

ATTACHMENT 10

ENVIRONMENTAL ASSESSMENT FORM

Appendix E: Riparian Buffer Planting Plan

NEW June 2025

Tioga Pathway Project Riparian Buffer Planting Plan

June 2025

PREPARED FOR

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1.0 INTRODUCTION

National Fuel Gas Supply Corporation (National Fuel) proposes to construct the Tioga Pathway Project (Project) located in Potter, Tioga, and McKean counties, Pennsylvania (PA), which consists of the construction and operation of the Z20 Replacement Pipeline, YM59 Mainline Pipeline, and construction or modification of a few auxiliary facilities. Project activities will involve aquatic resource impacts in both Potter and Tioga counties only; National Fuel has designed the Project to avoid all aquatic resource impacts in McKean County.

All streams impacted by the proposed Project will be restored to their original physical condition and there will be no change to their substrate, flow regime, or banks. In addition, National Fuel is voluntarily proposing to replant up to a 50-foot-wide riparian buffer on each side of the streams that supported scrub-shrub/forested vegetation prior to construction. With landowner approval, the previously forested riparian areas located within the limits of disturbance (LOD) will be planted, except for a 30-foot-wide corridor centered over the pipeline. Riparian areas that will be crossed by the proposed Project currently support a variety of cover types including both upland and wetland. Specifically, National Fuel's riparian planting plan includes planting trees/shrubs in wetland areas located within the riparian buffers: a total of 0.538 acre of palustrine emergent (PEM) wetland, 0.792 acre of palustrine scrub-shrub (PSS) wetland and 0.466 acre of palustrine forested (PFO) wetland will be planted within the non-maintained pipeline corridor to supplement the revegetation of these areas and to promote re-establishment of PSS and PFO wetlands on the ROW.

In addition to the riparian areas described above, a total of approximately 8.054 acres of wetlands will be temporarily disturbed by vegetation clearing and soil disturbance in the Project construction workspaces, including 1.907 acres of PSS and 1.145 acres of PFO. Preconstruction wetland conditions in the temporary workspace will be restored to the extent possible to promote revegetation by natural succession. Trench line topsoil segregation in unsaturated wetlands will preserve the native seed source, which will facilitate regrowth of herbaceous vegetation once pipeline installation is complete. The post-construction routine vegetation maintenance procedures in the 10-foot-wide mowed corridor centered over the pipeline (i.e., 5-foot on either side of the pipeline) will result in the permanent conversion of PFO and PSS vegetation to PEM herbaceous wetland vegetation, and the selective cutting of trees within the 30-foot corridor may result in the conversion of PFO to PSS wetlands. The remaining area outside of the maintained corridor will be allowed to naturally revert to its pre-existing cover, including shrubs and trees. However, National Fuel has proactively and conservatively identified all PFO and PSS impacts as permanent conversion to PEM and is proposing compensatory mitigation for the total 1.907 acres of PSS and 1.145 acres of PFO wetland impacts as presented in the Project's *Permittee Responsible Mitigation Plan* (Resource Environmental Solutions [RES] 2025). Therefore, only the wetland areas located within the riparian areas and described above will be replanted.

The following sections of this plan identify the areas that will be planted (Section 2 and Appendix A), the restoration approach including plantings (Section 3), and proposed monitoring activities (Section 4).

2.0 RIPARIAN BUFFER AREAS

As defined in Chapter 102 Section 102.1 of the Title 25 PA Code, a riparian buffer consists of “*permanent vegetation that is predominantly native trees, shrubs and forbs along a surface water that is maintained in a natural state or sustainably managed to protect and enhance water quality, stabilize stream channels and banks, and separate land use activities from surface waters.*”

A total of 56 stream areas were identified in the Tioga County Project LOD and a total of 21 stream areas were identified in the Project LOD in Potter County. Of these 77 streams located in the Project's LOD, 39 streams supported a scrub-shrub and/or forested riparian area that will be replanted (Table 1). In addition, a total of 17 wetland areas including PEM, PSS, and PFO cover types were identified within these riparian areas and will be

restored and replanted as part of the riparian buffers: PEM wetlands will be planted with woody vegetation to enhance the functions and values of the pre-existing riparian buffers.

The current condition of the riparian buffers in the proposed construction ROW consists of emergent, shrub, and forested habitat, with some areas of agriculture. National Fuel proposes to restore the existing cover type within the riparian buffers to their preconstruction condition. Specifically, all riparian areas will be seeded with a wetland or upland seed mixture specific to re-establishing the preconstruction cover type at each stream crossing, and areas of pre-construction scrub-shrub or forested cover will be planted up to a maximum extent of 50 feet landward on either side of the waterway (within the workspace disturbed by construction), with the exception of the 30-foot-wide swath centered over the pipeline (which will be restored by seeding herbaceous species only). This Riparian Planting Plan focuses on the post-construction planting of trees/shrubs in the riparian buffer areas identified in Table 1 and Appendix A; seeding of the riparian and wetland areas will be done earlier as part of the construction phase (i.e., during restoration and clean-up), and is addressed in the Project's Erosion and Sediment Control Plan provided in Attachment 11 of the Joint Application for Chapter 105 Water Obstruction and Encroachment and Section 404 Clean Water Act.

