

Sustainable Residential Landscaping for Susquehanna Township

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I. Introduction

Sustainable residential landscaping is driven by mindful design choices and practices which eliminate or reduce environmental harm.¹ Susquehanna Township is not immune to climate change, but it is seeking to remedy damage and prevent future harm. Susquehanna is a first class township located in Harrisburg, Dauphin County, Pennsylvania.² Almost 27,000 people reside within Susquehanna's 13 square miles.³ This Township has already made great strides in sustainable action, like achieving Gold Certification through the Sustainable Pennsylvania Community Certification.⁴ Susquehanna fulfilled every requirement for sustainable action, including curbside recycling, energy use tracking, greenhouse gas tracking, having a sustainability program, and having diversity and inclusion plans.⁵ Looking forward, Susquehanna created a Comprehensive Plan of its sustainable development goals, to be completed by 2030.⁶ A new ordinance would further the Township's goal of protecting the natural environment.⁷

¹ Dr. Sharon Hall, *Sustainable Landscaping*, Ariz. State Univ., <https://sustainabilitydefined.com/sustainablelandscaping>.

² Susquehanna Twp., *Susquehanna Twp. recognized as certified sustainable mun.*, (Mar. 7, 2018), https://www.susquehannatwp.com/sites/g/files/vyhlf3896/f/uploads/sustainable_pa_community_certification_program_press_release.pdf.

³ U.S. Census, <https://www.census.gov/quickfacts/susquehannatownshipdauphincountypennsylvania> (last visited Sept. 26, 2022).

⁴ Susquehanna Twp., <https://www.susquehannatwp.com/community-development/pages/sustainability> (last visited Sept. 26, 2022).

⁵ Sustainable Pa., <https://sustainablepa.org/certification-program/designation-levels/> (last visited Sept. 26, 2022).

⁶ Susquehanna Twp., *Sustainable Susquehanna 2030*, (May 2019), <https://www.susquehannatwp.com/sites/g/files/vyhlf3896/f/uploads/comprehensiveplanadoptedmay2019.pdf>.

⁷ *Id.*

When there is a lack of sustainable development, challenges arise, including invasive species, drought, pollinators dying off, lack of street tree diversity. For years, Susquehanna has been afflicted by increasing levels of drought and pests. Residents struggle to revive dying pollinator populations and cannot afford excessive upkeep of street trees. Municipalities like Susquehanna have addressed these problems through common themes of native plants in lawn replacements and buffer zones, and increasing incentives and new construction requirements. For example, Ferguson Township recently increased height limits in their buffer zones, which will provide more resources for pollinators, wildlife, and allow growth of drought-reducing rain gardens.

Our proposed ordinance provides incentives for landowners to implement sustainable practices, like meadows and buffers, and requires sustainable landscaping for new construction. The provisions suggest less resource intensive lawn alternatives, native species, and removal of invasive species. Based on influence from neighboring municipalities, sustainable residential landscaping in Susquehanna Township could provide social, economic, and environmental benefits, like creating a happier, healthier community. This narrative will further explore the challenges facing sustainable residential landscaping, what the Township has done to address those issues, how other municipalities have addressed them, and policy recommendations for the Township in writing a new ordinance.

II. Challenges

This section details the challenges facing residential landscaping in Susquehanna Township including pests, lack of pollinators, noxious weeds, drought, and lack of street tree diversity.

A. Pests

As a result of decades of unsustainable landscaping choices, several invasive insect species currently present a threat in Susquehanna Township. The spotted lanternfly population has become troublingly prevalent within the last 3 years.⁸ As temperatures rise, the growing season gets longer, which provides more food and a more hospitable environment for lanternflies.⁹ Rising temperatures allow the lanternfly to stay in the area longer and spread to new areas.¹⁰ The Pennsylvania Department of Agriculture issued an Order of Quarantine over Dauphin and 45 other counties to prevent the spread of lanternflies.¹¹ The quarantine requires that residents keep lanternflies from spreading by checking outdoor areas and cars.¹² Lanternflies feed on the sap of over 70 different plant species, preferring economically important plants, which inevitably destroys the plant.¹³ Planting milkweed can prevent lanternflies, because although they are attracted to it, they are a non-native species, unaware that the cardiac glycosides in the leaves are toxic.¹⁴ Food security is a critically important interest for the Township's residents, and sustainable landscaping can prevent the lanternfly population from threatening our residential gardens and farms.

⁸ Nat. Invasive Species Info. Ctr., <https://www.invasivespeciesinfo.gov/terrestrial/invertebrates/spotted-lanternfly#cit> (last visited Sept. 23, 2022).

⁹ Rachel Ramirez, *Spotted lanternflies are thriving in the Northeast.*, CNN, (Sept. 24, 2022, 2:42PM), <https://www.cnn.com/2022/09/24/us/spotted-lanternfly-habitat-expanding-climate>.

¹⁰ *Id.*

¹¹ Dep't of Agric. Addendum to the Ord. of Quarantine 52 Pa.B. 1744 (2022).

¹² Dep't of Agric.,

https://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/Entomology/spotted_lanternfly/program-information/Pages/Homeowners.aspx (last visited Sept. 23, 2022).

¹³ Spotted Lanternfly, <https://extension.psu.edu/spotted-lanternfly> (last visited Sept. 23, 2022).

¹⁴ Freda R. Savana, *The dreaded spotted lanternfly is back in force*, Bucks Cnty Herald, (June 17, 2021, 12:00AM), <https://buckscountyherald.com/stories/the-dreaded-spotted-lanternfly-is-back-in-force,10049>.

Introduced in the mid-1990's, stink bugs are common invasive pests, with the highest concentrations in the Mid-Atlantic region.¹⁵ Like lanternflies, they feed on valuable crops and ornamental plants.¹⁶ Physical damage includes pitting, leaf injury, scarring, and a mealy texture, which all make the crops unmarketable.¹⁷ The "edge effect" occurs in field crops, where stink bugs infest plants within 30-40 feet from the edge of a field.¹⁸ Few pesticides are adequate for eradicating stink bugs,¹⁹ but they can be effectively repelled by odiferous plants.²⁰ Mint, wild garlic, and wild scallions are examples of native Pennsylvanian odiferous plants.²¹ If Township residents choose to plant vegetation that repels invasive insects, pests will become less of a problem.

B. Lack of Pollinators

Pollinators are a crucial part human health and resources, and their population is in jeopardy. Pollinators are anything that carries pollen from the stamen to the stigma to fertilize flowering plants, including bees, wasps, moths, beetles, flies, butterflies, birds, flies, and small mammals.²² For several reasons, without pollinators, all ecosystems would perish.²³ Almost 80% of food plants, medicinal plants, and plant-based dyes require pollination by animals.²⁴

¹⁵ Env't Prot. Agency, *Brown Marmorated Stink Bug*, (Feb. 22, 2022), <https://www.epa.gov/safepestcontrol/brown-marmorated-stink-bug>.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ Dr. Maria Wheeler-Dubas, *Wild Onion or Garlic?*, Phipps Conservatory and Botanical Gardens (2022), <https://www.phipps.conservatory.org/blog/detail/biopgh-blog-wild-onion-or-garlic#:~:text=Outside%20of%20cultivation%2C%20though%2C%20Pennsylvania,wild%20scallions%2C%20or%20field%20garlic>.

²¹ *Id.*

²² Nat'l Park Serv., <https://www.nps.gov/subjects/pollinators/what-is-a-pollinator.htm> (last visited Sept. 26, 2022).

²³ *Id.*

²⁴ U.S. Forest Serv., <https://www.fs.usda.gov/wildflowers/pollinators/importance.shtml#:~:text=It%20is%20an%20essential%20ecologic al,80%25%20require%20pollination%20by%20animals> (last visited Sept. 26, 2022).

