



3. December 10, Planning Commission Meeting Agenda – At its December 10 meeting the Planning Commission may review existing township ordinances and subdivision applications LD 20-04 & LD 20-05

Andrew Raquet, Asst. Zoning Officer, provided an overview of the agenda for the December 10 planning commission meeting.

#### **PUBLIC COMMENT**

- There was no public comment.

#### **ADJOURNMENT**

There being no further business before the Planning Commission, Chair Sherr adjourned the meeting at 8:15 PM.

Respectfully Submitted:

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Andrew R. Raquet  
Codes Director







4259 W. Swamp Road  
Suite 410  
Doylestown, PA 18902

www.cksengineers.com  
215.340.0600

November 11, 2020  
Ref: # 7544

Township of Worcester  
PO Box 767  
171 Valley Forge Road  
Worcester, PA 19490-0767

Attention: Tommy Ryan, Township Manager

Reference: 3425 Stump Hall Road – Minor Subdivision

Dear Mr. Ryan:

I am in receipt of the Township's Memorandum dated November 3, 2020 requesting my review of the minor subdivision plans submitted for the existing property at 3425 Stump Hall Road. The plans consist of two (2) sheets, were prepared by Woodrow & Associates, Inc., and are dated October 30, 2020 with no revisions. The plans propose a subdivision of an existing 8.13 acre parcel into two (2) lots. Proposed Lot 1 is for a new house to be constructed at a later date, and proposed Lot 2 contains an existing house and associated facilities including a garage, swimming pool, and gazebo. In addition, an existing parcel containing 1.11 acres will be joined to proposed Lot 2. This will be accomplished by removing the existing lot line between the existing two (2) parcels. The owners of both parcels are Augustus J. and Carmella Mandracchia, who reside on the existing property.

This minor subdivision is being proposed to create a new building lot. The plans indicate that **"Plan is prepared to parcel subdivision only. No construction is proposed with this application. Improvement shown for Lot 1 are only to illustrate potential compliance with Township Ordinance. A full lot design will be required for submission prior to any construction activities."** Based on the above, I have reviewed this plan set to determine conformance and compliance with the Code of Worcester Township. Based on my review, I offer the following comments:

1. Sheet No. 1 shows the proposed subdivision of the existing Block 10 Unit 18 Parcel into two (2) separate lots. After subdivision, the "existing lot" is identified as "Existing Unit 18". This lot should be renumbered as "Proposed Lot 02". In addition, in the zoning schedule on Sheet 1, the applicant's engineer also uses the "Existing Unit 18". This should also be changed to "New Lot 02".
2. Sheet 2 includes the existing features plan. The plan shown on Lot 1 should also incorporate the existing features including topography and existing vegetation on the property. Also, the soils classification should also be shown on Sheet 1.
3. The proposed finish floor elevation of the house footprint of Proposed Lot 1 should be shown on Sheet 1.

4. The propose grade of the driveway serving lot one should be added to the plan. In addition, the applicant's engineer should be aware that Stump Hall Road is a state road (SR 3001), and a driveway permit will be required from PennDOT for construction of this driveway.
5. Sheet 1 includes General Plan notes. Note 15, 16, and 17 specifically refer to stormwater systems and facilities that are shown on the plans. There are no stormwater facilities proposed in conjunction with this minor subdivision, and therefore these notes do not apply based on the subdivision currently proposed. It should be noted however, that any future construction on Lot 1 will require stormwater management and potential stormwater facilities to comply with Township stormwater management ordinances.
6. Note 14 on Sheet 1, references construction material and procedures and indicate that the applicant shall follow the Pennsylvania Department of Transportation specifications and standard drawings. This note should also include Worcester township's specifications and procedures.
7. Sheet 1 includes a Plan Sheet Index, which references 3 sheets. Since only two (2) sheets are included in the plan set, the index should be revised accordingly.
8. Proposed Lot 1 is a corner lot. Section 130-20A(4) indicates that corner lot frontages shall be 1.5 times the required width of interior lots in the zoning district in which it is located. Since the minimum width of an interior lot would be 175 feet, the required frontage along Green Hill road would need to be at least 262.5 feet. Only 225 feet are provided. The applicant must revise the plan to conform or request a waiver from Section 130-20A(4).
9. Sheet 1 includes a list of waivers which are being requested by the Applicant. These waivers are as follows:

**SECTION**

- |    |                   |   |
|----|-------------------|---|
| a. | 130-16            | Requires road frontage improvements.  |
| b. | 130-18.A          | Requires sidewalks along all streets.   |
| c. | 130-18.B          | Requires curbs to be installed along each side of every residential, secondary commercial street or road. |
| d. | 130-26.B(2)(c)    | Requires on-lot sewage disposal areas to be outside of the required front yard or rear yard.              |
| e. | 130-28(Inclusive) | Requires all landscaping requirements, or a fee in lieu of amount to be determined by the Township.       |
| f. | 130-33.C(1)       | Requires providing existing features within 400' of any part of the land being subdivided.                |
| g. | 130-33.G          | Requires a natural resource protection plan.  |

The Township should review these waiver requests and make a determination if they are to be granted as part of consideration of this subdivision. In looking at the request regarding the on-lot sewage disposal areas, I believe the request should be expanded to

November 11, 2020

Ref: # 7544

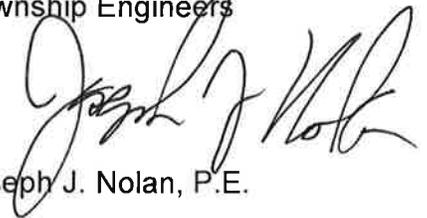
Page 3

include those areas shown on both Lots 1 and Lot 2. This would prevent the need to secure a waiver if the area on lot 2 was utilized in the future. The request regarding Landscaping needs to be considered as well. The applicant's engineer should prepare a preliminary landscaping plan identifying the required landscaping for this project. The Township may then make an informed decision regarding the potential amount of a fee, in lieu of, or if they will require the landscaping to be installed in conjunction with this project. Since the landscaping will primarily impact proposed Lot 1, it may make sense to consider deferring landscaping for this lot until that lot is developed, but collecting the fee for the landscaping now, or preparing an escrow agreement to cover the landscaping cost.

10. The plans show concrete monuments to be set and iron pins to be set as part of the subdivision. These monuments and pins should be either set prior to recording of the subdivision, or an escrow be set up to provide for the installation of the pins and monuments at a later date.

The above represents all comments on this initial subdivision submission. The applicant's engineer should revise the plans accordingly and address all other outstanding comments to the satisfaction of the Township and resubmit for further review. Please contact me if you have any questions or need any additional assistance on this project.

Very truly yours,  
CKS ENGINEERS, INC.  
Township Engineers



Joseph J. Nolan, P.E.

