



## **Appendix 6-F: Invasive Species Control Plan (ISCP)**



## **Invasive Species Control Plan (ISCP)**

Harlem River Bulkhead Penetration  
and Tie-In (“Segment 20A”)

Case Number 10-T-0139

City of New York, Borough of the Bronx, Bronx County,  
New York

City of New York, Borough of Manhattan, New York  
County, New York

## **Champlain Hudson Power Express**

TRC Project Number: 490523.0007.0000

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## APPENDICES

Appendix A Agency Invasive Species Flyers and Fact Sheets

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## ACRONYM AND ABBREVIATION LIST

2012 BMP	Best Management Practices document dated February 10, 2012
BMP	Best Management Practice
Certificate Holders	CHPE, LLC and CHPE Properties, Inc.
CHPE	CHPE, LLC and CHPE Properties, Inc.
CHPE Project	Champlain Hudson Power Express Project
EI	Environmental Inspector
ISCP	Invasive Species Control Plan
NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NYSDEC	New York State Department of Environmental Conservation
Project	Champlain Hudson Power Express Project

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## 1.0 Introduction

TRC Environmental Corporation has prepared this Invasive Species Control Plan (ISCP) on behalf of CHPE, LLC and CHPE Properties, Inc. (collectively CHPE and Certificate Holders) for the Champlain Hudson Power Express Project (the “CHPE Project” or “Project”) Harlem River Bulkhead Penetration and Duct Bank Tie-In (EM&CP Segment 20A). The CHPE Project involves the construction of approximately 339 miles of high voltage direct current underground and underwater transmission cable from Montreal, Quebec, to Queens, New York. It will bring 1,250 megawatts of renewable energy into New York by Spring 2026, to replace the use of fossil fuels and reduce carbon emissions. The proposed Project will provide enough power for more than 1 million homes, along with numerous environmental and economic benefits, to millions of residents in New York State communities.

This ISCP covers what is referred to as “EM&CP Segment 20A” of the CHPE Project, which describes the installation of conduits via bulkhead penetration and duct bank construction on a parcel of privately owned land at the northern shore of the Harlem River. Construction activities will take place in the Harlem River and on property currently used by Waste Management Inc. as a transfer facility, in the Port Morris neighborhood of the Borough of the Bronx, Bronx County, New York. The bulkhead penetration and duct bank conduits will be constructed in preparation for later installation and landfall of the submarine cable. This cable landfall location will serve as the transition between submarine cable to overland cable. During construction, conduits will be installed through a steel sheeting bulkhead. An in-water cofferdam and support barge will facilitate bulkhead penetration operations. Trench excavation will occur from the proposed bulkhead inland for approximately 60 feet, then will continue north and east for approximately 125 feet. The extents of the trench width and depth will be able to accommodate the installation of two 12” HDPE pipe conduits.

The invasive species control measures that will be employed for bulkhead penetration and duct bank tie-in construction activities are described herein and are consistent with Section 21.0 of the 2012 Best Management Practices (BMPs) Document. In an effort, where feasible, to limit the introduction and spread of invasive species, BMPs will be employed when performing work activities. This ISCP identifies procedures that will be incorporated into routine work practices to prevent the introduction and spread of invasive species.

### 1.1 Purpose and Goal

The New York State Department of Environmental Conservation (NYSDEC) defines an invasive species as “...a species that is non-native to the ecosystem under consideration; and whose introduction causes or is likely to cause economic or environmental harm or harm to human health” (6 NYCRR Part 575, 2014). The overall CHPE Project will involve both aquatic and land disturbance within the Project Corridor using equipment and construction practices with the potential to relocate or spread invasive species. This ISCP focuses on the measures to be implemented during construction activities to limit the introduction and spread of invasive

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species known to occur at the Harlem River bulkhead penetration and tie-in construction area (EM&CP Segment 20A). It is not the intent of this plan to control or eliminate existing populations of invasive species, but rather to prevent their spread as a result of construction activities.

## **1.2 Applicable Laws and Regulations**

There are several federal and state laws and regulations governing the control of invasive species that are applicable to this Project, including Sections 401 and 404 of the Clean Water Act and Article 15 and Article 24 of the New York State Environmental Conservation Law. Both the Environmental Conservation Law and the Agriculture and Markets Law authorize the NYSDEC and the NYS Department of Agriculture and Markets to regulate invasive species. These agencies are also party to the Article 7 (Public Service Law) process by which this Project was approved. The Part 575 Invasive Species Regulations are intended to control invasive species by reducing the introduction and spread of invasive species populations by limited commerce in such species, thereby having a positive impact on the environment.

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## 2.0 Observed Invasive Species

The Certificate Holders have identified certain invasive species that potentially occur at the Project, on the basis of field surveys, published studies and data, and/or consultation with federal and state agencies. Invasive species are typically nonindigenous and include both terrestrial and aquatic species that can spread rapidly in the environment, resulting in the displacement of native species, and sometimes causing economic impacts.

### 2.1 Invasive Aquatic Animals

Invasive aquatic animal species known to occur within the Harlem River include zebra mussel (*Dreissena polymorpha*), Atlantic rangia (*Rangia cuneata*), Asian shore crab (*Hemigrapsus sanguineus*), European green crab (*Carcinus maenas*), and Chinese mitten crab (*Eriocheir sinensis*). These species may be present within the Harlem River where bulkhead penetration is proposed.

### 2.2 Invasive Insects

The invasive Spotted Lanternfly (*Lycorma delicatula*) is now present in several counties in the State of New York, posing a threat to native vegetation, agriculture, and forest health. Spotted lanternflies may be present during bulkhead penetration and tie-in activities.

