4.4.9.4 Invasive Species

4.4.9.4.1 Introduction

Invasive species affect each of our lives, all regions of the U.S., and every nation in the world. Society pays a great price for invasive species – costs measured not just in dollars, but also in unemployment, damaged goods and equipment, power failures, food and water shortages, environmental degradation, increased rates and severity of natural disasters, disease epidemics and loss of life.

Transportation corridors provide pathways for the movement of invasive species through the landscape. Where transportation corridors intersect waterways, these effects can rapidly spread to additional areas. Invasive plant or animal species can move on vehicles and in the loads they carry. Invasive plants can be moved from site to site during spraying and mowing operations. Weed seed can be inadvertently introduced into the corridor during construction on equipment and through the use of infested mulch, imported top soil, water, gravel, sod or root-balls. Some common landscaping plant species may also be considered invasive and should not be planted in erosion control, landscape and wildflower projects.

Applicability by NYSDOT Regions
Considerations to invasive species shall apply to all Department regions.
4.4.9.4.2 Section Objectives

The objective of this chapter is to provide guidance in project design, development, construction and operations reflecting elements of EO 13112 and Department policy.

NYSDOT Role

The Planning, Design, Construction and Maintenance of highways, facilities and transportation corridors, ALL play a key role in the management of invasive species. Historically, consideration for the spread and control of invasive species had been incorporated into Department activities on a mostly ad hoc basis. Over the last decade and especially in the last few years, through experience and practice, management activities have become increasingly more strategic, multimedia and efficient. The Adirondack Park Invasive Plant Program, which since 1998 has incorporated a systematic approach to set management priorities and to identify, inventory and control priority invasive plant species has now become the standard for the statewide Partnerships for Regional Invasive Species Management (PRISM) program.

It is essential to the success of management efforts that the Department practices a strategic, long-term context appropriate approach and pro-actively participate in formal landscape-scale regional planning efforts. This will be accomplished in NYS primarily through implementation of this policy and participation in New York State Invasive Species Council (NYSISC) initiatives, including PRISMs. Participation in these formal collaborations of key stakeholders will best position the Department to effectively and efficiently contribute to consensus-based management actions.

In addition to context appropriate actions initiated by the Department, regulatory agencies may add requirements to projects through permit special conditions (eg: USACE NWPs), individual permit conditions or specific monitoring requirements for mitigation wetlands. Staff should carefully consider the appropriateness, practicality and cost of such requirements during permit negotiation.

4.4.9.4.3 DOT Policy

NYSDOT shall consider and address, to the extent practicable, the impacts of invasive species in all aspects of project scoping, planning, design, construction and maintenance for all projects and appropriate activities as detailed in the following guidance. Management actions should be context appropriate and consistent with approved long-term, landscape-scale strategic planning programs (e.g. PRISMs).

4.4.9.4.4 Legal Basis

4.4.9.4.4.1 Abstract of Law/Regulation

Presidential Executive Order (EO) 13112 - Requires federal agencies to:
INVASIVE SPECIES

1. Prevent the introduction of invasive species;
2. Provide for their control; and
3. Minimize the economic, ecologic and human health impacts that invasive species cause.

Under the EO, Federal agencies cannot authorize, fund or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless all reasonable measures to minimize risk of harm have been analyzed and considered.

Environmental Conservation Law (ECL) Article 9 Title 17- The Governor signed into law ECL Article 9 Title 17 on August 28, 2007, establishing the New York State Invasive Species Council (NYSISC). Specifically, the legislature finds that invasive plant and animal species pose an unacceptable risk to New York State’s environment and economy and that this risk is increasing through time as more invasive species become established within the state. The legislature additionally finds that invasive species are having a detrimental effect upon the State’s fresh and tidal wetlands, water bodies and waterways, forests, agricultural lands, meadows and grasslands, and other natural communities and systems by out-competing native species, diminishing biological diversity, altering community structure and, in some cases, changing ecosystem processes. Moreover, the legislature recognizes that the ecological integrity of an increasing number of publicly and privately-owned parks and preserves is being adversely affected by invasive plants and animals, challenging the ability of land management agencies to effectively manage these sites. The legislature further recognizes that nearly half (forty-six percent: fifty-seven percent of the plants, thirty-nine percent of the animals) of the species on the federal list of endangered species are declining, at least in part, due to invasive species. The legislature additionally finds that invasive species have an adverse impact on the State economy. Particularly affected by these species are the water supply, agricultural, and recreational sectors of the state economy. The economic impact to the national economy has been estimated to be as high as one hundred thirty-seven billion dollars annually.

