bodies from being impacted by potential waste material deposition, this containment level also provides additional protection for immediate nearby public receptors by including full hard-wall or tarpaulin containment for either localized or medium-scale paint removal work using manual scraping methods and/or shrouded power tools. Shrouded power tools can include shrouded grinder, needle scaler and vacuum-blast equipment.

*Class A Containment* – In addition to protecting either ground surfaces and/or water bodies from being impacted by potential waste material deposition, this containment level also provides additional protection for immediate nearby public receptors by including full hard-wall or tarpaulin containment and vacuum filtration ventilation for large-scale paint removal work using abrasive blasting methods. Class A Containment is required for all non-shrouded abrasive blasting of painted bridge steel or unpainted weathering bridge steel.

LBP Applicable Safety and Health Specification Items for Environmental Ground and/or Water Protection, Class B and Class A Containment Work - Include contract pay items for Lead-Exposure Control Plan, Medical Testing, Personal-Exposure-Monitoring Sample Analysis and Decontamination Facilities for all steel rehabilitation, demolition and painting projects associated with painted steel bridges constructed prior to 1989, regardless of containment level. Do not include contract pay items for Lead-Exposure Control Plan, Medical Testing, Personal-Exposure-Monitoring Sample Analysis and Decontamination Facilities for steel rehabilitation, demolition and painting projects that include work exclusively on weathering steel bridges and/or painted steel bridges constructed post 1988, regardless of containment level.

LBP Estimation of Weights of Paint Removal and Unpainted Weathering Steel Removal Waste - Waste quantities for simple girder structures may be estimated based on previously generated waste quantities from structures that are similar in size and area. The following conversions are also provided as a guideline:

- 10,000 ft² (929m²) of painted steel = Eight 55 gallon (208.2 liter) drums of painted steel paint removal waste
Contaminated Materials and Hazardous Substances

- One 55 gallon (208.2 liter) drum = 600 lbs. (272 kg) of painted steel paint removal waste
- 10,000 ft² (929m²) of unpainted weathering steel = fifteen 55 gallon (208.2 liter) drums of removal waste
- One 55 gallon (208.2 liter) drum = 1000 lbs. (454 kg) of unpainted weathering steel removal waste

Waste quantities for more complex painted structures with large areas of difficult to reach steel may be estimated based on previously generated waste quantities from structures previously blasted that are similar in complexity and size. The following conversions are also provided as a guideline:

- 1 cubic yard = five 55 gallon drums
- One 55 gallon drum = 600 lbs. of painted steel paint removal waste

LBP Coated Scrap Metal - LBP does not need to be removed from scrap steel as long as the salvage yard or scrap dealer is equipped to manage the LBP when they receive it.

LBP and Building Demolition - When NYSDOT projects involve demolition of buildings whose doors, woodwork, and window frames are coated with LBP, these are not typically regulated as hazardous wastes because the intact paint on these materials is incidental to the demolition waste and this LBP does not comprise a large volume of the generated waste.

Hazardous wastes are allowed to be accumulated / stored at the site of generation without requiring special hazardous waste permits. Since for bridge paint removal projects, the site of generation is the specific bridge undergoing renovation, the regulation necessitates that the drums or sealed roll-offs must be stored only at that location until the waste is sent (with a hazardous waste manifest) to a permitted transfer, storage and disposal facility (TSDF). At some urban or confined project locations, it may not be possible to safely store drums of lead-based paint. In these situations the NYSDOT has permission from the NYSDEC to move the drums to the nearest NYSDOT residency using a Part-364 licensed waste hauler. Generators may accumulate/store hazardous wastes for only allotted maximum time periods. The accumulation time allowed by regulation for quantities expected in bridge rehabilitation work is a maximum of 90 days from generation to removal off-site. The site must comply with the generator requirements of 6NYCRR Part 372.2 and the provisions included by reference for personnel training, preparedness and prevention, contingency plans and emergency procedures, and the management of container requirements. See Accumulation/Storage (Hazardous Waste) under subsection 4.4.20.8.12 for more details on these requirements.

Alert!
NYSDOT Standard Specification §571 Treatment and Disposal of Paint Removal Waste requires that hazardous bridge paint waste be removed from the site within 45 days of circumstances longer than 90 days.

Any spills above the Reportable Quantity (RQ) of hazardous waste must be reported to the NYSDEC Spills Hotline at 800-457-7362 (see Appendix D-1) and to the National Response...
Center at 800-424-8802. The RQ for solid hazardous waste that is composed of lead-based bridge paint is 10 pounds.

LBP wastes must be shipped using a Hazardous Waste Manifest that is usually prepared by the transporter or contractor, and which identifies the generator, describes the waste, and includes a generator certification. Additional information about completing and using the manifest is available in the Environmental Documentation chapter of the Office Engineer Training Manual, or by asking the regional Construction Environmental Coordinator or Hazardous Waste Contact.

**RCRA Generators**
Any facility which generates a hazardous waste is a RCRA Generator, of which there are three categories:

- **Large Quantity Generators (LQGs)** - those which generate over 1,000 kg (2,205 lbs) of hazardous waste during any month
- **Small Quantity Generators (SQGs)** - those which generate between 100 kg (220 lbs) and 1,000 kg or store between 1,000 kg and 6,000 kg (13,228 lbs) at any time
- **Conditionally Exempt Small Quantity Generators (CESQGs)** – those which generate less than 100 kg (220 lbs) in any month and store less than 1,000 kg (2205 lbs) on site at any time.

LQGs and SQGs require USEPA Generator ID numbers. Almost all bridges under NYSDOT jurisdiction that were originally painted with lead-based paint already have Generator ID numbers. The Regional Environmental unit can help to locate a Generator ID number or obtain a new one, if needed. A Generator ID number is tied to a piece of real estate (i.e., a single bridge, a single maintenance facility, a factory, etc.). Each bridge included in a multiple-bridge painting contract should have a unique Generator ID number. Generator ID numbers can also be looked up here: [http://www.epa.gov/enviro/facts/rcrainfo/search.html](http://www.epa.gov/enviro/facts/rcrainfo/search.html).

CESQGs do not require USEPA ID numbers, can ship less than 220 lbs of hazardous waste without a manifest, and can self-transport up to 220 lbs of waste in any calendar month to a disposal facility. CESQGs can dispose of their waste at a permitted hazardous waste facility or municipal or industrial solid waste facilities that are permitted to accept this type of waste.

**Alert!**
When disposing of waste from a NYSDOT project or facility classified as a CESQG at a facility other than a hazardous waste landfill, it is necessary to obtain documentation from the disposal facility stating that they know what the waste is and that they are permitted to accept such waste.

**Alert!**
When determining the category of generator based on the quantity of waste generated per month, please note that a “month” in this instance means a 30 consecutive day period from the first date of waste generation.

**Hazardous Waste Assessments, Fees, and Annual Reports**
Regulatory program fees and surcharges are collected from hazardous waste generators and are based upon the facility type and the amount of hazardous waste they manage. Annual reports must be filed with the NYSDEC by March 1st for the previous calendar year. A Hazardous Waste Regulatory Fee Information Form must be completed for each facility or USEPA ID number (such as a specific bridge). Information on these forms is used by the NYSDEC to send out annual invoices to all generators. This information must be verified by regional staff to ensure that previous year’s hazardous wastes are not incorrectly included and the completed forms forwarded to the Accounting Bureau in the Main Office.

In addition to annual reporting, generators of hazardous waste must also file quarterly tax returns to the Department of Taxation and Finance for waste generated during each quarter. The assessment is based upon the amount of waste generated and the method of waste disposal (landfilling, incineration, recycling, etc.). Form TP-550 and the instructions can be found at https://www.tax.ny.gov/forms/hazardous_waste.htm

and the instructions for completing this form can be found at https://www.tax.ny.gov/forms/hazardous_waste.htm. For bridge painting projects the forms are generally sent from the NYS Department of Tax and Finance to the regional construction offices. Information on the form should be verified and completed by the regional staff and then submitted to the appropriate contact at the Main Office Accounting Bureau.

**Alert!**
It is extremely important to verify annual hazardous waste fees and TP-550 information. NYSDEC’s system is set up for businesses that tend to generate the same amount of hazardous waste year after year. Because of this, the Department is often re-billed for the previous year’s waste generation at a particular bridge even though no waste was generated during the current reporting year.

**Cured-in-Place Pipeliner (CIPP)**
CIPP is a trenchless pipeline rehabilitation methodology, where a resin-impregnated fabric “sock”, after being inserted in a culvert, is cured in place using hot water, steam, or UV light. The curing method utilized depends on the resin used and what the facility owner’s specifications allow. Some resins are styrene-based, and the process water from hot water or steam curing of these resins will generally contain levels of styrene that may exceed allowable limits for discharge into surface waters, and therefore it will require special treatment/disposal. Refer to Section 602 of the Standard Specifications for additional details.

**Bird and Bat Waste**
Bridge washing projects frequently involve the disposal of significant quantities of bird and/or bat waste. For details on disposal, please refer to Appendix D-8, Typical Bird/Bat Waste Information. For health and Safety information, please refer to Safety Bulletin SB-94-4.

**Household Hazardous Waste**
When the Department acquires property as part of a construction project, household hazardous waste (HHW) may be left behind by the previous occupant. HHW includes, but is not limited to,
ignitable, toxic, corrosive, reactive, and other commonly encountered household chemicals. For more information on HHW, please refer to Appendix D-9, Household Hazardous Waste.

**Other Contaminated Materials:**

A variety of contaminated materials can be encountered during NYSDOT projects. The most common are petroleum-contaminated soil and groundwater caused by leaking underground fuel storage tanks adjacent to the right-of-way. Many buried tanks were abandoned in place long before New York required their registration in 1985, so they are often encountered unexpectedly during construction despite our best efforts to identify them prior to letting.

Other contaminants that may be encountered include heavy metals, pesticides, PCBs, and chlorinated solvents. Most of the contaminated materials encountered during NYSDOT projects are not hazardous wastes, though they do generally require special handling and disposal procedures as non-hazardous commercial-industrial waste.

The Engineer-in-Charge and Construction staff should notify the Construction Environmental Coordinator, the Regional Health and Safety Representative, and/or the Regional Environmental Unit staff if they encounter unforeseen contamination. These people can help determine an appropriate and prompt response, and call in other experts if necessary. NYSDOT’s stand-by hazardous waste term consultants can also be mobilized on short notice to help in these situations (see 4.4.20.7.1 Project Scoping). In some situations the NYSDEC’s oil spill response contractors can be used to rapidly respond to unexpected spills or releases. (See 4.4.20.6. Interagency Coordination and Agreements.)

The Regional Environmental Unit can help determine if a suspected contaminated material should be segregated, subjected to further testing, reused or disposed in a specific way. Staff in the Environmental Science Bureau can also help during unanticipated encounters with contaminated materials and specialty wastes, and can assist by identifying the best response with NYSDEC and Health Department program staff.

**4.4.20.8 Operations Guidance**

**Road and Roadside Maintenance**

Road, roadside, bridge and facility maintenance activities should be planned well in advance when possible. All maintenance activities, whether planned or emergency/on demand, should be conducted in a way that avoids or minimizes any effects to environmental resources.

**Pavement and concrete maintenance**

Asphalt cutback and dilution - The use of cutback asphalt, or asphalt which has been liquefied by blending with petroleum solvents, in paving activities is prohibited except in the following circumstances:

- When the asphalt is used in the production of long-life stockpile material for pavement patching and repair; or
- When the asphalt is used as a penetrating prime coat for the purpose of preparing a surface to receive asphalt pavement.
Asphalt cleaning - Use good practices when using petroleum products such as diesel fuel to clean asphalt tools and equipment to prevent contamination to any waters or soil. Consider using some of the ‘green’ cleaning products that are on the market and often available under existing purchase contracts whenever possible. Don’t clean equipment or tools near streams, ponds, or drainage structures. Solid pieces of asphalt must be removed by scraping or other mechanical means if possible before applying a cleaning agent. Asphalt removed solely by mechanical methods, using no cleaning solvents may be disposed of as C&D (See Pavement disposal below). If a petroleum product such as diesel fuel is used for cleaning, a minimal amount of petroleum product should be used to accomplish the cleaning because all spent cleaning product must be recovered. Use hand sprayers or other similar devices to minimize the amount of petroleum-based cleaner applied. Contain all products (including the cleaning product and the contaminated asphalt residue cleaned from the equipment) during cleaning using tarps, sand pads, pails or other collection methods to avoid spillage or accidental release of cleaning products. Contaminated sand, soil, asphalt pavement residue, and other debris containing petroleum products resulting from activities such as paver cleaning with petroleum products should be handled as petroleum contaminated soil/debris and must be disposed at an authorized disposal (i.e., a lined municipal solid waste landfill) or treatment facility. See Petroleum Contaminated Soil under subsection 4.4.20.8.12. Report releases of petroleum products to the NYSDEC Spills Hotline (1-800-457-7362) within two hours of discovery, or as soon as possible. Refer to Appendix D-1 for additional spill reporting information.

Pavement disposal - Recognizable uncontaminated broken concrete and asphalt from demolition activities or excess material from a project are construction and demolition (C&D) waste. Pavement containing routine intact traffic markings (i.e. paint) or which has come into contact with petroleum products such as lubricants through normal vehicle use of the roadway are considered uncontaminated and can be handled as C&D debris. Except for in Nassau or Suffolk Counties and within the Adirondack Park (a permit is required by the Adirondack Park Agency-APA), these materials can be disposed of at suitable locations on NYSDOT property (“spoiled onsite”), or taken to an off-site disposal facility that charges no fees and operates only during daylight hours (i.e., facilities requesting fill at no charge). Do not place this material within 30 meters (100 feet) of wetlands, archeological sites, or other sensitive environmental areas. See 4.4.20.8.4- Spoil and C&D Debris under subsection 4.4.20.8.12 for additional information. If disposed of within Nassau and Suffolk Counties, C&D debris including uncontaminated pavement debris must be disposed of at an authorized lined disposal facility or taken to an authorized C&D debris processing facility.

Pavement marking
Traffic marking activities use paints/coatings that may contain hazardous ingredients and must not be conducted in the rain. USEPA and NYSDEC regulate coatings including traffic paint to limit the release of volatile organic compounds (VOCs) which help form the air pollutant, ozone. Current paint specifications which NYSDOT has adopted state-wide meet all the above requirements. NYSDOT has replaced solvent-based alkyd traffic paints with waterborne paints that contain 80% less organic solvents, and with epoxy paints that release no solvent vapors. Yellow traffic marking paints in years past contained lead chromate in the pigment. NYSDOT began phasing out the use of lead chromate in yellow pigments in 2004 when non-lead based
pigments were used in waterborne paints by NYSDOT Maintenance staff. Lead chromate-based yellow marking paints used on construction contracts were phased out in 2006.

For older markings that contain lead, however, NYSDOT testing determined that typical dried yellow markings/chips do not “leach” lead and chromium at levels that would require paint waste to be classified as hazardous wastes. Therefore, dried paint marking chips/millings (yellow and white) are non-hazardous industrial wastes. See Paint and Dried Paint Chips and Flakes under subsection 4.4.20.8.12 for further discussion on disposal of traffic paints or of chips/markings milled or removed from the road surface. Some of the constituents in paints have reporting requirements for spills and releases and for use above certain thresholds. See 4.4.20.8.10 - Spills of Fuels, Chemicals and Hazardous Products and 4.4.20.8.11 - Emergency Planning and Community Right-to-Know.

Shoulder maintenance
Cleaning/sweeping: Cleaning/sweeping of shoulders can generate large amounts of dust. Care should be taken to minimize dust as much as possible. Equipment should be in good working order and contain filters and/or other controls as feasible. See Street Sweepings under subsection 4.4.20.8.12 for disposal information.

Herbicides
Herbicides are a significant component of NYSDOT’s IVM program. Their use is generally restricted to the following circumstances:
- Controlling vegetation in places that cannot be mowed, such as around guiderail and sign posts
- Controlling vegetation that can cause physical harm to workers and travelers, such as poison ivy, poison oak, Giant Hogweed or Wild Parsnip
- Targeted applications to remove invasive or noxious species that are causing safety, operational or environmental problems
- Treating stumps remaining after hazardous tree or brush removal to prevent re-sprouting

Herbicide application by NYSDOT employees is considered a "commercial pesticide business" activity. Staff applying herbicides must keep daily records for all herbicide applications. In addition to complying with regulations, accurate and timely recordkeeping is key to protecting the environment, addressing public inquiries, and helping NYSDOT plan the most effective vegetation management program for succeeding years. Certified Commercial Pesticide Applicators and Technicians must submit annual reports (even if they had no applications).

- The following levels of training are required for the following applications:

**Table 4: Pesticide Training Requirements**

<table>
<thead>
<tr>
<th>Level of training</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Commercial Pesticide Applicator</td>
<td>Any herbicide, including restricted use</td>
</tr>
</tbody>
</table>
Certified Commercial Pesticide Technician | Any general use herbicide typically used by NYSDOT or any application while under the direction of a Certified Applicator

Certified apprentice | Any application under the direct supervision of a Certified Applicator

- Apprentices must receive 40 hours of on-the-job herbicide training and 8 hours of core training before they may apply general use herbicide with off-site supervision.

- Herbicide labels
  - All herbicides must be applied according to the manufacturer's label instructions.
  - A label may also include 2ee “unlabeled pest” designations issued by the New York State Department of Environmental Conservation. These 2ee designations are useful to NYSDOT and its contractors as they provide more herbicide options for controlling invasive and noxious species. Information on 2ee designations may be found at: http://pmep.cce.cornell.edu/regulation/2ee/index.html
  - The applicator must have a copy of the label in their possession during applications.
  - Staff applying herbicides are responsible for reading and knowing the entire label. However, two label segments in particular are changing frequently: guidance on Personal Protective Equipment (PPE) and use of herbicides near water.