### 2.3 Potential Invaders

As the Harlem River is an aquatic environment with connections to a variety of regional waterbodies, the potential for expansion or proliferation of new invasive species is inherently in flux. The rusty crayfish (*Faxonius rusticus*) has been identified within portions of the Hudson River. Spiny water flea (*Bythotrephes cederstroemi*) is anticipated to make its way into the Hudson River within future years, after which they can potentially make its way into parts of the Harlem River. Eurasian water milfoil (*Myriophyllum spicatum*) and water chestnut (*Trapa natans*) are invasive plants species that have been found present in the Hudson River. CHPE will perform minimization and mitigation measures as outlined in this ISCP and in the 2012 BMP document so as to limit the spread of observed and potential invasive species. Should a new invasive species be identified, recommendations of the NYSDEC and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) will be heeded.

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### 3.0 Monitoring and Control Procedures

In accordance with the 2012 BMP document Section 21.4, the Certificate Holders will perform the measures outlined below to prevent or control the transport of invasive species. In addition, recommendations of the NYSDEC and NOAA Fisheries will be heeded.

#### 3.1 Inspectors and Training

As described in EM&CP Segment 20A, at least one full-time Environmental Inspector (EI) will oversee bulkhead penetration and tie-in activities. The EI(s) will oversee environmental compliance with all requirements of the Project during construction activities. The EI(s) will work directly with the construction crews to reinforce and encourage a team approach, and to develop a compliance culture that is understood and executed by all Contractor staff and personnel. The EI(s) will be responsible for understanding the requirements of the Certificate, EM&CP, and other permits and approvals. They will assist and report to the Environmental Compliance Manager, complete daily site inspection reports, participate in pre-job briefings and tailboards with the construction team to maintain a culture of environmental compliance, and address potential areas of non-compliant conditions. The EI(s) shall have stop work authority over aspects of the Project that could create an adverse impact to the environment.

As described in EM&CP Segment 20A, at least one Aquatic Inspector will present during construction overseeing any in-water bulkhead penetration activities. It is the Aquatic Inspector's job to monitor compliance with regulatory and permit requirements for the underwater portions of the bulkhead penetration. They will monitor construction activities on, above, or below the State's waters. If construction and installation appear to be in violation of the Certificate of Environmental Compatibility and Public Need, the Aquatic Inspector may direct the field crews to stop the specific potentially harmful activity immediately and attempt to assist in preventive or remedial action.

The EI(s) and Aquatic Inspector will monitor construction activities for invasive species. Construction equipment will be inspected for invasive species infestations prior to mobilization, use, and transportation. If, during construction, invasive species are found, they will be reported to the appropriate NYSDEC and/or NOAA Fisheries contact.

Prior to construction, training will be conducted to inform Project Contractor(s) and subcontractor(s) of the Project-wide and segment-specific protocols for invasive species management, including reporting such insects to NYSDEC contacts. This training will allow Project personnel to identify the invasive insect species listed in this ISCP.

Select informational flyers and pamphlets regarding invasive species management have been included as appendices to this ISCP. These flyers and pamphlets may be utilized or distributed by the EI or Aquatic Inspector to increase awareness regarding species of concern and best practices.



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## 3.2 Invasive Aquatic Animals

The Project will utilize BMPs to prevent or minimize the spread of invasive animals within the Harlem River. Thorough inspections of construction equipment will be conducted prior to movement of equipment from one waterbody to another. Vessel hulls, decks, propellers, lower units on outboard motors, and mooring lines will be washed and inspected to remove invasive animals prior to relocation of the vessels/equipment.

Within the Harlem River, the Certificate Holders will perform the following general measures, taken from the BMP Document, to prevent or control the transport of aquatic invasive species in accordance with applicable regulations and guidance from NYSDEC and the New York Invasive Species Council:

- Train and educate Project contractor(s) and subcontractor(s) to identify aquatic invasive species and site-specific prescriptions for preventing or controlling their transport throughout or off of the Project area;
- Require that vessels, equipment, and materials be inspected for, and cleaned of, any visible vegetation, algae, organisms and debris before bringing them to the Project area;
- Train Project contractor(s) and subcontractor(s) on the various cleaning or decontamination methods to be used on a site-by-site basis for the Project;
- Require that vessels, equipment, and materials be inspected for, and cleaned of, any visible vegetation, algae, organisms and debris before leaving the waterbody for another; and
- No vessel discharges of ballast water or sanitary waste will be allowed within the Project area.

Specific control measures for each invasive aquatic animal species are provided below.

### 3.2.1 *Zebra Mussel*

The Certificate Holders will perform the following measures to prevent or control the transport of zebra mussels:

- All construction equipment will be carefully inspected and washed-down to remove attached mussels (and other epiphytes) from hulls, decks, and mooring lines.

### 3.2.2 *Atlantic Rangia*

The following measures will be performed to prevent or control the transport of fleas Atlantic rangia:

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- All construction vessels and equipment (including mooring lines) will be washed and inspected prior to leaving the Harlem River for another waterbody.

### **3.2.3 Asian Shore Crab**

The following measures will be employed to prevent transportation of Asian shore crab from one location to another:

- All vessel hulls, submerged construction equipment, and mooring lines will be carefully inspected and washed with freshwater prior to moving to a different waterbody.

### **3.2.4 European Green Crab**

The following measures will be performed to prevent or control the transport of European green crab:

- All construction vessels and equipment (including mooring lines) will be washed and inspected prior to leaving the Harlem River for another waterbody.

### **3.2.5 Chinese Mitten Crab**

Vessel hulls, props, lower units, and any sampling equipment or field gear used in the bulkhead penetration and tie-in activities in the Harlem River will be inspected to prevent the transport of mitten crabs to other coastal waterbodies; however, the early life stages of these crabs are planktonic, and would be difficult, if not impossible to detect if they were to be attached to submerged construction equipment or mooring lines. As such, it will be necessary to wash all equipment with freshwater to remove species at this life stage.