Table 1. Riparian Buffer Planting Areas

| Stream / Wetland Number | Assigned Planting Area No. | Stream Name | Approx. Resource Milepost | Appendix A: Figure Page No. | Planted Riparian Areas (acres) | | | |
|---|----------------------------------|--|--------------------------------------|-----------------------------------|--------------------------------|------------------|-------|---------|
| | | | | | Upland Riparian | Wetland Riparian | | |
| | | | | | | PEM | PSS | PFO |
| Potter County | | | | | | | | |
| S73z W01z- PEM | 1 | UNT to Marsh Creek | 0.00 0.00 | 1 | 0.104 | 0.027 | - | - |
| S01 S02 W01-PSS | 2 | Marsh Creek | 0.10 0.10 0.10 | 1 | 0.038 | - | 0.210 | - |
| S03 S04 W02-PEM W02-PSS | 3 | UNT to Marsh Creek | 0.65 0.75 0.70 0.65 | 2 | 0.207 | 0.037 | 0.092 | - |
| S05 | 4 | UNT to Marsh Creek | 0.80 | 2 | 0.138 | - | - | - |
| S06 S07 W04-PEM W04-PFO | 5 | UNT to North Branch Cowanesque River | 1.85 1.85 1.84 1.84 | 3 | 0.091 | 0.050 | - | 0.119 |
| S08 | 6 | UNT to North Branch Cowanesque River | 1.90 | 3 | 0.121 | - | - | - |
| S09 S10 W05-PEM | 7 | UNT to North Branch Cowanesque River | 1.98 1.98 1.95 | 3 | 0.218 | 0.027 | - | - |
| S11 S12 S13 W06-PEM W06-PSS | 8 | UNT to North Branch Cowanesque River, North Branch | 2.18 2.20 2.25 2.19 2.16 | 4 | 0.001 | 0.023 | 0.360 | - |
| S14 W07-PEM W07-PFO | 9 | UNT to North Branch Cowanesque River | 2.70 2.72 2.72 | 5 | 0.063 | 0.057 | - | <0.0001 |

| Stream / Wetland Number | Assigned Planting Area No. | Stream Name | Approx. Resource Milepost | Appendix A: Figure Page No. | Planted Riparian Areas (acres) | | | |
|--------------------------------------|----------------------------|---------------------------------------|------------------------------|-----------------------------|--------------------------------|------------------|-------|-------|
| | | | | | Upland Riparian | Wetland Riparian | | |
| | | | | | | PEM | PSS | PFO |
| S15 | 10 | UNT to North Branch Cowanesque River | 3.30 | 6 | 0.129 | - | - | - |
| S16 W08-PEM | 11 | UNT to North Branch Cowanesque River | 3.40 3.38 | 6 | 0.120 | 0.030 | - | - |
| Tioga County | | | | | | | | |
| S17 | 12 | North Fork Cowanesque River | 2.10 | 7 | 0.08 | - | - | - |
| S18a | 13 | UNT to North Fork of Cowanesque River | 2.27 | 7 | 0.138 | - | - | - |
| S19 W14-PEM | 14 | UNT to North Fork of Cowanesque River | 3.00 3.16 | 8 | 0.044 | 0.006 | - | - |
| S20 W15-PEM | 15 | North Fork Cowanesque River | 3.25 3.25 | 8 | 0.143 | 0.013 | - | - |
| S21 W60-PEM | 16 | UNT to North Fork of Cowanesque River | 3.68 3.68 | 9 | 0.068 | 0.029 | - | - |
| S23 | 17 | UNT to North Fork of Cowanesque River | 4.30 | 10 | 0.127 | - | - | - |
| S24 W17-PEM W17-PSS W17-PFO | 18 | UNT to North Fork of Cowanesque River | 4.57 4.54 4.55 4.58 | 11 | 0.048 | 0.170 | 0.130 | 0.036 |
| S28 | 19 | UNT to California Brook | 5.34 | 12 | 0.073 | - | - | - |
| S29 | 20 | UNT to California Brook | 6.40 | 13 | 0.147 | - | - | - |
| S30 | 21 | UNT to California Brook | 6.45 | 13 | 0.111 | - | - | - |
| S62 W55-PFO | 22 | UNT to Cowanesque River | 9.56 9.56 | 14 | 0.066 | - | - | 0.108 |
| S36 | 23 | Jemison Creek | 12.24 | 15 | 0.130 | - | - | - |
| S39 | 24 | UNT to Jemison Creek | 12.05 | 15 | 0.154 | - | - | - |
| S40 | 25 | Boatman Brook | 14.81 | 16 | 0.121 | - | - | - |
| S41 | 26 | UNT to Crooked Creek | 15.24 | 17 | 0.122 | - | - | - |
| S45 W38-PEM | 27 | UNT to Crooked Creek | 16.50 16.48 | 18 | 0.010 | 0.017 | - | - |
| S47 | 28 | UNT to Crooked Creek | 17.04 | 19 | 0.044 | - | - | - |
| S48 S49 W40-PFO | 29 | UNT to Crooked Creek | 17.18 17.2 17.16 | 20 | 0.163 | - | - | 0.080 |
| S50 S51 W41-PEM | 30 | UNT to Crooked Creek | 17.50 17.50 17.50 | 21 | 0.107 | 0.009 | - | - |