JJN/paf

cc: Robert L. Brant, Esq., Township Solicitor  
Tim Woodrow, P.E., Woodrow & Associates  
Augustus J. and Carmella Mandracchia  
File

November 23, 2020

Mr. Tommy Ryan  
Township Manager  
Worcester Township  
1721 Valley Forge Road  
P.O. Box 767  
Worcester, PA 19490

RE: **Traffic Review #1 – Residential Subdivision Plans**  
3425 Stump Hall Road (LD 2020-05)  
Worcester Township, Montgomery County, PA  
McMahon Project No. 820899.11

Dear Tommy:

In response to the Township's request, McMahon Associates, Inc. (McMahon) has completed our initial traffic engineering review of the proposed subdivision, to be located at 3425 Stump Hall Road (S.R. 3001) in Worcester Township, Montgomery County, PA. It is our understanding that the proposed subdivision involves subdividing Parcel 67-00-03523-001 into two lots (Lots 1 and Existing Unit 18). The existing single-family home will remain on Existing Unit 18 while there is no development currently proposed on Lot 1; however, a single-family home is currently shown on the plans on Lot 1 to illustrate compliance with Township ordinance requirements. Access to Existing Unit 18 is proposed to continue to be provided via the existing driveway to Stump Hall Road (S.R. 3001), while future access to Lot 1 will be provided via driveway connection to Stump Hall Road (S.R. 3001).

The following document was reviewed and/or referenced in preparation of our traffic review:

- **Subdivision Plans for 3425 Stump Hall Road**, prepared by Woodrow & Associates, Inc., dated October 30, 2020.

Based on our review of the submitted document noted above, McMahon offers the following comments for consideration by the Township and action by the applicant:

1. Adequate sight distance measurements must be provided on the plans for the proposed driveway to Lot 1, as well as the existing driveway to Existing Unit 18 as required by **Section 130-16.E(5)** of the **Subdivision and Land Development Ordinance**, and to satisfy PennDOT highway occupancy permits. Specifically, vehicular egress sight distances looking in both directions must be provided, as well as for the ingressing left-turn vehicle sight distance to the front and rear, and achievable sight distances must be sufficient for the speed and conditions to allow full movements and the driveway locations as exist/proposed on the plans. Vegetation and physical restrictions along the property frontage and within the line of sight and within the legal right of way should be cleared to allow for at least the minimum safe stopping distances to be achieved at 10 feet back from the white edge line of the road.

2. The applicant is requesting a waiver from **Section 130-16.C(1)** of the **Subdivision and Land Development Ordinance**, requiring Stump Hall Road (S.R. 3001) to have a minimum cartway width of 40 feet along the site frontage. The plans currently show an approximate 21-foot cartway width along the site frontage of Stump Hall Road (S.R. 3001), thereby not satisfying the ordinance requirement. Since the approximate 21-foot cartway width along the site frontage is consistent with the cartway width along most of Stump Hall Road (S.R. 3001) in the vicinity of the site, we are not opposed to the granting of this waiver.
3. According to **Section 130-18.A** of the **Subdivision and Land Development Ordinance**, sidewalk should be provided along the site frontage of Stump Hall Road (S.R. 3001). The plans do not show any sidewalk along the site frontage of Stump Hall Road (S.R. 3001), thereby not satisfying the ordinance requirement. Due to this being a minor subdivision, and since there is currently no sidewalk along either side of Stump Hall Road (S.R. 3001) in the vicinity of the site, we recommend to the Board of Supervisors to consider deferring this obligation that is required of the applicant until such a time as may be required by the Township for these subdivided properties, whether under present or future land ownership, and at no cost to Worcester Township.
4. According to **Section 130-18.B** of the **Subdivision and Land Development Ordinance**, curbing should be provided along the site frontage of Stump Hall Road (S.R. 3001). The plans do not show any curbing along the site frontage of Stump Hall Road (S.R. 3001), thereby not satisfying the ordinance requirement. Due to this being a minor subdivision, and since there is currently no curbing along either side of Stump Hall Road (S.R. 3001) in the vicinity of the site, we recommend to the Board of Supervisors to consider deferring this obligation that is required of the applicant until such a time as may be required by the Township for these subdivided properties, whether under present or future land ownership, and at no cost to Worcester Township.
5. Additional details for the proposed driveway must be added to the plans. The driveways must be in accordance with **Section 130-17.B (3)** of the **Subdivision and Land Development Ordinance** with respect to grades, widths, and radii at the intersection with Stump Hall Road (S.R. 3001), as well as satisfy PennDOT minimum use driveway requirements for permitting.
6. The plans must be signed and sealed by a Professional Engineer and Surveyor licensed to practice in the Commonwealth of Pennsylvania.
7. Since Stump Hall Road (S.R. 3001) is a State Roadway, a minimum use driveway, Highway Occupancy Permit will be required for the new access and well as any modifications/improvements within the legal right-of-way along Stump Hall Road (S.R. 3001). The existing Unit 18 driveway should provide proof of its driveway permit to the state road, or application should also be made for that property for a minimum use driveway permit. The Township and our office must also be copied on all plan submissions and correspondence between the applicant and PennDOT, and invited to any and all meetings among any of these parties.
8. According to the Township's Roadway Sufficiency Analysis, the proposed development is located in Transportation Service Area South, which has a corresponding impact fee of \$3,125 per "new" weekday afternoon peak hour trip and the applicant will be required to pay a Transportation Impact Fee in accordance with the Township's Transportation Impact Fee Ordinance. Based on Land Use Code 210

(Single-Family Detached Housing) in the Institute of Transportation Engineers publication, *Trip Generation, 10<sup>th</sup> Edition*, a single-family home on Lot 1 would generate one “new” trip during the weekday afternoon peak hour resulting in a **transportation impact fee of \$3,125**. Should the Board of Supervisors consider this use and its peak hour trip generation to be a de minimus traffic-generating application, the transportation impact fee may be waived. To qualify for the exemption, the applicant must place a waiver request on their final plan and submit information to support the request for review and approval by the Board.

9. A more detailed review of the site and all transportation-related engineering elements on the plan can be conducted, as the Township deems necessary, if/when development is proposed on either Lot 1 or Existing Unit 18. Additional comments could be raised at that point.
10. Based on our review, the applicant should address the aforementioned comments, and provide revised plans to the Township and our office for further review and approval recommendations. **The applicant's engineer must provide a response letter that describes how each specific review comment has been addressed, where each can be found in the plan set or materials, as opposed to general responses.** This will aid in the detailed review and subsequent review timeframes.

We trust that this review letter responds to your request. If you or the Township have any questions, or require clarification, please contact me.

Sincerely,



Casey A. Moore, P.E  
Executive Vice President – Corporate Operations

BMJ/MEE/CAM

cc: Andrew R. Raquet, Codes Director & Asst. Zoning Officer  
Joseph Nolan, P.E., CKS Engineers (Township Engineer)  
Robert Brant, Esq. (Township Solicitor)  
Tim Woodrow, P.E., Woodrow & Associates, Inc. (Applicant's Engineer)

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SCOTT FRANCE, AICP  
EXECUTIVE DIRECTOR

December 7, 2020

Mr. Tommy Ryan, Manager  
Worcester Township  
1721 Valley Forge Road—Box 767  
Worcester, Pennsylvania 19490

Re: MCPC #20-0237-001  
Plan Name: 3425 Stump Hall Road  
(2 lots comprising approx. 9.23 acres)  
Situates: Stump Hall Road and Green Hill Road  
Worcester Township

Dear Mr. Ryan:

We have reviewed the above-referenced subdivision plan in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested on December 1, 2020. We forward this letter as a report of our review.