Sustainable residential landscaping can be used to support pollinators through encouraging residents to grow flowering plants.²⁵ These plants also eliminate greenhouse gasses and support biodiversity.²⁶ The roots of flowering plants in meadows secure soil in place, and the foliage cushions the impact of rain, which in turn, purifies water and prevents erosion.²⁷

C. Noxious Weeds

A noxious weed is any plant that directly or indirectly injures crops, livestock, or other resources.²⁸ Because they can poison areas around them, they cannot be sold, transported, planted, or propagated.²⁹ There are 3 classes based on its rate of spread and how easily it can be eradicated.³⁰ Class A noxious weeds are geographically limited to an area, and can be feasibly eradicated.³¹ Class B noxious weeds cannot be eradicated, and are widely established in Pennsylvania.³² Class A weeds found in Susquehanna Township include raveena grass and goatsrue, and Class B includes purple loosestrife, wild parsnip, and garlic mustard.³³ Class C noxious weeds are not known to exist in Pennsylvania, yet pose a treat if introduced, or are listed on the Federal Noxious Weed List.³⁴ Noxious weeds also tend to attract unwanted and invasive pests.³⁵ Sustainable landscaping removes noxious weeds because they can outgrow and outcompete native plants. Because of the prevalence of noxious weeds in the Township,

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ Plant Prot. Act, Pub. L. No. 106-224, § 403(10), 114 Stat. 440 (2000).

²⁹ *Id.*

³⁰ Dep't of Agric., https://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/NIPPP/Pages/Controlled-Plant-Noxious-Weed.aspx (last visited Sept. 24, 2022).

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

residents should be required to remove them. Eliminating noxious weeds in residential lawns will allow native plants and wildlife to thrive while repelling invasive insects.

D. Drought

Grass lawns in the Township generally require one inch of water per week.³⁶ This amount of watering is unfeasible for landowners when considering drought conditions.³⁷ Dauphin County is currently among 36 counties on drought watch by the Department of Environmental Protection.³⁸ The State requested that these counties take voluntary action to conserve water and reduce consumption by 5% to 10%.³⁹ The U.S. Drought Monitor (USDM), released weekly, illustrates drought areas by synthesizing the best available data from local observers on drought indicators such as precipitation, temperature, streamflow, groundwater levels, and soil moisture.⁴⁰

The USDM uses a five-category system where lack of drought does not fall into any category.⁴¹ Abnormally Dry (D0) conditions include stunted crop growth, delayed planting, elevated fire danger, lawn browning, and garden wilting.⁴² Moderate Drought (D1) includes lower crop yields, declining pollinator populations, and wildfire increase.⁴³ Severe Drought (D2)

³⁶ Ready Pa., <https://www.ready.pa.gov/BeInformed/Know-The-Threats/Pages/Drought.aspx#:~:text=Most%20of%20the%20year%2C%20lawns,the%20soil%20is%20still%20moist.> (last visited Sept. 25, 2022).

³⁷ *Id.*

³⁸ Katelyn Smith, *Drought watch remains in effect for 36 counties in Pennsylvania*, WGAL8 (Sept. 14, 2022, 10:59AM), <https://www.wgal.com/article/pennsylvania-drought-watch-continues/41208519#>.

³⁹ *Id.*

⁴⁰ Nat'l Integrated Drought Info. Sys., *Conditions for Susquehanna Twp., PA (Dauphin Cnty.)*, Nat'l Oceanic and Atmospheric Admin. (Sept. 23, 2022), <https://www.drought.gov/location/Susquehanna%20Twp%2C%20Pennsylvania>.

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

includes groundfire increase and poor air quality.⁴⁴ Extreme Drought (D3) includes widespread crop loss and wildlife disease outbreak.⁴⁵ Pennsylvania has never experienced D4 conditions.⁴⁶ Over the past 20 years, Susquehanna has remained consistently in and out of the D0 category, sometimes raising to D1 or D2, but rarely raising to D3.⁴⁷ This past August has been the thirteenth driest on record in the past 128 years.⁴⁸

Susquehanna Township's drought crisis can be combatted by incorporating clover and other alternatives into grass lawns. Running Buffalo Clover is a native Pennsylvanian perennial. Prior to 1950, clover was treated as a necessary lawn inclusion, but became widely known as an undesired weed due to marketing efforts by newly invented weed killer to influence a consumer mindset that anything but grass was unwelcome.⁴⁹ Clover is an ideal lawn replacement. Clover is a legume, not a grass.⁵⁰ Through nitrogen fixation, legumes absorb atmospheric nitrogen and deposit it into the soil, which acts as fertilizer and improves soil quality, making all surrounding plants healthier.⁵¹ Clover is drought tolerant, because its leaves provide shade to the soil to prevent groundwater evaporation.⁵² Its roots grow deeper than traditional grass, which pull water from further down in the soil, and require less water to stay green.⁵³ Clover acts as its own herbicide, because it forms dense secondary root clumps which outcompete broadleaf weeds.⁵⁴ Clover will not only reduce resident's water bills, it is also significantly cheaper to

⁴⁴ Nat'l Integrated Drought Info. Sys., *Drought Conditions for Dauphin Cnty.*, Nat'l Oceanic and Atmospheric Admin. (Sept. 20, 2022), <https://www.drought.gov/states/Pennsylvania/county/Dauphin>.

⁴⁵ Nat'l Integrated Drought Info. Sys., *Drought Conditions for Dauphin Cnty.*, Nat'l Oceanic and Atmospheric Admin. (Sept. 20, 2022), <https://www.drought.gov/states/Pennsylvania/county/Dauphin>.

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ Clover Lawn, <https://cloverlawn.org/> (last visited Sept 27, 2022).

⁵⁰ Lori Lovely, *11 Important Things to Know About Clover Lawns*, Bob Vila (June 21, 2022, 10:53 PM), <https://www.bobvila.com/articles/clover-lawn/>.

⁵¹ *Id.*

⁵² Clover Lawn, <https://cloverlawn.org/> (last visited Sept 27, 2022).

⁵³ *Id.*

⁵⁴ *Id.*

plant.⁵⁵ Clover attracts pollinators and benefits the sustainable lawn landscape.⁵⁶ Encouraging residents in the Township to plant clover will allow for increased recovery from drought and other challenges.

E. Lack of Street-Tree Diversity

City landscapes can be harsh ecosystems for trees. Damage can result from concentrated human activity and environmental conditions, like vehicle collision, vandalism, road salt, limited crown area for traffic and power lines, heat radiation, stress, and lack of irrigation systems.⁵⁷ Street trees can also cause physical damage.⁵⁸ Due to the limited root area on sidewalks around street trees, the roots may heave up surrounding structures.⁵⁹ Falling trees could damage neighboring property or injure nearby citizens.⁶⁰ Despite this, residents prefer street trees because they reduce greenhouse gasses, buffer sounds of congestion, add living elements to hardscape areas, reduce stormwater runoff, and offer shade in extreme temperatures.⁶¹ Canopy coverage from street trees increases property value and desirability.⁶²

Most municipalities, including Susquehanna Township, have little tree diversity. A lack of tree diversity presents a problem, for example, when a certain species becomes afflicted by a

⁵⁵ *How Much Does It Cost to Reseed a Lawn?*, This Old House (Aug. 1, 2022, 12:00 AM), <https://www.thisoldhouse.com/lawns/reviews/cost-to-reseed-lawn#:~:text=The%20national%20average%20cost%20to,number%20may%20be%20over%20%241%2C000>.

⁵⁶ *Id.*

⁵⁷ Jeran Farley, *St. Tree Diversification and Location Considerations*, Utah State Univ. (May 2013), <https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1405&context=gradreports>.

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ James Gorman, *Residents Op. on the Value of St. Trees Depending on Tree Location*, *Journal of Arboriculture*, (Jan. 2004), <https://www.proquest.com/docview/220358716?pq-origsite=gscholar&fromopenview=true>.