| Stream / Wetland Number | Assigned Planting Area No. | Stream Name | Approx. Resource Milepost | Appendix A: Figure Page No. | Planted Riparian Areas (acres) | | | |
|---------------------------|----------------------------|----------------------|---------------------------|-----------------------------|--------------------------------|------------------|-------|-------|
| | | | | | Upland Riparian | Wetland Riparian | | |
| | | | | | | PEM | PSS | PFO |
| S52 W42-PEM W42-PFO | 31 | UNT to Crooked Creek | 18.32 18.30 18.30 | 22 | 0.016 | 0.043 | - | 0.123 |
| Totals | | | | | 3.142 | 0.538 | 0.792 | 0.466 |
| Project Total | | | | | 4.938 | | | |

3.0 PLANTING PLAN

As previously stated, the riparian area of 39 streams will be planted with trees/shrubs following completion of construction activities associated with the Tioga Project. These plantings will be completed in accordance with methods and specifications outlined in the *Pennsylvania Bureau of Forestry Planting and Seeding Guidelines* (Pennsylvania Department of Conservation and Natural Resources 2024), to the extent possible. Existing tree and shrub species were identified during site-specific surveys and this data was utilized to inform the selection process of native and indigenous species suitable to re-establish the approximately 4.938 acres of riparian areas identified in Table 1.

Table 2 provides a list of recommended species and sizes to be used as plantings in the riparian areas. If these species are not available at the time of planting, species with similar characteristics will be identified and the appropriate agencies notified prior to planting.

Table 2. Recommended Riparian Species and Planting Sizes

| Common Name | Scientific Name | Indicator Status ¹ | Recommended Planting Size |
|-------------------------------|------------------------------|-------------------------------|-------------------------------|
| Trees | | | |
| Red maple ² | <i>Acer rubrum</i> | FAC | 1 Gallon (24" to <36") |
| Silver maple ² | <i>Acer saccharinum</i> | FACW | 2 Gallon (24" to 48") |
| Black willow ² | <i>Salix nigra</i> | OBL | Tubeling (18") or live stakes |
| Quaking aspen ² | <i>Populus tremuloides</i> | FACU | 1 to 2 Gallon (12" to 24") |
| Northern red oak ² | <i>Quercus rubra</i> | FACU | 2 Gallon (24" to 36") |
| Eastern hemlock ² | <i>Tsuga canadensis</i> | FACU | 1 Gallon (12" to 24") |
| Shagbark hickory ² | <i>Carya ovata</i> | FACU | 1 Gallon (8" to 12") |
| Yellow birch ² | <i>Betula alleghaniensis</i> | FAC | 2 Gallon (48") |
| Shrubs | | | |
| Brookside alder | <i>Alnus serrulata</i> | OBL | 2 to 3 Gallon (60" to 72") |
| Black cherry ² | <i>Prunus serotina</i> | FACU | 1 to 2 Gallon (12" to 24") |
| Gray dogwood ^{2,4} | <i>Cornus racemosa</i> | FAC | 1 Gallon (12" to 24") |
| Northern spicebush | <i>Lindera benzoin</i> | FAC | 3 to 5 Gallon (minimum 5') |
| Nanny-berry ² | <i>Viburnum lentago</i> | FAC | 1 Gallon (12" to 24") |
| Witch hazel ² | <i>Hamamelis virginiana</i> | FACU | 2 Gallon (12" to 24") |

| Common Name | Scientific Name | Indicator Status ¹ | Recommended Planting Size |
|---|-----------------------------|-------------------------------|------------------------------------|
| Southern arrow-wood | <i>Virburnum dentatum</i> | FAC | 1 Gallon (12" minimum) |
| Highbush Blueberry ² | <i>Vaccinium corymbosum</i> | FACW | 1 Gallon (24" to <36") |
| Silky Dogwood ^{2,3} | <i>Cornus amomum</i> | FACW | 1 Gallon (12" to 24") ³ |
| Notes: ¹ FAC = facultative, FACW = facultative wetland, FACU=facultative upland, OBL=obligate (wetland) ² Identified in site-specific surveys ³ If containers are not available, live stakes can be used at double the proposed number of plants in Table 3. ⁴ Species can be substituted with American hornbeam (<i>Carpinus caroliniana</i>). | | | |

Upland riparian areas will be planted with species that have an indicator status of FACU and FAC, and wetland areas will be planted with species that have an indicator status of OBL, FACW, and FAC. It is recommended that the selected tree/shrub species composition and spacing should mimic the natural, pre-existing conditions and/or immediately adjacent areas, to the extent possible. For example, if the riparian area currently supports a scrub-shrub cover dominated by just two species, the species selected for planting should primarily be shrubs of the same or similar species, whenever possible. Similarly, a forested riparian area should be planted with the same or similar tree species for the overstory and shrub species for the understory, whenever possible.

Spacing of individual plants will generally be based on a goal density of 350 stems per acre but should be conducted so as to maintain consistent aerial canopy coverage and provide adequate sun exposure as the plants grow and mature, while considering natural loss of plants. However, final spacing and placement of the plantings may be determined in the field by a trained professional. Specifically, plantings may be relocated to locations with more suitable hydrology and soils, and where appropriate structural context with other plantings can be maintained. Trees/shrubs are anticipated to be planted in the fall of 2026 following completion of construction activities and stabilization of the LOD.