## BACKGROUND

The Applicants, Augustus and Carmella Mandracchia, are proposing to consolidate two lots into one lot, while simultaneously subdividing off a single building lot at the corner of Stump Hall and Green Hill Roads in the R-175 Residential Zoning District. A long, slender existing lot with no improvements will be consolidated into the larger residential lot owned by the Applicants. The new lot will take access from Stump Hall Road. A building and driveway footprint are noted on the plans, but otherwise no improvements to this new lot are included with this proposal. All existing improvements of the remaining single-family lot will likewise remain. It appears that the development will be served by private water and sewage facilities.

## RECOMMENDATION

The Montgomery County Planning Commission (MCPC) generally supports the Applicant's proposal; however, in the course of our review we have identified an issue which the Township may wish to consider prior to final approval. Our comments are as follows:



## REVIEW COMMENTS

### ENVIRONMENTAL PLANNING

Sewage System. No percolation test results were included with this submission. The Township Engineer and the County Sewer Enforcement Officer should confirm that this site is suitable for an on-lot system, so that the lot being created has adequate sewage facilities.

## CONCLUSION

We wish to reiterate that MCPC generally supports the Applicant's proposal, but we believe that our suggested revisions will better achieve the Township's planning objectives for residential development.

Please note that the review comments and recommendations contained in this report are advisory to the municipality and final disposition for the approval of any proposal will be made by the municipality.

Should the governing body approve a final plat of this proposal, the Applicant must present the plan to our office for seal and signature prior to recording with the Recorder of Deeds office. A paper copy bearing the municipal seal and signature of approval must be supplied for our files.

Sincerely,



Brian J. Olszak, Senior Planner  
[bolszak@montcopa.org](mailto:bolszak@montcopa.org) - 610-278-3737

c: Augustus and Carmella Mandracchia, Applicant  
Woodrow and Associates, LLC, Applicant's Representative  
Andrew R. Raquet, Asst. Township Zoning Officer

Attachments: 1. Reduced copy of plan  
2. Aerial Map



Attachment 2: Aerial Map



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SCOTT FRANCE, AICP  
EXECUTIVE DIRECTOR

**SUBJECT:** Review of Worcester “Green” Conservation Ordinances

**TO:** Worcester Township Planning Commission

**CC:** Tommy Ryan, Township Manager  
Stacey Crandall, Asst. Township Manager  
Andrew R. Raquet, Asst. Zoning Officer; Codes Clerk

**FROM:** Brian J. Olszak, Senior Planner, MCPC

**DATE:** December 3, 2020

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## **INTRODUCTION**

At the direction of the Township Planning Commission, I have performed an analysis of Worcester’s Zoning Ordinance and Subdivision and Land Development Ordinance (SALDO) regarding “green” ordinance provisions related to natural resource protection and landscaping. As directed, I’ve analyzed these various ordinances with an eye to comparing Worcester’s standards with prevailing ordinance trends in the county and region, as well as identifying opportunities to strengthen existing protection standards. The topics I’ve reviewed included the following:

- Floodplains
- Steep slopes
- Riparian corridors
- Recommended plant species
- Street trees
- Buffers between zoning districts
- Parking lot landscaping
- Other miscellaneous conservation sections

Under each topic area, I give a brief overview of the existing regulatory framework and indicate notable code sections which the Township might consider revising.

## **FLOODPLAIN CONSERVATION**

The Township regulates floodplain protections in the Floodplain Conservation Overlay. Almost all Montgomery County municipalities were required to update their floodplain ordinances once FEMA finalized the new floodplain maps, which went into effect in 2016. The state Department of Community and Economic Development created a model ordinance, modified by MCPC, for municipalities to use to ensure compliance with federal FEMA regulations. The Township’s ordinance is based upon this

model and, because participation in the National Flood Insurance Program (NFIP) is conditioned upon having a compliant ordinance, we generally do not recommend changes which are too substantial in nature. That being said, municipalities were permitted to make changes which were more restrictive than the model suggested. Since most of the lots in floodplain in Worcester tend to be large lots, impacts to the floodplain have largely been avoided when developed out and, in that light, Worcester may not see any appreciable gain by making significant revisions to this section. In the interest of exhausting all possible options to strengthen the ordinance, I offer the following options for the Township's consideration:

- **§150-136.B.** The regulatory flood elevation, the minimum height above the base flood elevation which new structures must be constructed in the floodplain, is 1.5 feet, higher than the 1 foot that many municipalities have. Worcester may increase this height if desired, but I'll defer to the Township Engineer whether such a change is justified.
- **§150-138.D.2** Worcester, and many other communities, permit expansions and enlargements of existing structures in the floodplain (but not the *floodway*), which are conditioned upon specific criteria, one of which is that all cumulative improvements on the property must not "increase the one-hundred-year-flood elevation more than one foot at any point." While the FEMA model ordinance framework considers this modest rise acceptable, some communities in particularly flood-prone areas, such as Cheltenham Township, have stricken these clauses from the ordinance and have replaced them with the phrase "[must not] *increase the base flood elevation at any point.*" However, since Worcester has seen few, if any, applications for development within the restricted floodplain area, making this change may not be necessary.
- **§150-139.B.3** The same instance of permitting the modest increase in the base flood elevation also appears in the conditions for granting a variance. While the variance conditions of subsections **B.5**, **B.6** and **B.7** attempt to protect properties upstream and downstream from an unacceptable rise in the flood elevation on one particular variance application, there is still the possibility that permitting small, incremental changes from several properties may accumulate, which the current variance process cannot protect against. Again, since Worcester has seen few, if any, applications for development within the restricted floodplain area, making this change may not be necessary.

### **STEEP SLOPES CONSERVATION**

Regulation of steep slope disturbance is performed for two general reasons: to prevent the uncontrolled disturbance of slopes in a manner which will cause excessive erosion and unstable soils, and to protect the natural geology and ecology which steep slopes afford. Requiring any disturbance and regrading of steep slopes to be performed only through an engineered plan and the approval of the Township Engineer is considered customary across the region, which Worcester's Steep Slopes Conservation Overlay requires as well. Worcester defines steep slopes at 15% and above, with 25% and above considered especially steep, upon which most development is prohibited (**§150-146.4**). This is largely in line with how the many other county municipalities define steep slopes. A few revisions which the Township might consider include the following:

- Overall, the existing Steeps Slopes Conservation Overlay focuses largely on the avoidance of steep slopes during the land development process, particular in the "layout of developments."

However, disturbance of steep slopes can and does occur outside the land development process, such as when a single residential lot is under construction. One significant addition to address this issue could include a prohibition on vegetation removal in steep slope areas, with or without grading.