The following measures will be performed to prevent or control the transport of the Chinese Mitten Crab and other invasive crustaceans:

- All vessel hulls, submerged construction equipment, and mooring lines used in or transported from the Harlem River will be carefully inspected and washed with freshwater prior to moving to a different waterbody.
- If a Chinese mitten crab is caught, it will not be released back to the water. It will be kept and frozen (preserved in alcohol if it cannot be frozen).
- Make a report within 48 hours of catch that includes photos and location information to [isinfo@dec.ny.gov](mailto:isinfo@dec.ny.gov) or 518-402-9425.

## **3.3 Invasive Insects**

The Project will utilize BMPs to prevent or minimize the spread of invasive insects within New York State. During cable construction and installation, the Certificate Holders will perform the

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following general measures to prevent or control the transport of invasive insects in accordance with applicable regulations and guidance from NYSDEC and the New York Invasive Species Council:

- Train and educate Project contractor(s) and subcontractor(s) to identify invasive insect species and site-specific prescriptions for preventing or controlling their transport throughout or off of the Project site;
- Train Project contractor(s) and subcontractor(s) on the various cleaning or decontamination methods to be used on a site-by-site basis for the Project;
- Require that vessels, equipment, and materials be inspected for, and cleaned of, any visible insects, eggs, or larvae before bringing them to the Project area;
- Require that vessels, equipment, and materials be inspected for, and cleaned of, any visible insects, eggs, or larvae before leaving a Project area; and
- If, during construction, invasive insects are found, they will be reported to the NYSDEC Regional Forester. The Regional Forester does not need to be informed of spotted lanternfly encounters.

Specific control measures for each invasive insect species are provided below.

### **3.3.1 Spotted Lanternfly**

In an effort to detect Spotted Lanternflies early and respond in a timely manner, NYSDEC has established a Protective Zone encompassing 20 counties located near the Pennsylvania and New Jersey infestations (Statutory authority: Agriculture and Markets Law, §§ 18, 164, 167; Executive Law, § 102[2]; State Administrative Procedures Act, § 203[1]; NYSDEC n.d.). This Protective Zone includes Bronx, Broome, Chemung, Chenango, Delaware, Dutchess, Greene, Kings, Nassau, Orange, Otsego, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Tioga, Ulster, and Westchester Counties. Protective Zones allow NYSDEC and its partners to conduct activities such as surveying, monitoring, and management to find and prevent the spread of Spotted Lanternflies. Additionally, the NYSDEC has established external quarantine areas in states where infestations are extensive (1 NYCRR III C 142). The quarantine restricts the movement of goods and outdoor products and is inclusive to construction equipment. The following describes the transportation requirements:

- Transportation of goods *from* quarantine areas require a certificate of inspection or permit which will be checked by the appropriate agencies.
- Transportation of goods *to* quarantine areas also require an inspection certificate from the state department of agriculture from the originating state for that load/truck.

The Protective Zone pertains to Project activities in the Bronx County. Material and equipment delivered and temporarily stored during construction will be inspected for invasive species upon arrival and prior to leaving, as stated in the section above. Any equipment or material

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transported from an external quarantine area to any of the Project sites will be inspected and permitted in accordance with 1 NYCRR III C 142.

If a Spotted Lanternfly is observed during Project construction, the following mitigation procedures will be followed:

- If an individual insect is observed, the EI shall attempt to capture the insect in a sealed container. The EI shall freeze the sealed container or fill the container with rubbing alcohol or hand sanitizer for preservation. If the insect cannot be captured by the EI, any personnel shall immediately kill the specimen by crushing it. If more than one insect is observed, any personnel shall kill any additional specimens. Preference is to eliminate and report the invasive species.
- If an egg mass is observed, the EI shall attempt to scrape the egg mass into a sealed container. The EI shall fill the container with rubbing alcohol or hand sanitizer for preservation. If more than one egg mass is observed, the EI shall destroy any additional egg masses by scraping them into a bucket of hot, soapy water or rubbing alcohol/hand sanitizer. Preference is to eliminate and report the invasive species.
- Take pictures of the insect, egg mass, or infestation. If possible, include an object for scale, such as a coin or pen.
- Note the location of the insect, egg mass, or infestation (address, intersecting roads, or GPS coordinates).
- Email pictures, location, and any other relevant information to [spottedlanternfly@agriculture.ny.gov](mailto:spottedlanternfly@agriculture.ny.gov).

## 4.0 References

CHPE 2012 BMP Document, Section 21.0 Invasive Species Control Procedures.

iMapInvasives iMAP23. Accessed April 19, 2024. <https://www.nyimapinvasives.org/public-map>.

NYSDEC. n.d. "Spotted Lanternfly." Accessed April 2024 from:  
<https://www.dec.ny.gov/animals/113303.html>.

NYSDEC. n.d. "Invasive Chinese Mitten Crab." Accessed April 2024 from  
<https://www.dec.ny.gov/animals/35888.html>.

NYSDEC. n.d. "Invasive Chinese Spiny Waterflea." Accessed April 2024 from  
<https://www.dec.ny.gov/animals/109358.html>.

New York State Department of Agriculture and Markets. n.d. "Spotted Lanternfly." Accessed April 2024 from: <https://agriculture.ny.gov/spottedlanternfly>.