- Herbicides may not be applied into or over water unless the label instructions specifically state they may be applied in water and NYSDEC has approved the application. To avoid accidental water applications, inspect the route ahead of time and "flag" all cross culverts, streams and wetlands so that the sprayer can be shut off 20 feet (6 meters) before entering the sensitive area and its required buffer area. Some regions have identified these locations with permanent identification markers.

- Applying herbicides within 100 feet (30 meters) of a state-regulated wetland requires an Article 24 wetland permit from the NYSDEC or, in the Adirondack Park, from the APA. Some NYSDEC Regional Offices have issued General Permits to NYSDOT for herbicide applications in regulated wetland-adjacent areas (within 100 feet) where NYSDOT had submitted a permit application that included an approved Integrated Vegetation Management Plan. Residencies can obtain maps, paper or GIS (Geographic Information System) documents that show the approximate locations of state-regulated wetlands from the MEC.

- NYSDEC regulations require placing visual notification signs during and for at least 24 hours subsequent to show that herbicides have been applied within 100 feet (30 meters) of a dwelling, public building, or public park.

- When herbicides are applied to right-of-way not owned in fee by NYSDOT and a dwelling is anywhere on the property, advance notification - - in writing - - is required to the dwelling’s occupants. NYSDOT regions and residencies may not apply to right of way not owned in fee, unless they receive prior approval from the Office of Transportation Maintenance in the Main Office. A prior approval will require documentation on the locations where the herbicides are to be applied, the reason and the notification plan. Once a request for an application leaves the Region, it typically takes two to five business days for Main Office Maintenance to reply to the request. For more information on receiving such prior approvals, contact the Region’s Vegetation Manager, who is either the MEC or Director of Regional Crews.
• Herbicides should only be applied when the wind is calm, generally during early morning, late afternoon, or evening. This reduces herbicide "drift" onto sensitive non-target surfaces, such as adjacent streams, wetlands or desirable vegetation.

• Typically, rain diminishes the effectiveness of herbicides or causes them to run off the target. Unless the label allows, do not apply herbicides when rain is imminent, during rain or when the ground is saturated.

• Many herbicides are available in returnable containers. Regions and Residencies are encouraged to investigate if such containers are appropriate for use, given the price, expected amount of herbicides used at a location and the minimum size and number of containers that must be purchased.

• If the label allows, NYSDOT Applicators and Technicians are encouraged to consider if use of adjuvants, chemicals added to an herbicide to help active ingredients work more effectively, will make certain applications work better. Some adjuvants are spreaders/stickers and help an herbicide adhere better to a leaf. Others enlarge droplet size to lessen off-target drift.

• Do not wash herbicide application equipment or empty containers in ditches, streams, ponds or wetlands, or allow the wash water to flow into any surface waters, including wetlands.

• Most herbicide spills are not generally reportable to NYSDEC (i.e. Krenite, Escort, Roundup, Rodeo and Oust do not need to be reported). Clean up any spills as quickly as possible; if herbicides spill into a water body, notify the MEC and the local NYSDEC regional water program engineer (See 4.4.20.8.10 - Spills of Fuels, Chemicals, and Hazardous Products).

Pesticide applicator regulations are in 6NYCRR Parts 325-327. Other regulations for specific natural resources may also apply.

Superstructure and bridge decking maintenance and repair

Painting, paint removal, coating and sealing operations on bridges: USEPA and NYSDEC regulate coatings including structural paint to limit the release of volatile organic compounds (VOCs) that contribute to ozone formation. Current bridge paint specifications which NYSDOT has adopted state-wide meet all the VOC requirements. NYSDOT ceased using lead-based paints in the late 1980s and developed comprehensive procedures for the removal of old lead-based paints.

Some of the constituents (such as xylene, toluene and glycol ethers) in paints have reporting requirements for spills/releases and when used above certain thresholds. See 4.4.20.8.10 - Spills of Fuels, Chemicals and Hazardous Products and 4.4.20.8.11 - Emergency Planning and Community Right-to-Know. Concrete sealants and rust coatings may also have constituents (such as methanol and glycol ethers) which also have reporting requirements.

Work over water/wetlands and sensitive areas: To protect aquatic habitat and comply with State and Federal water and waste regulations, concrete and abrasive dusts and wastes must not be allowed to enter streams or wetlands. Dusts and abrasives impair aquatic habitat and interfere with aquatic food chains and fish egg development. In addition, C&D disposal regulations require disposal only at locations that are not close to streams and wetlands. Collect waste
concrete material, such as dusts and chippings removed from bridge surfaces and sidewalks, and dispose of as waste pavement/concrete material. See Pavement and Concrete Maintenance under subsection 4.4.20.8.1. In addition, collect all debris from welding or torch cutting that could generate paint debris from the bridge.

**Disposal issues**

**Structure and pavement material** - See Pavement and Concrete Maintenance under subsection 4.4.20.8.1 for discussions on structure and pavement material disposal.

Disposal of paints, coating, and sealant wastes solutions - See Paint, Paint Thinner, and Paint Wash Water from Pavement Marking Equipment under subsection 4.4.20.8.12 as applicable.

**Spoil**

Many highway maintenance activities such as cleaning ditches and culverts generate excavated material or other spoil that can be placed on the ROW in an upland (well-drained) area away from wetlands and streams. Spoil material must not be placed:

- Within 30 meters (legally 100 feet) of wetlands, within 15 meters (50 feet) of stream bank or within the floodway, whichever is greater, or in flood plains;
- On forest preserve lands or on prime agricultural land;
- In the vicinity of historic resources or archeological sites;
- In visually-sensitive areas or in other environmentally-sensitive areas;
- Outside ROW, unless appropriate permits are in place, e.g. APA.

**Alert!**

Disposing of spoil in or near environmentally-sensitive areas is not an exempt maintenance activity and may violate state and federal regulations.

Spoil areas should be graded and shaped to blend with the landscape and then re-seeded and mulched to prevent erosion.

Place any spoil material in an upland area (away from streams or wetlands), and then seed and mulch the spoil pile. Sediment from ditches and culverts is considered uncontaminated and does not need to be tested unless it smells like fuel, solvents, or sewage, is located in an area of known contamination, or is mixed with roadside trash. (See Exempt C&D Debris and Spoil under subsection 4.4.20.8.12 or call the MEC for more guidance). Before placing any excavated material or other spoil, consideration must be given so as to prevent the spread of invasive plants.

A good use for spoil is to flatten slopes so that guardrail is no longer required for operational and safety purposes. In planning and undertaking work that will result in fill, designers, traffic engineers and maintenance staff should look in advance for locations to flatten slopes when such work can be accomplished without environmental damage. Verify the safety of intended slopes within the right of way.

**Snow and Ice Control**
Snow and ice control is one of NYSDOT’s most widespread and visible activities. NYSDOT tries to use salt and other deicing materials in an efficient manner to provide effective performance while minimizing impacts to the environment.

Pre-season and pre-storm meetings are held to discuss snow & ice control guidelines and residency storm management plans. Such meetings should be held with municipal contractors and emphasize the need to consider environmental factors as well as traditional objectives such as safety, service, and budget considerations.

To minimize environmental impacts to water quality and roadside vegetation, NYSDOT employees and contractors incorporate appropriate best management practices (BMPs) outlined below:

**Storage and handling of snow & ice control materials BMPs**
See *Salt and De-icers Storage* under subsection 4.4.20.8.9.

**Equipment preparation/maintenance BMPs**
Calibrate spreading equipment for both solid (typically salt) and liquids (typically salt brine, calcium chloride, magnesium chloride or IceBan/MAGic solutions) to apply the proper amounts of materials. The equipment that controls the spread pattern must be adjusted to match the required use and ensure proper placement. Critical system components include the automatic ground speed controller, the flight chain or belt, the gate opening, the chute, the liquid nozzles (if applicable), the spinner and the deflectors.

Periodic calibration checks to confirm that these proper settings have not changed must be conducted during the snow and ice season. For details on calibration and spread pattern adjustments, contact the Equipment Operator Instructors.

**Plowing and/or spreading operation BMPs**
The objective of plowing, spreading, and direct liquid application operations is to maintain an acceptable level of service on the highway while using the minimum amount of materials necessary to achieve this. Several steps to reduce the amount of anti-icer, de-icer and/or traction enhancing materials that are wasted during snow and ice control operations can be taken, including:

- Practice anti-icing by promoting pre-storm anti-icing direct liquids applications and timely responses to snow and ice events to prevent precipitation;
- In order to avoid spillage, do not overload the material hopper or dump body;
- Plow off snow or slush before applying materials to decrease dilution and increase the effectiveness of the materials;
- Control spreading speeds to reduce bounce and scatter;
- Control spread patterns to concentrate material where it is most effective on the road;
- Using sand (abrasives) is not encouraged but may be considered for temporary traction control at limited locations such as steep hills, intersections, etc.;
- Supervisors and operators should become familiar with chemical application rate charts obtained in the *Snow and Ice Control Guidelines*;
- Evaluate road and weather conditions and trends to ensure that proper type and timing of
treatment is used;

- When re-applying material, consider the possibility of partial vs. full and spot vs. blanket treatments where appropriate;
- Consider pavement temperatures as opposed to air temperature when selecting treatment strategies;
- Consider alternative treatments (e.g., plow only, use of snow fencing) that do not require applying materials if possible;
- Return unused materials to stockpiles and avoid heavy “end of beat” applications that empty the load;
- Keep accurate records of materials usage to allow monitoring and improvement of operations.

For additional operational guidance refer to the most current NYSDOT Highway Maintenance Guidelines for Snow and Ice Control and the most current NYSDOT Equipment Operator Snow and Ice Manual. Complaints about possible salt contamination should be directed to the Regional MEC.

Post storm/post season cleanup BMPs

Minimize wash water runoff from these activities and do not use detergents or soaps. Where possible, use indoor wash facilities with controlled floor drainage that will direct the wash water into an oil/water separator or sanitary sewer.

If snow must be loaded and hauled, select a pre-approved disposal site to ensure that the environment is protected. Abrasives should be swept up from the highway environment wherever and whenever possible. Cleanup prevents sand from clogging drainage systems, reduces air pollution and waterway siltation, and reduces skidding hazards on the highway. A pre-approved site must be used to dispose of spent abrasives.

Spill Response within the ROW

Assistance to non-NYSDOT spills along the ROW

Anyone who discovers a reportable spill should call the NYSDEC's Spills Hotline at 1-800-457-7362 (see 4.4.20.8.10 - Spills of Fuels, Chemicals and Hazardous Products, and also Appendix D-1). Although the NYSDEC staff and their contractors respond to spills in emergencies, NYSDOT may also respond to certain spills along the highway if there are NYSDOT facilities and/or employees nearby. In 2008, NYSDEC and NYSDOT signed a Memorandum of Understanding (MOU) between the two agencies that allow NYSDOT employees to do the following:

- Set up traffic barricades to redirect traffic away from or around a spill site. NYSDEC spill response staff will indicate how far a barricade must safely be placed from a spill of a known or unknown hazardous substance;
- Spread sand on spills of known petroleum products on state highways. NYSDOT employees will not spread sand on spills of unknown materials or spills of known hazardous substances;
• NYSDEC will call a standby contractor to pick up contaminated sand, but if the amount of sand is small and a DOT facility is nearby, DOT employees may be asked to pick up the contaminated sand;

• When NYSDOT removes and disposes of petroleum-contaminated sand from a ROW spill event at NYSDEC direction, NYSDEC will assist in expediting any needed NYSDEC permits, locating disposal sites and authorizing reimbursements of NYSDOT disposal costs from the NYSDEC’s Spill Compensation Fund.

The spiller is responsible for the cost of any cleanup. Be certain that any paperwork you sign lists the name of the trucking firm or the vehicle operator, not NYSDOT, as the "generator or spiller."

For spills in the ROW that require excavation as a component of remediation, staff from a Regional technical support group (usually the Regional Geotechnical Engineer) are often requested to provide NYSDEC contractors with technical guidance to ensure that the integrity of the transportation infrastructure is maintained.

**NYSDOT spills**
For spills of which NYSDOT is responsible for the spill, see 4.4.20.8.10 - Spills of Fuels, Chemicals and Hazardous Products.

**Fuel and Petroleum Storage and Handling**

**Fuel and Petroleum Tank Storage and Management**
Fuel is essential for NYSDOT vehicles to accomplish critical missions such as removing snow and ice, performing maintenance, responding to emergencies and other functions. Other State agencies also use NYSDOT fuel facilities. Other petroleum products at facilities support operations and equipment management.

Improper management can:
• Result in release of petroleum to the environment and pollute waterways and groundwater;
• Impact employee health and safety;
• Disrupt fuel availability; and
• Result in legal actions, fines and penalties.

Significant environmental damage can occur from petroleum spills and leaks in the quantities present at typical facilities. The USEPA estimates a single gallon of oil can contaminate 1 million gallons of water. In addition to environmental damage, cleaning up leaks and spills is very costly and time consuming.

Requirements for managing and storing petroleum products result from many different regulatory and operational aspects, but are intended to achieve complimentary objectives. The Office of Operations Management Instruction, titled: **Fuel and Petroleum Storage: Main Office and Regional Responsibilities** describes the requirements and responsibilities of operating fuel storage facilities, and includes sample record forms and information. A checklist included as Appendix B of this document offers a quick guide to these regulatory requirements.
that require NYSDOT staff from different parts of the organization to work cooperatively to safely and efficiently install, operate, maintain and administer fuel storage and dispensing facilities. NYSDOT employees at the facilities handle daily operations, monitor inventory, and perform routine inspections. The Office of Transportation Maintenance – Facilities Section (FACS) builds new bulk storage facilities, arranges for replacement and repair when necessary, and administers the program for tank registrations, periodic testing, and major inspections of system components.

Specific assigned tasks are listed below. For specific questions, see the management instruction, contact the group responsible or contact the regional MEC.

**Responsibilities of Transportation Maintenance – Facilities Section**

- Provide Overall Program Direction, to maximize capital equipment assets and infrastructure investment and provide equipment compliant with regulations;
- Tank Systems Installation and Equipment (New and Major Equipment);
- Ongoing Equipment: Purchase, repair and installation of durable equipment components;
- Periodic Testing required by regulations: Develop policies, procedures and contracts for testing including tightness testing of USTs (that did not require and have not been upgraded to USEPA standards), and yearly testing of cathodic systems;
- Tank Registration;
- Tank Closures and Remediation Activities as needed from tank closures and past activities;
- Storage and Operating Guidance;
- Purchase Fuels related to fueling of vehicles and equipment; and
- Other administrative, funding, policy and procedures to support these activities.
- Maintenance and repair of fire suppression and leak detection systems
- Fire Suppression System Testing – Semi-annual inspection by contract vendor.
- Installation and repair of pumps, hoses and nozzles
- Supply and replacement of expendables (such as filters); and
- Coordination of site personnel for vendor services

**Responsibilities of the Site/Residency/Regional Fuel Facility**

- Operate the system.
- Facility Requirements: Identify facility deficiencies and needs (See Appendix B for checklist of environmental and related requirements) and reporting capital project needs to FACS;
- Routine Inspection: Conduct and document ongoing inspections including monthly inspections for environmental regulatory requirements and weekly check of interstitial spaces on USTs;
- Records: Maintain records of site inspections, deliveries, manuals, drawings, spills, inventory records and any other documentation of compliance and operation of the site;
- Site Plans and Manuals – Maintain as-built plans and manuals for tank equipment at each site;
- Inventory reconciliation and associated recordkeeping;
- Fuel Delivery and Purchase: Accept, coordinate and monitor deliveries. Purchase
• Signs/Communications: Installation of needed hazard communication signs, fire protection signs, product and capacity signs, registration postings and color coding.
  Maintain current material safety data sheets (MSDSs) within the hazard communication program for all products; and
• Spill Prevention, Control and Countermeasures (SPCC) Plan, Response and Reporting.

Reporting petroleum products stored on site for emergency plans
See 4.4.20.8.11 - Emergency Planning and Community Right-to-Know.

Petroleum spills
See 4.4.20.8.10 - Spills of Fuels, Chemicals and Hazardous Products, as well as Appendix D-1.

Regulations
Handling and storing petroleum in tanks is highly regulated by different, but supporting, areas:
The primary areas are listed to assist in identifying where different provisions are located and include:
• NYS Petroleum Bulk Storage regulations, 6 NYCRR Part 613 for both aboveground and underground storage tanks (ASTs and USTs), respectively, storing any petroleum products. Requires registration; certain operating features and equipment; testing, monitoring and recordkeeping; labeling and color coding; and design installation requirements for new tanks systems.
• USEPA Standards for USTs (40 CFR Part 280) for all USTs, except for on premises heating fuel. Requires USTs to have leak detection, corrosion protection and spill/overfill protection.
• USEPA Spill Prevention Control and Countermeasures (SPCC) regulations, 40 CFR Part 112, requires advance planning of spill prevention controls (such as secondary containment or other installed or equipment preventives), spill prevention procedures and spill response procedures. SPCC regulations apply to facilities storing more than 1,320 gallons of any oil products in any combination of aboveground tanks and containers of more than 55 gallons (or greater than 42,000 gallons in UST that do not meet the USEPA standards of Part 280) and may reasonably have the potential to discharge oil into waters of the US.
• USDOT Hazardous Material Transportation regulations, 49 CFR Part 171-180, regulate hazardous material shipping (petroleum products are “combustible or flammable liquids” (49 CFR Part 172.101)) including communication, emergency response information and training provisions. Part 177.834 requires the carrier to attend the unloading of a cargo tank (delivery to our tanks) with a qualified person at all times during unloading (and be alert and within 25’ and have an unobstructed view of the tanker and connections).
• OSHA requirements including: HAZCOM and HAZWOPER, and other safety requirements, 29 CFR Part 1910.1200 (HazCom) Part 120 (HAZWOPER), require communication of hazardous material health, safety and handling requirements and the training and procedures required for responding to emergency releases of hazardous materials.
• Fire Code (NFPA) requirements also stipulate design and installation, testing/monitoring and hazard communications regarding storage of flammable/combustible materials and fire suppression systems.