⁶² Geoffrey H. Donovan and David T. Butry, *Trees in the City*, *Landscape and Urban Planning*, (July 31, 2009), http://actrees.org/files/Research/donovan_butry.pdf.

disease or damaging insect.⁶³ That species could disappear from an area in a short timeframe, leaving streets desolate, and leaving residents to bear the burden of replacement.⁶⁴ Species diversity would reduce the chances of widespread street tree fatalities.

In this Township, street trees can become too large and cause property damage by growing into power lines or structures.⁶⁵ There are several species of tree that would remain short enough at maturity to accommodate smaller areas.⁶⁶ Small trees, such as the american hornbeam, can grow ten to 45 feet tall in harsh urban conditions.⁶⁷ The Township will directly benefit from increasing residential street tree diversity because trees provide protection from rain, sun, and heat, reduce harm from tailpipe emissions, lower urban air temperatures, reduce greenhouse gasses, and improve human health.⁶⁸ Susquehanna Township residents can increase sustainable development by planting a variety of tree species, at the right height for the area.

III. Why Susquehanna Township Needs a New Ordinance

Susquehanna Township's current ordinance does not speak significantly sustainable residential landscaping matters. It is silent on pests, sustainable lawns, native plants, and vegetative cover. Susquehanna Township has a Shade Tree Commission, which can regulate, plant, remove, maintain, and protect shade trees between the home and the road, or on public streets and highways.⁶⁹ A shade tree is any tree in public streets, highways, or tree lawn.⁷⁰ The

⁶³ Jeran Farley, *St. Tree Diversification & Location Considerations*, Utah State Univ. (May 2013), <https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1405&context=gradreports>.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ Chester Cnty. Plan. Comm'n (1996), <https://www.chesco.org/DocumentCenter/View/3663/Native-Plants-Planning-Bulletin?bidId=>.

⁶⁸ Dan Burden, *22 Benefits of Urban St. Trees*, Glatting Jackson & Walkable Communities, Inc., (May 2006), <http://www.cityofglowersville.com/wp-content/uploads/22-Benefits.pdf>.

⁶⁹ Susquehanna Twp., Pa., Code § 1-421 (2005); Susquehanna Twp., Pa., Code § 25-103(2) (2008).

⁷⁰ *Id.* § 25-102 (2008).

Commission can inspect residential shade trees and issue citations, but the Township does not have much control over residents or maintenance of Shade trees.⁷¹ Residents, not the Township, must maintain all trees, bushes, and vegetation, and replace all removed shade trees.⁷²

Otherwise, the Township can do the maintenance and send the residents the bill.⁷³

The Commission has approved a list of trees permissible to use in a tree lawn, but almost half the trees are not native to this region. Most non-native trees descend from East Asia, including the Japanese zelkova and Chinese elm, but the Persian parrotia is native to Northern Iran.⁷⁴ Native plants are crucial to the survival of native wildlife and pollinators, and they are more likely to survive in their native environment.⁷⁵ A permit is required to plant a tree that is not on this list, to remove a shade tree, or to conduct any work that will interfere with or damage a shade tree's roots within 10 feet from the base of the tree.⁷⁶

The current ordinance calls for "reasonable effort" to preserve existing shade trees and deciduous hardwood trees.⁷⁷ If vegetation creates a buffer zone between residential developments, that vegetation should then be preserved.⁷⁸ Buffers are any type of space or fence creating physical separation of one use of property from another to block light and noise.⁷⁹ A yard buffer is a space covered with vegetation, intended to provide physical partition.⁸⁰ In

⁷¹ *Id.* § 25-103(2) (2008).

⁷² *Id.* § 25-104 (2008); § 25-111 (2008).

⁷³ *Id.*

⁷⁴ Susquehanna Twp. Approved St. Trees, https://www.susquehannatwp.com/sites/g/files/vyhlf3896/f/uploads/approved_street_trees.08.02.22.pdf (last visited Sept. 26, 2022).

⁷⁵ DCNR Bureau of Forestry, [https://www.dcnr.pa.gov/Conservation/WildPlants/LandscapingwithNativePlants/Pages/default.aspx#:~:text=Bird%20Food%3A%20Native%20plants%20provide,tracks%20pollinator%20plantings%20\(PDF\)](https://www.dcnr.pa.gov/Conservation/WildPlants/LandscapingwithNativePlants/Pages/default.aspx#:~:text=Bird%20Food%3A%20Native%20plants%20provide,tracks%20pollinator%20plantings%20(PDF)) (last visited Sept. 26, 2022).

⁷⁶ Susquehanna Twp., Pa., Code § 25-105 (2008).

⁷⁷ *Id.* § 22-1109.

⁷⁸ *Id.*

⁷⁹ *Id.* § 27-204.

⁸⁰ *Id.*

generating residential development plans, natural features must be preserved wherever possible, recreational space must be designated, and buffer yards should be a mixed variety of trees and shrubs.⁸¹ These requirements are a good start, but the Township has yet to enact more guidelines regarding vegetative cover, diverse street trees, pollinator plants, drought-resistant plants, and other native vegetation.

IV. How Other Municipalities Have Addressed this Problem

Other municipalities surrounding Susquehanna Township have addressed sustainable residential landscaping using native plants and lawn replacement, vegetative buffers, incentive programs, and new construction requirements.

A. Native Plants and Lawn Replacement

Many municipalities have included ordinance sections which recommend or require planting native Pennsylvanian plants. Native plants are well suited to local humidity, temperature, and precipitation levels, and are less susceptible to disease and insect infestations.⁸² West Norriton Township, Pennsylvania passed a Resolution in Support of native plant use because they restore ecological balance and create healthy ecosystems.⁸³ West Norriton's appointed officials are currently educating and empowering residents to transition at least 50% of residential properties to contain at least 20% native plants.⁸⁴ Township officials are furthering sustainable development goals because native plants, like milkweed, encourage ecological

⁸¹ *Id.* § 22-1000.

⁸² *Id.*

⁸³ West Norriton Bd. of Comm'rs, Res. No. 18-1613 (Oct. 9, 2018).

⁸⁴ *Id.*

diversity and decrease the growing pest population.⁸⁵ This resolution was later adopted by Schuylkill Township, Pennsylvania, and was originally inspired by Lower Makefield Township, Pennsylvania.⁸⁶ By encouraging residents to plant native vegetation, all three townships have supported the native ecosystem and decreased pollution by absorbing greenhouse gasses.

The Borough of Phoenixville's ordinance was enacted to diversify the residential tree species in the Borough.⁸⁷ They have approved tree species for certain areas in effort increase diversity and to prevent mature trees from growing into elevated wires.⁸⁸ Tree species diversity and controlling the height of mature trees in Phoenixville allows the resident's environment to both fulfill and work around their needs. An increase in shade from trees decreases drought, and trees benefit pollinators and wildlife, creating a sustainable solution in residential landscaping.

Similarly, West Chester Borough's ordinance contains many provisions regarding planting diverse street trees.⁸⁹ Street trees of varying sizes should be planted on streets without trees, but not directly across from each other, and with 45 foot spacing between large trees and 30 foot spacing between medium trees.⁹⁰ This township uniquely provides protection against topsoil removal, and that if a root zone must be excavated, the disturbed roots must be "cut as cleanly as possible," and refilled with soil quickly to avoid compaction.⁹¹ Lower Makefield Township's street tree standards include branching height, caliper, height, and root ball standards and detailed planting procedure.⁹² These standards increase vegetative health and safety, and minimizes environmental disturbances.⁹³ In Ferguson Township, Pennsylvania, the area within a

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ Borough of Phoenixville, Pa., Code § 25-101(2)(F) (2018).

⁸⁸ *Id.* § 25-105(7).

⁸⁹ Borough of West Chester, Pa., Code § 97-33(2) (2016).

⁹⁰ *Id.*

⁹¹ *Id.* § 97-34(2).

⁹² Lower Makefield Twp., Pa., Code § 178-81 (2007).