## **Appendix A: Agency Invasive Species Flyers and Fact Sheets**

NYSDEC “Protect Your Waters” Flyer

NOAA Fisheries Preventing Invasive Species: Cleaning Watercraft and Equipment

NYS Integrated Pest Management Program Spotted Lanternfly Fact Sheet

NYS DAM Spotted Lanternfly Prevention Guidance

# PROTECT YOUR WATERS



Help Prevent the Spread of Aquatic Invasive Species

**AQUATIC INVASIVE SPECIES (AIS)** are plants and animals that can:

- interfere with boating and fishing,
- harm native plants and animals,
- destroy habitat,
- lower waterfront property values, and
- reduce the quality of drinking water.



**YOU** can help prevent AIS from spreading to new lakes and rivers.



## CLEAN. DRAIN. DRY.

- Inspect your watercraft and trailer, and remove anything that shouldn't be there, like plants, animals, mud, or debris.
- Drain all water-holding compartments.
- Wash your boat and allow it to fully dry before entering a new waterbody.

## INSPECT AND CLEAN

your gear before using it in another waterbody.

**VISIT** a launch with a boat steward for help inspecting your boat and a free wash.

**DISPOSE** of unused bait in trash cans and dump bucket water on dry land (not into the water).

Purchase only certified, disease-free bait.



## NEW YORK STATE

has more than **70,000 MILES** of rivers and streams, and more than **7,600** freshwater lakes, ponds, and reservoirs.



**REHOME** unwanted pets responsibly—never release them into the wild.

Dispose of plants and aquarium gravel in the trash.

**THINK** before you buy—make smart choices about the pets and plants you bring home.



## TELL A FRIEND!

Together, we can all help protect the lakes and rivers we love.

**JOIN US ON SOCIAL MEDIA!**

Use the hashtags:  
#ProtectNYWaters  
#CleanDrainDry



**Thank you for keeping New York's waters swimmable, fishable, drinkable, and livable!**

Learn more by searching for "aquatic invasive species" on our website: [dec.ny.gov](http://dec.ny.gov).



Department of Environmental Conservation



## NOAA FISHERIES SERVICE



Boats can transport invasive species into new locations. Watercraft operators should follow the Clean, Drain, Dry strategy in between every body of water, every time (Photo credit: NY Department of Environmental Conservation).



Once introduced, aquatic invasive plants can spread quickly. Once established they reduce light and oxygen to native wildlife (Photo credit: Maine Bureau of Land and Water Quality).

## Preventing Invasive Species: Cleaning Watercraft and Equipment

### Background

Aquatic, as well as many non-aquatic, invasive species are readily spread by flowing water. In addition, many aquatic invasive species are capable of survival out of water for extended periods of time. To prevent the accidental introduction organisms transported through water, all watercraft and equipment that are to be placed in a water body should be cleaned to remove invasive species, including any fragments, seeds, or other materials. This recommendation applies to equipment arriving on the project site as well as equipment that is relocated within the project.

To prevent cross contamination with other lands or water bodies, whenever possible, keep equipment and vehicles at the same project area for use only in that project area. If practical, the least infested (or least likely to be infested) sites should be visited first to reduce the risk of accidentally infecting a new area during restoration activities.

### Clean, Drain, and Dry!

When done properly before entering a new body of water, this general set of procedures can effectively prevent the spread of invasive species into new waters.

#### Drain:

- Drain **every conceivable space** or item that can hold water.
- Follow factory guidelines for eliminating water from engines.
- Always drain the bilges of the boat by removing the drain plug. Bilge pumps are not capable of removing all water from the boat hull.
- Drain live-wells, bilge, ballast tanks, and transom wells.
- Empty water out of kayaks, canoes, rafts, etc.

#### Clean:

- Remove any visible **plant or plant fragments**, as well as **mud or other debris**. Plant material, mud, and other debris routinely contain other organisms that may be an invasive species.
- Check trailer, including axle and wheel areas, in and around the boat itself: anchor, props and jet engines, ropes, boat bumpers, paddles.
- Clean all parts and equipment that came in contact with water using one or more of the methods listed below.

#### Dry:

- Allow everything to completely dry before launching into new waters; **five days** in warm, dry weather and up to **30 days** in cool, moist weather. Calculate local dry time at: <http://www.100thmeridian.org/Emersion.asp>
- If sufficient drying time is not available, decontaminate all surfaces using one or more of the cleaning methods described below. Carefully inspect for invasive organisms before entering a new water body.





## **Cleaning Methods**

Set up the best staging area possible for cleaning operations. A paved area with accommodations to elevate vehicles or otherwise allow easy access to the undersides of vehicles and equipment is ideal. Equipment of all types should be cleaned at the location of last use. If this is not possible, arrange for cleaning at a facility that is specially designed for equipment cleaning. Commercial hot-water car washes are effective for disinfecting boats and vehicles.

Water runoff carrying sediment, plant material, algae, animals, and/or petroleum contaminants, must be managed with the use of berms or other containment. Silt fence installed along perimeters of work areas can also aid in preventing spread of contaminated materials outside of the washdown location. Despite very careful efforts to capture and quarantine materials from cleaning operations, site-specific invasions are likely to occur; therefore, part of the cleaning process should involve monitoring the washdown areas for invasive species and using appropriate control methods early to prevent additional spread.

Personnel who use equipment during cleaning operations are responsible for properly using Personal Protective Equipment (PPE) that is appropriate to the cleaning activity. Using cleaning and disinfectant chemicals, power washers, air compressors, and other types of cleaning equipment may present working hazards. PPE items to protect hearing, skin, eyes, and respiration may be required. All personnel should undergo proper training of all equipment prior to performing any cleaning operation.

### ***Brushing (Physical Removal)***

Brushing is considered to be moderately effective in removing invasive material from equipment or gear. A follow-up with water washing, high-pressure air blasting, or high-pressure wash is also recommended.