To address these concerns, ECL Article 9 Title 17 establishes the New York State Invasive Species Council. The ISC is required to:

- Meet at least quarterly;
- Assess IS impacts and identify actions;
- Develop a NYS Comprehensive IS Management Plan;
- Recommend funding priorities;
- Convene a biennial IS Summit;
- Encourage industry and trade organizations to adopt voluntary codes of conduct;
- Support and encourage PRISMs;
- By 2010 to develop a four-tier list system for non-native species that are prohibited, regulated and unregulated and a procedure to review non-native species; and
- Establish a 25 member IS Advisory Committee.
4.4.9.4.2 Other related regulations

16 USC 4701 et seq, Non-indigenous Aquatic Nuisance Prevention Control Act, 1990- Intended to: i.) prevent unintentional introduction and release of non-native species into Waters of the U.S. through ballast water management; ii.) identify and share information on Federal research regarding prevention and control of aquatic nuisance and invasive species; iii.) develop and implement control methods to prevent, control and monitor unintentional introductions of non-native species from vectors other than ballast water; iv.) minimize economic and ecological impacts of established invasive species; and v.) establish a program to research and develop technology for national zebra mussel removal and management;

7 USC 150aa et seq, Federal Plant Pest Act- Regulates importation and interstate movement of plant pests. The Act may apply to landscape plantings, soil, fill, etc. brought across the border into New York State;

7 USC 2801 et seq, Federal Noxious Weed Act, 1974- Regulates importation and interstate movement of plant pests. The Act may apply to landscape plantings, soil, fill, etc. brought across the border into New York State;

33 USC 1341 (Section 401) and 33 USC 1344 (Section 404) of the Clean Water Act, 1972

4.4.9.4.5 General Methodology Analysis and Evaluation

All Department capital projects, and appropriate maintenance activities and roadside operations shall consider and address, as practical, the potential environmental effects of invasive species. This process and analysis shall include, at a minimum: 1) an inventory of the project area for priority species; 2) consideration of potential environmental impacts; and 3) incorporation of context appropriate preventive measures and context appropriate control practices into project documents and activities.
<table>
<thead>
<tr>
<th>PROJECT STAGE</th>
<th>ACTION / STEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIATION</td>
<td>Review the Initial Project Proposal (IPP) to determine if there any <em>special circumstances</em> and/or <em>special technical activities</em> that may require additional attention and note these in the IPP (e.g., presence of large stand of phragmites which could affect the budget).</td>
</tr>
<tr>
<td>SCOPING</td>
<td><strong>Existing Conditions/Affected Environment.</strong></td>
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</table>

**STEP 1. Determine if vegetation/soil will be disturbed during project.**

Many projects, such as repaving or pavement marking, typically do not disturb soil, which minimizes the potential of spreading invasive species that may occur within project limits.

- If disturbance to soil and vegetation is minimal, document in Project Scoping Report (PSR). No further review is required.
- For projects which vegetation/soil disturbance is anticipated, go to STEP 2.

**STEP 2. Determine whether invasive species exist in project area (including areas adjacent to project).**

Statewide priority invasive species shall include, but not be limited to Purple loosestrife, Common reed, Japanese knotweed and Giant hogweed. Additional statewide priority invasive species will be determined through the approved National lists, the NYSDEC ECL Article 9 Title 17 4-tier list, approved PRISM “Early Detection” lists with consideration also given to approved PRISM “Approaching Region” lists (See [http://www.ipcnys.org/](http://www.ipcnys.org/), Attachment 2). Discuss with Regional Environmental Units regarding potential of invasive species in the project area. Annual submissions of the regional inventory should be sent to Office of Environment to incorporate into *imapinvasives* database ([www.imapinvasives.org](http://www.imapinvasives.org)).