⁹³ *Id.*

tree drip line, which the area between the tree trunk and the edge of the canopy, is called the tree protection zone.⁹⁴ § 22-202 in their Code prohibits harm to the of the tree protection zone of designated trees.⁹⁵ These provisions in each township protect the tree while allowing for development around it. The native plant landscaping ordinances in these townships increase social opportunities because they ensure the safety of the street trees and of the residents. By caring for street trees, townships address environmental and economic benefits, keeping the cost of tree repair down and trees can continue filtering air for residents.

B. Vegetative buffer

Vegetative buffers are areas of intermixing layers of native vegetation, including grasses, shrubs, and trees.⁹⁶ Buffers slow the flow of stormwater, which replenishes groundwater and prevents soil erosion.⁹⁷ In Ferguson Township, a buffer yard is a space of vegetation which provides separation between districts or uses.⁹⁸ A landscaping plan must indicate the buffer yard's location, number of plant species, and distribution of plants, whenever a land development plan requires installation of landscaping.⁹⁹ All trees in the buffer yard must be noninvasive or included on the selective planting list, and 60% of the yard must be native plants.¹⁰⁰ Landowners are additionally required to destroy noxious weeds.¹⁰¹ Recently, this Township changed their vegetation maximum height limit from 6 to 8 inches.¹⁰² Ferguson saw positive change from this

⁹⁴ Twp. of Ferguson, Pa., Code § 25-102 (2014).

⁹⁵ *Id.* § 22-202.

⁹⁶ Env't Prot. Agency, <https://www.epa.gov/system/files/documents/2021-11/bmp-vegetated-buffers.pdf> (last visited Sept. 27, 2022).

⁹⁷ *Id.*

⁹⁸ Twp. of Ferguson, Pa., Code § 22-516(2) (2022).

⁹⁹ *Id.* § 22-516(4).

¹⁰⁰ *Id.* § 22-515(3)(d).

¹⁰¹ *Id.* § 10-105(2).

¹⁰² *Id.* § 10-101(1)(A).

height increase, because limits make it difficult to cultivate wildflower garden or rain gardens. Environmentally, these buffers encourage pollinator populations and prevent devastating effects of extreme weather. Socially, buffers provide privacy and visual aesthetics. Economically, residential buffers save the Township major costs by lessening soil erosion repairs.

C. Financial Incentives, Enforcement, and Penalties

This subsection addresses neighboring Township's ordinance provisions on incentive programs, new construction requirements, and enforcement of other provisions.

1. Incentive Programs

Landscaping incentive programs usually apply to existing construction, in effort to encourage residents to convert unsustainable property to a more sustainable choice. Many programs involve both the use of survey, for township officials to assess a property owner's eligibility, and a credit, in exchange for meeting certain requirements. The credit will be for a specific amount of money and can go toward offsetting township fees. The tree preservation and protection incentive program in Ferguson Township begins with making a tree survey plan for existing and proposed trees.¹⁰³ Based on the percentage of existing tree canopy, and diameter of the trunk of the preserved tree, credits will be issued to offset parking and planting requirements.¹⁰⁴ The credit received will be greater for larger amounts of existing tree canopy and thicker tree trunk diameter.¹⁰⁵ Additionally, in West Chester Borough, a credit can be received against stream protection fees for properties with a stormwater facility, which is similar

¹⁰³ Twp. of Ferguson, Pa., Code § 22-515(3)(A) (2019).

¹⁰⁴ *Id.* § 22-515(3)(D)(4).

¹⁰⁵ *Id.*

to a retention basin, if the facility decreases the Borough's expenses to maintain the stormwater management system.¹⁰⁶ These townships are slowly transforming their ecological landscapes through incentives, which is difficult to accomplish, due to the nature of private property. These programs are socially, environmentally, and economically beneficial because they allow residents to choose whether to put the effort into participating, and they can be rewarded for making conscious and sustainable decisions.

2. New Construction Requirements

New construction includes both landscaping on undeveloped land, and additions on existing land, for which municipalities generally required a landscaping plan. In Lower Makefield Township, the approval process for all new construction requires a landscaping plan to conserve the natural landscape and enhance the surrounding area.¹⁰⁷ All required new plantings must be native plants.¹⁰⁸ The goal of new construction specifications is to preserve ecological health and native species diversity by encouraging native plants in native conditions.¹⁰⁹ In West Chester Borough, the landscaping plan requires diagrams and complex analysis of the proposed planting and landscaping needs.¹¹⁰ The Borough is able to enforce this and other landscaping provisions through refusal to issue a permit or issuing a fine of \$500.¹¹¹ With each day that passes since the issuance of the violation, there is a separate violation.¹¹² In Ferguson Township, new housing developments are required to plant vegetative buffers between

¹⁰⁶ Borough of West Chester, Pa., Code § 94A-10(A) (2016).

¹⁰⁷ Lower Makefield Twp., Pa., Code § 178-80 (2007).

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ Borough of West Chester, Pa., Code § 97-33 (2016).

¹¹¹ *Id.* § 97-56.

¹¹² *Id.*

curbs and the right-of-way line.¹¹³ If there is no landscaping plan for new landscaping construction, and there will be subject to penalties and the township may initiate a civil action to enforce any landscaping provision.¹¹⁴ These townships are able to enforce requirements for new construction, which over time, creates a more sustainable township. These townships are now able to better control plantings and buffers on private property. Socially, this allows for aesthetically pleasing neighborhoods and improved public health. Environmentally, townships can discourage invasive species from spreading. Economically, installing sustainable features both stimulates the economy and maintenance costs lessen over time.

V. Recommendations

The purpose of our ordinance is to limit invasive pest and plant species, promote pollinators, drought-resistant plants, native species, and provide incentives and enforcement to create a healthier Susquehanna Township. Most townships require landscaping plans of varying detail prior to landscaping, including Lower Makefield and West Chester, from which we learned that landscaping plans can allow townships to monitor the specific choices and evaluate their sustainable benefits. Our landscaping plan requires that residents provide the Township with information regarding spacing and size of plants, number of plants, proposals for protection of existing plants, buffers, and yard features. Landscaping plans can be submitted alone or along with landscaping construction permit applications.

Susquehanna's current approved street trees listed many non-native trees, so our list addresses this by including only native species that are well adapted to this environment. To allow residents to cultivate meadows, we increased the vegetation height limit to 4 feet 6 inches,

¹¹³ Twp. of Ferguson, Pa., Code § 22-401(1)(A)(3)(h) (2022).

¹¹⁴ *Id.* § 22-602(1)(A).

and it may not be mowed more than twice a year. Raising this requirement and encouraging meadow growth also promotes pollinators and drought management while deterring pests. Certain native plants are particularly well suited for the Township's goals. Wildflowers like milkweed support the monarch butterfly population and prevent stinkbugs and lanternflies; sundrops and goldenrods are drought tolerant; white snakeroot, virginia bluebells, and oxeye sunflowers serve as nectar sources for pollinators.¹¹⁵ Residents may elect to use native lawn alternatives or remove a percentage of invasive species, and complete an application to receive a stormwater credit from the Township.

Landowners may install vegetative buffers in different areas around the home and are encouraged to use already existing plant material. Residents who install a buffer using existing native plant material may qualify for a credit toward the landowner's stormwater bill, like Ferguson's credit for preservation of existing canopy. Street trees must be large enough to thrive in nature on their own, must be an appropriate mature height for the planting area, and follow planting procedure. Like Ferguson's initiative to transform the native landscape on private property, our ordinance requires that new lawns must contain at least 50% native plantings, at least 50% native lawn alternative, and a vegetative buffer. If any of these provisions are violated, there will be a civil enforcement proceeding and a fine of an amount between \$100 and \$500. Once the ordinance is implemented, it will not need to be funded. The ordinance contains primarily regulations and voluntary actions which can only be taken and paid for by residents. Although potentially a large financial burden, residents are required to maintain their street trees

¹¹⁵ Pa. Dep't of Conservation and Natural Res., *Landscaping with Native Plants in Pa.*, (Oct. 15, 2015), https://elibrary.dcnr.pa.gov/GetDocument?docId=1742582&DocName=sf-Native_Plants_Landscaping-brochure.pdf.

and plant their own vegetation. Residents are not required to participate in incentive programs. Residents must take active steps to apply for benefits.