Storing and Handling Products
General principles
Good storage and handling practices can greatly minimize waste quantities and costs for disposal as well as reduce potential for employee exposure or environmental contamination. The following general steps are good practices that can significantly reduce handling, disposal costs, and future liability from NYSDOT activities:

**Substitute.** Substitute a less hazardous or less waste-producing product or process for those that would otherwise have generated a more hazardous or higher quantity of wastes. As well as potentially resulting in a non-hazardous waste for an indicated activity, such substitution may reduce or eliminate potential employee exposure concerns and additional regulatory burden. An example is substitution of a non-flammable, non-chlorinated cleaning product for a methylene chloride gasket cleaner.

**Identify container contents and maintain data on its contents.** Keep products in their original containers whenever possible. Otherwise, label containers with permanent markers, include the date when you first began filling it, and keep a record of what is stored in each one. Retain the material safety data sheets (MSDS) for the product. Also record any other information that relates to a waste, such as "also contains some water" or what activity the waste resulted from, such as “Safe-Strip cleaning solvent from epoxy pavement marking activities”.

**Whenever possible, return unused products to the supplier.** Some suppliers and manufacturers will accept unused, expired products. This eliminates our need to pay for disposal in some cases.

**Never mix dissimilar materials and wastes in the same containers.** Mixing of different materials will likely require the resulting mixture to be analytically tested and may present increased disposal restrictions. Environmental regulations also place strict limits on the types of wastes that can be mixed together and generally prohibit mixing dissimilar wastes.

**Store drums in protected (dry) and temperature-compatible manner.** Do not store product or empty drums upright and outdoors where they can collect rain or melting snow, allowing for collection of water (and the potential need for testing of rainwater) in the drums and degradation (even when a lid is originally in place). Rather, store all drums under a roof if possible and store uncovered empty drums on their sides. Do not store materials that can freeze in unheated areas.

**Don't let wastes or empty containers accumulate; dispose of them regularly.** Dispose of wastes before knowledge of their contents is lost and before deterioration occurs. Keep an inventory of the waste you have on hand and contact the MEC to set up disposal contracts for both hazardous and nonhazardous wastes. Dispose of empty containers promptly before water or other contamination or deterioration occurs. (See *Empty Drums and Containers* under subsection 4.4.20.8.12 for empty drum disposal.)

**Waste vs. Product**
Partly-used containers of paint and other products may be present at NYSDOT Residencies and facilities. The waste handling requirements and storage time limits begin to apply when the decision is made that these products are not likely to be used and should be disposed. For example, a partly-used drum of pavement-marking paint may be left over from a previous season. If the paint can still be used when the drum is reopened, then the drum contains a product, not a waste; if, however, the paint has become too dry to be useful, the drum then becomes a waste that must be disposed.
**Disposal procedures:** See 4.4.20.8.12 - Waste Management.

**Material Safety Data Sheets (MSDSs)**
Suppliers and manufacturers are required to supply MSDSs for all products and they must be retained and available for all materials on site as part of the Hazard Communication (HAZCOM) Program. An unused unmixed product in its original container typically does not need to be tested prior to disposal if you have a MSDS that properly identifies the material.

**Chemical tank requirements**
Chemical storage tanks holding hazardous substances listed in 6 NYCRR Part 597 such as ethylene glycol (antifreeze), toluene (paint thinner), or hydrochloric acid require registration with NYSDEC. Registration is required for underground storage tanks of any size and stationary aboveground tanks of 185 gallons or more capacity. Operation, equipment and design standards of 6 NYCRR Parts 596-599 apply to covered tanks. Contact the PBS Manager in Transportation Maintenance – Facilities Section for more information on chemical tank requirements.

**Tip:**
Non-stationary tanks, such as totes containing pavement marking paint do not require registration. However, totes that are stored for a period of 90 consecutive days or more must be in an enclosure such as a warehouse or storm shelter and must be in an area with an impervious floor and a perimeter curb or ramp of sufficient capacity to hold 110% of the largest tank. Each tank must be labeled to identify its contents and an inventory must be kept for all containers kept within the storage area. Additionally, totes of incompatible materials must not be stored in close proximity to each other.

**Petroleum product storage and handling:** See 4.4.20.8.8 - Fuel and Petroleum Storage and Handling.

**Salt and de-icers storage**
Salt and other anti-icing/de-icing materials should be handled and stored in a way that minimizes possible contamination of surrounding areas by wind-blown or waterborne “runoff”.

**Salt:** Piles of salt should not be left exposed to the elements. Good management practices require that salt and mixtures of salt and sand be kept on an impermeable surface like asphalt or concrete and stored in salt storage buildings whenever possible. Under some circumstances, such as storage building maintenance or excess supply, temporary (typically, less than one season) “surge” piles may be utilized if placed on an impermeable surface and covered with adequate (weighted) tarping. For additional details on storage site characteristics, see the most current NYSDOT Highway Maintenance Guidelines for Snow and Ice Control.

**Liquid anti-icer storage:** Liquid Anti-Icer materials (Magnesium Chloride, Calcium Chloride Salt Brine, Liquids with agricultural additives, etc., which are not included under the Chemical Bulk Storage regulations) are stored in above ground storage tanks (typically 3,000 - 5,000 gallon) at many facilities. These should be placed on level, compacted sand bases and protected from traffic by barriers (i.e., bollards, guiderail, etc.). Drainage in that area should be graded so that any spills can be contained on site. Placards or stenciled lettering should be used to identify the tanks contents. Spill containment systems should be considered. For additional handling and
spill containment information, refer to the most current *NYSDOT Highway Maintenance Guidelines for Chemical De-Icers*.

### Spills of Fuels, Chemicals, and Hazardous Products

Spillage from NYSDOT operations of petroleum products and other products containing listed chemicals may require reporting (see Appendix D-1) if the spill reaches or exceeds reporting criteria. Reportable spills should be reported to the NYSDEC Spills Hotline (1-800-457-7362) within 2 hours of discovery. NYSDOT may also provide some response actions to certain spills that occur along the ROW.

#### Petroleum spill reporting

Spills of petroleum products (gasoline, fuel, used oil, etc.) are required to be reported (see Appendix D-1) to the NYSDEC Spills Hotline (800-457-7362) unless they meet all of the following criteria:

- The quantity is less than 5 gallons;
- The spill is contained and under the control of the spiller;
- The spill can not reach the State’s water or land (i.e. occurs on pavement); and,
- The spill is cleaned up within two hours of discovery

**Special note:** NYSDOT’s Transportation Maintenance Safety Manual also lists important safety requirements for transporting gasoline and diesel fuel that will help avoid spills during the work. *Petroleum spill reporting requirements are included in the state’s Petroleum Bulk Storage Regulations, 6NYCRR Parts 612-614.*

#### Chemical spill reporting

Spills of regulated chemicals must be reported to the NYSDEC Spills Hotline (1-800-457-7362) and the National Response Center ((800) 424-8802) if the spill reaches or exceeds the listed “reportable quantities”. The reportable quantity (RQ) pertains to the quantity of the specific chemical released; the quantity of the chemical within a release of a mixture or product should be estimated to determine if the RQ was exceeded. (For example, the quantity of methanol released in a 100 pound release of concrete sealant (approximately 15 gallons) containing 22% methanol is 22 pounds). Many of these RQs are quite large in comparison to the quantities that are typically used in NYSDOT activities, thereby exceeding the federal RQ for those chemicals is unlikely.

NYSDEC also requires reporting (to the NYSDEC Spills Hotline) of releases that could impact land and water at lower reporting thresholds (see Appendix D-1). The following table includes the federal RQs (49 CFR 172.101) and NYSDEC RQs to land/water (6NYCRR Part 597) for chemicals present in appreciable quantity in common products used by NYSDOT:

<table>
<thead>
<tr>
<th>Chemical/Typical Product where present</th>
<th>Federal RQ (lb)</th>
<th>NYSDEC water/land RQ (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Glycol (antifreeze)</td>
<td>5000</td>
<td>1</td>
</tr>
<tr>
<td>Hydrochloric Acid (muriatic acid)</td>
<td>5000</td>
<td>100</td>
</tr>
<tr>
<td>Lead compounds (Lead paint removal waste from bridge rehabilitation)</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Chemical</th>
<th>Reportable Quantity</th>
<th>Quantity in Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol (paints, sealants)</td>
<td>5000</td>
<td>1</td>
</tr>
<tr>
<td>Styrene (polyester paints)</td>
<td>1000</td>
<td>1</td>
</tr>
<tr>
<td>Sulfuric Acid (batteries)</td>
<td>1000</td>
<td>100</td>
</tr>
<tr>
<td>Toluene</td>
<td>1000</td>
<td>1</td>
</tr>
<tr>
<td>Xylene</td>
<td>100</td>
<td>1</td>
</tr>
</tbody>
</table>

Chemicals such as isopropanol, calcium chloride, magnesium chloride, most herbicides (including Escort, Krenite, Oust, Rodeo, and Roundup), propylene glycol, ethanol, and salt present in common products used in NYSDOT activities are not regulated and do not have reportable quantity notification requirements. Many chemicals are not listed, but this does not mean they are harmless and they still require appropriate cleanup.

The federal Chemical Spill Reporting Requirements are listed in USEPA regulations, 40 CFR Part 302.4, “Designation, Reportable Quantities and Notification” (the reportable quantities are also included in Appendix A of the USDOT regulation 49 CFR part 172.101 (Hazardous Materials Table)). NYS includes chemical spill reporting requirements in the Chemical Bulk Storage Regulations, 6NYCRR Parts 595-598.

Spill containment and cleanup
Spills have the potential to expose people and contaminate the environment with hazardous materials. The Student Manual for Hazardous Materials Awareness and Communication Training is available from the Employee Health and Safety representative and describes NYSDOT's responsibilities and procedures for incidents involving hazardous materials. The recommended procedures and risks change with the circumstances of each spill. However, the following general procedure can be used for most workplace spills as applicable.

- Inform and remove unnecessary employees from the area.
- Determine the identity and hazards of the material and any personal protective equipment such as impermeable gloves required for handling.
- If the spilled material is flammable, remove any open flames or sources of ignition. Use non-sparking tools and grounding wires if needed.
- Stop additional material from spilling at its source if possible. For example, plug a leaking hole in a barrel or turn the barrel so that hole is on top.
- Plug any drains that may be impacted.
- Contain the spill by placing absorbent "socks" or sand to prevent the spill from running into storm drains, bare soil, large surface areas, etc.
- Pump large quantities to an empty drum that will hold the material. Collect smaller quantities and/or remaining liquid by absorbing liquid with absorbents or sand. Gently scoop or sweep up the residue and place in empty container.
- Label all containers of spill collection and debris as soon as possible.

Note: Always be careful about exposing anyone to hazardous vapors/fumes that can be inhaled or from skin and eye contact. Do not try to clean up spills of unfamiliar materials if you don't have adequate hazard communication information.

Assistance to non-NYSDOT spills along the ROW: See 4.4.20.8.7 - Spill Response within the ROW.
Emergency Planning and Community Right-to-Know
The Federal Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 (which is also known as the Superfund Amendments and Reauthorization Act (SARA) Title III) includes several reporting requirements to let members of the local community know what chemicals are stored or used at facilities in their neighborhoods.

Hazardous chemical (including fuels) inventory reporting
Reports are required from facilities that store more than 10,000 pounds at any one time during the year (roughly 1500 gallons for fuels) of any hazardous chemicals for which material safety data sheets (MSDS) are required under the OSHA Hazard Communication Standard. The chemicals/products to be reported are not on a designated list, but are broad chemical categories - fire; sudden release of pressure; reactivity; acute health hazard; and chronic health hazard. Fuels and large quantities of paints and vehicle fluids stored at one location would be the likely products for which a DOT facility could exceed the reporting threshold.

The local fire department, County Local Emergency Planning Committee (LEPC), and NYSDEC must be notified within 90 days if a chemical or product is stored above this threshold (also, provide copies of notifications to the Regional Safety Representative). An inventory form, called a Tier II form, that includes the chemical/product names and maximum amount stored during the previous year must be submitted by March 1, of each year to these organizations. Call the Regional Safety Representative if you have questions on this.

Toxic Chemical Release Inventory (TRI) reporting
Another community right-to-know regulation requires reporting when a certain chemical is used or generated at a quantity exceeding 5,000 pounds per year at a facility. Reportable chemicals are on a designated “Toxic Chemical List” and reportability considers all products in which they may be present. Several exemptions may apply to chemicals present in products used for certain activities including maintaining motor vehicles operated by the facility; use as a structural component of the facility; and routine janitorial or facility grounds maintenance. Use of the exemptions is discouraged for activities that are a significant part of the facility/agency mission. Annual reports have been completed for all NYSDOT facilities by the Operations Division and the ESB. Chemicals requiring reporting have been present in traffic marking paints and have included: methanol, glycol ethers, lead compounds, chromium compounds, styrene, and an epoxy paint hardener compound. If you have additional questions about these requirements, contact the ESB’s Hazardous materials and Asbestos Unit.

The federal requirements for hazardous chemical inventory and TRI reporting are in 40 CFR Part 370 and 40 CFR Part 372, respectively. Title 3 of article 37 of the NYS ECL expanded the TRI requirements to apply to NYS facilities and reduced reporting thresholds.

Waste Management
This waste management and disposal guidance applies to wastes from all NYSDOT operations, whether the activities are facility- based or occur along the ROW.
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Waste Management - General Rules

“Solid Waste” is a broadly defined term. It includes any garbage, refuse, sludge or any solid, liquid, semi-solid or contained gaseous material which is:

- Discarded
- Disposed of
- Burned or incinerated

Further, “solid waste” includes any substances:

- That are accumulated, stored, or physically, chemically or biological treated in lieu of or before being disposed of, burned or incinerated or
- Which have served their original intended use and is sometimes discarded.

A “Generator” means any person whose act or process produces a solid waste or whose act first causes solid waste to be subject to regulation. NYSDOT is considered the “generator” of wastes that result from its construction, maintenance, and other activities.

NYSDOT generates many categories of wastes. It is NYSDOT’s responsibility to properly categorize the wastes and ensure proper handling and disposal based on the waste. NYSDOT wastes include:

- “Construction and Demolition (C&D) Debris” is uncontaminated solid waste from construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste from land clearing. NYSDOT generates C&D debris during many activities including roadway rehabilitation and related activities.
- “Non-Hazardous Solid Wastes” includes routine trash and garbage from support and administrative operations including general litter collection from along the roadside (with the separation of specialty wastes).
- “Non-Hazardous Industrial-Commercial Waste” is any solid waste which originates at, is generated by, or occurs as a result of any industrial or commercial activity (and does not meet criteria of a hazardous waste. Many NYSDOT specialty wastes such as discarded (non-hazardous waste) chemical products, used vehicular fluids for disposal, and contaminated soil are classified as non-hazardous industrial waste.
- “Hazardous wastes”, are solid wastes that have a “characteristic” or are “listed” in defined criteria of 6 NYCRR Part 371. Criteria are as described in Hazardous Wastes, below. Certain wastes such as lead paint removal waste may be hazardous wastes.

A determination of whether a waste is a hazardous waste as described under the “Hazardous Wastes” subsection should be conducted for all wastes that could possibly be hazardous wastes. The hazardous waste determination may be conducted by using generator’s knowledge of the waste and/or testing. The product’s Material Safety Data Sheet (MSDS) or product label should indicate if an unused product would be a hazardous waste. Information such as ingredients, flash point, pH and disposal requirements are useful in making this determination.

Consideration must also be given to used materials where contaminants and/or changes to the material could have been introduced during its use. This type of contamination may not be easily predicted by generator’s knowledge and may require testing of the typical waste product. Examples could include metal contamination in waste oils, degreasing solvent, or antifreeze that could be added during the vehicle operation that were not present in the original product.
The requirements for handling and disposal vary significantly for the different categories of wastes. The surplus and waste material requirements are outlined in the following subsections in order of decreasing regulation, with hazardous wastes being the most highly regulated disposal category.

Hazardous Wastes

**Background:**
*Regulatory Basis* - The Resource Conservation and Recovery Act (RCRA) establishes a comprehensive framework to regulate hazardous wastes codified in USEPA regulations 40 CFR Part 261-268. In New York State, NYSDEC has authority for the program with the regulations at 6 NYCRR Parts 371-376. The New York State regulatory citations will be used in this document. RCRA regulates hazardous waste from “cradle-to-grave”. Generators are responsible from the point of generation through the final disposal. Overall inspection checklists, [NYSDEC State Inspection Checklist: Large Quantity Generators (LQG) and Small Quantity Generators (SQG)](https://www.epa.gov/hwgenerators) are available under the Hazardous Waste Generators heading as self assessment tools at the USEPA Web site: [https://www.epa.gov/hwgenerators](https://www.epa.gov/hwgenerators)

*Generator and Co-Generators of Hazardous Waste* – A **generator** is the person whose act or process first causes a hazardous waste to become subject to regulation. Depending on ownership, act or process, a waste may have **co-generators** as shown by the following example with a NYSDOT funded bridge rehabilitation contract. When a contractor removes lead paint from the bridge, he or she becomes a **generator** by creating hazardous waste, lead paint removal debris. NYSDOT, however, as bridge owner/operator is also a **generator**, since initiating the project created the waste. Where one or more people meet the definition of **generator**, they are jointly and severally liable for compliance with hazardous waste regulations. The parties may, by a mutual decision, have one party assume the duties of generator. If a violation occurs, anyone meeting the definition of generator may be held liable for violations.