- Currently there is no limitation to how much regrading of slopes under 25% can occur on a property. While slopes below 25% may not be as environmentally sensitive as slopes greater than 25%, such slopes still provide ecological functions and potential erosion hazards worthy of protection. A potential revision in this regard could include an overall limitation on the disturbance of slopes between 15% and 25%: many municipalities limit disturbance of these types of slopes to 25% of all eligible slopes on the property by area.
- **§130-32.1.** There appears to be a discrepancy between what the Zoning and the SALDO consider steep slopes: the SALDO defines steep slopes as 10% and 18%, while the Zoning defined steep and very steep slopes as 15% and 25%. This discrepancy should be corrected.
- **§150-9.** Worcester ensures, through the “lot area calculation” standard required for all residential zoning districts, that the presence of steep slopes must be accounted for when determining the minimum lot size necessary for residential properties. This essentially requires a *greater* lot area to ensure there is usable lot area outside of steep slope areas and other sensitive land, which ultimately incentivizes their continued protection. However, it appears no such requirement is included for calculated *nonresidential* lot area. The Township may want to consider adding similar language to the creation of nonresidential lots as well, to ensure consistent conservation practices across the Township.

## **RIPARIAN CORRIDOR CONSERVATION**

Stream corridors, as well as lakes and ponds, all maintain unique aquatic-based habitats and plant communities. Not only do these resources provide habitat, but the land-based resources abutting these water bodies provide a number of ecological benefits, including the attenuation of stormwater, streambank conservation and erosion prevention, as well as the regulation of pollutants and oxygen levels in waterways. Worcester regulates activities on the land abutting these waterways, called riparian corridors, primarily through the Riparian Corridor Conservation Overlay District (RCCD) in the Zoning ordinance. This ordinance, along with those of many municipalities in the county, uses [MCPC's Model Riparian Corridor Conservation District ordinance](#).

Worcester's ordinance is, in fact, better than many other ordinances I have come across, namely because it includes a substantial section which is left out of the Model and other existing ordinances: corridor management and replenishment. However, there are certain sections of Worcester's ordinances on this topic which might be strengthened in the following ways:

- **§150-146.6.A.2.** The Township might desire to strengthen the measured width of the corridor to be included within the district. Many municipalities, as well as the Model ordinance, provide for a Zone 1 width of 25 feet and a Zone 2 width of 50 feet, adding up to a total width of 75 feet from bankfull flow. However, since the Model was written, guidance has evolved to recommend at least a 100-foot buffer from the streambank, which could be expressed as an additional 25 feet added to the Zone 2 width. However, increasing the total buffer from 75 feet

to 100 feet may prove more onerous for affected property owners, in that additional setbacks may reduce the amount of usable land on certain properties.

### **RECOMMENDED PLANT SPECIES LIST**

The list of recommend plant species contained within **§130-28.H** of the SALDO appears to be a good mix of native and adapted species, and otherwise appears more or less in line with the average municipality. However, there are some sections which could be improved, following current best practices, in the following ways:

- **Remove: Invasive Species.** I'd recommend the removal of the following species, which are known to be invasive in Pennsylvania and nearby states:
  - *Acer ginnala*
  - *Koelrueteria paniculata*
  - *Phellodendron amurense*
- **Remove: Pest or Disease-Prone Species.** I'd recommend the removal or clarification of the following species:
  - *Fraxinus americana* and *Fraxinus pennsylvanica var. lanceolata* (white and green ashes, respectively). The Township should remove these species due to the persistent threat of the emerald ash borer in the state.
  - *Elm species.* The Township should specify that any elms to be planted should be of a Dutch Elm Disease—resistant variety, such as *Ulmus americana 'New Harmony.'*
- **Add to Prohibited Species List.** In addition to those species already listed in **§130-28.H.6** which are prohibited, the Township may want to adopt by reference other lists established by governmental agencies, including any other plants listed in the official Federal and State Noxious Weed Laws, as well as those species listed in the Department of Conservation and Natural Resources' [Invasive Species List](#). This last list contains the most comprehensive list of any organization relevant to Pennsylvania, is more-frequently updated, and is based on DCNR's current management practices of state lands.
- **Add to Overall Recommended Plant List.** While the list of **§130-28.H** contains many good species, there is significant potential to include additional beneficial species, as well as to provide expanded guidance on recommended species for other plant categories mentioned in the SALDO but not referenced in the existing list, such as for drainage areas and detention basins. Additionally, recommended species for shrubs in **§130-28.H.4** is not currently included in the existing list. Attached to this memo is a comprehensive **List of Recommended Plants I** recently put together for another Montgomery County municipality, which was reviewed by several landscape architects and conservation professionals, which represents our most comprehensive guidance—the Township can adopt any part, or the entirety, of this list according to its preference. A particular strength of this list is that it also provides specific *cultivars*, or cultivated varieties, of tree species which have been cultivated for positive attributes, and which can make them suited for special environments, like a parking lot or a street tree.

## STREET TREES

Street trees provide a number of benefits to the community, including beautification, increasing the shading of paved areas like sidewalks and streets, and providing a visual buffer between the street and buildings. Street trees are required along shared driveways, streets, and sidewalks in the Township. It appears that much of this section, **§130-28.G.4**, may have been inspired by [MCPC's Model Subdivision and Land Development Ordinance](#), which has been used in multiple municipalities across the county. However, since its publishing in 2012, our guidance has evolved, which has been complemented by a renewed interest among municipalities in encouraging street tree plantings, and the Township may wish to consider these revisions:

- **§130-28.G.2.** The wording of this section is a bit confusing: “Plantings should be selected and located where they will not create or contribute to conditions hazardous to the public's safety. Such locations include but shall not be limited to public street rights-of-way; sidewalks; underground and above ground utilities; and sight triangle areas required for unobstructed view at street intersections, as discussed in **§ 130-16E(5)**”. The second sentence appears to suggest places where trees are *not* recommended, instead of recommended. The Township should consider rewriting this section to state something to the effect of: “Street trees shall not be located within **X** feet of street rights-of-way, sidewalks, underground and above ground utilities and sight triangles.” Five or ten feet are common distances used which may be reasonable to use here. That being said, there are trees which are appropriate for and adapted to confined spaces, such as near sidewalk or street pavement, and areas with overhead utility wires, which the Township may wish to insist a developer use in those circumstances, instead of having no landscaping at all in those areas. Such tree species and cultivars are included in the attached **List of Recommended Plants** referenced above.
- **§130-28.G.4.b.** The first sentence of this section appears to set one standard for the *number* of trees required, but then suggests a different *spacing* requirement for primary streets “where they may be up to 50 feet on center spacing.” It is not clear from a reading of this sentence whether the actual number of street trees required on primary streets is different, or if just the spacing is permitted to be flexible. The actual number of street trees required should be consistent and unambiguous, but the Township can continue to permit flexibility in the spacing of those trees. Using one tree for every 25 feet of street frontage is a common requirement. In addition, this section should explicitly clarify that the required street tree is calculated based on the frontage of both streets *and* “new sidewalks or passageways,” as is referenced in Subsection 4.a.
- **§130-28.G.4.c.** As it stands, there is a minimum five-foot setback required from rights-of-ways, but no *maximum*. Measuring a street tree setback from the ultimate right-of-way, which can often extend several yards from the edge of the street pavement into a property, can be tricky—if a street tree is too far away from the street, it arguably may no longer be a *street* tree, and the benefits of shading sidewalks and streets are lost. While there are legitimate concerns about street trees heaving sidewalks or complicating road widening projects, many of these concerns can be allayed by instead installing or requiring the appropriate tree species for the space (such appropriate tree species and cultivars are included in the attached **List of Recommended Plants** referenced above). Some municipalities instead use a

“distance from the curb or cartway edge” measurement and a *maximum* setback to achieve better results, which the Township could also consider doing.