Considering invasive species issues as early as possible is important so that long-term invasive species control strategies can be implemented during Operations activities, as appropriate, prior to project construction. Since common control techniques often take multiple years to be effective, implementing controls in advance of project construction may be desirable.
<table>
<thead>
<tr>
<th>PRELIMINARY DESIGN</th>
<th>STEP 3. Review project limits and adjacent areas for presence of priority invasive species (as determined in Scoping) and note locations on plan sheets.</th>
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<tbody>
<tr>
<td></td>
<td>• Add any updated or additional information to NEPA documentation, project file and ETRACK.</td>
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<td></td>
<td>• If project does not require USACE Section 404/10 Individual Nationwide permits, NYSDEC Individual 401 Water Quality Certification (WQC), Article 15 Coordination, Article 24 or Article 25 Permits, go to STEP 5. If the project involves the fore-mentioned, go to STEP 4.</td>
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**STEP 4. Coordination with Regulatory Agencies (see also 4.4.9.4.6)**

- Discuss potential context appropriate management considerations with regulatory agencies. Typically if an agency permit, PCN, approval, etc. is required, permit conditions may contain invasive species considerations. Work with the agencies to develop reasonable and practicable permit conditions.
- If wetland creation is planned for compensatory mitigation, screen potential sites for presence of priority invasive species, as controlling them in the mitigation wetland to meet monitoring requirements can be very difficult or impossible (see Chapter 4.4.1 Wetlands).

<table>
<thead>
<tr>
<th>FINAL DESIGN</th>
<th>STEP 5. With consideration of local project area conditions, NYSISC actions, PRISM priorities and permit requirements, incorporate:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>• Standard specifications, special specifications, notes and special notes, as appropriate;</td>
</tr>
<tr>
<td></td>
<td>• Document invasive species issues in ECOPAC.</td>
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</tbody>
</table>

All management actions should be consistent with approved long-term strategic planning programs and be context appropriate.
4.4.9.4.6 Interagency Coordination and Agreements

Federal Highway Administration (FHWA) - has an oversight role in federally funded highway projects that include both Interstate and State highways. FHWA’s Vegetation Management Program guides State departments of transportation on invasive species issues. Guidance on EO 13112 was issued in 1999, encouraging inventory and integrated management of roadside weeds before-and-after projects. The guidance requires invasive species assessment during the NEPA process. The FHWA continues to provide technical support to all states on this vegetation issue.

4.4.9.4.7 Project Development and Construction Guidance

Project Scoping - For federally-funded and state-funded projects, conduct a preliminary assessment for invasive species issues. For federally-funded projects, complete NEPA checklist. Record results of this consideration in project NEPA documentation, project file (eg: environmental checklist) and ETRACK. Preliminary analysis should be performed using an Invasive Species Field Form or GPS device (see Attachment 2).

Design Approval Document (DAD) - In General Ecology and Wildlife section under Environmental Consequences of the DAD, for federally-funded projects, briefly discuss EO 13112 as it relates to the project. Project should: (a) limit the additional introduction of invasive species; (b) limit the further spread of existing invasive species; and (c) eradicate and/or control existing invasive species populations, when feasible and practicable. For state-funded projects, briefly discuss the NYSDOT policy regarding invasive species (same as EO 13112). State the presence or absence of priority invasive species in the project limits, describe the site conditions (with respect to invasive species) and discuss methods (see BMPs Attachment 1) which will be implemented to satisfy EO 13112 and NYSDOT policy. If it is determined that it is not feasible or practicable to implement such measures, it should be explained in this section.

Plans and Specifications - Identify invasive species infestations on appropriate plansheets (eg: General, Landscape, Drainage, etc.) If applicable, identify potential cleaning station(s) locations as well. As appropriate, standard specifications, special specifications, notes and special notes should include: (i) limiting area and duration of soil disturbance; (ii) cleaning construction equipment; (iii) limited construction equipment access and movement within project area; (iv) use of approved water sources; (v) use of native plants and seed; (vi) use of weed free planting, bedding and mulching (straw, wood fiber) materials; (vii) implementation of accepted control and disposal practices; and (viii) proper spoil management (see Attachment 1). All management actions should be consistent with approved long-term strategic planning programs and be context appropriate.

Construction - Ensure that contract provisions for inventory, prevention and control of invasive species are understood by Department Construction staff and Contractor staff prior to construction and implemented throughout the project. Invasive species considerations should be routinely addressed by Department staff to Contractor staff
during pre-bid, pre-construction, get-start and weekly safety meetings, as appropriate. Any additional priority invasive species populations encountered within the project area during construction should be noted on the right side of the ECOPAC form, added to the Regional Invasive Species Inventory and context appropriate management implemented (see Attachment 2). If priority invasive species within the project limits are not adequately controlled during project construction, the Regional Maintenance/Operations Engineer should be notified so that controls may be addressed post-construction, as practical.