Hazardous wastes are tracked on a site-specific basis, with unique USEPA ID numbers issued to the site. Since each facility or contiguous piece of property is viewed as a separate generator, each residency and each bridge in New York are typically considered separate site generators. **Forms/Instructions** for Notification of Regulated Waste Activity [USEPA Form 8700] to **request an EPA ID Number** can be obtained at the following USEPA links:


USEPA Region 2 site: (New York State facilities forms get mailed to USEPA Region 2): [https://www3.epa.gov/region02/waste/csummary.htm](https://www3.epa.gov/region02/waste/csummary.htm)

**EPA Generator ID numbers can be looked up here:** [http://www.epa.gov/enviro/facts/rcrainfo/search.html](http://www.epa.gov/enviro/facts/rcrainfo/search.html)

**Hazardous Waste Determination:**
Generators must determine if their wastes are hazardous wastes per Part 371, including the following classifications:

**Listed wastes** - Commercial products, off-specification products, container residues and spill residues of chemicals that are specifically “listed” are hazardous wastes when discarded. These would include the commercial/technical grade formulation of the product or products for which a listed chemical is the sole active ingredient. (Note: Products are not listed hazardous wastes merely because they contain a listed ingredient in a mixture). Certain process wastes from certain types of industrial/maintenance activities may also be “listed”. Examples include spent degreasing solutions containing certain components such as chlorinated solvents. Polychlorinated biphenyl (PCB) contaminated articles, liquids, and materials are also regulated hazardous wastes in NYS. Note: Listed hazardous wastes also include acute hazardous wastes which have additional requirements including designation of a generator as large quantity if > 1 kg is generated within any month. Since acute hazardous wastes are not anticipated within NYSDOT activities, the additional requirements are not detailed.

**Characteristic wastes** - Wastes that have certain “characteristics” (ignitability; corrosivity; reactivity; and/or toxicity) are hazardous wastes regardless of their origin.
- **Ignitable** - Defined for liquids as having a flashpoint below 140° F
- **Reactive** - Can explode or react violently when exposed to air or water
- **Corrosive** - Can dissolve steel or harm skin (Defined as pH < 2 or > 12.5)
- **Toxicity** - Does the waste have toxic constituents that can be released upon disposal? This characteristic considers not solely that the constituents are present, but whether they have the tendency to leach out and release into the environment upon disposal as measured by a test termed the *Toxicity Characteristic Leaching Procedure (TCLP)*. The TCLP is an analytical test which determines the potential of a toxic constituent (currently 40 constituents: metal, pesticide, and organic chemicals) to leach and become mobile and contaminate groundwater/waters upon disposal. Metals such as lead and chromium are constituents on the TCLP list.. For example, lead-based bridge paint removal waste is typically a hazardous waste due to lead toxicity characteristic.

**Accumulation/Storage:**
Generators may "accumulate" hazardous waste on site without a permit as long as they comply with certain hazardous waste management regulations for their accumulation unit(s) and for their facility (such as a contingency plan and personnel training requirements). The length of time a generator is allowed to accumulate their waste will vary depending on the generator's classification (based on quantity generated). USEPA interprets the accumulation provisions as allowing generators to store their waste for the allotted time period and to treat their waste in the accumulation unit, provided the generator complies with the generator requirements of Part 372.2 and the provisions included by reference for personnel training, preparedness and prevention, contingency plans and emergency procedures, and the management of container requirements.

**Hazardous waste generator categories and requirements** - Generators must determine how much hazardous waste they generate and maintain records to document the amounts. The categories are:
• Large Quantity Generators (LQG) are fully regulated and generate >1,000 kg (2,205 lbs) in any month.
• Small Quantity Generators (SQG) have somewhat reduced requirements and generate between 100 kg (220 lbs) and 1,000 kg/month and store less than 6,000 kg (13,228 lbs) on site at any one time.
• Conditionally Exempt Small Quantity Generators (CESQGs) are facilities that generate <100 kg hazardous wastes in any month and store less than 1000 kg on site at any one time have significantly reduced hazardous waste regulatory requirements as follows:
  o Waste Identification (6NYCRR §372.2) - Determine if wastes generated are hazardous wastes and determine quantities of generation.
  o CESQG do not require a USEPA ID number, annual reports, manifesting of shipment, accumulation time and storage requirements, training/emergency planning documentation, and land ban notification requirements (6NYCRR §371.1(f)).

Hazardous wastes from CESQGs can be disposed at a permitted hazardous waste facility or municipal or industrial solid waste facilities that can accept that type of waste. (It is recommended, however, that CESQG quantities be disposed of at hazardous waste facilities and most protective secure options be selected). Since wastes from CESQGs can be accepted at other locations without requiring the recipient site to be a permitted facility, CESQG waste can be moved and consolidated at other locations (For other categories of hazardous waste generators, storage without a permit is only allowed at the site of generation unless special agreements are negotiated).

Alert!
When disposing of waste from a NYSDOT project or facility classified as a CESQG at a facility other than a hazardous waste landfill, it is necessary to obtain documentation from the disposal facility stating that they know what the waste is and that they are permitted to accept such waste.

Alert!
When determining the category of generator based on the quantity of waste generated per month, please note that a month means “30 day period” beginning on the first day of generation in this instance. For example, if you begin work at a site on February 28th and generate 100 lbs of hazardous waste, then generate another 150 lbs from that site on March 5th, you will still fall into the SQG category rather than the CESQG category. However, if you begin work on February 1st, generate 20 lbs that day, then generate 100 lbs on February 28th, and another 150 lbs on March 5th, you will be a CESQG, because you are still under the 220lb/month threshold.

The hazardous waste management regulation requirements for LQGs and SQGs will be discussed through the remainder of this section. Note: For rough estimation purposes, 100 kg = approximately ½ drum of bridge paint waste.
General Storage and Handling - Requirements vary based on the amount of hazardous waste generated at a facility. For other than CESQG facilities, the following requirements apply:

- **Labels/Markings (372.2)**: Any hazardous waste container must be labeled with the following information:
  - The words “Hazardous Waste” and
  - The date the waste in the container was generated. This date is the day when the first wastes are placed in the container

- **Accumulation Time (372.2)** - Hazardous wastes must be shipped within 90 days for LQGs and 180 days (270 days if it must be shipped more than 200 miles) for SQGs from the date of generation.

- **Containers (373-3.9)** - Containers must be in good condition, not leaking, and must be compatible with the wastes stored within. Containers must be kept closed and stored in a manner to prevent rupture or leaks.

- **Inspections (373-3.9)** - At least weekly, the containers (and containment systems, if present) must be inspected for any leaks and deterioration. This inspection must be documented with a log of date, inspector, wastes present and condition. Immediate action should be taken on any leaks or deterioration.

Since storing is allowed without a permit only at the site of generation, hazardous wastes can not be moved to other off-site storage locations except for the following exceptions:

- Regulations allow hazardous wastes from CESQGs to be accepted at other locations (i.e., for consolidation)
- Per an agreement with NYSDEC, bridge lead-based protective coating removal wastes may be relocated to the nearest NYSDOT residency if space limits prevent

Emergency Preparedness, Prevention and Contingency Plans, Personnel Training and Release Reporting:

Generators must document preparedness, prevention and contingency planning for the site addressing plans, responsibilities and emergency response actions. The emergency and contingency planning and training documentation for SQGs are not required to be written in formal plans. Planning and readiness must include:

Preparedness and Prevention (Part 373-3.3 required by reference in Part 372.2) - Preparedness and prevention planning is required to ensure maintenance and operation of the site to minimize the possibility of a fire, explosion or release of hazardous waste constituents to the air, soil or water. Specifically required are:

- Adequate aisle space for emergency personnel and equipment as needed in the event of a fire or spill and to provide for inspection;
- Telephone or other device to summon emergency assistance and internal communications or alarm system. Employees must have access either directly or through visual or voice communications to an alarm or emergency device (i.e., telephone) whenever hazardous waste is being poured, mixed, spread or otherwise handled;
- Fire control equipment and materials (including fire extinguishers and adequate water) and spill control equipment as needed to address the hazards posed by the waste; and
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- Arrangements with local authorities including police, fire departments, emergency response teams, and hospitals to familiarize them with the site and develop agreements for assistance.

Contingency Plan and Emergency Procedures (373-3.4) - The facility must have a contingency plan to minimize hazards from any releases of hazardous waste to air, soil, or surface water. The plan must:
  - Specify personnel actions to be taken in the event of a release or emergency;
  - Describe arrangements with outside authorities;
  - List names, addresses, and phone numbers of all persons to act as emergency coordinator;
  - List all emergency equipment at the facility; and
  - Include an evacuation plan.

At all times, there must be at least one employee either on site or on call who can act as the emergency coordinator.

Personnel Training (373-3.2(g)) - Facility personnel must be trained to perform duties in accordance with hazardous waste regulations. Personnel must also be trained to understand emergency procedures, emergency equipment, and any emergency systems.

Release Reporting - Releases/Spills above the designated reportable quantities for Hazardous Substances under CERCLA (Comprehensive, Environmental Response Compensation and Liability Act) as listed in 40 CFR Part 302 must be reported to the NYSDEC Spills Hotline (800-457-7362) and the National Response Center (800-424-8802). For example, the reportable quantity for hazardous waste solid with the characteristic of lead toxicity, D008, is 10 pounds. See 4.4.20.8.10 - Spills of Fuels, Chemicals and Hazardous Products, as well as Appendix D-1. In addition, the carrier must report any release of hazardous waste in any quantity that have been discharged during transportation (including loading, unloading, and temporary storage) to USDOT on Form F 5800.1 within 30 days of the incident.

Waste Minimization:
LQGs of hazardous wastes must have a program to reduce the volume and toxicity of the waste generated and must certify such on manifest signature. NYSDOT strives to minimize generation of hazardous wastes as a component of its objectives for waste reduction, reuse, recycling and environmental sustainability, summarized in Waste Reduction, Recycling, Reuse and Environmental Sustainability.

Alert!
Dilution is not a hazardous waste minimization strategy. A waste generator may not dilute hazardous wastes with non-hazardous wastes/materials in an attempt to make them nonhazardous. For example, if one gallon of a hazardous waste such as used toluene from painting operations is mixed with 54 gallons of rainwater, 55 gallons of hazardous waste for disposal is created.

Shipping, Manifesting, and Notifications:
All hazardous waste must be transported from the point of generation to a permitted Treatment, Storage and Disposal (TSD) facility. The following narrative details the requirements for a proper transfer to the selected TSD facility.

**Manifesting (372.2) and Shipping Paper Descriptions** - Manifests are required to ship hazardous waste for off-site treatment, storage, or disposal. The manifest is a multiple-copy tracking document required by USDOT and USEPA/NYSDEC. It tracks the chain of custody for the waste from when it leaves the generator to final disposition at a TSD or recycling facility. Each party involved in any or all aspects of shipping the waste signs the manifest and retains a copy, providing critical continuity between the generator and the TSD facility (Part 372). The manifest provides the communication in lieu of the shipping paper required per USDOT (49 CFR Part 172).

**Manifest Content** - The USDOT information that must be placed in the manifest (shipping paper) is as follows: Proper Shipping name (including technical name in parenthesis for any “not otherwise specified (n.o.s.) names”) [per 49 CFR 172.101]; Hazard classes [49 CFR part 173]; Identification number [49 CFR 172.101]; Packing Group [49 CFR Part 173].

**Manifest Tracking and Retention** - Once the chain is complete, the TSD facility returns a signed copy of the manifest to the generator. If a generator does not receive a copy of the manifest signed by the TSD facility owner or operator within 45 days of the date the waste was accepted by the initial transporter (60 days for a SQG), an exception report must be prepared. Manifest copies must be retained for a minimum of 3 years.

**Reportable Quantity (RQ)** - Reportable Quantities above which releases must be reported have been determined and are listed in 40 CFR Part 302 for materials that have been designated Hazardous Substances under CERCLA (Comprehensive, Environmental Response Compensation and Liability Act). For shipments of such designated hazardous substances in packages exceeding the RQ, the letters RQ must be entered on the shipping paper before or after the basic description. Note: The transporter must provide notifications, however, of releases of hazardous waste in any quantity that occurs during shipment.

**Land Disposal Restriction Notification** - Hazardous wastes also have treatment standards per Part 376, above which land disposal is not allowed and which must be communicated to the TSD facility. For example, for lead paint waste, this typically requires “stabilization” at the TSD facility before disposal so that the waste is below the treatment standard for the lead and chromium as an underlying constituent of concern. The notification to the TSD Facility that a waste exceeds the treatment standard must accompany the shipment.

**Prepare Containers for Shipping and Placarding of the Shipment:**

- **Labeling and Marking** - Before shipment, containers must be marked with the following:
  - Proper shipping name and ID Number
  - “HAZARDOUS WASTE – Federal Law Prohibits Improper Disposal.” If found, contact the nearest police or public safety authority or the US Environmental Protection Agency
  - Generator’s Name
  - Manifest Document Number
  - Any hazard labels as required for the USDOT hazard class
Accumulation Start Date (The date that the waste was first placed in container (required for on-site identification, not shipment)

- **Placards** - Placards indicating the hazards of the cargo are required on each side and each end of a transport vehicle for bulk shipments (exceeding 119 gallon containers); for certain highly dangerous materials in any quantity; and when >454kg/1001 pounds of the aggregate weight of the containers of otherwise regulated hazardous material is present (in multiple containers on the shipment).

- **Packaging** - All containers used in transporting hazardous wastes must meet the requirements of 49 CFR Parts 173, 178 and 179.

*Emergency Response Information and Phone Numbers* - Emergency response information and emergency contact phone number must accompany each shipment of hazardous waste and be available to emergency response personnel to mitigate any incidents involving the hazardous waste during transportation. The information must contain the following information:

- The basic description and technical name of the hazardous material;
- Immediate hazards to health;
- Risks of fire or explosion;
- Immediate precautions to be taken in the event of an accident or incident;
- Immediate methods for handling fires;
- Initial methods for handling spills or leaks in the absence of fire; and
- Preliminary first aid measures.

The applicable page from the USDOT Emergency Response Guidebook is typically supplied to satisfy these requirements. In addition, an emergency response phone number that is monitored throughout the transportation process must be supplied for use in the event of an emergency involving the hazardous material during transportation.

*Security planning and training* are new USDOT requirements (49 CFR 172.800 and 172.704). These changes require hazardous waste generators and carriers to perform the following:

- **Security** - As entities that offer hazardous waste for transport, both NYSDOT and the Contractor are required to perform the following:

  - **Security awareness training** - Each hazmat employee must receive training about the security risks associated with the hazardous waste transportation, methods designed to enhance security, response to security threats and contents of the site-specific security plan.

  - **Security Plan** - A written security plan must be prepared covering the following:
    - An assessment of the transportation security risks for shipment of the hazardous waste.
    - Personnel security.
    - Prevention of unauthorized access.
    - Security en route.

*Transporters* - The transporter (carrier) of hazardous wastes must have:

- Obtained an USEPA identification number as a transporter;
- NYS waste transporter permit (Part 364);
- Any other licenses/transporter permits from any other states through which the waste will travel if any other states have requirements;
• Registration with USDOT as a hazardous material carrier if required under the Hazardous Materials Transportation Uniform Safety Act of 1990 (HMTUSA). Government agencies and their employees (but not our contractors) are exempt from this requirement for registration as a shipper of hazardous material. Carriers/persons must be registered if shipment met certain criteria (likely to be impacted in hazardous waste shipments) including:
  o Hazardous materials in bulk packaging/containers exceeding more than 13.24 cubic meters. Roll-offs of lead-based protective coating waste could be expected to exceed this criteria; and/or
  o Shipments in other than bulk packaging of 2,268 kg gross weight or more of a class of a hazardous material for which placarding of the vehicle would be required. A large quantity of drums of lead-based protective coating waste could exceed this criteria; and/or
  o A quantity of hazardous materials that requires placarding. Several drums of lead-based protective coating removal waste could exceed this quantity.

Since hazardous waste transporters typically handle many different types and quantities of hazardous wastes, it would be expected that they would require registration.
• Security - As a registered carrier, the permitted waste transporter is required to perform the same security measures as described in 6f.i. above.

**Annual Reports, Fees, Taxes and Records Retention:**
The following are reports, fees and related procedures required of generators of hazardous wastes in New York:

*Generator Annual Reports* - Annual reports are required to NYSDEC for all large quantity generators, due March 1, for the preceding calendar year.

*Regulatory and Surcharge Fees (Hazardous Waste)* - Hazardous waste program fees (regulatory and surcharge) are assessed upon large quantity generators that generated 15 tons or more of hazardous waste within the calendar year. The surcharge fees (approximately 4 times the original fees) were added to the base regulatory fees starting in 2004. The fees are typically assessed by NYSDEC based on manifest records with invoices sent to and paid centrally by Main Office Accounting with the correctness of the assessment determined by regional review. The combined fees start at $5,000 ($1,000 regulatory fee and $4,000 surcharge fee) for a facility generating 15 tons and increase with higher generations. These fees are in addition to disposal costs and the special tax that is assessed on waste generations.

*Special Assessment (Tax)* - A quarterly assessment (Form TP-550) is required to be submitted to the NYS Department of Taxation for any calendar quarter that hazardous waste disposals exceeded 1 ton or more, dependant on the disposal method. This assessment is in addition to the disposal fees and regulatory fees.