Table 3 identifies the species and number of plants of each species proposed at the various planting areas. In addition, this information is presented in Appendix A on the Riparian Planting Area Figure.

Table 3. Proposed Tree/Shrub Species and Numbers at Each Planting Area

| Planting Area No. | Resource Area | Planting Area (Acres) | | Planted Riparian Areas | | | |
|-------------------|-----------------------|-----------------------|---------|-----------------------------------|----|------------------------------------|----|
| | | Upland | Wetland | Upland Species & Number of Plants | | Wetland Species & Number of Plants | |
| Potter County | | | | | | | |
| 1 | S73z W01z- PEM | 0.104 | 0.027 | Red maple | 12 | Silver maple | 2 |
| | | | | Black cherry | 8 | Black willow | 10 |
| | | | | Quaking aspen | 16 | Silky dogwood | 4 |
| | | | | | | Brookside alder | 3 |
| 2 | S01 S02 W01-PSS | 0.038 | 0.21 | Red maple | 3 | Nanny-berry | 14 |
| | | | | Quaking aspen | 3 | Black willow | 15 |
| | | | | Northern red oak | 3 | Silky dogwood | 22 |
| | | | | | | Gray dogwood | 22 |
| | | | | Witch hazel | 4 | | |

| Planting Area No. | Resource Area | Planting Area (Acres) | | Planted Riparian Areas | | | |
|-------------------|---------------|-----------------------|---------|-----------------------------------|----|------------------------------------|----|
| | | Upland | Wetland | Upland Species & Number of Plants | | Wetland Species & Number of Plants | |
| 3 | S03 | 0.207 | 0.129 | Red maple | 25 | Nanny-berry | 5 |
| | S04 | | | Quaking aspen | 20 | Black willow | 25 |
| | W02-PEM | | | Northern red oak | 15 | Silky dogwood | 12 |
| | W02-PSS | | | Black cherry | 7 | Gray dogwood | 12 |
| | | | | Witch hazel | 5 | | |
| 4 | S05 | 0.138 | 0 | Eastern hemlock | 15 | Not Applicable | |
| | | | | Shagbark hickory | 15 | | |
| | | | | Yellow birch | 8 | | |
| | | | | Black cherry | 5 | | |
| | | | | Northern spicebush | 5 | | |
| 5 | S06 | 0.091 | 0.169 | Eastern hemlock | 10 | Black willow | 30 |
| | S07 | | | Red maple | 6 | Red maple | 25 |
| | W04-PEM | | | Shagbark hickory | 5 | Northern spicebush | 10 |
| | W04-PFO | | | Black cherry | 5 | Brookside alder | 5 |
| | | | | Northern red oak | 5 | | |
| 6 | S08 | 0.121 | 0 | Eastern hemlock | 25 | Not Applicable | |
| | | | | Shagbark hickory | 17 | | |
| 7 | S09 | 0.218 | 0.027 | Eastern hemlock | 40 | Silver maple | 6 |
| | S10 | | | Red maple | 18 | Yellow birch | 3 |
| | W05-PEM | | | Northern red oak | 18 | | |
| 8 | S11 | 0.001 | 0.383 | Gray dogwood | 2 | Red Maple | 34 |
| | S12 | | | | | Black willow | 34 |
| | S13 | | | | | Nanny-berry | 33 |
| | W06-PEM | | | | | Gray dogwood | 33 |
| 9 | S14 | 0.063 | 0.057 | Red maple | 6 | Red maple | 2 |
| | W07-PEM | | | Black cherry | 2 | Silver maple | 5 |
| | W07-PFO | | | Yellow birch | 4 | Black willow | 10 |
| | | | | Gray dogwood | 10 | Gray dogwood | 9 |
| 10 | S15 | 0.129 | 0 | Eastern hemlock | 19 | Not Applicable | |
| | | | | Shagbark hickory | 18 | | |
| | | | | Black cherry | 10 | | |
| 11 | S16 | 0.12 | 0.03 | Eastern hemlock | 15 | Black willow | 10 |
| | W08-PEM | | | Red maple | 8 | Gray dogwood | 4 |
| | | | | Witch hazel | 4 | Silky dogwood | 4 |
| | | | | Gray dogwood | 15 | | |
| Tioga County | | | | | | | |
| 12 | S17 | 0.08 | 0 | Shagbark hickory | 6 | Not Applicable | |
| | | | | Red maple | 10 | | |
| | | | | Northern red oak | 10 | | |
| | | | | Northern spicebush | 2 | | |