### **BUFFERS BETWEEN DISTRICTS**

Requirements for landscape buffers are located within **§130-28.G.5** of the Township’s SALDO; however, most individual zoning districts in the Township also contain their own specific buffer requirement, which are generally limited to the specified width, or otherwise state that “a buffer is required.” The Township may wish to consider the following revisions:

- **Buffers throughout Zoning.** Buffer requirements for individual zoning districts vary widely, and can sometimes be under-prescriptive (e.g. the SC Shopping Center District does not specify a required width for the buffer) or over-prescriptive, leading to small conflicts with the buffer requirements of the SALDO. Since by law the regulations of both the SALDO and Zoning are meant to apply simultaneously, conflicts tend to be resolved, since the more restrictive regulation would tend to apply. In theory, the zoning district should stipulate the required widths of the buffer, and the SALDO should stipulate the method in which buffers across *all* zoning districts will be planted. While the provisions for buffers do vary slightly from district to district, the total impact of the Zoning and SALDO requirements—in particular the relative buffer widths and intensity of plantings required—do not radically differ from the average municipality in Montgomery County. In the future, the Township may wish to investigate the slight differences in application of buffering requirements to ensure that the same terms and conditions apply consistently throughout the zoning districts.
- **§130-28.G.5.b.1:** This section states that “Existing vegetation of appropriate species and quantities on the property can be considered in the fulfillment of these requirements.” The Township may want to consider conditioning a developer’s inclusion of existing vegetation into the required buffer plantings by requiring the removal of dead, dying, diseased and invasive trees in the existing tree masses.
- **§130-28.G.10:** This section stipulates several buffer requirements for the “RPD Rural Preservation District.” However, it appears that this district may no longer exist in the Zoning Ordinance, or may intend to apply to a newer district that may have superseded the RPD district. If this is no longer an active zoning district, then it should be repealed, applied to the successor zoning district, or applied to Conservation Subdivisions.
- **Buffering** of other site elements, such as refuse areas and other related elements appear satisfactory.

### **PARKING LOT LANDSCAPING**

Landscaping in a parking lot serves several uses, not the least of which is beatification. However, trees and other vegetation also reduce the “urban heat island effect” of large parking lots, break up large patches of impervious surface, and ultimately improve air quality. Worcester requires the provision of landscaping within parking lots in **§130-28.G.6** of the SALDO, which also appears to have been inspired by [MCPC’s Model Subdivision and Land Development Ordinance](#). The traditional way that landscaping is usually integrated within and around parking lots through land development regulations is either through an “*x* parking islands per *y* parking spaces” scheme or “*x* trees per *y* parking spaces” metric, which is how Worcester generally does it. It has been our experience at

MCPC and the experience of several municipalities, however, that this method of parking lot landscaping tends to not worked out as well as planned. What often results is the creation of several parking islands with little to no vegetation in them at all (which instead are primarily composed of shredded hardwood mulch), and what trees do survive after the initial guaranty period are otherwise stunted and in poor health due to poor soil conditions and constricted growing conditions. Upon review of the Township’s provisions for parking lot landscaping, the Township may want to consider the following revisions:

- Overall we highly recommend applying provisions from [MCPC’s Sustainable Green Parking Lots Guidebook](#), which has taken a comprehensive approach to updating our guidance on parking lot landscaping and design. One need only look at the parking lot landscaping of Peter Went Farmstead to see the impressive benefits of such landscaping, which can even be used for stormwater management purposes. In particular, we recommend adding enhanced interior landscaping standards. I’ve created the first full implementation of this guidance in Montgomery County into another community’s recently-adopted SALDO, which can be found here: <https://ecode360.com/36416171>
- **§130-28.G.6.a.** Perimeter buffers for parking are required along property lines, rights-of-way, as well as between buildings and parking lots. These planting schemes satisfactorily add beneficial landscaping to these areas. However, we’d recommend offering additional street-buffering options for more constrained sites, such as a reduced reliance on landscaping and greater allowance for ornamental fences and walls, as well as shrubs.
- **§130-28.G.6.c.** This section provides the fundamental planting requirement for parking lot interiors. However, several terms within this section could be further defined: for instance, it is not clear how “a minimum of 10% of the [parking] area shall be devoted to landscaping” is measured, whether it is by surface area of planting islands or by number of plants. Although there is “one tree per 15 parking spaces” required, offering “lawn” as a potential landscaping option tends to be rare among municipalities, and could be reconsidered. In the *Guidebook* referenced above, and my own implementation of it linked above, the landscaping required is benchmarked at increasing percentages depending upon the size of the parking lot, and uses a “canopy and ground coverage” measurement of vegetation to ensure high-quality, beneficial landscaping is provided with adequate growing conditions, which the Township may consider using as well.
- The selection of appropriate plantings for the challenging environment of parking lots could be further encouraged by the inclusion of the relevant plant species from the attached **List of Recommended Plants** indicated for adaptability to parking lots.

## **OTHER CONNSERVATION SECTIONS**

The Township stipulates, through the Conservation Subdivision standards within the SALDO, that certain natural resources be protected and included with the required open space of certain land developments (**§130-15.2**). The natural resources referenced in **§130-15.2** extend beyond the scope of the typical riparian, steep slope and floodplain areas for which Worcester already has established protections, and are generally not well defined. Some of these referenced natural resources include “groundwater recharge” areas, “hedgerows,” “groups of trees,” “swales,” and “springs,” among other resources. These and other resources are currently required to be incorporated into required

open spaces “to the fullest extent practicable,” according to the satisfaction of the Township. If desired, the Township could specify more clearly which of these and other resources should be protected and to what extent.

## Appendix A: List of Recommended Plants

**Note:** Any species or cultivar listed below may be used for another purpose other than the Category under which it is listed, provided it receives the recommendation of the Township.

### **Street Trees:**

#### **Shade or Canopy Trees Suitable Under or Near Power Lines**

Maximum height shall not exceed 25.' Trees shall be spaced at least 18' apart.