VI. Conclusion

Since humans have been faced with the consequences of climate change, municipalities have done their best to react and adapt appropriately. Of these consequences, Susquehanna Township is battling invasive pests like the lantern fly and stink bug, a lack of pollinators, noxious weeds and invasive plants, drought, and a lack of street tree diversity. The Township's current ordinances are insufficient to solve these problems. The Township is lacking guidelines regarding native trees and plants, mixed shrubs, pollinator plants, drought-resistant plants, and other native vegetation. No other municipality has created a perfect solution, but others have made steps in the right direction. These steps include replacing local lawns and vegetation with native plants, planting vegetative buffers, and enacting enforcement and incentive programs. Pennsylvanian ecosystems are struggling to counterbalance a rapidly changing landscape, and greater action must be taken.

ORDINANCE NO. __ of 2022

Residential Landscaping Ordinance for Susquehanna Township

NOW, THEREFORE, BE IT ENACTED AND ORDAINED by the authority of
the Board of Supervisors of Susquehanna Township.

Chapter 1

General Provisions.

Section 101. Short Title. This ordinance shall be known and may be cited as the Residential Landscape Ordinance of Susquehanna Township.

Section 102. Authority. This Ordinance is authorized under Act 247 Pennsylvania Municipalities Planning Code, Act of 1968, P.L. 805, No. 247, Sect. 209.1 as reenacted and amended.

Section 103. Purpose. The purpose of this ordinance is to:

- (1) Limit pests, invasive species, and noxious weeds in residential landscaping.
- (2) Promote pollinators and native species in residential landscaping.
- (3) Promote drought-resistant residential landscaping.
- (4) Promote native street tree planting and diversity.

- (5) Provide incentives and enforcement to promote sustainable residential landscaping and combat degrading environmental effects.

Chapter 2.

Definitions.

Section 201.

The following words and phrases when used in this ordinance shall have the meanings given to them in this section unless the context clearly indicates otherwise.

"Bare root tree." A tree that has no soil around the roots.¹¹⁶

"Board of Commissioners." The Board of Commissioners of Susquehanna Township, Dauphin County, Pennsylvania.¹¹⁷

"Buffer." An area of dense vegetation¹ intended to slow runoff and trap sediment.¹¹⁸

¹¹⁶ PennState Extension, Handling and Planting "Bare Root" Plants in the Home Landscape, Handling and Planting "Bare Root" Plants in the Home Landscape (psu.edu). (Last visited October 1).

¹¹⁷ Susquehanna Twp., Pa., Code § 22-301 (2007).

¹¹⁸ Wis. DEP, Vegetative Buffer for Construction Sites, <https://dnr.wi.gov/topic/stormWater/documents/1054VegetativeBuffer.pdf> (Last visited Nov. 3, 2022).

"Caliper." The diameter of a tree's trunk.¹¹⁹

"Clear Site Triangle." A triangle-shaped portion of land established at street intersections in which nothing is erected, placed, planted, or allowed to grow as to limit or obstruct the site distance of motorists entering or leaving the intersection.¹²⁰

"Curb." A cut stone, asphalt or concrete boundary usually marks the edge of the roadway or paved areas.¹²¹

"Deciduous shrub." A native bush that sheds its leaves in fall and grows new foliage in spring.¹²²

"Deciduous tree." A native tree that sheds its leaves in fall and grows new foliage in the spring.¹²³

"Driveway." A private roadway providing access for a vehicle to a parking space, garage, dwelling or other structure, including

¹¹⁹ Jacob. J. Wright, *"What Does Caliper Mean in Landscaping?"* (2020), (Last visited November 2, 2022).

¹²⁰ Susquehanna Twp., Pa., Code § 22-301 (2007).

¹²¹ *Id.*

¹²² Abdullah Riaz, *Deciduous Trees - Types, Cultivation, Care, and, Uses, Deciduous Trees - Types, Cultivation, Care, and, Uses* (thegardening.org) (Last visited November 3, 2022).

¹²³ *Id.*

nonresidential structure, that provides services to not more than six (6) residential dwelling units.¹²⁴

“Evergreen shrub.” A native bush that retains all or most of its foliage year-round.¹²⁵

“Evergreen tree.” A native tree that retains all or most of its foliage year-round.¹²⁶

“Existing Site.” A current residential development that has been approved or already built before the enactment of this ordinance. Including property sold or transferred to a new owner.

“Flowering perennial species.” Unless otherwise clearly indicated by the section, flowering perennial species include but is not limited to:¹²⁷

¹²⁴ Susquehanna Twp., Pa., Code § 22-301 (2007).

¹²⁵ Merriam-Webster Dictionary, Evergreen Definition & Meaning - Merriam-Webster. (Last visited November 16, 2022).

¹²⁶ *Id.*

¹²⁷ PA DCNR, Landscaping with Natives, <https://elibrary.dcnr.pa.gov/GetDocument?docId=1743796&DocName=Landscaping with Native Plants.pdf> (Last visited October 10, 2022).

Common Name	Scientific Name
Alumroot	Heuchera americana
Bee-balm	Monarda didyma
Bigleaf aster	Eurybia macrophylla
Black cohosh	Actea racemosa
Cardinal-flower	Lobelia cardinalis
Culver's-root	Veronicastrum virginicum
Dutchman's breeches	Dicentra cucullaria
Foamflower	Tiarella cordifolia
Golden ragwort	Packera aurea
Great blue lobelia	Lobelia siphilitica
Guara	Caura biennis
Jack-in-the-pulpit	Arisaema triphyllum
Jacob's ladder	Peletonium reptans
Joe-pye-weed	Eutrochium fistulosm
Mayapple	Pedophyllum peltatum
Mountain mints	Pyenantheum muticum
Oxeye sunflower	Heliopsis heliantheides
Solomon's plume	Smilacina racemosa
Swamp milkweeds	Asclepias incarnata
Virginia bluebells	Mertensia virginca
White snakeroot	Ageratina altissima
White wood aster	Eurybia divaricata

Wild blue phlox	Phlox divaricata
Wild columbine	Aquilegia canadensis
Wild ginger	Asarum canadense
Wood geranium	Ceranium maculatum

“Grass species.” Unless otherwise clearly indicated, grass species include but are not limited to:¹²⁸

Big bluestem grass	Andropogon gerardii
Blue-eyed grass	Sisyrinchium bellum
Bottlebrush grass	Elymus elymoides
Indian grass	Sorghastrum nutans
Switchgrass	Panicum virgatum

“Guying.” A technique used to stabilize transplanted trees with a diameter of 4 inches or larger to prevent the lower trunk and root system from moving.¹²⁹

“Invasive species.” A non-native plant that reproduces more rapidly, outcompetes, and displaces native plants in the

¹²⁸ *Id.*
¹²⁹ University of Minnesota Extension, Staking and guying trees (2020), [Staking and guying trees | UMN Extension](#) (last visited October 10, 2022).

landscape.¹³⁰

“Landowner.” The legal or beneficial owner or owners of land including but not limited to, the holder of an option or contract to purchase, a lessee if he is authorized under the lease to exercise the rights of the landowner or other person, agent, or developer having a proprietary interest in land.¹³¹

“Landscaping.” The area not occupied by structures, roads, or parking including but not limited to existing and proposed plant-materials and man-made materials.¹³²

“Landscaping plan.” A component of a development plan that shows proposed landscape species, including but not limited to:¹³³

- (1) Spacing of the plants.
- (2) Size at time of planting.
- (3) Number of plants.
- (4) Proposals for the protection of existing plant-material during and after construction.
- (5) Proposed decorative features.
- (6) Grade changes.

¹³⁰ York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 003 (2014).

¹³¹ Act 247 of 1968, P.L. 805; 53 P.S. § 10101, at § 107.