| Planting Area No. | Resource Area | Planting Area (Acres) | | Planted Riparian Areas | |
|-------------------|--------------------------------------|-----------------------|---------|--|--|
| | | Upland | Wetland | Upland Species & Number of Plants | Wetland Species & Number of Plants |
| 13 | S18a | 0.138 | 0 | Eastern hemlock 14 Shagbark hickory 10 Red maple 10 Northern red oak 10 Northern spicebush 4 | Not Applicable |
| 14 | S19 W14-PEM | 0.044 | 0.006 | Red maple 5 Witch hazel 5 Gray dogwood 5 | Silky dogwood 2 Gray dogwood 2 |
| 15 | S20 W15-PEM | 0.143 | 0.013 | Yellow birch 13 Gray dogwood 25 Northern spicebush 12 | Black willow 10 Silver maple 2 Southern arrow-wood 3 |
| 16 | S21 W60-PEM | 0.068 | 0.029 | Red maple 10 Northern red oak 10 Witch hazel 4 | Silky dogwood 4 Silver maple 2 Brookside alder 4 |
| 17 | S23 | 0.127 | 0 | Shagbark hickory 10 Red maple 17 Northern red oak 17 | Not Applicable |
| 18 | S24 W17-PEM W17-PSS W17-PFO | 0.048 | 0.336 | Nanny-berry 2 Gray dogwood 9 Quaking aspen 6 | Brookside alder 45 Black willow 20 Nanny-berry 12 Gray dogwood 46 |
| 19 | S28 | 0.073 | 0 | Yellow birch 6 Gray dogwood 15 Northern spicebush 5 | Not Applicable |
| 20 | S29 | 0.147 | 0 | Northern red oak 18 Red maple 18 Shagbark hickory 8 Northern spicebush 4 Witch hazel 4 | Not Applicable |
| 21 | S30 | 0.111 | 0 | Northern red oak 12 Red maple 12 Shagbark hickory 7 Northern spicebush 4 Witch hazel 4 | Not Applicable |
| 22 | S62 W55-PFO | 0.066 | 0.108 | Red maple 7 Northern red oak 7 Northern spicebush 2 Gray dogwood 7 | Black willow 20 Silver maple 10 Silky dogwood 10 Brookside alder 10 |
| 23 | S39 | 0.154 | 0 | Red maple 18 Northern red oak 18 Quaking aspen 18 | Not Applicable |
| 24 | S36 | 0.13 | 0 | Red maple 15 Northern red oak 15 Quaking aspen 15 | Not Applicable |

| Planting Area No. | Resource Area | Planting Area (Acres) | | Planted Riparian Areas | |
|-------------------|---------------------------|-----------------------|---------|---|--|
| | | Upland | Wetland | Upland Species & Number of Plants | Wetland Species & Number of Plants |
| 25 | S40 | 0.121 | 0 | Gray dogwood 15 Red maple 15 Shagbark hickory 8 Northern spicebush 4 | Not Applicable |
| 26 | S41 | 0.122 | 0 | Gray dogwood 15 Red maple 15 Shagbark hickory 8 Northern spicebush 4 | Not Applicable |
| 27 | S45 W38-PEM | 0.01 | 0.017 | Gray dogwood 1 Red maple 1 Northern red oak 1 Yellow birch 1 | Black willow 10 Brookside alder 1 Silky dogwood 2 Southern arrow-wood 2 |
| 28 | S47 | 0.044 | 0 | Gray dogwood 5 Red maple 4 Shagbark hickory 4 Northern spicebush 2 | Not Applicable |
| 29 | S48 S49 W40-PFO | 0.163 | 0.08 | Eastern hemlock 20 Red maple 37 | Silver maple 14 Black willow 15 |
| 30 | S50 S51 W41-PEM | 0.107 | 0.009 | Eastern hemlock 13 Red maple 12 Gray dogwood 12 | Silver maple 1 Black willow 10 |
| 31 | S52 W42-PEM W42-PFO | 0.016 | 0.166 | Eastern hemlock 2 Red maple 2 Witch hazel 2 | Red maple 25 Yellow birch 25 Brookside alder 10 |

Installation of plant materials, including protective fencing, will be conducted in accordance with the specifications provided in the detail drawings below. Other recommended planting measures include, but are not limited to:

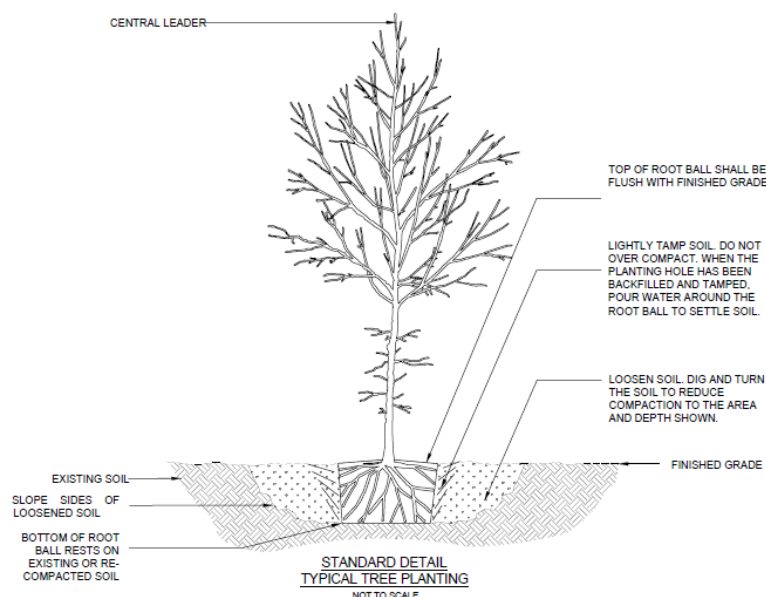
Container Growth Material

- Planting holes shall be at least twice the diameter of the container and dug to the same depth as the container in which they are grown. Do not remove plant material from container until immediately before installation. Examine the roots to see if they are pot bound. Carefully separate any pot bound or cramped roots and spread them out when placing the plant within the hole so that the roots can grow without further constriction of the root ball.
- Set plant materials plumb and centered within hole, ensuring that the top of the root ball is flush with surrounding grade. Backfill around root ball with suitable native soil, maintaining plumb, and gently tamping backfill layers to eliminate voids. Water to the point of soil saturation.
- Following the backfilling, add existing soil to bring the final grade in the planting hole to the surrounding soil surface. Rake the unused existing soil outside the planting hole, taking care not to mound the soil or to significantly alter the existing grades.

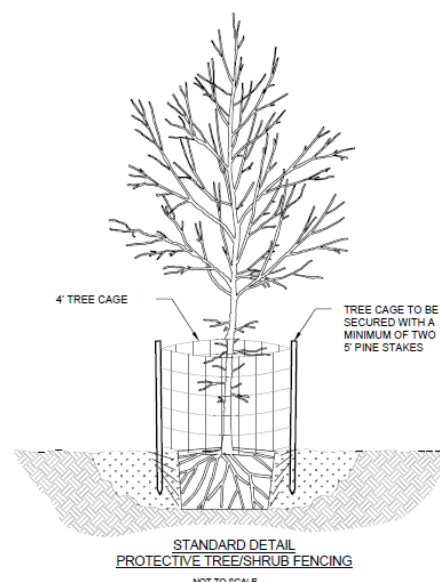
Live Stake Material

- Live stake material shall be kept moist according to manufactures recommendations. Do not allow the live stakes to dry out prior to installation.
- The use of a punch/planting bar, auger, rebar, or water-jet may be used to pre-drill hole if necessary. Tamp soil around stake following install.
- All live stakes are to be installed along stream banks, pools, and floodplain pools based upon spacing indicated in the planting plan species list.

Typical Tree/Shrub Planting Detail



Typical Protective Fencing Detail



4.0 MONITORING

As part of their voluntary riparian planting plan, National Fuel is proposing to conduct annual post-construction monitoring for a maximum of three years to document the successful restoration of the planted riparian buffers. If post-construction monitoring finds that corrective action is warranted National Fuel would implement such actions where needed.