<i>Amelanchier arborea</i> 'Robin Hill'	'Robin Hill' Juneberry
<i>Amelanchier canadensis</i>	Serviceberry
<i>Carpinus caroliniana</i> 'Native Flame'	'Native Flame' American Hornbeam
<i>Cercis canadensis</i>	Eastern Redbud
<i>Cornus alternifolia</i>	Alternate-Leaf Dogwood
<i>Cornus florida</i>	Flowering Dogwood
<i>Magnolia virginiana</i>	Sweetbay Magnolia
<i>Prunus serrulata</i> "Shirotae"	Mt. Fuji Cherry
<i>Prunus subhirtella</i> "Autumnalis"	Autumn Flowering Cherry
<i>Syringa reticulata</i> "Ivory Silk"	Japanese tree lilac
<i>Syringa reticulata</i> "Summer Snow"	Japanese tree lilac
<i>Zelkova serrata</i> 'City Sprite'	City Sprite Zelkova
<i>Zelkova serrata</i> 'Schmidtlow'	Wireless Zelkova

**Note:** No other cultivars of *Zelkova serrata* shall be permitted under these conditions.

### **Street Trees:**

#### **Shade or Canopy Trees Suitable Near Paving and Parking Lot Greening (Planting Islands and Planting Strips):**

Trees shall be spaced at least 20' apart.

Trees indicated with an asterisk (\*) shall be spaced at least 30-40' apart.

<i>Acer saccharum</i> 'Goldspire'	'Goldspire' Sugar Maple
<i>Betula nigra</i>	River Birch
<i>Carpinus betulus</i> 'Columnaris'	Columnar European Hornbeam
<i>Carpinus caroliniana</i>	American Hornbeam
<i>Cercis canadensis</i>	Eastern Redbud
<i>Ginkgo biloba</i> 'Princeton Sentry'	Princeton Sentry Ginkgo
<i>Ginkgo biloba</i> 'Magyar'*	Magyar Upright Ginkgo*
<b>Note:</b> No female cultivars of <i>Ginkgo biloba</i> shall be permitted.	
<i>Gleditsia triacanthos</i> 'Inermis'*	Thornless Honey Locust*
<i>Ilex opaca</i>	American Holly
<i>Nyssa sylvatica</i>	Black Gum
<i>Platanus x acerfolia</i> 'bloodgood'*	Bloodgood London Plantree*

<i>Quercus alba</i> *	White Oak*
<i>Quercus coccinea</i> *	Scarlet Oak*
<i>Quercus imbricaria</i> *	Shingle Oak*
<i>Quercus palustris</i>	Pin Oak
<i>Quercus rubra</i> *	Red Oak*
<i>Tilia cordata</i>	Littleleaf linden
<i>Taxodium distichum</i>	Bald Cypress
<i>Zelkova serrata</i>	Zelkova

## **Shade or Canopy Trees Suitable for Buffers, Screens, and Natural Areas**

*Minimum mature height: 45' or more. Trees shall be spaced at least 30' apart, and shall be planted in minimum eight foot (8') planting strip.*

<i>Acer saccharum</i>	Sugar Maple
<i>Acer rubrum</i> 'October Glory'	October Glory Red Maple
<i>Betula nigra</i>	River Birch
<i>Carya ovata</i>	Shagbark Hickory
<i>Celtis occidentalis</i>	Common Hackberry
<i>Cercidiphyllum japonicum</i>	Katsura
<i>Cladrastis kentukea</i>	American Yellowwood
<i>Fagus grandifolia</i>	American Beech
<i>Ginkgo biloba</i> (male clones only)	Ginkgo (Male Clones Only)
<i>Gleditsia triacanthos</i> var. <i>inermis</i>	Thornless Common Honeylocust
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Liriodendron tulipifera</i>	Tulip Tree
<i>Metasequoia glyptostroboides</i>	Dawn Redwood
<i>Ostrya virginiana</i>	American Hophornbeam
<i>Platanus occidentalis</i>	Sycamore
<i>Platanus x acerifolia</i> 'bloodgood'	Bloodgood London Planetree
<i>Quercus alba</i>	White Oak
<i>Quercus bicolor</i>	Swamp White Oak
<i>Quercus imbricaria</i>	Shingle Oak
<i>Quercus macrocarpa</i>	Bur Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus phellos</i>	Willow Oak
<i>Quercus prinus</i>	Chestnut Oak
<i>Quercus robur</i>	English Oak
<i>Quercus robur</i> f. <i>fastigiata</i>	Fastigiata English Oak
<i>Quercus rubra</i>	Northern Red Oak
<i>Styphnolobium japonicum</i>	Chinese Scholar Tree
<i>Taxodium distichum</i>	Common Baldcypress
<i>Tilia americana</i>	American Linden
<i>Tilia cordata</i> 'Chancellor'	Chancellor Littleleaf Linden

<i>Tilia tomentosa</i>	Silver Linden
<i>Ulmus americana</i> 'New Harmony'	New Harmony American Elm
<b>Note:</b> Any other cultivar of <i>Ulmus americana</i> with a demonstrated resistance to Dutch Elm Disease shall be permitted.	
<i>Ulmus parvifolia</i> 'Emer II'	Elmer II ALLEE Lacebark Elm
<i>Zelkova serrata</i> 'Green Vase'	Green Vase Japanese Zelkova
<i>Zelkova serrata</i> 'Village Green'	Village Green Japanese Zelkova

## Shade or Canopy Tree – Suitable for Property Lines or Buffer Strips

Minimum Mature Height – 30' or more.

<i>Acer rubrum</i> 'October Glory'	October Glory Red Maple
<i>Acer saccharum</i>	Sugar Maple
<i>Aesculus x carnea</i>	Red Horsechestnut
<i>Betula nigra</i>	River Birch
<i>Carpinus betulus</i>	European Hornbeam
<i>Carpinus caroliniana</i>	American Hornbeam
<i>Carya ovata</i>	Shagbark Hickory
<i>Celtis occidentalis</i>	Hackberry
<i>Fagus grandifolia</i>	American Beech
<i>Ginkgo biloba</i> (male clones only)	Ginkgo (Male Clones Only)
<i>Gleditsia triacanthos</i> 'Inermis'	Thornless Honey Locust
<i>Gymnocladus dioica</i>	Kentucky Coffeetree
<i>Halesia tetraptera</i>	Carolina Silverbell
<i>Koelreuteria paniculata</i>	Panicled Goldenraintree
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Metasequoia glyptostroboides</i>	Dawn Redwood
<i>Nyssa sylvatica</i>	Black Tupelo
<i>Ostrya virginiana</i>	American Hophornbeam
<i>Oxydendrum arboretum</i>	Sourwood – (in low-pH soil only)
<i>Platanus x acerfolia</i> 'bloodgood'	Bloodgood London Plantree
<i>Quercus alba</i>	White Oak
<i>Quercus bicolor</i>	Swamp White Oak
<i>Quercus coccinea</i>	Scarlet Oak
<i>Quercus imbricaria</i>	Shingle Oak
<i>Quercus macrocarpa</i>	Bur Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus phellos</i>	Willow Oak
<i>Quercus prinus</i>	Chestnut Oak
<i>Quercus robur</i> 'Fastigiata'	Fastigiata English Oak
<i>Quercus rubra</i>	Northern Red Oak
<i>Quercus velutina</i>	Black Oak