*Records Retention* - All manifests, annual reports, land disposal restriction notifications and documentation of the hazardous waste disposal must be retained for at least 3 years. As the generator has cradle-to-grave responsibility which has no time limit, it is often advisable to retain documentation of proper disposal for longer time frames.
**Non-hazardous industrial wastes**
Some wastes that do not meet any hazardous waste criteria, but result from work activities, are considered industrial-commercial wastes. Industrial commercial wastes are disposed of at municipal/commercial disposal facilities, similar to routine nonhazardous solid waste, at recycling facilities and/or at specialized facilities for that type of waste. Shipment, however, requires transport by permitted waste transporters, if transported in greater than exempt quantities (500 pounds/shipment). Examples of non-hazardous industrial wastes include:

- Paint and paint chips that do not contain any regulated RCRA metals or that do not fail the TCLP test. This also includes millings of traffic markings and adhering road material when markings are purposely removed from pavement.
- Non-hazardous used oil, non-hazardous waste antifreeze, and other waste vehicular fluids and filters that do not meet the criteria of hazardous waste.
- Contaminated soil such as soil contaminated with petroleum or other materials, but not at levels to be considered a hazardous waste. Stockpiles of contaminated soil must be disposed of within 60 days of being generated.
- Friable (able to flake) asbestos (Special concerns apply. See Asbestos)
- Unused products containing chemicals (that are not hazardous wastes)
- Empty drums/containers for disposal, not recycling

NYSDOT may self-transport up to 500 pounds of non-hazardous industrial wastes in a single shipment without requiring the vehicle to be permitted. See *Waste Management - Specific Items and Topics* for disposal information specific to each item.

**Non-hazardous solid wastes**
Routine garbage, office trash, and most litter collection are considered non-hazardous wastes. Most roadside trash, garbage and debris collected by NYSDOT forces or Adopt-a-Highway (AAH) groups, is non-hazardous solid wastes. With roadside trash, garbage and debris, exceptions the designation of non-hazardous solid wastes include items that are industrial or possibly hazardous wastes, such as abandoned drums and containers, medical waste including needles and syringes, tires, animal carcasses or anything that appears to be a hazardous waste. Non-hazardous waste that comes from routine garbage, office trash, and most roadside litter collection should be sent to municipal or commercial landfills or trash burning plants, and no special haulers or manifests are needed. Nonhazardous waste (such as roadside trash) and other waste materials at the facility can be stored for up to 18 months.

Except for items that are possibly industrial or hazardous wastes, NYSDOT forces or AAH groups should not separate roadside trash, garbage and debris.

**C & D (Construction and Demolition) Debris**
Uncontaminated solid waste from construction, remodeling, repair and demolition may be disposed of at permitted C&D debris landfills or may be disposed of at municipal solid waste landfills. Permitted C&D debris processing facilities may also be an economical disposal option for projects in metropolitan areas. Generally, where available, C&D debris landfills typically charge less than municipal or commercial solid waste landfills. Certain C&D wastes have additional disposal options outlined below under *Exempt C&D and Spoil*. Permitted C&D landfills can accept the following types of wastes:

- Uncontaminated bricks, glass, asphaltic pavement, concrete and masonry materials.
(Pavement containing routine intact traffic markings or that has come into contact with petroleum products through normal vehicle use of the roadway are considered clean)

- Uncontaminated soil, rock and land clearing debris
- Wood and wood products
- Wall coverings, plaster and drywall
- Plumbing fixtures, electrical wiring and components containing no hazardous liquids, non-asbestos insulation, plastics that are not sealed in a manner that conceals other wastes, roofing shingles and other roof coverings
- Empty buckets/containers (10 gallons or less) with less than one inch of residue in the bottom
- Pipes or metal attached to, or embedded in, these waste materials
- Contact the NYSDEC Regional Solid Waste contact for information regarding authorized disposal or treatment facilities in the area.

**Exempt C&D Debris and Spoil**

Some types of C&D wastes (Exempt C&D or “fill”) have additional disposal options as follows:

- Green Waste, including trees, stumps, yard waste and wood chips from these materials may be buried on ROW/NYSDOT property in an area that has been approved by Environmental staff. *(Note: Within the APA, this activity requires a permit from the APA.)* Regions or residencies may use mulch from trees, stumps or other vegetation waste to help control erosion, stabilize banks or protect new plantings, such as living snow fence, from being overrun by weeds.

- In some parts of the State, the presence of invasive insects, such as the Asian Longhorn Beetle or the Emerald Ash Borer, may require special handling or disposal of green wastes. Because of the dynamic nature of the spread of invasive insects, check with your MEC or Director of Regional Crews, to see if there are special handling or disposal requirements for green wastes at your location. Recognizable uncontaminated concrete and concrete products (including steel reinforcing rods embedded in concrete), asphalt pavement, brick, glass, soil and rock may be buried on NYSDOT property (except for Nassau and Suffolk Counties) as above or off-site at a facility (except for Nassau and Suffolk Counties) that takes no compensation and operates only during daylight hours (i.e., facilities requesting fill at no charge). *(Note: Within the APA, this activity requires a permit from the APA.)*

- Recognizable (unprocessed) uncontaminated concrete and other masonry waste (including steel or fiberglass reinforcing embedded in concrete), asphalt pavement, brick, soil or rock that has not been in contact with a spill from a petroleum product, hazardous waste, or industrial waste, and that is not commingled with any other solid waste may be handled at a registered C&D debris processing facility. Readily recyclable items such as steel beams, guiderail, posts and cables are not considered exempt C&D.

If other wastes get mixed into the materials listed above, the entire area may be considered an illegal landfill and cleanup and removal of everything may be required. More restrictive regulations for Nassau and Suffolk Counties and within the Adirondack Park require a permit for any landfilling, including placement of fill.

Placement of any materials must consider the environmental issues associated with the location of the placement and includes consideration of:

- Wetlands and Flood Plains (can not be placed in wetlands/buffer)
- Erosion Control
- SPDES Phase 2 (Fill placement may disturb more than 1 acre)
Property - owner approval

Local planning and zoning approval which owner must consider

Cultural resource presence

**Specialty Waste Disposal (including drums and containers of products, chemicals, and other wastes)**

Specialty wastes include hazardous wastes, chemical products (including partially-used products) or other materials that are not disposed of by routine trash collection and require a special waste contract for disposal. Disposing of specialty wastes is generally a two-step process:

- **Identify specialty wastes and if necessary perform laboratory testing** - Known unused materials with sufficient information on their characteristics from material safety data sheets (MSDSs) or other information sources can be identified adequately for disposal. Examples include unused containers of toluene or paint with labels intact and MSDSs available. Sufficient information may also be available to identify used materials of known characteristics such as antifreeze where the waste had previously been tested and the process generating the waste has not changed; or fluorescent bulbs which are known to be hazardous due to mercury content. For waste of unknown or uncertain identity or where contamination could be added at unknown levels to the material upon use, testing may be required to adequately identify the waste for disposal. The NYSDOT has contracts with analytical laboratories and standard procedures for confirming suspected drum contents. The contracts with these labs are designed to characterize wastes for disposal and will meet regulatory standards without adding unnecessary testing. Call the MEC for assistance in inventorying, identifying and testing materials for disposal. The current lab contract is posted in the Manual/Guidance Section of the ESB IntraDOT site.

- **Specialty waste disposal contracts** - A specialty waste disposal contract can be developed to remove and dispose of specialty wastes as identified on the inventory. The contracts should include MSDSs and analytical results to assist the contractor in providing proper handling, recordkeeping and disposal of the wastes. It is generally most cost-effective to arrange for disposal of all waste materials within a DOT Region at one time, but smaller or periodic disposal contracts may be required if storage time limits or storage space are issues (See Hazardous Wastes- Accumulation/Storage). Contact the MEC and/or the Procurement Bureau (518-457-4401) in the Main Office for assistance in developing contracts.

- **Laboratory Analysis Tests (Totals versus TCLP)** - “Totals” testing measures the constituent component as a part of the entire sample, usual on a weight of constituent per weight of entire sample, such as milligrams per kilogram. The Toxicity Characteristic Leaching Procedure (TCLP) measures the component of the constituent that will leach out in a standard (USEPA preparation method 1311) “extracting” solution (with specified timeframes, dilutions, etc). The constituent concentration is measured as the component of constituent in weight per volume of the resulting extraction solution, such as milligrams per liter. Since the objective of waste regulation is to consider the hazards of the waste upon disposal, some of waste characterization criteria (specifically, the characteristic of toxicity), consider the tendency of the hazardous constituent (such as metals, organic compounds and pesticides) to leach and become mobile and contaminate
groundwater/waters upon disposal. A “theoretical” maximum TCLP concentration can be determined by material balance and mathematical calculations from the total concentration of a constituent which assumes that all of the constituent present is extracted into the leachate. For this theoretical maximum concentration conversion, the concentration in mg/kg is divided by 20 to determine the maximum possible TCLP concentration in mg/l. In determining what analytical tests to perform it is important to determine the form of the standards for which the results will be compared. Generally, for employee exposure and site assessment work (for soils that may remain on site) and non-hazardous contaminated soils, total concentrations are most frequently required. For RCRA metals contamination, TCLP results are needed to determine if it is regulated as a hazardous waste.

**Waste Reduction, Recycling, Reuse and Environmental Sustainability**

The overall objective of the transportation system is “sustainable” development that balances economic, environmental and social needs and consists of a long-term, integrated approach to planning, design and decision making. Another objective is incorporation of environmental stewardship/environmental enhancements into projects, because there is the opportunity (often simple and inexpensive) to do so. The Department Environmental Policy, Environmental Initiative and Solid and Hazardous Waste Reduction Policy support these goals on an agency-wide approach.

The Department's waste reduction and recycling goal includes two major objectives:

- Reduce waste quantity and toxicity generated and pursue recycling of wastes generated from construction and maintenance operations; and
- Maximize recycled material use within highway applications and support functions (such as use of reused materials as a substitute for raw materials) and minimize use of clean natural materials in projects (including balancing of cuts and fills).

The policies document the following principles:

- Wastes should be prevented or reduced at the source whenever feasible;
- Wastes that cannot be prevented should be recycled whenever feasible;
- Wastes that cannot be prevented or recycled should be treated whenever feasible;
- Disposal or other release into the environment should be employed as a last resort and should be conducted in an environmentally safe manner.
- Source reduction will include any practice which:
  - Reduces amounts of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) before recycling, treatment, or disposal; and
  - Increases efficiency in use of raw materials, energy, water, or other resources, or protection of natural resources by conservation.

Practices can pertain to: equipment or technology modifications, process or procedure modifications, reformulation or redesign or products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. Examples of techniques that have been used by NYSDOT to reduce wastes include:

- **Recycling** - DOT recycles waste materials such as used antifreeze and vehicle batteries.
• **Reuse** - Whenever possible, DOT reuses asphalt and concrete pavements as a substitute for crushed stone in subbase and other engineering applications.

• **Waste to energy** - DOT routinely collects used motor oil that is burned for fuels or space heating.

**Waste Management - Specific Items and Topics**

This category discusses disposal procedures for specific wastes items and discusses specific waste topics, arranged alphabetically. If you have any waste disposal questions, contact the MEC.

**ABANDONED DRUMS AND CONTAINERS IN RIGHT-OF-WAY (ROW):**

Abandoned drums or containers of unknown substances that are found along the ROW are handled similarly to spills of hazardous substances on the ROW (See 4.4.20.8.7 - Spill Response Within the ROW). The NYSDEC spill response program has contractors who can safely remove the drum or container, test its contents, and dispose of it properly. If you find a drum or container of an unknown substance, note its location but DO NOT MOVE IT OR TAKE IT BACK TO THE RESIDENCY! Call the NYSDEC Spill Hotline at 1-800-457-7362 to report abandoned drums and for assistance (see also Appendix D-1). NYSDEC may need assistance to locate where the drum can be found on the ROW. Some illegally disposed drums may be the result of criminal activity. State or local police investigators may want to look for evidence such as fingerprints, footprints, tire tracks, etc. Be careful and try not to ruin any evidence that may be helpful to police.

**ACUTE HAZARDOUS WASTES:**

Acute hazardous wastes (P listed) are toxic or reactive in small quantities and are regulated as strictly as larger quantities of other wastes. They include cyanide, strychnine and dioxin wastes and are not anticipated from typical NYSDOT activities.

**ADOPT-A-HIGHWAY WASTE:**

Routine trash picked up along the ROW is considered non-hazardous waste and can be disposed of at municipal/commercial landfills or disposal facilities. Except for items that are possibly industrial or hazardous wastes, AAH groups should not separate roadside trash, garbage and debris. Some wastes that are industrial or possibly hazardous wastes need special handling and are listed as: abandoned drums and containers, medical waste including needles and syringes, tires, animal carcasses or anything that appears to be a hazardous waste. Call a Region or Residency Adopt-a-Highway contact or MEC if you have questions.

**AIR CONDITIONING FLUIDS (Freon):**

See **REFRIGERANTS**.

**ANIMAL CARCASSES (Road-Kill):**

Dead animals can be disposed in five ways:

• Placed in wooded or heavily vegetated areas well off the shoulders in rural parts of New York.

• Buried on NYSDOT owned property if:
Contaminated Materials and Hazardous Substances

- no more than 10 animals are buried in a single pit;
- at least 1 meter (3 feet) of soil is placed over the carcasses which cannot be placed within groundwater;
- the burial pits are spaced at least 15 meter (50 feet) from each other, from any residence and from any surface waters;
- burial is in a well-drained area, above the water table.

(Note: the transportation agency is allowed to do such burial on their own property, but any other landowners could not bury carcasses from off-site without permits and compliance with landfill standards.)

- At a municipal disposal facility or rendering plant that will accept them. (*Note: Many landfills have refused to accept carcasses*).
- Work Order Contracts (WOCs): Some parts of the State are covered by contractors who will pick-up and remove carcasses for a fee.
- Static Pile Deer Carcass Composting

Composting deer carcasses is an effective alternative to the above methods. Complete details can be found at [https://www.dot.ny.gov/divisions/engineering/environmental-analysis/repository/deer_c_manual.pdf](https://www.dot.ny.gov/divisions/engineering/environmental-analysis/repository/deer_c_manual.pdf) in the document entitled *Road-Kill Deer Carcass Composting, Operational and Maintenance Manual, Region 8 NYSDOT*. The basic procedure is to select a well drained location with an impervious work surface and layer deer carcasses between layers of chipped tree limbs. To manage odor and discourage scavenging, care must be taken to completely cover all carcasses with a thick layer of wood chips.

**ANTIFREEZE (COOLANTS):**
New antifreeze would not be a listed hazardous waste or fail any characteristic for hazardous waste. However, any contaminants such as chlorinated solvents, benzene, or metals that could be introduced during use must be considered to determine if the waste antifreeze could be a hazardous waste. Generator knowledge and/or representative testing of the typical waste is required to determine if it is classified as hazardous waste. Used antifreeze should be collected in dedicated drums or tanks and clearly labeled. Disposal should preferably be by a commercial recycler who will reclaim the material.

**ASBESTOS:**
Asbestos is a mineral that breaks into very small fibers and was used for many years in making fire-proofing, roofing, siding, flooring, ceiling tile and others building products. Friable and non-friable asbestos containing materials (ACM) shall only be handled or packaged for transport by NYS Department of Labor licensed certified personnel. Friable asbestos (able to flake) waste shall only be transported by a permitted waste transporter under a waste shipment record and disposed of at a permitted waste management facility approved to accept friable asbestos. Non-friable asbestos, however, may be transported and disposed of as C&D waste. Any renovations or demolitions involving buildings, bridges, and utility lines that could contain asbestos must be evaluated by licensed certified personnel. OSHA requires a visual inspection to identify materials you think may contain asbestos for future reference. If this inspection has not been performed at the facility, or if you think you have found asbestos waste along the ROW, contact the MEC for help and further instructions. (See also NYSDOT Safety Bulletin, SB-99-5, Asbestos)
BALLASTS - Polychlorinated biphenyls (PCBs):
Some older fluorescent lamp (light) fixtures have ballasts with an oily insulating liquid that contain PCBs which must be disposed of as a PCB hazardous waste. PCB-free dielectric oil contained in newer ballasts can be handled and disposed of as used oil. Assume the ballast contains PCBs unless it is marked “does not contain PCBs”. The ballasts can be disposed of using specialty waste contracts. The ballast should be separated from the lamp/bulb and disposed of separately. (See “Fluorescent Bulbs” for bulb disposal).

BATTERIES:
Requirements vary for batteries dependant upon type and content and may require specialty recycling or disposal due to metal content or corrosivity. The federal Battery Act of 1996 required the phase out of mercury in alkaline batteries and required the development of recycling programs for nickel cadmium, lead and certain other batteries. Review information on the battery (or provided with it) and, unless supplier information indicates otherwise, handle by the following general guidelines:

- **Lead Acid Batteries**, typically vehicle batteries and small sealed batteries in electronic equipment, contain acid liquid and lead and must be recycled or disposed as hazardous waste. NYS law requires retailers/distributers to accept used automotive/truck/RV batteries back for recycling at no charge (two per month maximum without new battery purchase). Turn in the old batteries when new batteries are installed. Licensed waste transporter, manifesting of shipment, or inclusion of the battery quantities in site hazardous waste generation amounts and generator status calculations are not required.

- **Nickel-Cadmium** rechargeable batteries must be recycled or managed under the “Universal Waste Rule”. The Call 2 Recycle program (1-877-723-1297 or http://www.call2recycle.org/) can provide assistance in recycling; alternatively, specialty waste disposal contracts could include the recycling of these batteries in their requirements.

- **Nickel Metal Hydride** batteries are not specifically required to be, but should also be similarly recycled. **Silver Oxide** and formerly available **Mercuric Oxide** batteries must also be recycled or disposed of as hazardous waste due to silver or mercury content, respectively.