4.4.9.4.8 Operations Guidance

To assist with assessment of future context appropriate management efforts, during the operation and maintenance of all elements of the state transportation system, the Department shall initiate a system and Regions are encouraged to formally identify and inventory priority invasive species known to exist along the roadside within and immediately adjacent to the ROW. Priority invasive species will include, but not be limited to: Purple loosestrife, Common reed, Japanese knotweed and Giant hogweed. Additional priority species will be determined by approved National and State lists and PRISM priorities. Due to their heightened role in the introduction and spread of invasive species, priority areas to initiate invasive species inventory efforts shall be the interstate, expressway and parkway systems, as practical. This inventory should also provide information regarding the extent of invasive species populations adjacent to and outside the R.O.W. Identified priority invasive species will be considered and managed as appropriate in each context to: (1) limit additional introduction of invasive species; (2) limit the further spread of invasive species; and (3) eradicate or control existing invasive species populations. Regional inventory information should be incorporated into the Regional Invasive Species Inventory annually (see Attachment 1 for control practices; see Attachment 2 for sample inventory methods).

4.4.9.4.9 Flow Chart
Invasive Species Process

**Screening**

- Does project disturb soil/vegetation?
  - No: No further review is required → Document in the Project Scoping Report → End
  - Yes: Field screening is required → Are state/regional priority species present?
    - Yes: Input information into invasive species database → Is it feasible/practicable to manage infestations?
      - Yes: Implement BMPs to control infestations → Document in the Design Approval Document
      - No: Implement BMPs to manage infestations → End
    - No: No further review is required → Document in the Design Approval Document → End

*Federal and State Process*
4.4.9.4.10 Local Projects Guidance

Locally-administered projects should follow procedures and guidance as outlined in this Chapter.

4.4.9.4.11 Appendices

A. Legal Citation

1. Presidential Executive Order 13112, Invasive Species, February 3, 1999;
2. ECL Article 9 Title 17;
3. 16 USC 4701 et seq, Non-indigenous Aquatic Nuisance Prevention Control Act, 1990;
4. 7 USC 150aa et seq, Federal Plant Pest Act;
5. 7 USC 2801 et seq, Federal Noxious Weed Act, 1974;
6. Lacey Act of 2008

B. Scope of Services

None

C. Definitions

Alien Species - With respect to a particular ecosystem, any species, including its seeds, eggs, spores or other biological material capable of propagating that species, that is not native to that ecosystem.

Context Appropriate Management – Actions that are consistent with priorities established in approved, long-term, strategic invasive species management plans such as PRISM Cooperative Agreements. Proposed management actions should be specific to the site and should be practical and reasonable. Often, due to conditions at and/or in the site vicinity, no specific eradication activity will be appropriate on a project even though priority species are present. Specific actions should consider context specific factors such as:

♦ Is the infestation an early detection species?
♦ Is the infestation a priority species?
♦ Is the infestation an isolated patch?
♦ Is the infestation at the leading edge of an invasion?
♦ Is the entire infestation owned by NYSDOT?
♦ Is the infestation located at or near a critical environmental nexus or pathway?

Answers of “Yes” to the above questions may increase the likelihood that management will be appropriate, effective and practical. Control efforts should NOT be attempted where eradication of the entire infestation is not possible or practical, however efforts to prevent the introduction or spread may still be appropriate through proper disposal, benign mulching, native plantings, equipment cleaning, etc.
Control - As appropriate, eradicating, suppressing, reducing or managing invasive species populations, preventing spread of invasive species from areas where they are present, and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasion.

Early Detection and Rapid Response – The practice of identifying “new” invaders and implementing management actions as soon as possible to prevent additional spread. With EDRR, eradication of small, isolated infestations is the goal. ED lists are available for each PRISM at http://www.ipcnys.org/

Ecosystem - The complex of a community of organisms and its environment.

Invasive Species - An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Landscape-scale - Large geographic areas that are typically thousands of acres in size. Area boundaries may be along political lines, e.g. counties, towns, etc.

Native Species - With respect to a particular ecosystem, a species that other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

NYS ISC – New York State Invasive Species Council.