<i>Sassafras albidum</i>	Sassafras
<i>Taxodium distichum</i>	Common Baldcypress
<i>Tilia americana</i>	American Linden
<i>Tilia cordata</i> 'Chancellor'	Chancellor Littleleaf Linden
<i>Tilia tomentosa</i>	Silver Linden
<i>Ulmus americana</i> 'New Harmony'	New Harmony American Elm
<b>Note:</b> Any other cultivar of <i>Ulmus americana</i> with a demonstrated resistance to Dutch Elm Disease shall be permitted.	
<i>Ulmus parvifolia</i> 'Emer II'	Elmer II ALLEE Lacebark Elm
<i>Zelkova serrata</i> 'Green Vase'	Green Vase Japanese Zelkova
<i>Zelkova serrata</i> 'Village Green'	Village Green Japanese Zelkova

**Ornamental Trees – Suitable Near Overhead Utility Wires, and for Property Line Buffers, Site Element Screening and Parking Lot Greening (Planting Islands and Planting Strips)**

*Minimum mature height – 15' or more, with maximum height of 25'.*

<i>Acer buergerianum</i>	Trident Maple
<i>Acer griseum</i>	Paperbark Maple
<i>Acer triflorum</i>	Three-flower Maple
<i>Acer truncatum</i>	Shantung Maple
<i>Amelanchier canadensis</i>	Serviceberry
<i>Carpinus caroliniana</i>	American Hornbeam
<i>Cercis canadensis</i>	Eastern Redbud
<i>Chionanthus retusus</i>	Chinese Fringe Tree
<i>Cornus alternifolia</i>	Alternate-Leaf Dogwood
<i>Cornus florida</i>	Flowering Dogwood
<i>Cornus kousa</i>	Kousa Dogwood (Cultivars)
<i>Cornus florida x Cornus kousa</i>	Rutger's Dogwood
<i>Cornus mas</i>	Cornelian Cherry Dogwood
<i>Cornus officianalis</i>	Japanese Cornel Dogwood
<i>Cotinus obovatus</i>	American Smoketree
<i>Crataegus crusgalli</i> var. <i>inermis</i>	Thornless cockspur hawthorn
<i>Crataegus laevigata</i> "Superba"	English hawthorn
<i>Crataegus x lavalleyi</i>	Lavalle hawthorn
<i>Crataegus phaenopyrum</i>	Washington hawthorn
<i>Crataegus viridis</i> "Winter King"	Winter king hawthorn
<i>Hamamelis virginiana</i>	Common Witchhazel
<i>Hamamelis mollis</i>	Chinese Hybrid Witchhazel
<i>Magnolia virginiana</i>	Sweetbay Magnolia
<i>Malus</i> "Adirondack"	Adirondack crab apple
<i>Malus</i> "Prairifire"	Prairifire crab apple

<i>Malus "Professor Sprenger"</i>	Professor Sprenger crab apple
<i>Prunus x 'Okame'</i>	'Okame' Cherry
<i>Prunus x Yeodensis'</i>	'Yeodensis' Cherry
<i>Prunus sargentii 'Spire'</i>	Columnar Sargent Cherry
<i>Prunus subhirtella var. autumnalis</i>	Higan Cherry
<i>Prunus virginiana</i>	Chokecherry
<i>Prunus virginiana "Schubert"</i>	Canada red chokecherry
<i>Syringa reticulata "Ivory Silk"</i>	Japanese tree lilac
<i>Syringa reticulata "Summer Snow"</i>	Japanese tree lilac

## Large Deciduous Shrubs – Suitable for Property Line Buffers Screens

Minimum Mature Height – 15' or more

### Key

**W = Wet Site Tolerant**

**D = Dry Site Tolerant**

<i>Aesculus parviflora</i>		Bottlebrush Buckeye
<i>Aronia arbutifolia</i>	W	Red Chokeberry
<i>Aronia melanocarpa</i>		Black Chokeberry
<i>Calycanthus floridus</i>	W	Common Sweetshrub
<i>Clethra alnifolia</i>		Summersweet Clethra
<i>Cornus racemosa</i>	W or D	Gray Dogwood
<i>Cornus sericea</i>		Redosier Dogwood
<i>Corylus americana</i>		American Hazelnut
<i>Diervilla sessilifolia</i>		Southern Bush-honeysuckle
<i>Forsythia 'Meadowlark'</i>		Forsythia
<i>Hamamelis vernalis</i>		Vernal Witchhazel
<i>Hamamelis virginiana</i>		Common Witchhazel
<i>Hydrangea quercifolia</i>		Oaklead Hydrangea
<i>Ilex verticillata</i>		Winterberry
<i>Philadelphus x lemoinei</i>	D	Sweet Mockorange
<i>Rhus glabra</i>		Smooth Sumac
<i>Salix caprea</i>		Pussy Willow
<i>Viburnum dentatum</i>		Arrowwood Viburnum
<i>Viburnum farreri</i>		Fragrant Viburnum
<i>Viburnum nudum "Winterthur or Brandywine"</i>		Witherod
<i>Viburnum prunifolium</i>		Blackhaw Viburnum
<i>Viburnum trilobum</i>		American Cranberrybush Viburnum

## Evergreen Shrubs – Suitable for Buffers and Screens

Minimum Mature Height – Four Feet (4') or more

<i>Ilex crenata</i>	Japanese Holly
<i>Ilex glabra</i>	Inkberry (Cultivars)
<i>Juniperus communis</i>	Common Juniper
<i>Juniperus virginiana</i>	Eastern Redcedar
<i>Kalmia angustifolia</i>	Sheep Laurel
<i>Kalmia latifolia</i>	Mountain-laurel
<i>Leucothoe fontanesiana</i>	Fetterbush
<i>Leucothoe racemose</i>	Sweetbells Leucothoe
<i>Pieris floribunda</i>	Mountain Pieris
<i>Prunus laurocerasus</i>	Common Cherry Laurel
<i>Prunus laurocerasus</i> 'Otto Luyken'	'Otto Luyken' Cherry Laurel
<i>Rhododendron sp.</i> ( <i>viscosum</i> , <i>vaseyi</i> , etc.)	<i>Rhodoendron and Azalea</i>
<i>Taxus sp.</i>	Yew
<i>Schipkaensis</i>	Skip Laurel
<i>Viburnum rhytidophyllum</i>	Leatherleaf Viburnum

### **Shrubs – Suitable for Building Foundation, Front Yard Landscaping or Parking Lot Greening (Planting Islands and Planting Strips)**

<i>Baccharis halimifolia</i>	Groundsel-tree
<i>Buxus Microphylla</i>	Littleleaf Boxwood (needs winter wind protection)
<i>Clethra alnifolia</i>	Summersweet
<i>Fothergilla gardenia</i>	Dwarf Fothergilla
<i>Forsythia</i> 'Arnold Dwarf'	Arnold Dwarf Forsythia
<i>Hypericum frondosum</i> 'Sunburst'	Sunburst Golden St. Johnswort
<i>Ilex glabra</i>	Inkberry
<i>Itea virginica</i> Henry's Garnet or 'Little Henry'	Virginia Sweetspire
<i>Myrica pennsylvanica</i>	Northern Bayberry
<i>Rhus aromatica</i> 'Lo-Grow'	'Low-Grow' Aromatic Sumac
<i>Rosa hybrida</i> 'Ratko'	Double Knockout Rose
<i>Spiraea x bumalda</i> 'Goldflame'	Bumald Spiraea
<i>Viburnum dentatum</i>	Arrowwood Viburnum

