CITY OF DENTON	**Standard Operating Procedure for Ligustrum species (Privet) Removal and Habitat Restoration on PARD Property**	**SOP Owner**	Environmental Services and Sustainability and Parks and Recreation
		Revision #	Initial
		Implementation Date	November 11, 2022
		Last Reviewed/Update Date	November 1, 2022
		Approval	

1. Background

Privet (*Ligustrum* species) are a non-native, invasive thicket forming shrub causing notable reduction of ecological quality and recreational use to open spaces and natural habitats across the region, especially in forested areas and near waterways. Once established the shrub quickly overtakes the space, crowding out native understory vegetation and threatening the long-term health and recruitment of native vegetation by shading out most saplings and understory. Mature plants result in a dense monoculture with reduced diversity of pollinators and wildlife and a thicket that blocks visibility and limits the use of the area.

Privet removal is necessary to improve the health of the natural area and increase the use and enjoyment of public land. This SOP outlines the procedures for targeted removal that promotes long-term solutions to eliminate this plant and restore the characteristics and functions of the open space and habitat.

There are many variables influencing the success of removing invasive plants and restoring land to similar native conditions. This SOP outlines a procedure for professional input, allowing for best-practice decisions to be made during the process for each specific and unique site.

2. Goal and Scope

The goal is to align with the Parks, Recreation and Trails System Master Plan and to achieve privet eradication on property owned by PARD. It is important to acknowledge progress toward this goal is a continuous process as existing privet on other properties will continue to re-invade Parks property.

The scope of this SOP includes pre-activity inspections and reports, identifying when it is appropriate to have a site-specific plan appropriate for the area with targeted removal strategies, providing public education and involvement regarding the activity, developing a site-specific restoration plan appropriate for the area, performing follow-up inspections and performing follow up activities.

3. Applicability Criteria

This SOP is specific to the removal and restoration of privet invasion in natural open spaces and confirmed habitats on City of Denton property owned by Parks and Recreation Department (PARD). **Incidental plant removal during routine maintenance of developed or regularly maintained Parks property does not require guidance from this SOP.** The following are definitions applicable to this SOP.

- Environmentally Sensitive Areas (ESAs). Potential ESAs are shown on the city's Interactive GIS Map. The actual presence, location and extent of the ESA can only be confirmed through an ESA Field Assessment. Parks property will follow procedures outlined in the ESA Primer to make a final determination and updated the Official ESA Map.

- Small area. A small area is defined as a planned privet removal and restoration activity of less than 1 acre, is not located within an ESA, and has insignificant environmental or wildlife concerns as documented through the activity-initiation procedures in Section 6.
- Planned privet removal activity. Planned privet removal and restoration activities include new park land improvement activity, a budgeted activity for maintenance to improve an existing park land previously identified to be in decline, and budgeted maintenance for areas where trash and debris removal is necessary for public safety.
- Emergency privet removal activity. Emergency privet removal and restoration activities are performed in situations where privet is aggravating hazardous environmental situations such as fire or flooding, or when privet is aggravating public safety concerns, such as visibility.
- Public safety concerns. Areas where public safety concerns exist are identified through collaboration with Public Safety Officers and Public Safety committees.

4. Responsibilities

Parks and Recreation Department

PARD performs initial investigations and determines applicability, engages Environmental Services and Sustainability (ESS), engages the public and provides public education with the assistance of ESS (as stated in the following paragraph), enacts the site-specific privet removal and restoration plan, and performs follow-up restoration activities as provided by follow-up inspections and reports.

Environmental Services and Sustainability Department

ESS performs a pre-planning site inspection and confirms applicability, assists in public education and engagement planning, when appropriate develops a site-specific privet removal and restoration plan, and performs follow-up inspections and reports.

5. Prerequisites

Maintenance inspectors, supervisors, and crews will have knowledge of the City of Denton Integrated Pest Management Plan (IPM) and methods outlined in the plan, be able to identify common native vegetation of North Texas, have knowledge of tree size measurement procedures, and have knowledge of tree protection procedures.

6. Activity-Initiation Procedures

The following activity initiation procedures will be followed for all planned activity. In emergency situations, as defined above, the departments will document as much information as possible before, during and after the privet removal activity. By using work orders in both situations.