¹³² York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance, § 003 (2014).

¹³³ Susquehanna Twp., Pa., Code § 27-204 (2003).

(7) Buffers and screening devices.

“Landscaping use.” The use of plant-material to modify an area of land, including but not limited to meadows, buffers, lawn alternatives, and street trees.

“Lawn alternative.” Ground-cover species that can be mowed and can tolerate foot-traffic.

“Maintenance.” Measures to ensure proper functioning, safety, structural integrity, weed and pest control, aesthetic appeal or any other measures required to maintain landscaping standards provided in this ordinance.¹³⁴

“Man-made material” Including but is not limited to sculptures, walls, fences, paving materials, or outdoor furniture.¹³⁵

“Mature height.” A plant that has reached the desired size or age for its intended use.¹³⁶

¹³⁴ *Id.* at § 22-301 (2007).

¹³⁵ York Cnty., Pa., York County Sustainable Landscaping Model Ordinance, § 003 (2007).

¹³⁶ *What Does Mature Size Mean?* [Midwest Gardening — Landscape Planning & Care \(midwestgardentips.com\)](https://www.midwestgardentips.com) (Last visited October 10, 2022).

“Meadow.” An area containing native grasses and native flowering perennial species.¹³⁷

“Native meadow plants.” Including but not limited to:¹³⁸

Black-eyed susan	Rudbeckia hirta
Blue vervain	Verbena hastata
Blue bluestem	Andropogon gerardi
Ox eye	Buphthalmum salicifolium
Butterfly weed	Asclepias tuberosa
Wild columbine	Aquilegia canadensis
Wood poppy	Stylophorum diphyllum
Coral-bells	Heuchera americana
Partridgeberry	Mitchella repens
Serpentine aster	Symphotrichum depauperatum

“Native species.” Any plant species that occurred in the Mid-Atlantic Region prior to European settlement.¹³⁹

¹³⁷ York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 003 (2007).

¹³⁸ PA DCNR, Landscaping with Natives.

¹³⁹ York Cnty., Pa., York County Sustainable Landscaping Model Ordinance, § 003 (2007).

“Necessary disturbance.” Uprooting or relocating plant-material during construction or replanting of a lawn or garden.

“New construction.” Residential development that is approved and begins planning after the enactment of this ordinance or a building addition to an existing structure that needs a permit.

“Noxious weeds.” A plant that is determined to be injurious to public health, crops, livestock, agricultural land, or other property and is regulated to prevent uncontained growth and negate undesirable characteristics.¹⁴⁰

“Ornamental tree.” A native tree with flowers or fruits.¹⁴¹

“Parking areas.” A site or portion of a site unoccupied by buildings, which is used or is intended to be used, primarily for the parking or storage of motor vehicles that is not part of a public street.

¹⁴⁰ Pa. Dept. of Agriculture, *Controlled Plants & Noxious Weeds*, https://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/NIPPP/Pages/Controlled-Plant-Noxious-Weed.aspx. (Last visited October 10, 2022).

¹⁴¹ City of Wichita, Kan., Ordinance No. 50-340 (2016).

"Pathways." Including but not limited to sidewalks, bikeways, and pedestrian paths.

"Planning Commission." Susquehanna Township Planning Commission, Dauphin County, Pennsylvania established by Township of Susquehanna Pa., Municipal Code Administration and Government, § 1-401.¹⁴²

"Plant-material." Including but not limited:

- (1) Trees.
- (2) Shrubs
- (3) Flowering Perennials.
- (4) Natural materials.¹⁴³

"Root-balled." The mass of roots of a plant.¹⁴⁴

"SALDO." Susquehanna Township Subdivision and Land Development Ordinance.¹⁴⁵

"Setback." The line within a property defining the required minimum distance between any principal or accessory structure

¹⁴² Susquehanna Twp., Pa., Code § 27-301 (2007).

¹⁴³ York Cnty., Pa., York County Sustainable Landscaping Model Ordinance, § 003 (2007).

¹⁴⁴ *Id.*

¹⁴⁵ Susquehanna Twp., Pa., Municipal Code Chapter 22 (2006).

and adjacent right-of-way, and the line defining side and rear yards.¹⁴⁶

“Shade Tree Commission.” Susquehanna Township Shade Tree Commission as established by Township of Susquehanna Pa., Municipal Code Administration and Government, § 1-421.¹⁴⁷

“Sidewalks.” A path or footwalk for public use located between the cartway or curb line and right-of-way line of any public or municipal maintained street or highway.¹⁴⁸

“Staking.” A procedure that is used to anchor, support, and preserve newly planted trees.¹⁴⁹

“Stamped Report.” Any signed or impressed document prepared by an expert in the field.¹⁵⁰

“Storm drain inlet.” Including but not limited to:¹⁵¹

1. a surface connection to a closed drain.
2. A structure at the diversion end of a conduit.

¹⁴⁶ *Id.*

¹⁴⁷ *Id.* at § 1-421 (2005).

¹⁴⁸ *Id.* at § 27-301 (2007).

¹⁴⁹ University of Minnesota Extension, Staking and guying trees (2020).

¹⁵⁰ Township request.

¹⁵¹ Susquehanna Township., Pa., Municipal Code § 27-301 (2007).

3. The upstream end of any structure through which water may flow.

“Stormwater credit.” An incentive to reduce the landowner’s stormwater fee.¹⁵²

“Street.” Including but not limited to the following:¹⁵³

- (1) Road.
- (2) Avenue.
- (3) Boulevard.
- (4) Highway.
- (5) Freeway.
- (6) Parkway.
- (7) Lane.
- (8) Alley.
- (9) Any other ways used or intended to be used by vehicular traffic or pedestrians whether public or private.

“Street trees.” A tree along a public street, highway, or tree lawn. Including but are not limited to:¹⁵⁴

¹⁵² Susquehanna Twp. Authority, Resolution No. 2020-06 (2020).

¹⁵³ *Id.*

¹⁵⁴ PA DCNR, Landscaping with Natives.

American hornbeam	Carpinus caroliniana
American sweetgum	Liquidambar styraciflua
Black gum	Nyssa sylvatica
Eastern redbud	Ginkgo biloba
Katsura	Cercidiphyllum japonicum
Littleleaf Linden	Tilia cordata
Northern red oak	Quercus rubra
Red maple	Acer rubrum
Sawtooth oak	Quercus acutissima

“Susquehanna Township Authority.” An independent agency outside of direct township control. The Susquehanna Township Authority is a municipality authority incorporated under the Municipality Authorities Act of 1945, approved May 2, 1945, P.L. 382, as amended, pursuant to appropriate legal action of the Township of Susquehanna, Dauphin County, Pennsylvania.¹⁵⁵

“Township.” The Township of Susquehanna, Dauphin County, Pennsylvania, Board of Commissioners, its agent, or authorized representatives.¹⁵⁶

¹⁵⁵ Susquehanna Twp. Authority, [Susquehanna Township Authority | Susquehanna PA \(susquehannatwp.com\)](http://SusquehannaTownshipAuthority.com)

¹⁵⁶ Susquehanna Twp., Pa., Code § 27-301 (2007).

“Turf.” Narrow-leaved grass species that form a uniform, long-lived groundcover that can tolerate traffic and low mowing heights of two inches or lower.¹⁵⁷

Chapter 3

Residential Landscaping for Existing Sites.

Section 301. Use of Meadows.¹⁵⁸

(a) General rule. – A landowner may use a meadow instead of groundcover or turf in any landscaped area. A meadow must meet the following:¹⁵⁹

- (1) The meadow shall consist of native meadow plants.
- (2) The meadow shall not contain any invasive species or noxious weeds.

(b) Meadow requirements.¹⁶⁰ –

- (1) A minimum of two (2) grass species and four (4) flowering perennial species.
- (2) A minimum of four (4') feet wide mown turf along any road or property line.