- If there is a nap to fabric (e.g., upholstery, carpeting, or clothing), brush with the nap rather than against it. Brushing against the nap could further embed small seeds or plant fragments into the material.
- A combination of soft and stiff bristles of varying length is recommended for use on carpeting or components made of rubber, nylon, or plastic.
- Bristles of medium length and stiffness are desired for removal of mud and other matter from fabrics and upholstery.
- Stiff bristles are recommended for the tread of wheels that become encrusted with sediment and mud.

### ***Vacuuming (Physical Removal)***

Vacuuming equipment or clothing with a brush attachment is suggested to remove most loose particle matter, but care should be taken because small seeds and plant fragments may become further embedded in materials. To prevent contained plant and soil matter from being redeposited following the cleaning process, collected matter should be bagged and incinerated or disposed of in a sanitary landfill. A follow up with water washing, high-pressure air blasting, or high-pressure wash is also recommended.

### ***Use of Adhesive Roller (Physical Removal)***

Adhesive is considered to be moderately effective in removing the majority of plant material from equipment or gear. Seed and fragment materials readily attach to the adhesive sheets and are effectively lifted out of seams and the weave of loose particle fabrics; proper attention and care given during removal is a direct reflection of the potential efficiency of this technique. A follow up with water washing, high-pressure air blasting, or high-pressure wash is also recommended. To prevent contained plant and soil matter from being redeposited following the cleaning process, adhesive sheets should be bagged and incinerated or disposed of in a sanitary landfill.



### **Thermal Treatment**

Thermal treatments involve the use of extremely hot temperatures in order to kill all invasive material. Using steam, hot air, or hot water to clean vehicles and field equipment has proven to be especially effective when used to bring the surface temperature of the up to 140 °F for 30 seconds. A hand-held infrared thermometer can be used to verify the surface temperature. Disadvantages to the use of thermal treatments are the apparent risk of burns, its labor-intensive nature, and the initial cost of equipment.



To prevent the spread of invasive species, all equipment should be inspected and cleaned after exiting the water body.

### **Chemical Treatment**

Many chemical agents are available to prevent the potential movement of invasive species. However, the use of chemical treatments sometimes poses disposal and wastewater concerns. If chemical treatments are used, local standards of waste disposal must be followed. Since local regulations for chemical disposal may vary, always contact a local chemical waste management facility, the Environmental Protection Agency, or refer to the Material Safety Data Sheet for recommendations on proper disposal prior to use of any chemical. Some states may also require certification or licensing for personnel who use chemical treatments. Finally, some solutions may cause corrosion on metal surfaces and electrical connections; thus be sure to follow all label restrictions and manufacture guidelines. Following treatment, rinse all surfaces with clean water and dry thoroughly.

Diluted household bleach solution provides an inexpensive, effective way to control invasive species. Soak or spray equipment for at least one minute with a two percent bleach solution (three ounces of household bleach mixed with one gallon of water). If invasive pathogens or diseases are suspected, a 10 percent solution should be used (13 ounces of household bleach mixed with one gallon of water). Bleach is an extremely effective disinfection agent, but it is a caustic substance that can be corrosive to aluminum and other sensitive fishing and boating equipment.

Of the materials traditionally used to disinfect for human or animal health purposes, quaternary ammonium compounds have been found to be effective in controlling viruses and pathogens. Commercial formulations, such as Parvasol® and Kennelsol®, are available through laboratory or veterinary supply companies. Household cleansers/disinfectants, such as Formula 409® and Fantastic® that contain the quaternary ammonium compound alkyl dimethyl benzyl ammonium chloride can also be used to disinfect equipment. These solutions can be used full strength as a spray, or diluted for soaking with two parts water to one part disinfectant. For all materials, follow label instructions and be sure to soak equipment for a minimum of 10 minutes. *Be sure to dispose of materials away from surface waters in accordance with label restrictions.*

Other common chemical decontamination methods are:

- Undiluted white vinegar for 20 minutes.
- 1% potassium permanganate solution at 24-hour exposure.
- 5% quaternary ammonium solution for 10 minutes.
- 250 mg/L ROCCAL (benzalkonium chloride) for 15 minutes
- 500 mg/L hydrogen peroxide for 60 minutes
- 167 mg/L formalin for 60 minutes



### **General Water Washing**

General water washing can be used in conjunction with a physical removal technique such as brushing or vacuuming and is moderately effective in removing residual foreign material. Some seeds or fragments may remain viable following a wash treatment. In extreme situations, where known invasive materials are present, wastewater can be treated or filtered, and the waste materials bagged and incinerated or disposed of in a sanitary landfill.

### **High-Pressure Water Washing**

High-pressure washing is the most effective means of cleaning heavily soiled and contaminated items to eliminate invasive species materials and prevent their spread. There are many models of high-pressure washers, from simple hand-held nozzles to laser guided systems. In some cases, containment sheds are portable. Not all items are capable of withstanding the pressure of this treatment, and it should only be used where applicable. In certain situations cleaning with compressed air, rather than water, could prevent damage to certain equipment areas such as engine wiring systems and vehicle cabs.



Cleaning boats and equipment before leaving the landing is an important step that citizens can take to prevent the spread of invasive species (Photo credit: Aquatic Nuisance Species Project).

Minimum water pressure for vehicle cleaning should be at least 90 pounds per square inch. Water can be supplied as high volume/low pressure or low volume/high pressure. Each option has advantages and disadvantages based on specific cleaning needs and water availability:

- Heavy accumulations of soil and debris on large equipment can best be cleaned using high water volumes.
- Cleaning watercraft and in-water equipment usually requires lower volume, high-pressure washing systems.