A. PARD initiates a privet removal and restoration project by collecting and preparing the following by completing Attachment A, initial information checklist:
   1) Identify if this is a planned activity or an emergency activity.
   2) Identify if the planned activity is a small area as defined in Section 3
   3) Compile any site-specific complaints, police reports, and other external records of concerns regarding the area.
   4) Prepare a summary of the initial site inspection, to include:
      a) a description of the site concerns,
      b) evidence of wildlife through staff observations, public reports, and other documents available for staff review,
      c) comprehensive site photos that show:
         (1) wide-angles from multiple directions showing the extent of the privet removal area
         (2) photos of site features, such as ESAs, areas of native species, major topographic changes, tree species and density, evidence of wildlife, and other important features that should be documented, and
      d) a map of the area of concern will include:
         (1) the extent of the PARD property,
         (2) the extent of the area of concern and/or extent of the proposed privet removal and restoration,
         (3) any water bodies, or other important environmental features at or near the area of concern and/or extent of proposed activity.

B. ESS will review the initial information provided by PARD and perform an environmental investigation. ESS will supplement the initial PARD information with:
   1) A site assessment will document:
      a) A brief survey of vegetative species, summary of tree size(s), and density.
      b) the extent and density of privet.
      c) a review, and if needed, expansion of wildlife findings, including any nesting migratory birds or rookeries. When necessary, ESS will engage the Texas Parks and Wildlife Department for consultation on wildlife findings.
   2) Any ESAs confirmed through an ESA Field Assessment.
   3) A map review and enhancement with:
      a) General location of trees of similar size and density.
      b) General locations of privet density – in some locations across the project the density may be more than other areas.
      c) General topography and soil conditions.
   4) ESS will evaluate the information gathered and make a final determination of the need to perform the privet removal and restoration activity.

7. Public Education and Engagement Plans

Privet removal should always be preceded with public education. PARD will determine the scope of an engagement plan.

Public education and engagement may include:

- creating a webpage dedicated to privet removal and tracking projects,
- producing a Friday report,
- posting signage onsite that provides basic information and directs the public to the webpage,
- creating social media,
- informing and engaging appropriate agencies ahead of outreach,
- hosting neighborhood meetings, when warranted.

PARD with ESS assistance will provide a public education and engagement plan that:

- Informs the public of the need to address this invasive plant, including providing information on the long-term threat to habitat and trees within the park and that privet has far-reaching dispersal properties that threatens adjacent natural spaces.
- Informs the public of the specific project, including timing, extent, expected short-term conditions and expected long-term conditions of the privet removal area.

8. Privet Removal Procedures

A. Timing. Research suggests the more effective time to remove privet is in the fall. To maximize efforts, PARD will prioritize initial removal activities during late fall months and continue to evaluate the situation. When removing privet across large areas it may be more effective to consider phasing the area in sections. When prioritizing phasing, it is more important to try to address mature plants or re-growth plants that have started flowering/producing berries to reduce future distribution.

B. Equipment.
   1) Small equipment may be used to remove privet when environmental conditions permit the use. When conditions cannot be met, privet shrubs will be removed by hand. Conditions that may inhibit the use of small equipment include:
      a) Any stand of trees over 6” DBH and the equipment could negatively impact beneficial tree canopy.
      b) Areas where native vegetation dominates and few privet have invaded the space.
      c) Areas with major topographic changes, making safe equipment mobility difficult.
      d) The equipment may not be operated within two feet of the trunk of a tree 6” or greater DBH. Privet branches located within the 2-foot boundary must be hand-cut.
   2) Small equipment may include a skid steer with a mulcher. Other parameters include:

a) The skid steer must have tracks.
b) A drum mulcher is preferred.
c) Mats are required when operating in wetland areas.

3) Chaining may be appropriate when the area is greater than 40 acres and tree density (6" or greater DBH) is less than 10% of the area.

C. Privet disposal from initial removal. Larger material resulting from the activity will be managed to allow restoration to occur. Depending on resulting volume, the material could be shredded to reduce volume or collected to transport to a compost facility.

D. Herbicide use. Whether mechanically cut or hand-cut, all privet cut stumps have a high probability of recovery and must be treated to reduce re-growth.

1) An herbicide listed in the IPM will be selected for targeted cut stump treatment and seedling treatment. All cut stump treatment and seedling treatment activities will follow best-practices as defined by the herbicide manufacturer.
2) To be effective cut-stump treatment must be performed
   a) within 30 seconds of the original cut, or
   b) within 30 seconds of a new cut made after the original removal activity.

E. Seedling removal. Seedlings should be expected and seeding removal will occur within one year of the initial privet removal activity.

1) Hand pulling will be prioritized, when feasible.
2) When hand pulling is not feasible, an herbicide listed in the IPM will be applied with a hand wand by a trained applicator. Precautions will be taken to target the privet seedling and avoid over-spraying.

F. Volunteer activities. When small equipment use is not available, volunteers may be employed to hand-cut privet stems. Volunteers will be provided training to identify privet and common environmental hazards, provided safety training, and supervised by staff who meet prerequisites listed in Section 5.