¹⁵⁷ PennState Extensions, *The Cool-Season Turfgrasses: Basic Structures, Growth and Development* (2016), <https://extension.psu.edu/the-cool-season-turfgrasses-basic-structures-growth-and-development#:~:text=Turfgrasses%20are%20narrow%2Dleaved%20grass,as%20the%20cool%2Dseason%20turfgrasses.>

¹⁵⁸ York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 003 (2014).

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

- (3) A minimum of four feet (4') height visual barrier that may be used in place of the turf between the meadow and property line.
- (4) The mature height of the meadow must meet all requirements for plant-material and must not exceed four-and-a-half (4.5) feet to prevent obstructing the view of road intersections or clear site triangle.
- (5) A meadow shall not be mown more than twice a year as follows:
 - (i) once in March or April to cut stems that were left standing through the winter; and
 - (ii) once more throughout the year, if needed, to control invasive species.

Section 302. Native Lawn Alternatives.

- (a) A landowner may plant any native lawn alternative instead of turf.
- (b) A landowner must receive approval from the Planning Commission for use of a non-native lawn alternative.
- (c) The Planning Commission may grant approval if the following are met:¹⁶¹
 - (1) A landowner submitted a complete application.

¹⁶¹ Township request.

- (2) The Planning Commission reviewed the application.
- (3) The invasive species does not pose a threat to the biodiversity of the township.
- (4) A stamped report was submitted.
- (5) The Planning Commission considers the stamped report in subsection (4).

Section 303. Removal of Invasive Species on an Existing Site.¹⁶²

- (a) A landowner may preserve existing native plant-material that meets the requirements set forth in this ordinance.
- (b) A landowner shall remove and destroy a percentage of the invasive species or noxious weeds on the lawn, as set forth by the township, to maintain the health of the existing vegetative area to qualify for stormwater credits.
 - (1) When removing invasive species, a landowner will prepare a vegetation study. The landowner must submit a stamped report and the vegetative study to the Planning Commission. The vegetative study shall include the following about the plant to be removed:
 - (i) The quantity.
 - (ii) The size.
 - (iii) The species.
 - (iv) The location.

¹⁶² Lower Makefield Twp., Pa., Ordinance No. 368, §178-83 (2007).

- (2) The Planning Commission will approve the study and report.
- (c) In areas of necessary disturbance, existing native species may be relocated for use in other areas. The landowner shall include:
 - (1) The procedure for removal.
 - (2) The area of relocation.
 - (3) The material needed for relocation.
- (d) If a landowner removes any existing plant-material, the plant-material must be replaced with a native species within a reasonable time.

Section 304. Buffer.¹⁶³

- (a) General Rule. – A landowner may install a vegetative buffer to reduce stormwater runoff.
- (b) No proposed parking area or any other type of physical land improvement shall be in a buffer. A pathway, driveway, or road may cross a buffer if necessary to provide access to the building site. The landowner shall do the following:
 - (1) Protect all landscaping, trees, and plant-materials adjacent to a parking area, driveway, pathway, or road with curbs or other means from damage by vehicles.

¹⁶³ York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 010 (2014).

(2) Plant a tree a minimum of three (3) linear feet from any curb.

(3) Select and distribute native plant-material with seasonal diversity throughout the buffer.

Section 305. Use of Existing Plant-Material in a Buffer.¹⁶⁴

(a) General Rule. – A landowner may use existing plant-material, located within a proposed buffer, to count toward a stormwater credit under the Authority Resolution 2020-06.¹⁶⁵

(b) All changes the landowner makes to the existing plant-material in a buffer must be approved by the Planning Commission.

(1) Any existing plant-material that is native shall count toward the buffer requirements.

(2) A landowner must plant at least more than one type of the following in a buffer:

- (i) Street tree.
- (ii) Ornamental tree.
- (iii) Deciduous tree.
- (iv) Evergreen shrub.

¹⁶⁴ *Id.*

¹⁶⁵ Susquehanna Twp. Authority, Resolution No. 2020-06.

- (c) A landowner must submit a landscaping plan to use existing plant-material in a buffer. The landscaping plan must be approved by the Planning Commission. The following is required to be included:
- (1) The species name of the plant-material that is being removed.
 - (2) The species name of the new plant-material.
 - (3) The location of the new plant-material in comparison to the removed plant-material.
 - (4) A stamped report.
- (d) No plant-material within a buffer will be permitted where the plant-material may inhibit sight, conflict with the safety of pedestrians, or create potential maintenance problems.

Section 306. Landscaping Plan Permit Approval.

General Rule. – A landowner may submit a landscaping plan alone or along with the land development plan or permit application as required under §22-401 of the SALDO.¹⁶⁶ The landscaping plan shall show the following:¹⁶⁷

- (1) A graphic depiction of the location of all landscaping uses.

¹⁶⁶ Susquehanna Twp., Pa., Code §22-1001 (2006).

¹⁶⁷ York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 004 (2014).

- (2) A graphic depiction of the distribution, mature height, and spread of all plant-materials.
 - (3) A table including the proposed number of species planted for each landscaping use.
 - (4) A table including the scientific and common name of each plant-material.
 - (5) The specific size and type of man-made material to be used.
- (b) Failure to submit a plan required under subsection (a) will result in denial of permit and a fee of one hundred dollars (\$100.00)¹⁶⁸ and paid according to §22-1602 of the SALDO.¹⁶⁹

Section 307. Landscaping Maintenance.¹⁷⁰

- (a) General Rule. – A landowner shall be responsible for the maintenance, repair and replacement of all landscaping material to maintain conformance with the landscaping requirements set forth in this ordinance.
- (b) A buffer shall be kept free of litter and trash.
- (c) A landowner must replace any dead plant-material.
 - (1) A landowner shall replace the dead plant during the first spring or fall planting season following the death.

¹⁶⁸ Susquehanna Twp., Pa., Draft Susquehanna Twp. Subdivision and Land Development Ordinance §22-205 (2022).

¹⁶⁹ Susquehanna Township, Pa., Code §22-1602 (2006).

¹⁷⁰ York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 014 (2014).

- (2) A landowner shall plant a replacement that is the same species of plant-material as shown on the landscaping plan.
- (d) A landowner's responsibility includes, but is not limited to, watering, mowing, weeding, fertilizing and other landscaping maintenance techniques necessary to ensure the health and long-term survival of the plant-material.
- (e) Landscaping Standards. – A landowner must comply and conform to the following landscaping standards¹⁷¹:
- (1) A Street tree is a minimum of two (2) inch caliper.
 - (2) An Evergreen tree is a minimum of six (6) feet in height.
 - (3) An Ornamental tree is a minimum of two (2) inch caliper or eight (8) feet in height.
 - (4) A Deciduous shrub is a minimum of eighteen (18) inch in height.
 - (5) An Evergreen shrub is a minimum of twenty-four (24) inch in height.

¹⁷¹ Susquehanna Twp., Pa., Code §22-1009 (2006).

Chapter 4.

Landscaping for New Construction.¹⁷²

Section 401. Requirements.

- (a) A landowner of a new construction site is required to comply with the following:
- (1) Plant at least fifty percent (50%) native species on the site.
 - (2) Seed the lawn using at least a fifty percent (50%) mix of turf and native lawn alternatives.
 - (3) Comply with the street tree standards set forth in Chapter 5 of this ordinance.
 - (4) Install a buffer in accordance with §304.
- (b) If the new construction is an addition to an existing building or site, then a landowner will proportionately apply the requirements set forth in Chapter 3 based on the percentage of square footage being added to the existing structure and the percentage of the lawn.
- (c) If a landowner is not in compliance with this section, then the landowner is subject to penalties set forth in §§702-703.

¹⁷² Township request.

Chapter 5.

Street Trees.