### **Water Availability and Disposal**

Water availability must be considered in cleaning operations. Freshwater in a quantity suitable for all cleaning operations is necessary. When this is not possible, consideration should be given to other water options such as water recycling systems or use of compressed air to remove soil. Raw water, or even gray water, is sometimes used, but potential health issues may require precautions such as immunizations or specialized safety equipment for personnel. If pumping water from field sources, unintentional movement of exotic plants, algae, and other invasive aquatic species must be addressed. Proper placement of pumps away from aquatic or shoreline vegetation that is known to be invasive is a practical first step.

Water storage tanks, filters, and recapture systems can offer adequate onsite water supplies with less water use than would otherwise be necessary without recycling. By using sand or cartridge filters, many contaminated substances can be captured during cleaning operations to be safely handled later. In addition to soil and invasive species, wash water and used wash water filters may also contain oily residues from cleaning certain types of equipment. Such items may require handling, treatment, and disposal according to state and local standards.

Activities that require use of water also need to consider invasive species control. The equipment used in transporting and spraying water should be cleaned before arrival on site.



## Decontamination of Specific Watercraft Parts

### **Watercraft Compartments**

- Bilge compartments, water holding tanks, wet wells, live wells, and any other compartments that could hold water from an infested water body should be drained of water at the boat ramp before leaving the area.
- If a compartment has carried water from another location, remove all water into a container and heat it to at least 140 °F, or treat it with one of the chemical treatment solutions listed above. If adult mussels are found in these compartments, use the recommended hot water treatment.
- If the compartment is too large to make filling practical, high pressure wash the compartment thoroughly with hot water.

### **Watercraft Hull Surfaces, Anchors, and Trailers**

- Wash down with hot, high-pressure water. Then, visually inspect and feel by hand to remove any remaining foreign material.
- Watercraft hulls, anchors, or trailers will be assumed to be free of invasive species if they have been thoroughly scrubbed, inspected, and any visible foreign materials have been removed or if they have remained dry and out of the water for five days.

When inspecting and cleaning, special attention should be given to the cracks and crevices in which material may become trapped as well as aquatic plants or fragments that may be present on trailers or propellers. Particular attention must be paid to trailer pads made of carpet and foam rubber, which could trap invasive species. If possible, such material should be removed from trailers before doing work in infested waters.



Invasive species can become trapped in watercraft engines and transported to new locations. Proper engine flushing is recommended to prevent future invasions (Photo credit: Bureau of Reclamation).

### **Watercraft Engines**

If the watercraft engine is not a closed cooling system configuration (if the engine intakes its cooling water from the environment), the following applies:

- A hot water treatment is recommended for engine decontamination; barrel filled with 140 ° F to 160 ° F water and operating the engine for 5 to 10 minutes.
- An appropriate flushing attachment, such as an “earmuff” attachment, may be used in place of the hot water treatment. Refer to the manufacturer’s directions for flushing attachment hookup and operation.
- Running a chemical solution through an engine to decontaminate it may violate the terms of the engine’s warranty, or otherwise damage the engine. Chemical treatments on engines are **not** recommended, unless specified by the manufacturer.

All surfaces of the propeller, rudder, driveshaft, and driveshaft bearing and supports must be cleaned to remove any clinging foreign material by washing with hot, high-pressure water. Then, visually inspect, feel by hand, and remove any remaining foreign material. Finally, decontaminate the engine cooling system by using the appropriate flushing attachment.





## Decontamination of Field Equipment Used in Water

### Thermal Treatment

Field equipment can be effectively decontaminated by soaking in water kept above 140°F for one minute or for 20 minutes in water that is at least 110°F. Note that hot water can delaminate Gore-Tex® fabric and damage other sensitive clothing items. Household steamers may also be used for disinfection by exposing equipment to steam for one minute.

### Chemical Treatment

Field equipment can also be cleaned by soaking, dipping in, or scrubbing with one of the chemical decontamination solutions listed above under decontamination of watercraft. If adult mussels are found during inspection, the equipment should be steam cleaned, washed with hot, high-pressure water, or dipped treated in hot water, and allowed to dry completely before the next use. (See *Decontaminating of Mussels*).

NOTE: Felt-soled waders and wading shoes, which have been identified as a vector for whirling disease spores and *Didymo*, are difficult to disinfect. Rubber or studded soles are now readily available that provide similar traction, and are much less likely to transport invasive species.



Personal gear, including waders, can introduce aquatic invasive species into new locations if not properly cleaned following use (Photo credit: NOAA).



Drying equipment for a minimal period of 5 days can be an effective method of preventing the spread of invasive species (Photo credit: NY Department of Environmental Conservation).



## Suggested Resources:

### [Aquatic Invasive Species Hazard Analysis and Critical Control Point Training Curriculum](#)

Sea Grant Great Lakes Network. Aquatic Invasive Species – Hazard Analysis and Critical Control Point Training Curriculum. 2<sup>nd</sup> Ed. Editors Jeffrey L. Gunderson JL., Ronald E. Kinnunen RE. Minnesota Sea Grant Publications Number: MN SG–F11. 91 pp. Available online at <http://www.seagrant.umn.edu/ais/haccp>  
*This manual identifies critical pathways through which aquatic invasive species and/or non-target aquatic species could be moved to new waterbodies. It explains an approach (called AIS-HACCP) to prevent the inadvertent transfer of these species.*

### [Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species](#)

U.S. Department of the Interior Bureau of Reclamation. 2009. Technical Memorandum No. 86-68220-07-05. 203 pp. Available online at: [http://www.usbr.gov/pps/EquipmentInspectionandCleaningManual\\_Sept09.pdf](http://www.usbr.gov/pps/EquipmentInspectionandCleaningManual_Sept09.pdf)  
*This manual provides recommendations for inspection and cleaning of vehicles and equipment as a prevention tool to limit the spread of invasive species.*