### **Evergreen Trees – Suitable for Property Line Buffers or Screens**

*Minimum Mature Height – 20' or more*

<i>Abies balsamea</i>	Balsam Fir
<i>Abies concolor</i>	White Fir
<i>Chameacyparis thyoides</i>	Atlantic Whitecedar
<i>Cryptomeria japonica</i>	Japanese Cedar

<i>Cupressocyparis leylandii</i>	Leyland Cypress
<i>Ilex opaca</i>	American Holly
<i>Picea abies</i>	Norway Spruce
<i>Picea glauca</i>	White Spruce
<i>Picea omorika</i>	Siberian Spruce
<i>Pinus strobus</i>	Eastern White Pine
<i>Pinus thunbergii</i>	Japanese Black Pine
<i>Pseudotsuga menziesii</i>	Douglas Fir
<i>Thuja occidentalis</i>	Eastern Arborvitae
<i>Thuja plicata</i>	Giant (Western) Arborvitae
<i>Tsuga Canadensis</i>	Canadian Hemlock

## Deciduous and Evergreen Trees and Shrubs, Wildflowers and Grasses - Suitable for Wet Meadows, Edges, and Bioretention Facilities

### Trees

<i>Acer rubrum</i>	Red Maple
<i>Amelanchier canadensis</i>	Serviceberry
<i>Betula nigra</i>	River Birch
<i>Carpinus caroliniana</i>	American Hornbeam
<i>Ilex opaca</i>	American Holly
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Magnolia virginiana</i>	Sweetbay Magnolia
<i>Metasequoia glyptostroboides</i>	Dawn Redwood
<i>Nyssa sylvatica</i>	Black Gum
<i>Platanus occidentalis</i>	American Sycamore
<i>Quercus bicolor</i>	Swamp White Oak
<i>Taxodium distichum</i>	Bald Cypress
<i>Thuja occidentalis cv. nigra</i>	Dark American Arborvitae
<i>Tilia Americana</i>	American Linden

### Shrubs

<i>Aronia arbutifolia</i>	Red Chokeberry
<i>Aronia melanocarpa</i>	Black Chokeberry
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Clethra alnifolia</i>	Summersweet
<i>Cornus amomum</i>	Silky Dogwood
<i>Ilex verticillata</i>	Winterberry Holly (Cultivars, male & female grouped)
<i>Myrica cerifera</i>	Southern Bayberry

**Note:** Southern Bayberry shall not be planted near structures, as the leaves, stems and branches contain flammable aromatic compounds.

*Viburnum trilobum*

American Cranberrybush

### **Wildflowers/Perennials**

*Asclepias incarnata*

Swamp Milkweed

*Aster nova-angliae*

New England Aster

*Aster puniceus*

Purple-stemmed Aster

*Aster laevis*

Smooth Aster

*Daucus carota*

Queen Anne Lace

*Eupatorium fistulosum*

Hollow Joe-pye Weed

*Eupatorium dubium*

Joe-pye Weed

*Helenium nudiflorum*

Purple-headed Sneezeweed

*Hibiscus moscheutos*

Swamp Rose Mallow

*Impatiens capensis*

Jewelweed

*Impatiens pallida*

Jewelweed

*Iris versicolor*

Blue Flag Iris

*Lilium canadense*

Canada Lily

*Lobelia cardinalis*

Cardinal Flower

*Lobelia siphilitica*

Blue Lobelia

*Ludwigia alternifolia*

Seedbox

*Monarda didyma*

Beebalm

*Penstemon digitalis*

Beardtongue

*Pycnanthemum virginianum*

Mountain Mint

*Rudbeckia laciniata*

Green-headed Coneflower

*Rudbeckia triloba*

Black-eyed Susan

*Scirpus acutus*

Hardstem Bulrush

*Senecio aureus*

Golden Ragwort

*Solidago gigantea*

Late Goldenrod

*Solidago graminifolia*

Lance-leaved Goldenrod

*Typha latifolia*

Common Cattail

*Zizia aurea*

Golden Alexander

### **Grasses**

*Panicum virgatum*

Switchgrass

*Sorghastrum nutans*

Indian Grass

*Tridens flavus*

Red Top

## **Deciduous and Evergreen Trees and Shrubs, Wildflowers and Grasses - Suitable for Dry Meadows, Edges, and Stormwater Detention Basins**

### **Trees**

*Acer rubrum*

Red Maple

*Celtis occidentalis*  
*Gleditsia triacanthos inermis*  
*Juniperus virginiana*  
*Liquidambar styraciflua*  
*Quercus bicolor*  
*Quercus coccinea*  
*Quercus macrocarpa*  
*Quercus palustris*  
*Quercus rubra*  
*Sassafras albidum*  
*Thuja occidentalis*

Hackberry  
Thornless Honey Locust  
Eastern Red Cedar  
Sweetgum  
Swamp White Oak  
Scarlet Oak  
Bur Oak  
Pin Oak  
Red Oak (Cultivars Recommended)  
Sassafras  
Dark American Arborvitae

### **Shrubs**

*Comptonia peregrine*  
*Cornus racemosa*  
*Diervilla sessilifolia*  
*Hamamelis virginiana*  
*Myrica pennsylvanica*  
*Rosa Carolina*  
*Rhus aromatic*  
*Rhus copallina*  
*Rhus glabra*  
*Rhus typhina*  
*Viburnum lentago*

Sweetfern  
Gray Dogwood  
Southern Bush Honeysuckle  
Common Witchhazel  
Northern Bayberry  
Pasture Rose  
Fragrant Sumac  
Shining Sumac  
Smooth Sumac  
Staghorn Sumac  
Nannyberry Viburnum

### **Wildflowers and Grasses**

*Andropogon gerardi*  
*Andropogon scoparius*  
*Asclepias tuberosa*  
*Aster pilosus*  
*Aster simplex*  
*Carex sp.*  
*Elymus canadensis*  
*Monarda fistulosa*  
*Panicum virgatum*  
*Pycnanthemum tenuifolium*  
*Rudbeckia hirta*  
*Solidago nemoralis*  
*Solidago speciosa*  
*Sorghastrum nutans*  
*Tridens falvus*  
*Veronicastrum virginicum*

Big Bluestem Grass  
Little Bluestem Grass  
Butterfly Weed  
Aster  
White Aster  
Sedge  
Canada Wild Rye  
Wild Bergamot  
Switchgrass  
Slender Mountain Mint  
Black-eyed Susan  
Old Field Goldenrod  
Showy Goldenrod  
Indian Grass  
Red Top  
Culver's Root