- **Alkaline batteries** and carbon-zinc batteries are now made with no intentionally added mercury and are considered acceptable for disposal as routine municipal waste.

BRUSH AND TREE (Clearing and Grubbing) Waste:
See Waste Management - C & D (Construction and Demolition) debris - Exempt C&D.

CONCRETE SEALERS:
Unused concrete sealers typically have a flash point below 140°F which would classify the product as an ignitable hazardous waste. The product upon use, however, with the volatile components evaporated, is no longer ignitable/flammable.

CONTAMINATED SOIL OR SEDIMENT:
Contaminated soil is an industrial waste and requires disposal at municipal/commercial disposal facilities (such as sanitary landfills) reclamation facilities or at specialized facilities for the type of contamination present. The potential for contaminated soil to be a hazardous waste due to characteristics such as flammability or toxic metal content must also be considered. If you
suspect that soil or sediment is contaminated, call the MEC to help arrange further investigation and possible testing. Soil or sediment may be contaminated if it is discolored or stained, or smells like fuel or sewage. Section 205 of the Standard Specifications, while a construction specification, provides good guidance on this topic for Operations applications as well.

CULVERT AND CATCH BASIN CLEANINGS:
Uncontaminated grit and sediment from culverts and catch basins is normally disposed of as C&D waste and is not considered contaminated unless it smells like petroleum, fuel, or solvents, or is mixed in with other wastes like roadside trash. (See Exempt C&D and Spoil). Contaminated cleanings should be handled as contaminated soil and sediments.

CURED IN PLACE PIPELINER (CIPP)
CIPP is a trenchless pipeline rehabilitation methodology, where a resin-impregnated fabric “sock”, after being inserted in a culvert, is cured in place using hot water, steam, or UV light. The curing method utilized depends on the resin used and what the facility owner’s specifications allow. Some resins are styrene-based, and the process water from hot water or steam curing of these resins will generally contain levels of styrene that may exceed allowable limits for discharge into surface waters, and therefore it will require special treatment/disposal. Refer to Section 602 of the Standard Specifications for additional details.

DEGREASERS:
See PARTS WASHER WASTES.

DIAMOND GRINDING SLURRY:
ADiamond grinding@ is a process used to restore smoothness to concrete (or asphalt) pavement. Slurry consists of fines removed from the pavement and water, originating as the coolant from the abrading process. NYSDOT placement of concrete or asphalt slurry from diamond grinding is considered recognizable concrete/asphalt subject to the exemption provisions of the Construction and Demolition (C&D) debris provisions of 6NYCRR Part 360-7.1 (b) (1)(i) when placed on state property under the control of NYSDOT in a manner and location that is in compliance with all other environmental regulations. Letter of interpretation and supplemental information is at: https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm/repository/5-a-1-f.pdf

DISPOSAL PROCEDURES FOR EACH CATEGORY OF WASTE (including Drums and Containers of Wastes and Other Specialty Wastes):
See 4.4.20.8.12.6- Specialty Waste Disposal Procedures and/or specific waste item.

EMPTY DRUMS AND CONTAINERS:
Drums and containers that have had all of the contents removed by common practices and have less than 25 mm (1 inch) product residue on the bottom and less than 3 % of the original product are considered “empty” and nonhazardous, even if the material they contained (such as solvents or coatings with flashpoints below 140°F) would otherwise be classified as a hazardous waste (This does not apply to drums or containers that held acutely hazardous wastes which would require “triple cleaning”). “Empty” containers may be returned to the manufacturer, sent to a reconditioner or handled as scrap metal, cardboard, etc. They are exempt from waste transporter
requirements when destined for such reuse. “Empty” containers are nonhazardous industrial wastes when otherwise disposed. Small containers of up to 10 gallon capacity are, however, considered C&D debris and can be disposed of as such.

The original product label and hazard warnings must be left on drums or containers until they are empty as described above and no longer pose the indicated hazard. Remove or obliterate the label and mark the drum “empty” as soon as the drum is empty by these criteria. The hazard markings must be removed from an empty drum meeting these criteria prior to removing from the facility.

FILL (Exempt C&D) - Brush & Tree (Clearing and Grubbing) Waste and Some Recognizable C & D Debris:
See Exempt C&D Debris and Spoil.

FREON:
See REFRIGERANTS.

FLUORESCENT BULBS:
Mercury content makes typical spent fluorescent bulbs (lamps) hazardous wastes. Intact (not crushed or broken) fluorescent lamps may be handled as “universal wastes” allowing for somewhat reduced regulation (See UNIVERSAL WASTES). Some manufacturers are marketing lamps with lower mercury content; these lamps may not be hazardous wastes when spent. Unless the lamps are marked (or otherwise identified) as low mercury content lamps, assume they must be handled and disposed of as a universal or hazardous waste, with hazardous waste code, D009. Waste bulbs may be disposed of by specialty waste contracts. Lamps marked or identified as low mercury must be evaluated to determine if they are a hazardous waste; manufacturer’s data may be used to support a determination that particular lamps are not a hazardous waste. Note: Ballasts should be segregated from the lamp. It may be a hazardous waste due to PCB content (See BALLASTS). For more information on lamp regulation, see: http://www.dec.ny.gov/chemical/8787.html.

FUEL FILTERS:
Used gasoline or diesel fuel filters are hazardous wastes because they are typically ignitable (waste code D001) or toxic for benzene (waste code D018). These should be stored in closed containers, separate from other wastes, and labeled, handled and disposed as hazardous wastes. However, if fuel filters can be drained of all free liquids, they can qualify as scrap metal and be recycled at a scrap metal facility, under the scrap metal exemption.

GREASE AND TAR:
Collect grease and soft tar in separate containers with proper labeling. Include these containers for disposal by a specialty waste disposal contract.

HAULING HAZARDOUS AND INDUSTRIAL WASTES:
See WASTE TRANSPORTER PERMITS.
HAZARDOUS SUBSTANCES IN EQUIPMENT:
Some equipment contains hazardous substances that may require special handling and disposal. Examples include switches or thermometers that contain mercury, or ballasts and light fixtures with PCBs (See UNIVERSAL WASTES and BALLASTS). Call the MEC with specific questions.

**HERBICIDES:**
Herbicides are regulated pesticides. See PESTICIDES.

**HYDRAULIC FLUID:**
Hydraulic fluids such as brake fluid, transmission fluid and power steering fluid are chemically different from motor oil, but for regulatory purposes can be handled as used oil and may be mixed with and recycled along with used oil. The recycler or disposal firm should be consulted, however, on their specific requirements. The fluids also must not be contaminated with any solvents or other materials that could make them hazardous wastes.

**LIGHTING WASTES:**
See BALLASTS and/or FLUORESCENT BULBS.

**LITTER FROM THE ROADSIDE:**
See ADOPT-A-HIGHWAY WASTE.

**MANIFEST:**
See: Shipping, Manifesting, and Notifications.

**MEDICAL WASTE (Used Syringes or Needles):**
Used hypodermic needles and syringes are sometimes discarded at rest areas or along ROW. Used needles and other "sharps" can poke workers, and some bloodborne diseases like hepatitis can be transmitted if the virus is present. (The AIDS virus is unlikely to live more than an hour outside a human host, but should also be considered a risk.). CAREFULLY place the syringe in a container and label with a biohazard sign (or use red containers). Disposal should be at a local hospital or other facility that can accept medical waste. As with “Abandoned Drums”, notify NYSDEC for assistance if large quantities are found. (See also Safety Bulletin, SB-91-1, Infectious waste and agents).

**METAL ARTICLES FOR RECYCLING:**
Materials including source separated metal materials (steel beams, guiderail, posts and cables, etc) traditionally incorporated as substitute to raw metal in the manufacturing process are encouraged to be recycled and are exempt from regulation as solid waste when recycled per 360-1.2(a)(4)(viii).

**OIL FILTERS:**
Used oil filters are a non-hazardous waste if used oil is removed from the filter. The filter may then be preferentially recycled as scrap metal or otherwise disposed of as non-hazardous waste. For the oil to be considered “removed”, filters must be gravity hot-drained by:
- puncturing the filter and hot draining; or
- hot draining and then crushing the filter; or
- dismantling and hot-draining; or
• other equivalent hot draining method that will remove used oil.

USEPA recommends hot draining occur at or near engine operating temperature for at least 12 hours. The drained oil is combined with other used oil from the site for recycling. See USED OIL.

PAINT:
Most unused paints, including waterborne, have a flashpoint below 140 °F and therefore require handling and disposal as an ignitable waste (waste code D001). If the paint contains lead or chromium, the potential for the waste to have a toxicity characteristic for lead or chromium (codes D008 and D007, respectively) must also be considered.

PAINT REMOVAL WASTE (Lead-Based Bridge Paint):
Paint removal waste from abrasive blasting or other removal methods for old lead based paint from bridge rehabilitations is typically considered a hazardous waste for lead toxicity. The following outlines and consolidates the information for handling, shipping and disposal of lead paint waste as a hazardous waste:

- **Hazardous Waste due to the Characteristic Lead Toxicity, Waste Code D008**
- **USDOT Shipping Description:** RQ Hazardous waste, solid, n.o.s. (D008); 9; NA3077; PG III
- **Constituents of Concern:** Lead and Chromium
- **Treatability Group:** Nonwastewater
- **Treatment Standard:** 0.75 Lead mg/l and 0.60 mg/l Chromium by TCLP test
- **Reportable Quantity:** 10 pounds
- **Placard for shipments exceeding 1001 pounds or bulk - Class 9**
- **Markings on container:** Hazardous waste, solid, n.o.s. (D008); NA3077

HAZARDOUS WASTE –Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency
Generator’s Name: NYSDOT Region__ USEPA ID # (for bridge) ____.
Manifest Document Number (fill in actual manifest # when shipped) Accumulation Start Date (When waste was placed in container (required for on-site identification, not shipment)

- **Hazard Label on containers:** Class 9
- **USDOT Emergency Response Guidebook Guide:** 171, Substances (Low to Moderate Hazard)
- **NAICS (industrial classification code) included in USEPA ID number requests:** 23731 Highway, Street, and Bridge Construction (or 237310 same title) for NYSDOT typical construction/TMD sites NAICS code.

PAINT CHIPS AND FLAKES (DRIED):
Dried pavement marking paints and other non-lead dried paint are non-hazardous industrial wastes, requiring disposal at a municipal landfill. These dried paints include markings purposely removed/milled from the road surface, but would not include the paint markings incidentally present on an entire removed section of roadway which would qualify as C&D debris. Testing of typical dried yellow pavement marking paints (waterborne and epoxy), however, has indicated that, although lead and chromium have been present in products in the past the dried products are under regulatory levels for hazardous waste. **Note:** Landfills, however, may be unwilling to accept paint waste or may require additional testing. Dried paint wastes may also be collected, stored and disposed of by the specialty waste disposal contract.
PAINT THINNER:
Most paint thinners are organic solvents that would be listed or ignitable wastes. Store and handle them as hazardous wastes.

PAINT WASH WATER FROM PAVEMENT MARKING EQUIPMENT (Waterborne pavement marking washwaters):
Washwaters from cleaning of pavement marking equipment and activities must be disposed of as a specialty waste or, with approval of the servicing facility, discharged to the public sanitary treatment works. (It may not be discharged to stormwater or floor drains).

PARTS WASHER WASTES:
Ignitability may make spent solvents from parts washers a hazardous waste. The solvent in Safety Clean parts washers typically has a flashpoint below 140°F and would be an ignitable waste on disposal. The solvent in the Zep Parts washers has a flashpoint exceeding 140°F so would not be expected to be ignitable. Any contaminants such as metals that could be added through use must also be considered. Typical spent filters (bag and cartridge filters) from the Zep parts washers have been tested for contaminants including metals that could be introduced during its operation and were under regulatory limits and are therefore determined to be a non-hazardous waste.

PESTICIDES (Includes Herbicides and Insecticides):
Keep all pesticides in original, labeled containers, and keep pesticide labels and Material Safety Data Sheet (MSDS) on file at the facility and with staff who are applying the pesticides. When herbicides are transferred to tanks, injection units, backpack sprayers or small spray bottle containers, such containers must have the herbicide label on the container or on the person making the application, in the case of backpack sprayers and small spray bottle containers. Save partly-used containers for next use. Pesticides that cannot be used must be disposed of by a specialty waste contract. Follow instructions on disposing of the container that are found on the pesticide or herbicide label.

It is possible to purchase many of the herbicides used by NYSDOT in reusable or returnable containers. Two issues that may limit the use of reusable and returnable containers are that they come in specific sizes and some vendors require purchasing a minimum quantity that may be greater than the amount of materials used at a location. (See also EMPTY DRUMS AND CONTAINERS).

PETROLEUM CONTAMINATED SOIL:
Soil materials contaminated by petroleum products, including (but is not limited to) gasoline, heating oil, diesel fuel, kerosene, jet fuel, lubricating oils, motor oils, and other fractions of crude oil are require disposal as industrial waste (See CONTAMINATED SOIL AND SEDIMENT).

REFRIGERANTS:
Refrigerants such as Freon are used in air conditioning systems and contain chlorofluorocarbons (CFCs) which pollute the air. Freon and other refrigerants must be removed and recycled by workers with USEPA-approved training. Maintain records that show the name of the recycling facility that removed the refrigerants.
SHOP RAGS (or Shop Towels):
When rags are used to clean up known nonhazardous waste materials such as non-hazardous cleaning solvents or hydraulic fluid or motor oil, the rags would NOT be a hazardous waste. However, if rags are used to soak up a material that is a hazardous waste (toluene or chlorinated solvents for example), the rag itself could be a hazardous waste. Hazardous waste rags are not regulated as hazardous wastes if they are sent out to be cleaned and returned for re-use.

All used rags, shop towels, and clothing soiled with parts cleaner, gasoline or diesel fuel, used oil, etc. should be stored and managed in fire-proof or fire-resistant containers and must not be so saturated that they can drip any free liquid. Since NYSDOT does not typically use chlorinated solvents or hazardous waste cleaning solvent or other listed materials, it is likely that rags for disposal would be non-hazardous industrial wastes. Any rags, however, that were used for potentially hazardous waste materials could be hazardous wastes requiring disposal as specialty hazardous wastes and should be kept separate from non-hazardous waste rags. Contact the MEC for additional information.

SOIL AND ROCK, EXCESS:
Excess soil and rock may result from maintenance and construction activities. Provided these materials are uncontaminated, in accordance with 6 NYCRR 360-1.15(b)(7) they are not considered waste when used as fill material. These materials may be used for NYSDOT activities or sold (“placed in commerce”) to a consumer and the consumer is responsible for its use/placement.

SOLVENTS and DEGREASERS:
See PARTS WASHER WASTES OR PAINT THINNER.

SORBENTS (Speedi-Dry or Sorbent Pads):
When used to clean up spills from known nonhazardous sources such as hydraulic fluid or non-flammable (non-chlorinated) parts washers, the used sorbent is NOT a hazardous waste and may be disposed of as routine non-hazardous waste. Sorbents used to clean up known hazardous wastes, however, would be a hazardous waste. When sorbents are used to clean up spills from unknown sources, they could be hazardous wastes and should be tested. Call the MEC to arrange for testing and/or disposal as specialty wastes.

SPILLS ON THE HIGHWAY:
See 4.4.20.8.7 - Spill Response within the ROW and 4.4.20.8.10 - Spills of Fuels, Chemicals, and Hazardous Products.

STORAGE OF WASTES:
See 4.4.20.8.9 - Storing and Handling Products and Wastes and Accumulation/Storage under 4.4.20.8.12.

STREET SWEEPINGS (Shoulder Maintenance):
Routine street sweepings are not considered contaminated and may be handled like fill or sent to a C&D (construction and demolition) or municipal waste landfill. Street sweepings should be handled as contaminated soil if they smell like petroleum or solvents, or contain considerable roadside litter such as paper, cigarette butts, plastic, etc. Contaminated street sweepings must be sent to a municipal landfill. Note: Additional requirements apply in Nassau and Suffolk Counties.

SWITCHES:
See HAZARDOUS SUBSTANCES IN EQUIPMENT.

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP):
See Hazardous Waste Determination and Laboratory Analysis Tests.

TIRES:
Waste tires and scrap tires collected along state highways may be stored for up to 18 months. A permit is required from the NYSDEC to store more than 1,000 tires. Waste tires can be sent to a landfill, recycler or trash-burning incinerator, but some landfills do not accept scrap tires because they are bulky and tend to "float" to the top of the waste pile. Some cement kilns or burn plants can burn tires for fuel. Check with the local waste hauler or landfill to see how to dispose of waste tires in your area.

TRANSPORTING WASTES:
See WASTE TRANSPORTER PERMITS.

TREATED WOOD:
The preserved wood industry with USEPA has initiated a voluntary phase out of arsenic (CCA) treated wood preservatives in residential consumer applications. There are now alternative waterborne treatments (such as Alkaline Copper Quat, Copper Azole and Sodium Borates) and other materials available for many uses. For NYSDOT applications that may offer basically the same issue, it is recommended that substitutes be used.

EB00-022- Disposal of Treated Wood, March 2003, describes disposal requirements for treated/preserved wood, which remain unchanged from requirements before the phase-out. Treated wood including CCA-treated wood may be disposed of in construction & demolition (C&D) debris landfills and municipal solid waste landfills which are authorized to accept construction and demolition debris. CCA-treated wood should never be burned or shredded for mulch. Arsenic-treated (e.g., chromated copper arsenate [CCA]) wood products disposed by the end user are exempt from classification as a hazardous waste by a specific exclusion at 6 NYCRR Part 371.1 (e) (2) (viii). In addition, extensive TCLP testing of pentachlorophenol ("penta") and creosote treated wood by industries and NYSDOT has conclusively demonstrated that treated wood products are not a hazardous waste and, as such, generator knowledge can be applied.