### [Maine's Safety Net - A Practical Guide to Building Wash Stations](#)

Friends of the Cobbossee Watershed and Lakes Environmental Association. March 2006. 28 pp. Available online at: <http://www.watershedfriends.com/L.%20L.%20Bean%20handbook.pdf>  
*This handbook has been designed to assist those organizations and citizens in building Boat Wash Stations.*

### [Preventing Accidental Introductions of Freshwater Invasive Species](#)

U.S. Department of Agriculture, Forest Service. Available online at: [http://www.fs.fed.us/invasivespecies/documents/Aquatic\\_is\\_prevention.pdf](http://www.fs.fed.us/invasivespecies/documents/Aquatic_is_prevention.pdf)  
*This document provides standard sterilization techniques that are effective against New Zealand mudsnail, Whirling disease, and Chytrid Fungus.*

### [Protect Your Boat, Fight Quagga and Zebra Mussels A Guide to Cleaning Boats](#)

California Department of Fish and Game. October 2009. Available online at: <http://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=4957>  
*This guide was compiled specifically for boat owners and watercraft users. The information contains general guidelines for all boaters and a basic checklist for inspecting and cleaning boats and recreational equipment for Quagga/Zebra mussels*

### [Protect Your Boat and Engine from Zebra Mussels](#)

Wisconsin Department of Natural Resources. Available online at: <http://dnr.wi.gov/invasives/publications/pdfs/protectyourboat.pdf>  
*This document describes simple and proactive steps boat owners may implement to protect their investment and prevent the spread of invasive species into more of Wisconsin's waters.*

### [Protect Your Waters](#)

Aquatic Nuisance Species Task Force. Available online at: <http://protectyourwaters.org>  
*This site provides recommendations for recreational users who want to help prevent the spread aquatic nuisance species.*

### [Transfer of Invasive Species Associated with the Movement of Military Equipment and Personnel.](#)

Cofrancesco, Jr. AF., Reaves DR. Averett DE. July 2007. Army Corp of Engineers, Engineer Research and Development Center. ERDC/EL TR-07-8. Washington D.C., 126 pp. Available online at: <http://el.erd.usace.army.mil/elpubs/pdf/trel07-8.pdf>  
*This document provides an overview of the current process that exists to clean, inspect, and regulate the movement of invasive species through ports of embarkation and debarkation.*

# INVASIVE SPECIES & EXOTIC PESTS

## Spotted Lanternfly *Lycorma delicatula*

**Juliet Carroll, Nicole Mattoon, and Brian Eshenaur**, New York State Integrated Pest Management Program, Cornell University

The spotted lanternfly is a planthopper native to China and Southeastern Asia. Discovered in Pennsylvania in 2014, the spotted lanternfly presents a threat throughout much of the United States. While its list of hosts is large, the greatest agricultural concern falls on grapes, hops, apples, blueberries, and stone fruits.

### Concern

There is great concern about its effect on vineyards, orchards, and hardwood trees. Its presence has led to crop loss, exporting issues, and increased management costs. Spotted lanternfly eggs are laid on practically any hard surface, including tree trunks, stones and metal. Because of this, egg masses may be transported unknowingly. Spotted lanternfly nymphs are able to feed on many hosts, while adults prefer certain trees such as Tree of Heaven (*Ailanthus altissima*), Black Walnut (*Juglans nigra*), Maples (*Acer spp.*), and Grapevines (*Vitis spp.*). Furthermore, abundant excretions of sticky honeydew by swarms feeding on shade trees, and the associated growth of sooty mold, can restrict people's enjoyment of parks and their own backyards.

### Description

Spotted lanternfly adults are very colorful when their interior hind wings are displayed. The hind wings are red with black spots. They have a black head, and a yellow abdomen with black bands. Their beige-gray forewings have also black spots and a distinctive black brick-like pattern on the tips. There is one generation per year, with adults developing in the summer, laying eggs in the late summer through fall, and overwintering as eggs. Each egg mass normally contains 30-50 eggs which are laid in rows and usually covered in a waxy substance. The first nymphs to hatch from the eggs in the spring are wingless, black, and have white spots, while the final nymph stage turns red before becoming winged adults. Adult males are slightly smaller than the inch-long females, but are almost identical in appearance. Adults and nymphs commonly gather in large numbers on host plants to feed, and are easiest to see at dusk or at night.



Spotted lanternfly egg mass. Photo: Holly Raguza, Bugwood.org.



The black and white nymphs as they appear after hatching in the spring until their third molt in mid-summer. Photo: Richard Gardner, Bugwood.org.



The final nymph stage of the spotted lanternfly, shown on a branch, is distinctively colored. Photo: Lawrence Barringer, PA Dept. of Agriculture, Bugwood.org.



## Damage

This planthopper is able to feed using specialized mouthparts that can pierce the plant and suck up sap. Both nymphs and adults feed this way, on leaves, stems, and trunks. Spotted lanternflies also excrete honeydew while feeding, which, over time, may encourage the growth of sooty mold. Piercing the plant's tissues and feeding on the sap weakens the plant, sometimes causing it to ooze and weep, which may result in a fermenting odor and a gray/black trail on the bark. The presence of the fermenting odor and honeydew may also attract other insects. Spotted lanternfly feeding can cause wilting, defoliation, flagging, yield loss, reduction in crop quality and cold hardiness, dieback and plant death.