Office of Invasive Species Coordination – Established at NYSDEC in 2007 to coordinate invasive species issues in NYS and is currently comprised of 4 staff – Director and Regulatory, Planning and Management specialists.

Pathway – The means and routes by which invasive species are imported and introduced into new environments. Some invasive species arrive as hitchhikers on commodities such as nursery stock. Others are stowaways in transport equipment or packing materials.

Prevention – The best dollar spent for invasive species management is spent on prevention. Once species are introduced, the cost to eradicate increases and the likelihood of success decreases.

PRISM or “Partnership for Regional Invasive Species Management” - Collaboration of public and private stakeholders organized to strategically manage invasive species at the landscape-scale. Each of the 8 PRISMs that cover NYS have a designated host organization and are funded for administrative and operations costs by the NYS ISC and the Environmental Protection Fund. NYSDOT has a designated coordinator for each PRISM.

PRISM Cooperative Agreement – Formal document developed by consensus of partners and stakeholders and approved by NYSDEC that identifies goals, objectives, priorities, roles and responsibilities.
Statewide Priority Species – These species are determined using the following criteria: ability to efficiently spread; difficulty to eradicate/control; and health/safety risks associated with the species. Purple loosestrife, Common reed, Japanese knotweed and Giant hogweed have been identified as NYSDOT priority species. The former 3 species grow extensively in our drainage system and other disturbed areas and are readily introduced and spread to adjacent or nearby natural areas via the transportation system. In addition, these 3 species, due to their extensive growth rates create operational and safety problems regarding reduced sight distance, shorter maintenance cycles, etc. Giant hogweed, poses severe health and safety concerns to workers and others due to the extreme photolysis potential when human skin is exposed to the plant sap in the presence of sunlight.

D. References

1. National Invasive Species Council and Invasive Species Advisory Committee:  
   http://www.invasivespeciesinfo.gov
2. National Invasive Species Management Plan, January 18, 2001:  
   http://www.invasivespeciesinfo.gov/council/nmp.shtml
3. NYS Invasive Species Council: http://www.dec.ny.gov/animals/32846.html
4. Invasive Plant Council of New York State: www.ipenys.org
5. Final Report of the New York State Invasive Species Task Force, Fall 2005:  
6. New York State Ag & Markets Law, Article 9, Section 136 as amended, Definitions,  
   Ag & Markets Circular 826 – NYS Noxious Weed List  
   http://www.agmkt.state.ny.us/PI/commodities/ARTICLE9.pdf
7. Cornell SeaGrant Invasive Species Clearinghouse: www.nyis.info
9. Cornell Invasive Species Research Council: nyisri.org
10. Adirondack PRISM: www.adkinvasives.com
11. The Nature Conservancy: www.nature.org/initiatives/invasivespecies
12. Lake Champlain Aquatic Nuisance Species Management Plan:  
13. Development of Biological Controls for Phragmites Australis, State Planning &  
    Research Project SPR C-06-26
14. NYSDOT Highway Design Manual:  
    https://www.nysdot.gov/divisions/engineering/design/dqab/hdm
15. Invasive Species Knowledge Team IntraDOT Site:  
    P:\Office of Engineering\Environmental Analysis\Knowledge Teams\Invasive  
    Species\Website\iHome.htm
16. Office of Design Tree Home Page:  
    https://www.nysdot.gov/divisions/engineering/design/landscape/trees
17. FHWA Greener Roadside Home Page:  
    http://www.fhwa.dot.gov/environment/greenerroadsides/
18. FHWA Guidance re. EO 13112: www.fhwa.dot.gov/environment/inv_guid.htm (note  
    there is an _ between inv and guid)
19. NYSDOT Engineering Instruction 07-013- Reissue of Revision to Standard
Specifications - 209 Erosion and Sediment Control, 610 Turf and Wildflower Establishment and 713 Landscape Development Materials, 4/2/07;
20. NYSDOT Engineering Instruction EI 07-032 - Maintenance Cleaning and Washing of Bridges - US Customary, 9/12/07;

E. Contacts

Peter Dunleavy at (518) 457-1730, pdunleavy@dot.state.ny.us, or
Scott Kappeller at (518) 485-7106, skappeller@dot.state.ny.us

F. Sample Statements

None

G. Attachments
1. Invasive Species Control Practices for Design, Construction and Operations
2. Invasive Species Inventory Methods