G. Goats and other alternative privet reduction and removal tools.

1) Goats do not remove the plant but are useful for reducing the volume of privet. Goats may support hand-removal activities and can be deployed as a pre-removal measure.
2) Other privet reduction and removal tools and procedures may be evaluated for efficacy, cost-effectiveness and results in improved privet reduction or removal and least impacts to the natural environment.

9. Emergency Activity Procedures

Emergency situations may not permit for all activity-initiation information gathering. In these situations, the departments will document as much information as possible before, during and after the privet removal activity. In these situations,

A. Privet removal activity should be performed by personnel who meet the prerequisites listed above.
B. PARD must inform ESS of the emergency privet removal activity within three business days of the activity and prepare as much of the information listed Section 6 as possible.
C. Post-privet removal during emergency situations must be followed with restoration activity. ESS will follow up after the emergency removal activity with a site inspection. A restoration activity plan will be prepared following the restoration plan procedures listed below.

10. Small Area Activity Procedures

Small, planned activities, as defined in the Applicability section above, will follow a standard removal and restoration plan.

A. Activity-initiation information will be gathered following Section 3.
B. A public informational plan will be prepared and executed following Section 7.
C. PARD will give ESS notice of the privet removal activity no later than 3 business days prior to commencing.
D. Privet may be removed using small equipment following equipment removal procedures provided in Section 8.
E. ESS will inspect the area within 3 business days upon completion of the privet removal activity.

11. Site-Specific Privet Removal Plans

Site-specific privet removal plans will be developed for sites that do not meet the criteria of a small area or an emergency activity. The site-specific removal plan will facilitate least impacts to ESAs, address other environmental or topographical constraints, or other concerns. A site-specific privet removal plan may include:

- A comprehensive list of privet removal procedures to be deployed. Detailed additions or deviations from the procedures outlined in Section 8 that facilitate least impacts may be added to the site-specific plan.
- A map identifying the location where small equipment removal procedures and where hand removal procedures will be deployed.
- Timing of privet removal for most effective removal and reduced wildlife impacts, such as migratory bird nesting or rookeries.

12. Post- Initial Removal Procedures and Restoration Plans

A. Because seedlings are expected to emerge, seedling eradication will be scheduled no later than 1 year after the initial post-removal activity. PARD will notify ESS at least 3 business

days prior to seedling eradication. ESS will inspect the site and document seedling densities prior to seedling eradication activities. PARD will not commence seedling eradication until the received confirmation from ESS the seedling density review is complete. ESS will then re-inspect the site one month after seedling eradication activities to evaluate the success of the activity.

B. When warranted, a temporary ground cover will be installed post- initial removal. Circumstances that may warrant temporary ground cover include are large topographical changes that may lead to erosion and soil loss or public concerns. Appropriate temporary ground cover includes green sprangletop, Canadian wild rye, cereal rye, winter wheat, oats, or side oats grama.

C. Final restoration plans should start after seedling eradication activities. Depending on the seedling eradication schedule, final restoration may be one to two years after the initial privet removal activity. Public education and continued education will be necessary for clarity.

D. Except for emergency activity, final restoration revegetation plantings will be selected prior to commencing privet removal activity.

E. Final restoration plant selection should include a variety of plants to encourage a healthy re-establishment of natural conditions and establish park conditions appropriate for the park use.
   1) Native plants will be prioritized in natural areas.
   2) Native grasses and forbs appropriate for the environmental conditions they will be placed should be selected to establish a ground cover.
   3) Shrubs and vines may be interspersed within the space to encourage reestablishment of the habitat and provide varied competition to reduce future privet re-establishment.
   4) ESS will perform an annual inspection of the final restoration plantings for three years from the date of final restoration planting. Inspections will result in a summary of site conditions, planting conditions, and suggestions for follow-up activities as needed.
   5) Final restoration will be attained when:
      a) privet in the area has been reduced by 80%,
      b) there is 70% survival rate of final restoration plantings, and
      c) 70% uniform perennial vegetative cover.

Attachment A

Checklist for PARD Privet Removal Initial Investigation

Address or property ID:

Select one:

- □ Planned Activity. Complete checklist.
- □ Emergency Activity. Provide as much information as possible.

Site Size:

- □ Less than 1 acre
- □ Greater than 1 acre

Map showing:

- □ Park boundary
- □ outline of privet removal activity
- □ potential ESAs that may be onsite
- □ location of important site features

Wide-angle photos from:

- □ North
- □ South
- □ East
- □ West

Photos of Site Features:

- □ ESA
- □ Evidence of Wildlife
- □ Streams
- □ Other important features

List site specific concerns /complaints.

Tree species and density. Provide a list of known tree species to the best of your knowledge and provide a general description of tree density (only trees greater than 6” DBH).