UNIVERSAL WASTES:
Certain common hazardous wastes that were considered to be low risk have been designated as “universal wastes” with reduced regulation. Universal wastes include spent batteries, certain unused pesticides, fluorescent bulbs containing mercury and mercury thermostats. Manifests are
Contaminated Materials and Hazardous Substances

not required for shipment (although permitted waste transporters are required for transport of >500 pounds/shipment) and wastes may be accumulated on site for up to 1 year. Small quantity handlers (up to 5,000 kg at one time) do not need an USEPA ID number.

UNUSED PRODUCTS:
See Waste Management - Specialty Waste Disposal.

UNKNOWN DRUMS AND CONTAINERS FOUND IN ROW:
See ABANDONED DRUMS AND CONTAINERS IN ROW.

USED OIL (Waste Oil):
Used oil destined for recycling or burning for energy recovery is not regulated as a hazardous waste. “Used oils” include spent motor oil, hydraulic oil, cutting oil, transmission fluid, fuel oils, gear oil and greases. Collect used oil in clearly labeled tanks or drums. Do not mix any other materials such as solvents, antifreeze or gasoline with the used oil. (If any hazardous wastes such as solvents, degreasers, etc. are mixed with used oil, the entire volume may be classified as a hazardous waste). Send used oil to an authorized recycler or fuel blender using a permitted Waste Transporter.

USED OIL for Space Heating: Used oil may be used for on-premises space heating without requiring air permits (parts 225 and 201) and comprehensive fuel/waste analysis programs if: (i) the maximum operating heat input is less than one million Btu per hour; and (ii) waste oil is generated on site (or by owner). (The facility becomes a used oil facility (not merely a generator) requiring a permit by Part 360-14 (and much more requirements including a Used Oil Quality Control Plan) if they accept used oil from other commercial/industrial generators.)

WASTE TRANSPORTER PERMITS:
NYSDOT employees can use Department trucks to haul up to 500 pounds (per trip) of industrial wastes, such as petroleum-contaminated soil and materials, used oil and tires, without a waste transporter permit. Hazardous wastes from a conditionally exempt small quantity generator (<100 kg/month) may also be self-transported without a permit. A "Part 364" Waste Transporter Permit issued by the NYSDEC is required to haul larger quantities of petroleum-contaminated soil and materials, hazardous wastes and industrial wastes such as used tires. Information on permit requirements or applications can be obtained by calling the NYSDEC's Division of Compliance Services at (518) 402-8707.
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TEM Section 4.4.20

Flowchart

Project involves use of ROW, excavation, building demolition, or may lead to contaminated media being encountered and/or new environmental liabilities for the Department?

Yes

Perform Phase I ESA/Screening (as appropriate for the complexity of the project) per NYSDOT TEM Section 4.4.20 in order to determine the presence/absence of recognized environmental conditions (RECs) such as containers of hazardous materials, current or historic property use consistent with associated with soil ground water contamination, or known soil/groundwater contamination.

No

REC(s) identified?

Yes

Develop Phase II ESA workscope according to site-specific concerns and investigate site(s) as appropriate.

No

Contamination identified?

Yes

If possible, work with Regional ROW agent and property owner to complete necessary remediation prior to property acquisition.

No

Possible AND all issues addressed?

Yes

Add appropriate Standard or Special Specifications to the contract documents as necessary.

No

No additional contaminated material or property have environment considerations.
4.4.20.10  Local Project Guidance

Procedures for Locally Administered Federal Aid Projects manual (PLAFAP)

All transportation projects are subject to the solid and hazardous waste laws, regulations and requirements described here no matter how the project is funded or who has designed the project, let the contract, or is contracted to perform the work. In addition, local projects should also verify that they have met the OSHA requirements summarized in 4.4.20.4.7

4.4.20.11  Appendices

(A) Legal Citations

The following state and federal laws and regulations are used as a source for this Section. Specific citations, are provided throughout the document.

State Statutes:

NYS Environmental Conservation Law
http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=@LENV+&LIST=LAW+&BROWSER=EXPLORER+&TOKEN=33910847+&TARGET=VIEW

NYS Navigation Law
http://codes.findlaw.com/ny/navigation-law/

State Regulations
6 NYCRR Parts 360-376, 595-614, 700-706
http://www.dec.ny.gov/regulations/regulations.html

State Guidance
NYSDEC Commissioner’s Policy # 51

NYSDEC Division of Environmental Remediation (DER)-10 – Technical Guidance for Site Investigation and Remediation
http://www.dec.ny.gov/regulations/67386.html

NYSDEC Technical Operations and Guidance Series (TOGS) 1.1.1
http://www.dec.ny.gov/regulations/2652.html

Federal Statutes
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
http://frwebgate.access.gpo.gov/cgi-bin/usc.cgi?ACTION=BROWSE&TITLE=42USCC103

Resource Conservation and Recovery Act
http://frwebgate.access.gpo.gov/cgi-bin/usc.cgi?ACTION=BROWSE&TITLE=42USCC82
Federal Regulations
40 CFR, Environmental Protection Agency
https://www.epa.gov/laws-regulations/regulations

29 CFR 1910.120, Occupational Safety and Health Administration (OSHA) Hazardous Waste and Emergency Response (HAZWOPER)
http://edocket.access.gpo.gov/cfr_2009/julqtr/pdf/29cfr1910.120.pdf

49 CFR, Subtitle B, Chapter I, USDOT, Pipeline and Hazardous Materials Safety Administration
http://www.access.gpo.gov/nara/cfr/waisidx_09/49cfrv2_09.html

(B) **Scope of Services**

(C) **Definitions Specific to the Topic**

Many of the definitions related to hazardous waste, hazardous substances, and contaminated materials are taken from the Federal and State statutes and regulations that govern these materials and activities. As a result, the Citations are included with the Definitions in this guidance document. Some of the applicable New York State regulations are available at: http://www.dec.ny.gov/regulations/regulations.html.

“All Appropriate Inquiry” (AAI) – The investigation that constitutes “all appropriate inquiry into the previous ownership and uses of a property consistent with good commercial or customary practice” as defined in CERCLA, 42 USC §9601(35)(B), that will qualify a party for one of the threshold criteria to satisfy the landowner liability protections (LLPs) for CERCLA liability (Final Rule 40 CFR Part 312). AAI sets standards for conducting investigations into the ownership, uses and environmental conditions of a property, and is the most commonly used approach to environmental “due diligence” for transactions involving commercial real estate and brownfield redevelopment. ASTM’s E 1527-05 for Phase I Environmental Site Assessments has been approved by the USEPA as satisfying the statutory requirements of AAI.

In New York State to comply with ECL-27-1323.4(c ) all appropriate inquiry means:
- Compliance with the procedures of ASTM Standard 1527-05 for acquisitions completed on or after the effective date of this rule (December 14, 2006);
- Compliance with the procedures of ASTM Standard 1527-97 for acquisitions after May 31, 1997 and before the effective date of this rule; or
- Compliance with the industry standards and guidance on or before May 31, 1997.

**Approved State** - State approved or authorized by the USEPA under 40 CFR part 271 to administer its' own hazardous waste programs. New York received approval in May, 1985.

**Area of concern (AOC)** – Any existing or former location where contaminants are known or suspected to have been discharged which is considered a source area. These include locations where contaminants were generated, manufactured, refined, transported, stored, handled, treated, disposed, or where they may be migrated.
AST – Aboveground storage tank.

ASTM – Originally known as the American Society for Testing and Materials, ASTM is a voluntary organization that develops technical standards for materials, products, systems, and services, including environmental site assessments. See www.astm.org

Brownfield - means any real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant, but not including some highly contaminated properties such as Registry or National Priority List sites, for example. Brownfields are subject to regulation under the Federal “Small Business Liability Relief and Brownfields Revitalization Act” of 2002 and since 2006 in New York, the Brownfield and Superfund Regulation in 6 NYCRR Parts 375.

Brownfields Amendments – amendments to CERCLA known as the Small Business Liability Relief and Brownfields Revitalization Act, Pub. L. No. 107-117 (2002), 42 USC §§ 9601 et. seq. The Brownfields Amendments modified Superfund to promote the cleanup, reuse and redevelopment of contaminated properties by addressing concerns about liability and providing some specific protections and defenses against liability.

BTEX - Benzene, toluene, ethylbenzene and xylene; four contaminants that are very soluble in water and highly mobile, and which are typically associated with subsurface releases of petroleum products such as gasoline.


CERCLIS - Comprehensive Environmental Response, Compensation and Liability Information System; a list of sites compiled by the USEPA that have been, or are being investigated for potential contamination by hazardous substances and possible listing on the National Priorities List (NPL).

CFR - Code of Federal Regulations; all federal regulations presently in effect.

Chain-of-Custody – A written form typically provided by the analytical laboratory used to document sample possession from the time the sample was collected, as it was transported, and when it was finally analyzed by the lab. The chain-of-custody form verifies that the sample has not been spiked, altered or tampered with.

Characteristic Waste - A waste that is hazardous because it possesses at least one of these characteristics: (1) corrosivity - if the material dissolves metals or burns skin; (2) reactivity - if the material undergoes violent chemical reactions with water; (3) ignitability - if the material
catches fire easily; or (4) toxicity - if the material or fumes can be noxious or poisonous. The USEPA has established standard tests for measuring these characteristics. Typically if lead-based paint on bridges is removed, it then becomes a characteristic waste due to lead toxicity.

See the complete definition in the NYSDEC regulations in 6 NYCRR 371.3 at https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guide=Id10d5690b5a011dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=%28sc.Default%29

**Characterization** – An older term for environmental site assessment that includes sampling, monitoring and analysis at a facility or site to determine the nature and extent of a contaminant release. This term has been superseded by “Phase II Environmental Site Assessment.”

**Contaminant** – means any hazardous waste (see that definition) and petroleum or oil (see that definition) as defined by Article 12 Section 172 of the New York State Navigation Law or Article 17, Title 10 of the ECL, or any other chemical constituent or compound, typically not naturally-occurring, that exceeds guidance or background levels.

**Contaminated materials** - A general phrase that is not defined in federal or State statutes or regulations, but which is used in this guidance document to include hazardous wastes under RCRA, hazardous substances under CERCLA, and other regulated materials or soils containing petroleum products or other contaminants.

**CORRACTS List** – A list maintained by the USEPA of hazardous waste treatment, storage or disposal facilities and other RCRA-regulated facilities that have been notified by the USEPA to undertake corrective action under RCRA.

**Data Usability Summary Report or “DUSR”** – is a document that provides a thorough evaluation of the analytical data to determine whether or not the data, as presented, meets the specific criteria for data quality and use.

**Deed Restriction** – is an encumbrance on a property that transfers controls on the use of that property to the county. Deed restrictions “run with the land” to provide a permanent restriction or prohibition on the property’s use that is inconsistent with engineering controls. Deed restrictions do not apply to State-owned lands.

**Dense Non-Aqueous Phase Liquid or “DNAPL”** – is a liquid contaminant that is denser than water and does not dissolve or mix readily with water. DNAPL is a non-aqueous phase or immiscible liquid that remains as a separate phase or layer and has a specific gravity greater than water. DNAPL has the potential to sink through soil or rock until it pools on a confining unit or is immobilized as a residual. Unlike LNAPLs, DNAPLs may flow down the slope of an aquifer bottom and move independently of the hydraulic gradient.

**Disposal** - means the abandonment, discharge, deposit, injection, dumping, spilling, leaking or placing of any contaminant so that such contaminant or any related constituent thereof may enter the environment. Disposal also means the thermal destruction of a contaminant and the burning of a contaminant as fuel for the purpose of recovering usable energy. (see 6 NYCRR 375-1.2(k))
Due Diligence – The process of inquiring into the environmental characteristics of a parcel of commercial real estate or other conditions, usually in connection with a real estate transaction (i.e., acquisition). The degrees and kinds of due diligence vary for differing properties and different purposes.


EIC or Engineer-in-charge – The Engineer representing the Dept. of Transportation having direct supervision of the execution of the contract under the direction of the Regional Director.

ELAP - The New York State Department of Health's Environmental Laboratory Approval Program that approves commercial laboratories who analyze environmental samples collected in New York. See the list of currently approved labs at http://www.wadsworth.org/labcert/elap/comm.html

Eminent Domain – The power of the sovereign and those to whom it has been delegated (i.e. the New York State Dept. of Transportation) to take property for public use without the owner’s consent.

Engineering Controls – Physical modifications to a property or facility (for example, pavement, capping, subsurface barriers, slurry walls, fencing, connecting to existing public water supply or point-of-use water treatment) to reduce or eliminate the potential for exposure to hazardous substances or petroleum products in the soil or ground water of the property. Engineering controls are a type of “activity and use limitation (AUL).”

Environmental easement - means an interest in real property, created under and subject to the provisions of ECL article 71, Title 36 which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls. (See 4.4.20.7.2 Right-of-Way Acquisition for Transportation Projects)

Environmental lien – A charge, security, or encumbrance upon title to a property to secure the payment of a cost, damage, debt, obligation or duty arising out of response actions, cleanup or other remediation of hazardous substances or petroleum products. Environmental liens can be imposed pursuant to section 107(1) of CERCLA (42 U.S.C. §9607(1) or under the New York Environmental Protection and Spill Compensation Fund (the “Oil Spill Fund”) administered by the Office of the State Comptroller

Environmental professional – A person who meets the education, training and experience requirements as set forth in 40 CFR § 312.10(b), and who may be an independent contractor or employee of the user.

Environmental Site Assessment (ESA) – The process used to determine if any recognized environmental conditions (RECs) are present on a particular parcel of real property. An ESA is both different from and less rigorous than an environmental compliance audit. The guidance
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in this EPM chapter follows the guidance provided in ASTM’s E 1527-05, “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.”

**EPCRA** - Emergency Planning and Community Right-to-Know Act; also known as SARA Title III. This law was enacted by Congress to help local communities protect public health, safety, and the environment from chemical hazards. EPCRA establishes methods and requirements for states to plan and prepare for releases of hazardous substances, and also requires facilities to maintain Material Safety Data Sheets (MSDS) for the chemicals they use as part of the hazard communication regulations of OSHA.

**Exposure pathway** – An exposure pathway describes the unique mechanisms by which an individual or population is exposed to a chemical of concern. Each exposure pathway includes a source or release from a source, an exposure point and an exposure route.

**Fate and transport** - The natural break down, dilution, dispersion or other consequences that occur after a chemical has been released into the environment, based upon the characteristics of the chemical and the media through which it travels.

**FHWA** – The Federal Highway Administration under the USDOT.

**Federal Register** – A publication of the U.S. government containing all proposed and final regulations and some activities of the Federal government. Environmental documents in the Federal Register can be found at [https://www.federalregister.gov/](https://www.federalregister.gov/)

**Free Product** – An immiscible non-aqueous phase liquid, other than a DNAPL, present as a potentially mobile liquid in the surface or subsurface soil, surface water or ground water.

**Generator** - A generator is defined as the person whose act or process first causes a hazardous waste to become subject to regulation. For example, a contractor removing hazardous contaminated soil has “generated” the contaminated soil that must be managed as a hazardous waste; thus, and the contractor is the “generator” of the hazardous waste. NYSDOT, however, as the property owner is also typically considered a “generator” since the act of owning and constructing the project led to the generation of hazardous wastes. USEPA regulations require all generators to determine whether their waste is hazardous and account for its final disposal.

**GIS** - Geographic Information Systems; computer-based systems of storing, modeling, manipulating, analyzing and retrieving various kinds of geographic information. NYSDOT has adopted ARCGIS as the standard GIS platform.

**Ground water** - That portion of the subsurface below the saturated zone where the soils and geologic formations are fully saturated with water; sometimes referred to as below the “water table.” Movement of water within the zone of saturation is known as ground water flow.

**Hazardous Materials** – are defined in Federal transportation regulations in 49 CFR Part 105.5 as “a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety and property when transported in commerce, and
has designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 USC 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101) and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of the chapter. (bold type added for emphasis)

**Hazardous Materials Regulations (HMR)** - means the regulations at 49 CFR parts 171 through 180. HMR are issued by the Pipeline and Hazardous Materials Safety Administration of the USDOT and govern the transportation of hazardous materials by highway, rail, vessel, and air. The HMR address hazardous materials classification, packaging, hazard communication, emergency response information and training.

**Hazardous Substance** - CERCLA broadly defines hazardous substances to include: (1) all toxic pollutants and hazardous substances under the federal Clean Water Act; (2) hazardous wastes as defined in the Resource Conservation and Recovery Act (RCRA); (3) any hazardous air pollutant of the federal Clean Air Act; and (4) chemicals designated as "imminently hazardous" under the Toxic Substances Control Act (TSCA). CERCLA, however, excludes crude oil, petroleum products and natural gas products.

**Hazardous Waste** - As defined in RCRA, a solid (or liquid) waste or combination of solid wastes that, because of quantity, concentration, or physical, chemical or infectious characteristics, may cause or significantly contribute to an increase in mortality or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed. Hazardous waste can be "listed wastes" that are generally produced by specific industrial processes, or "characteristic wastes" that exhibit the characteristic of ignitability, corrosivity, reactivity or leachability of a toxic constituent (as determined by TCLP testing). RCRA specifically exempts some solid wastes, including household waste, cement kiln dust waste and arsenic treated (pressure treated) wood, among many others. For more complete discussion, see NYSDEC hazardous waste regulations at [http://www.dec.ny.gov/chemical/8486.html](http://www.dec.ny.gov/chemical/8486.html) . [http://www.dec.ny.gov/chemical/8477.html](http://www.dec.ny.gov/chemical/8477.html)

**HASP** – Health and Safety Plan, required when work will be performed in areas known or suspected to be contaminated with hazardous substances (see 4.4.20.5.2 - Site-Specific Health and Safety Plans). For this work, the HASP required under §107-05, Safety and Health Requirements, or the NYSDOT Standard Specifications.