## Found a Spotted Lanternfly in New York?

1. Take pictures of the insect, egg masses, or infestation you see and, if possible, include something for size, such as a coin or ruler.
2. If possible, collect the insect. Place in a bag and freeze, or in a jar with rubbing alcohol or hand sanitizer.
3. Note the location (street address and zip code, intersecting roads, landmarks, or GPS coordinates).
4. **Email pictures and location:** [spottedlanternfly@agriculture.ny.gov](mailto:spottedlanternfly@agriculture.ny.gov)

## For More Information

New York State Integrated Pest Management Program: Spotted Lanternfly [nysipm.cornell.edu/environment/invasive-species-exotic-pests/spotted-lanternfly](https://nysipm.cornell.edu/environment/invasive-species-exotic-pests/spotted-lanternfly)

New York State Department of Agriculture and Markets: Spotted Lanternfly [agriculture.ny.gov/plant-industry/spotted-lanternfly](https://agriculture.ny.gov/plant-industry/spotted-lanternfly)

United State Department of Agriculture, Animal and Plant Health Inspection Service Pest Alert: Spotted Lanternfly [aphis.usda.gov/aphis/resources/pests-diseases/hungry-pests/the-threat/spotted-lanternfly/spotted-lanternfly](https://aphis.usda.gov/aphis/resources/pests-diseases/hungry-pests/the-threat/spotted-lanternfly/spotted-lanternfly)

PennState Extension: Spotted Lanternfly [extension.psu.edu/spotted-lanternfly](https://extension.psu.edu/spotted-lanternfly)



Spotted lanternfly adult at rest on a branch. Photo: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org.



Collected spotted lanternfly adult with wings spread. The yellow sides of the abdomen are visible because this is a mated female, full of eggs. Photo: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org.



[nysipm.cornell.edu](https://nysipm.cornell.edu)

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**Department of  
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and Markets**

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Environmental  
Conservation**



## Reporting Spotted Lanternfly

- Take pictures of the insect, egg masses, or infestation. Include something in the photograph for scale, such as a coin or pen.
- Collect the insect and place it in a freezer or a jar with rubbing alcohol/hand sanitizer.
- Note the location (address, intersecting roads, or GPS coordinates), shipping information, and any other relevant information.
- Email the information to:  
spottedlanternfly@agriculture.ny.gov



### Contact Information

[agriculture.ny.gov/spottedlanternfly](https://agriculture.ny.gov/spottedlanternfly)  
[spottedlanternfly@agriculture.ny.gov](mailto:spottedlanternfly@agriculture.ny.gov)



**Agriculture  
and Markets**

# SPOTTED LANTERNFLY

*(Lycorma delicatula)*

## PREVENTION GUIDANCE



**Agriculture  
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## Spotted Lanternfly (SLF)

SLF is an invasive insect from Asia that primarily feeds on Tree-of-Heaven. It feeds on a wide variety of plants, trees and crops, such as grape, hops, apple, maple, walnut, and others. SLF can threaten New York's agricultural, forest, recreation, and tourism industries and can impact farmers, residents, transport companies, travelers, outdoor enthusiasts, and other individuals.

### Where to Spot SLF

SLF can be transported on outdoor goods and equipment. SLF can also hitchhike in vehicles. Look for SLF on:



Landscaping, remodeling, or construction materials and waste.



Packing materials, such as wood crates or boxes.



All plants and plant parts, including, but not limited to, nursery stock, green lumber, fruit and produce, and other material, such as roots, branches, and mulch.



Outdoor household articles, including, but not limited to, tarps, tile, stone, deck boards, and mobile fire pits.

### SLF Quarantine

A quarantine is in place on counties in states known to have a SLF infestation—Delaware, New Jersey, Pennsylvania, Virginia, and Maryland. The quarantine restricts the movement of goods and outdoor products. For a list of quarantine counties within these states, please visit [agriculture.ny.gov/spottedlanternfly](https://agriculture.ny.gov/spottedlanternfly).

If you transport goods across state lines, here's what you need to know.

### Transporting Goods from Quarantine Areas

Companies transporting goods from quarantine areas should remember the following:

- A certificate of inspection or permit is required. These will be checked by the appropriate New York State agencies.
- Trucks must be inspected before they leave the quarantine area, and when they arrive to their destination. If SLF are found, report it to [spottedlanternfly@agriculture.ny.gov](mailto:spottedlanternfly@agriculture.ny.gov).

### Transporting Goods to Quarantine Areas

Companies transporting goods to a quarantine area should remember the following:

- Avoid stopping within quarantine areas other than for deliveries, emergencies, fueling, and when necessary due to traffic.
- Trucks must be inspected prior to leaving the quarantine area and should be inspected again upon return.
  - Complete an inspection certificate from the state department of agriculture from the originating state for that load/truck. Present both the checklist and a copy of your SLF permit to regulatory staff for inspection when requested.
  - If SLF are found in New York, report it to [spottedlanternfly@agriculture.ny.gov](mailto:spottedlanternfly@agriculture.ny.gov).
- If applicable, you may also need to:
  - Obtain a nursery certificate/permit from a licensed nursery for nursery stock.
  - Obtain an inspection certificate or permit for Christmas trees.

### Receiving Goods from Quarantine Areas

Companies receiving landscape or other materials from quarantine areas should:

- Double-check the materials, packaging, and conveyance for SLF adults, juveniles, and eggs.
- Report any findings of SLF, in any life stage, to [spottedlanternfly@agriculture.ny.gov](mailto:spottedlanternfly@agriculture.ny.gov).



### SLF Permits, Certificates, and Training

Each state department of agriculture has its own permits. For more information, please visit [agriculture.ny.gov/spottedlanternfly](https://agriculture.ny.gov/spottedlanternfly). The Department will recognize the Pennsylvania permit as valid for items coming from any SLF-regulated areas, regardless of the state of origin. A free two-hour SLF permit training is available at:

<https://extension.psu.edu/spotted-lanternfly-permit-training>.