Section 501. General requirements.¹⁷³

- (a) General Rule. – Within any land development or subdivision under §22-301 of the SALDO,¹⁷⁴ a landowner shall plant a street tree along both sides of all streets, where applicable.
- (b) The following requirements must be followed:¹⁷⁵
- (1) The minimum street tree size shall have a three (3) inch caliper.
 - (2) An average of one (1) street tree shall be installed for at least every twenty (20) linear feet of a curb line.
- (c) Setback Requirements.¹⁷⁶ – A landowner shall plant trees to have appropriate setbacks.
- (d) A street tree setback shall be at least six (6) linear feet from a curb, but no more than ten (10) linear feet

¹⁷³ Lower Makefield Twp., Pa., Ordinance No. 368, §178-81 (2007).

¹⁷⁴ Susquehanna Twp., Pa., Code §22-301 (2007).

¹⁷⁵ Twp. of Lower Makefield, Pa., Ordinance No. 368, §178-83 (2007).

¹⁷⁶ *Id.* at § 008.

beyond the street right-of-way line. The following applies to appropriate setbacks:¹⁷⁷

- (1) A street tree shall not be planted within ten (10) linear feet of any storm drain inlet.
- (2) A street trees shall be planted at least thirty (30) linear feet on center for each side of the street.
- (3) If sidewalks are not required, a street tree shall be planted at least six (6) linear feet from the back of the curb or edge of proposed or existing road.
- (4) At an intersection, a street tree may be located no closer than thirty (30) linear feet from the intersection of the street right-of-way lines.

Section 502. Street Trees Standards.¹⁷⁸

- (a) A landowner is responsible for planting, maintaining, and removing street trees.
- (b) General Standards. – A landowner must comply with the street tree standards as follows:
 - (1) A minimum clearance height of seven (7') feet above grade before branching begins.¹⁷⁹
 - (2) The minimum trunk diameter shall be three (3) inches.

¹⁷⁷ York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 014.

¹⁷⁸ Twp. of Lower Makefield, Pa., Ordinance No. 368, §178-81 (2007).

¹⁷⁹ *Id.*

(c) Root ball standard.¹⁸⁰ – A tree to be installed shall be balled and burlapped. The following shall apply:

- (1) The ball depth shall not be less than 60% of the ball diameter.
- (2) Bare root trees are not permitted.

(d) When planting near a utility line, the following shall apply:

- (1) A tree shall be planted outside any underground utility line easements.
- (2) A tree planted under overhead utility lines shall not substantially grow through the utility lines.
- (3) Where the planting results in an inappropriate or impractical design due to underground utilities, overhead wires or other factors, the following substitutions may be made:¹⁸¹
 - (i) Two (2) trees with two (2) inches caliper may be substituted for one (1) canopy tree.
 - (ii) Two (2) evergreen trees may be substituted for one (1) street tree.
 - (iii) One (1) evergreen tree may be substituted for five (5) shrubs.

¹⁸⁰ *Id.*

¹⁸¹ Susquehanna Twp., Pa., Code §22-1009 (2006); *See also* Susquehanna Twp., Pa., Draft Susquehanna Twp. Subdivision and Land Development Ordinance §22-331 (2022).

Section 503. Street Trees Planting Procedures.¹⁸²

- (a) A landowner is responsible for street tree planting and maintenance.
- (b) A landowner shall not use staking or guying of the tree except for the following:
 - (1) Where the tree falls over after the stake is removed.
 - (2) In high wind areas.
- (c) If required, staking or guying shall follow best current practices as approved by the Shade Tree Commission.
 - (1) A tree wrap shall be tied on with natural twine.
 - (2) The stake or guying materials shall be removed after one year after planting.
- (d) After planting, the landowner must install tree guards following best practices.
- (e) Other native species not listed may be used with prior approval of the Shade Tree Commission.

¹⁸² York Cnty., Pa., York Cnty. Sustainable Landscaping Model Ordinance § 008 (2014).

Chapter 6.

Administrative Provisions.

Section 701. Right of Entry

- (a) Upon presentation of proper credentials, the Township may enter, at a reasonable time, upon any property within the municipality to inspect the condition of the landscape regarding any aspect regulated by this Ordinance.¹⁸³

Section 702. Violations, Penalties, and Remedies.¹⁸⁴

- (a) Any landowner who violated the provisions of this Ordinance upon being found liable thereof in a civil enforcement proceeding commenced by the Township, shall pay a judgment of not less than one hundred dollars (\$100.00) but no more than five hundred dollars (\$500.00) plus court costs, including reasonable attorney fees incurred by the Township as a result thereof.
- (b) If the defendant neither pays nor timely appeals the judgment, the Township may enforce the judgment pursuant to the applicable rules of civil procedure.

¹⁸³ *Id.* at § 015.

¹⁸⁴ Susquehanna Twp., Pa., Draft Susquehanna Township Subdivision and Land Development Ordinance §22-108 (2022).

- (c) All judgments, costs, and reasonable attorney fees collected for the violation of this Subdivision and Land Development Chapter shall be paid over to the Township.
- (d) Nothing contained in this Ordinance shall be construed or interpreted to grant any person or entity other than the Township the right to commence any action for enforcement of this Ordinance.
- (e) Each day that a violation continues shall constitute a separate violation, unless the District Justice determines that the violation was in good faith.

Section 703. Preventative Remedies.¹⁸⁵

- (a) The Township may institute and maintain appropriate actions by law or in equity to restrain, to correct or abate violations of this Ordinance to recover damages.
- (b) The Township may refuse to issue any permit or grant any approval necessary that has resulted from a subdivision in violation of this Ordinance.
- (c) The Township may require compliance with the conditions that would have been applicable to the property at which time the Applicant acquired it.

¹⁸⁵ *Id.*

Section 704. Appeals.¹⁸⁶

- (a) The Board of Commissioners may grant a modification or wavier of the requirements of one or more provisions of this Ordinance, if the literal enforcement of them would exact undue hardship because of peculiar conditions pertaining to the land in question, provided that such modification(s) will not be contrary to the public interest and that the purpose and intent of this ordinance is observed.
- (b) All requests for modifications shall be provided in writing and be part of the application for subdivision and land development. In the request for a modification, the Applicant shall include all the following:
- (1) State the grounds and facts of unreasonableness or hardship on which the request is based or demonstrate that an alternative standard can provide equal or better results.
 - (2) List the provision(s) of this Chapter involved.
 - (3) State the minimum modification necessary.
- (c) The request for modification shall be referred to the Planning Commission for advisory comments.

¹⁸⁶ *Id.*

Section 705. Incentives.¹⁸⁷

- (a) If the landowner submits an application and receives approval from Susquehanna Township Authority, then the landowners shall receive stormwater credits pursuant under Susquehanna Township Authority Resolution 2020-06.

Chapter 8.

Severability, amendment, repeals, and effective date.

Section 801. Severability.

- (a) Should a court of competent Jurisdiction declare any Part, subsection, or provision of this Chapter invalid or unconstitutional, this decision shall not affect the validity or constitutionality of this Chapter as a whole, or any part thereof, other than the part so declared to be invalid or unconstitutional.¹⁸⁸

Section 802. Amendment Procedure.¹⁸⁹

- (a) The Township Board of Commissioners may amend, supplement, modify, or repeal this ordinance by proceeding in accordance with the Municipal Planning Code.

¹⁸⁷ Susquehanna Twp. Authority, Resolution No. 2020-06 (2020).

¹⁸⁸ Susquehanna Twp., Pa., Draft Susquehanna Twp.Subdivision and Land Development Ordinance §22-107 (2022).

¹⁸⁹ *Id.* at §22-113.

(b) The township is required to provide notice according to §22-113 of the 2022 SALDO Draft [if enacted.]¹⁹⁰

Section 803. Repeals.

(a) No other sections of the ordinances of the Township shall be repealed. All parts of the ordinance of the Township are to be read together. To the extent that there are inconsistencies that cannot be read together, this ordinance shall be construed as to supersede other ordinances for purposes relevant to the provisions and purpose of this ordinance.

Section 804. Effective Date.

(a) This Ordinance shall take effect in 60 days.

¹⁹⁰ *Id.* at §22-113.