**HAZWOPER** – Hazardous waste operations and emergency response which is required under OSHA.1910.120.

**Historic Fill** – is non-indigenous or non-native material, historically deposited or disposed by filling water bodies, wetlands or topographic depressions, and not connected to subsequent operations at the location of the emplacement. Historic fill may be solid waste including, but not limited to, coal ash, wood ash, municipal solid waste incinerator ash, construction and demolition debris, dredged sediments, railroad ballast, refuse and land clearing debris, which was used prior to October 10, 1962.
Household Hazardous Waste – Materials found in residential waste that would be regulated as hazardous waste if generated by industry, including but not limited to pesticides, paints, solvents, degreasers, and other chemicals. See Appendix D-9.

HSWA - Hazardous and Solid Waste Amendments of 1984, 42 USC Sections 6901-6987, amendments to RCRA. Subtitle I of these amendments include many requirements that apply to underground storage tanks (USTs) including tank standards, reporting and recordkeeping requirements, corrective action, compliance monitoring and enforcement.

Institutional Control - means any non-physical means of enforcing a restriction on the use of real property that limits human or environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of operation, maintenance, or monitoring activities at or pertaining to a remedial site. [See 6 NYCRR 375-1.2(aa)]

Interim remedial measure (IRM) – An activity to address both emergency and non-emergency site conditions that can be undertaken without extensive investigation and evaluation, to prevent, mitigate or remedy environmental damages or consequences. IRMs include but are not limited to construction of diversion ditches, collection systems, drum removal, leachate collection systems, construction of fences or other barriers, installation of water filters or provision of alternative water systems, remove of source areas or plume control.

Just compensation – In a condemnation case, the amount of money that a landowner is entitled to be paid.

Landowner liability protections (LLPs) – Legal protections available under the Small Business Liability Relief and Brownfields Revitalization Act amendments to CERCLA, which include prospective purchaser liability protection, contiguous property owner liability protection, and innocent landowner defenses.

Light non-aqueous phase liquid or LNAPL – A liquid contaminant that is less dense than water and which does not dissolve or mix easily with water. LNAPL is a non-aqueous phase or immiscible liquid that remains as a separate phase or layer that has a specific gravity less than water. Because LNAPLs are less dense than water, they tend to float on top of the water table. Synonym: floating product.

Listed Hazardous Waste - A waste from either a specific industrial process or a generic waste (such as a common solvent) that is identified as a hazardous waste. Listed wastes that are regulated in New York State can be found at https://govt.westlaw.com/nycrr/Document/I4eacc3f8cd1711dda432a117e6e0f345?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPagItem&contextData=(sc.Default)&bhcp=1
Manifest – USEPA Form 8700-22, a shipping document for tracking hazardous waste from the generator to the final destination. More information can be found at http://www.dec.ny.gov/chemical/8793.html

Market value – The most probably sales price, assuming a willing buyer, willing seller, adequate marketing time, and where no party has an unfair advantage over or knowledge of another party to the transaction.

Monitored Natural Attenuation or MNA – A process in which natural systems attenuate contaminants at a specific site through biodegradation, sorption, volatilization, radioactive decay, chemical or biological stabilization, transformation, dispersion, dilution and/or destruction of contaminants. MNA must be confirmed, monitored and quantified.

Material Safety Data Sheet (MSDS) – A written form containing details of the hazards and properties associated with a chemical or product which gives information on it’s safe use. The OSHA Hazard Communicatrion Standard at 29 CFR §1910.1200 requires that employers have MSDS’s in the workplace for each hazardous chemical that is used there.

Navigation Law – The New York State law that governs the transfer and storage of petroleum products and provides for prompt cleanup and removal of pollution related to the discharge of petroleum under Article 12, Oil Spill Prevention, Control and Compensation. §181 of Section 3 of Article 12 states that any person who has discharged petroleum shall be strictly liable, without regard to fault, for all cleanup and removal costs and all direct and indirect damages, no matter who sustains the damages.

NFRAP – A Federal database of former CERCLIS sites where no further remedial action is planned under CERCLA.

NPL - National Priorities List. Contaminated sites are ranked by the USEPA using the Hazard Ranking System (HRS) to determine those most in need of remediation using federal money. The NPL was promulgated under CERCLA Section 105(a)(8).

NYSDEC - The New York State Department of Environmental Conservation that regulates hazardous and nonhazardous wastes in New York and the remediation of hazardous waste sites.

Operable Unit – A portion of the remedial program for a site that for technical or administrative reasons can be addressed separated to investigate, eliminate or mitigate a release, threat of a release, or exposure pathway resulting from site contamination. Operable units may address geographical portions of a site, media-specific action, specific site problems or an initial phase of an action, or may consist of any set of actions performed over time or any concurrent actions located in different parts of a site. An OU can be proposed by the NYSDEC or a remedial party.

OSHA – The U.S. Occupational Safety and Health Administration which regulates most private sector workplaces’ safety and health. In New York, the Public Employee Safety and Health (PESH) Bureau in the Dept. of Labor provides occupational safety and health protection to public sector workers at the State and Local levels.
Part per million (ppm) – A concentration that is approximately equivalent to one milligram per kilogram (mg/kg) in a solid or one milligram per liter (mg/l) in a liquid. A part per million can be represented as one penny in $10,000.

Part per billion (ppb) – A concentration that is approximately equivalent to one microgram per kilogram (µg/kg) in a solid or one microgram per liter (µg/l) in a liquid. A part per billion can be represented as one penny in $10 million.

Part per trillion (ppt) – A concentration that is approximately equivalent to one nanogram per kilogram (ng/kg) in a solid or one nanoogram per liter (ng/l) in a liquid. A part per trillion can be represented as one penny in $10 billion.

Polynuclear (AKA Polycyclic) Aromatic Hydrocarbons – a subset of semivolatile organic compounds associated with petroleum products and incomplete combustion.

PCBs - Polychlorinated biphenyls. A class of more than 200 compounds, whose manufacture and disposal are regulated under TSCA, and as wastes, are regulated by New York State. Sometimes called "Aroclors," a former trade name in the U.S. PCBs are a large family of artificially produced chemicals known as chlorinated hydrocarbons that were non-flammable, stable at very high temperatures, and possessed good electrical insulating properties. PCBs were widely used in hydraulic, electrical and heat transfer equipment, and as plasticizers in paints, plastics and caulks as well as in pigments, dyes and carbonless copy paper. Many PCB products were known by their industrial trade names, of which the most common was “Aroclor.”

PCBs that are released into the environment break down very slowly, and belong to a chemical family that “bioaccumulates” throughout the food chain. As a result, almost all people living in the U.S. today have some level of PCBs in their tissues. PCBs have been shown to cause cancer and have adverse health effects on the immune and reproductive systems in animals. The manufacture of PCBs was prohibited under TSCA in 1979 but they still persist throughout the environment today.

Petroleum or “oil” – is defined in Article 12 Section 172 of the NYS Navigation Law or Article 17, Title 10 of the ECL specifically oil or petroleum of any kind and in any form including but not limited to oil, petroleum, fuel oil, oil sludge, oil refuse, oil mixed with other wastes and crude oils, gasoline, kerosene and dielectric fluids.

The Federal definition of petroleum as a “regulated substance” in the underground storage tank (UST) regulations is: “petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 degree Fahrenheit and 14.7 pounds per square inch absolute). The term “regulated substance” includes but is not limited to petroleum and petroleum-based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oil, residual fuel oils, lubricants, petroleum solvents, and used oils.”

Petroleum storage and dispensing equipment is regulated under 40 CFR Sections 280-282 at the Federal level, and under the Navigation Law and the Petroleum Bulk Storage program described
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in 6NYCRR Parts 611-614 in New York. Although petroleum-contaminated soil and media are not hazardous wastes in most cases, their identification, handling and disposal are regulated activities.

**Potential environmental concern** – The possible presence of any hazardous substances or petroleum products on a property under conditions that indicate the possibility of an existing release, a past release, or a threat of a release into structures on the property or into the ground, ground water, or surface water of the property.

**PPE – Personal Protective Equipment** – OSHA requires the use of PPE to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective in reducing these exposures to acceptable levels. Employers are required to determine if PPE should be used to protect their workers and may include air-purifying respirators, chemically resistant gloves, steel-toed safety shoes, and protective clothing such as splash suits.

**PRP – Potentially responsible party under CERCLA.**

**Qualified Environmental Professional** – is defined in New York as “a person, including a firm headed by such person, who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases to the surface or subsurface of a property or off-site areas, sufficient to meet the objectives and performance factors for the areas of practice identified… This person must: (a) hold a professional engineer’s or a professional geologist’s license or registration and have three years of full-time relevant experience in site investigation and remediation; or (b) be a site remediation professional licensed or certified by the Federal government, a State or a recognized accrediting agency to perform this work and have three years of full-time relevant experience. (see [http://www.dec.ny.gov/chemical/8664.html](http://www.dec.ny.gov/chemical/8664.html) for full definition).

**Quality assurance/quality control (QA/QC)** – Standards, duplicate samples, and procedures that provide reasonable assurance that samples collected and data generated from those samples are reliable, reproducible and verifiable.

**RP - Responsible Party.** A "person" that held title to contaminated land or was partly responsible for the environmental damage and who is also liable for the clean-up costs under CERCLA.

**RBCA- Risk-Based Corrective Action;** the process of addressing contaminated sites in the context of the actual risk they present to human health and the environment rather than requiring cleanup to an inflexible standard. New York’s brownfields regulations in 6NYCRR Part 375 take this approach for contaminated soils, rating them as suitable for unrestricted use to industrial and commercial uses if the levels of contamination are higher.

**RCRA - Resource Conservation and Recovery Act, 42 USC 6901 et. seq.** Passed in 1976, RCRA defines and regulates the treatment, storage, transportation and disposal of hazardous wastes from "cradle to grave." RCRA provides a framework for managing non-hazardous solid
wastes, and a series of amendments dating from 1986 address environmental problems related to leaking underground storage tanks that contain petroleum and other hazardous substances.

**RCRA Metals** – Eight metallic elements associated with toxic hazardous wastes. These are arsenic, beryllium, cadmium, chromium, lead, mercury, selenium and silver.

**Real property** – Land, improvements, and all legal interests therein.

**Receptor** – Any human or biota that are, or may expect to be, or have been exposed to or affected by a contaminant from a site.

**Recognized Environmental Conditions (REC’s)** – are defined in the ASTM guidance as: “the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or onto the ground, ground water, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws, but this term is not intended to include *de minimus* conditions that do not present a threat to human health or the environment, and which would not generally be subject to enforcement action by regulatory agencies.

**Restricted/Residential** – Property under common control such as in apartment complexes and townhouses. Specific soil cleanup levels apply to these types of properties, and are not as stringent as soils suitable for unrestricted use.

**RI/FS - Remedial Investigation/Feasibility Study** - After a preliminary study confirms the presence of hazardous waste, a remedial investigation is carried out by the responsible party or the NYSDEC to determine the nature and extent of contamination. The information from the RI is evaluated by the NYSDEC and DOH to perform a Feasibility Study to evaluate cleanup options. The FS forms the basis for selecting the remedy that eliminates the threat to public health and the environment, and this is documented in a Record of Decision (ROD) for the site.

**ROD** - Record of Decision. The administrative record by the USEPA or NYSDEC of the remedial action to be taken at a site, and the decisions that led to this selection. (See RI/FS above).

**SARA** - Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499, 100 Stat. 1613. SARA refined the Superfund legislation to require reporting of any release of hazardous substances to any environmental medium and expanded the defenses of “innocent landowners” under CERCLA, especially for government entities that acquired contaminated properties by eminent domain if due care and caution were first exercised. SARA also emphasized permanent remedies and innovative treatment of hazardous waste sites, increased the involvement of states and the public, and required the USEPA to revise the Hazard Ranking System (HRS) for nominating sites to the Federal National Priorities List (NPL).
**Screening** – An obsolete term to describe a study of whether contaminated materials are likely to be present on a parcel by using published information and observations. The term screenings has been replaced by Environmental Site Assessment, and now follows the steps that are typically used in the financial and real estate industries as “Phase I Environmental Assessment.”

**Soil vapor intrusion (SVI)** – The process where volatile chemicals move from a subsurface source into the indoor air of overlying buildings. In New York, the State Health Department has issued guidance that explains when, where and how to evaluate soil vapor intrusion.

**Solid Waste** - A discarded material that is solid, liquid, semi-solid or contains gaseous material, that results from industrial, commercial, mining and agricultural operations, and from community activities. Some discarded materials such as return irrigation flows or domestic sewage are not classified as solid wastes. A material is discarded if it is abandoned by being disposed of, burned or incinerated (including being burned as a fuel for the purpose of recovering usable energy), or accumulated before being disposed. A material is disposed if it is discharged, deposited, injected, dumped, spilled, leaked or placed into or on any land or water so that such material or any constituent thereof may enter the environment or be emitted into the air or discharged into groundwater or surface water. (See 6NYCRR 371.1(c) & (d) for the regulatory definition of “solid waste” at [https://govt.westlaw.com/nycrr/Document/I4eac9d18cd1711dda432a117e6e0f345?viewType=FullText&originContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)](https://govt.westlaw.com/nycrr/Document/I4eac9d18cd1711dda432a117e6e0f345?viewType=FullText&originContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

**SPCC** – Spill Prevention, Control and Countermeasures plan – Plans required by the USEPA for all facilities that store oil or oil-containing products above certain volumes, when there is a possibility that an oil spill can reach a navigable waterway. Facilities that store more than 1,320 gallons in aboveground storage facilities or more than 42,000 gallons in belowground storage facilities must have SPCC plans.

**Standards, Criteria and Guidance or “SCGs”** – Standards and criteria that are generally applicable, consistently applied, and officially promulgated, and which are either directly applicable or are relevant and appropriate after the exercise of scientific and engineering judgment. This term incorporates both the CERCLA concept of “applicable and relevant and appropriate requirements” (ARARs) and the USEPA’s “to be considered” (TBCs) category of non-enforceable criteria or guidance. The most common applicable SCGs are soil cleanup objectives and supplemental soil cleanup objectives listed in 6 NYCRR 375-6.8 and the NYSDEC Commissioner’s Policy on Soil Cleanup Guidance.

**Strip taking** - Acquisition of a narrow strip of land from the margin of a property, often acquired to widen an existing road.

**Superfund** - See CERCLA.

**SVOCs or Semivolatile Organic Compounds** – Organic compounds whose boiling points are higher than water and which may vaporize when heated above room temperature. SVOCs include phenols and polynuclear (AKA “polycyclic”) aromatic hydrocarbons (PAHs).
Take-Line Meeting – A meeting, which is held to determine what the property impacts and appraised damages may be, and for Real Estate to advise and assist Design with formulating strategies for acquiring needed properties.


Title search – An investigation of public records and documents to determine the history and present status of a property.

TPH or Total Petroleum Hydrocarbons – An imprecise test to determine the presence of oil in water or soil.

TSCA - The Toxic Substances Control Act. A law enacted in 1976 that allows the USEPA to track more than 75,000 industrial chemicals made or imported into the U.S. PCBs are one family of those chemicals that are no longer be manufactured, used or disposed within the U.S. In New York, materials containing more than 50 milligrams per kilogram (mg/kg or parts per million) PCBs must be managed as hazardous waste.

TSDF – Facilities on which treatment, storage, and/or disposal of hazardous wastes takes place, as defined and regulated by RCRA.

USEPA - The U.S. Environmental Protection Agency.

USEPA Identification Number – A unique, site-specific number assigned to each generator and transporter of hazardous waste, and to each treatment, storage and disposal facility (TSDF). Forms and instructions to obtaining a USEPA ID number can be found at https://www.epa.gov/hwgenerators/how-hazardous-waste-generators-transporters-and-treatment-storage-and-disposal

UST - Underground Storage Tank. USTs are regulated under the 1984 amendments to RCRA, Section 601, 9001-10 if they contain a "regulated substance" such as petroleum and more than 10% of the tank is below ground. USTs are regulated in New York under the Navigation Law and by NYSDEC under the Petroleum Bulk Storage (PBS) program.

VOCs - Volatile organic compounds are a family of organic compounds whose boiling point is generally less than 150°Celsius that have high vapor pressures (less than 1 millimeter mercury) under normal conditions to readily vaporize and enter the atmosphere. VOCs are found in gasoline, fuels, paints and solvents among other products.

(D) References/Technical Documents

D-1 Spill Reporting Information
  • D-1a Spill Reporting “Cheat-Sheet” (Wall Version)
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- D-1b Spill Reporting “Cheat-Sheet” (Construction Version)
- D-1c Spill Reporting “Cheat-Sheet” (Maintenance/Field Notebook Size)

D-2 In-House Phase I ESA Documentation
- D-2a In-House Phase I Documentation Form
- D-2b Site Inspection Checklist

D-3 Sanborn Fire Insurance Map Legend

D-4 Sample Preservation Table

D-5 NYSDEC Soil Screening Letter

D-6 Contaminated Soil Removal Flow Chart

D-7 - Reserved-

D-8 Typical Bird/Bat Waste Information

D-9 Household Hazardous Waste

(E) Contacts

NYSDOT Office of Environment, Hazardous Materials and Asbestos Unit
(518) 457-5672

NYSDEC Spill Hotline
1 (800) 457-7362

NYSDEC Central Office Program Directory
http://www.dec.ny.gov/about/556.html
NYSDEC Regional Office Directory
http://www.dec.ny.gov/about/558.html

(F) Sample statements - Reserved-