5.0 SOURCES

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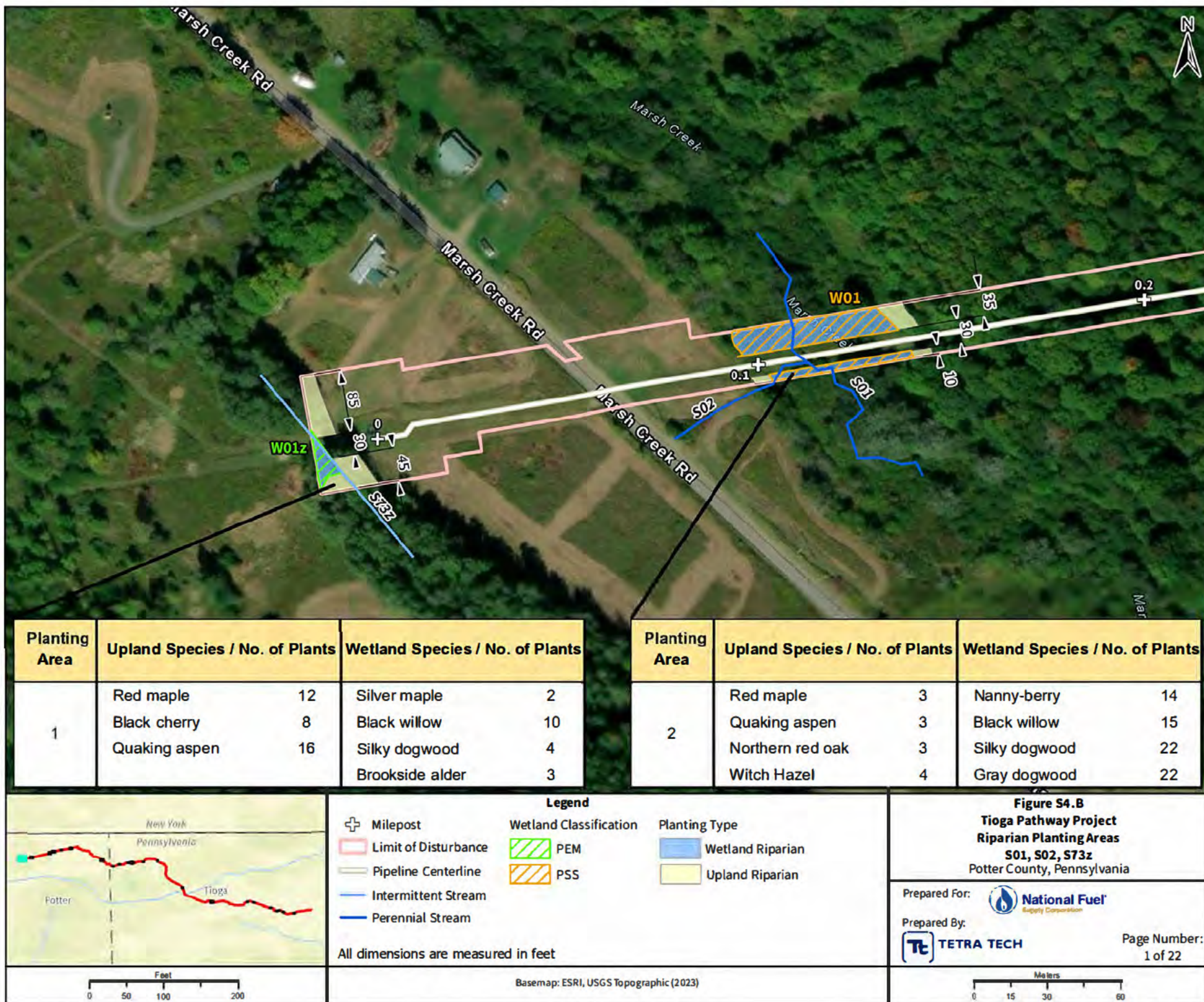
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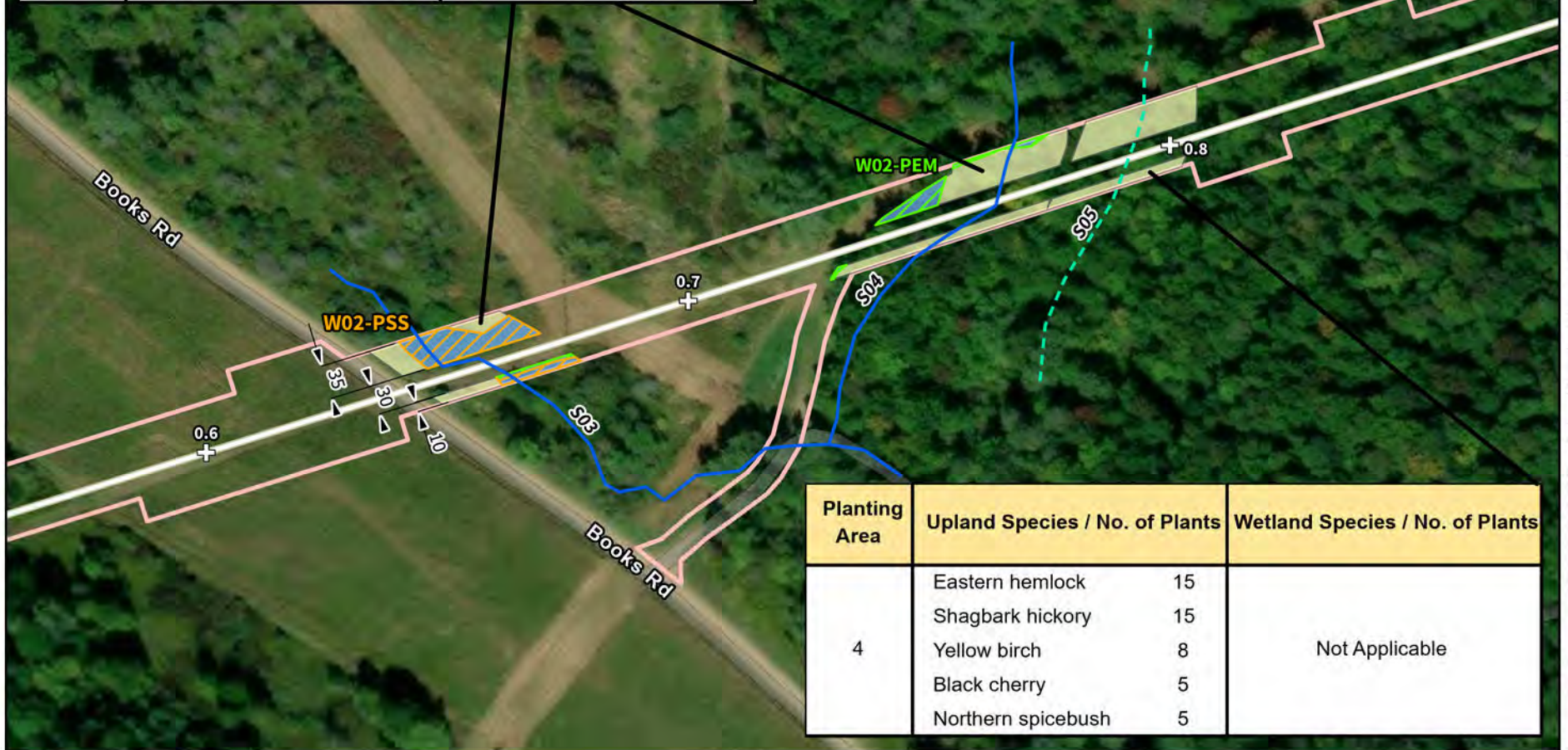
APPENDIX A: RIPARIAN PLANTING AREA FIGURE



| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|----|
| 1 | Red maple | 12 | Silver maple | 2 |
| | Black cherry | 8 | Black willow | 10 |
| | Quaking aspen | 16 | Silky dogwood | 4 |
| | | | Brookside alder | 3 |
| | | | | |

| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|---|---------------------------------|----|
| 2 | Red maple | 3 | Nanny-berry | 14 |
| | Quaking aspen | 3 | Black willow | 15 |
| | Northern red oak | 3 | Silky dogwood | 22 |
| | Witch Hazel | 4 | Gray dogwood | 22 |
| | | | | |

| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|----|
| 3 | Red maple | 25 | Nanny-berry | 5 |
| | Quaking aspen | 20 | Black willow | 25 |
| | Northern red oak | 15 | Yellow birch | 12 |
| | Black cherry | 7 | Gray dogwood | 12 |
| | Witch hazel | 5 | | |



| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants |
|---------------|--------------------------------|----|---------------------------------|
| 4 | Eastern hemlock | 15 | Not Applicable |
| | Shagbark hickory | 15 | |
| | Yellow birch | 8 | |
| | Black cherry | 5 | |
| | Northern spicebush | 5 | |



Legend

| | | |
|--|--|--|
| <p>⊕ Milepost</p> <p>Limit of Disturbance</p> <p>Pipeline Centerline</p> <p>Ephemeral Stream</p> <p>Perennial Stream</p> | <p>Wetland Classification</p> <p>PEM</p> <p>PSS</p> | <p>Planting Type</p> <p>Wetland Riparian</p> <p>Upland Riparian</p> |
|--|--|--|

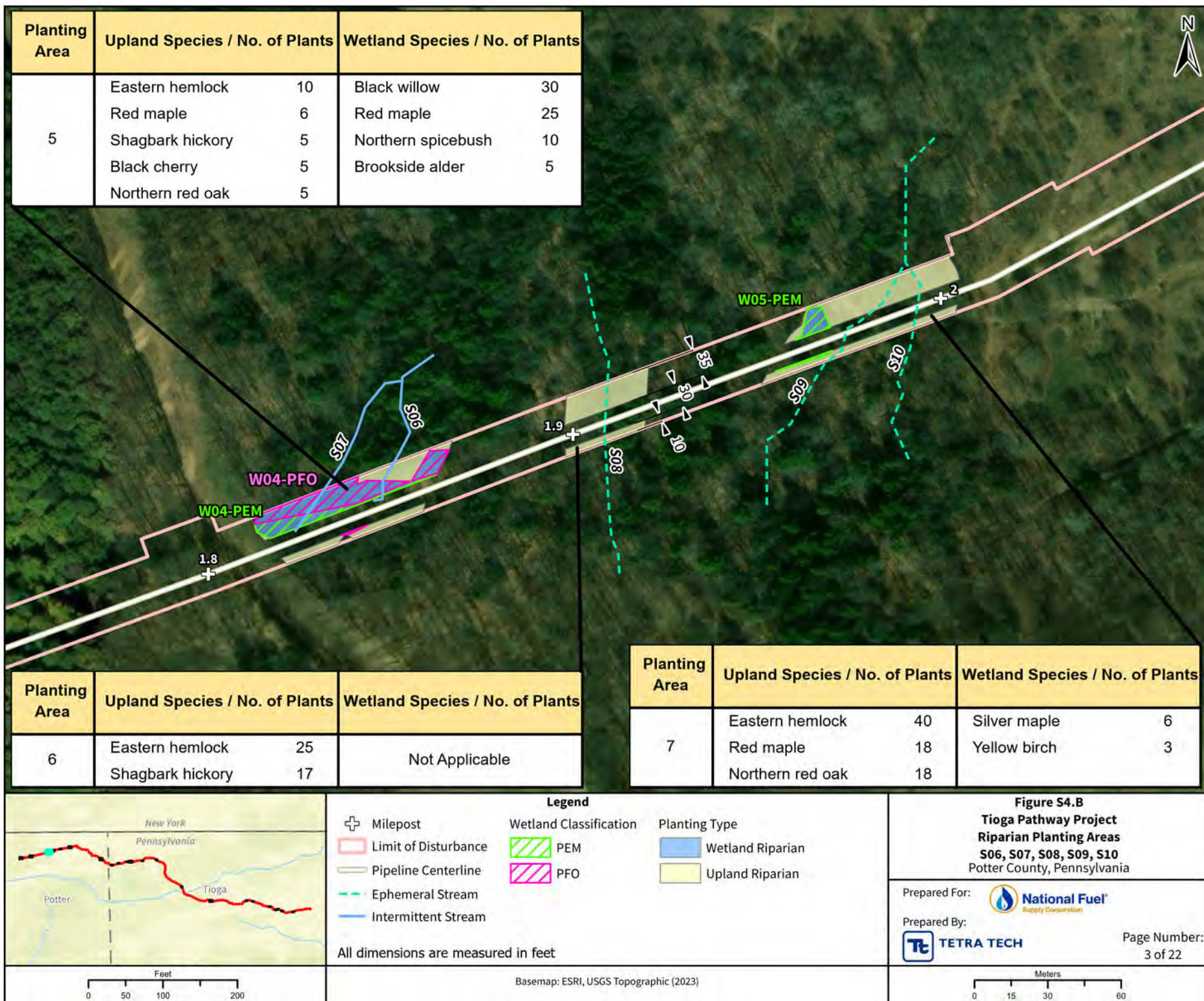
All dimensions are measured in feet

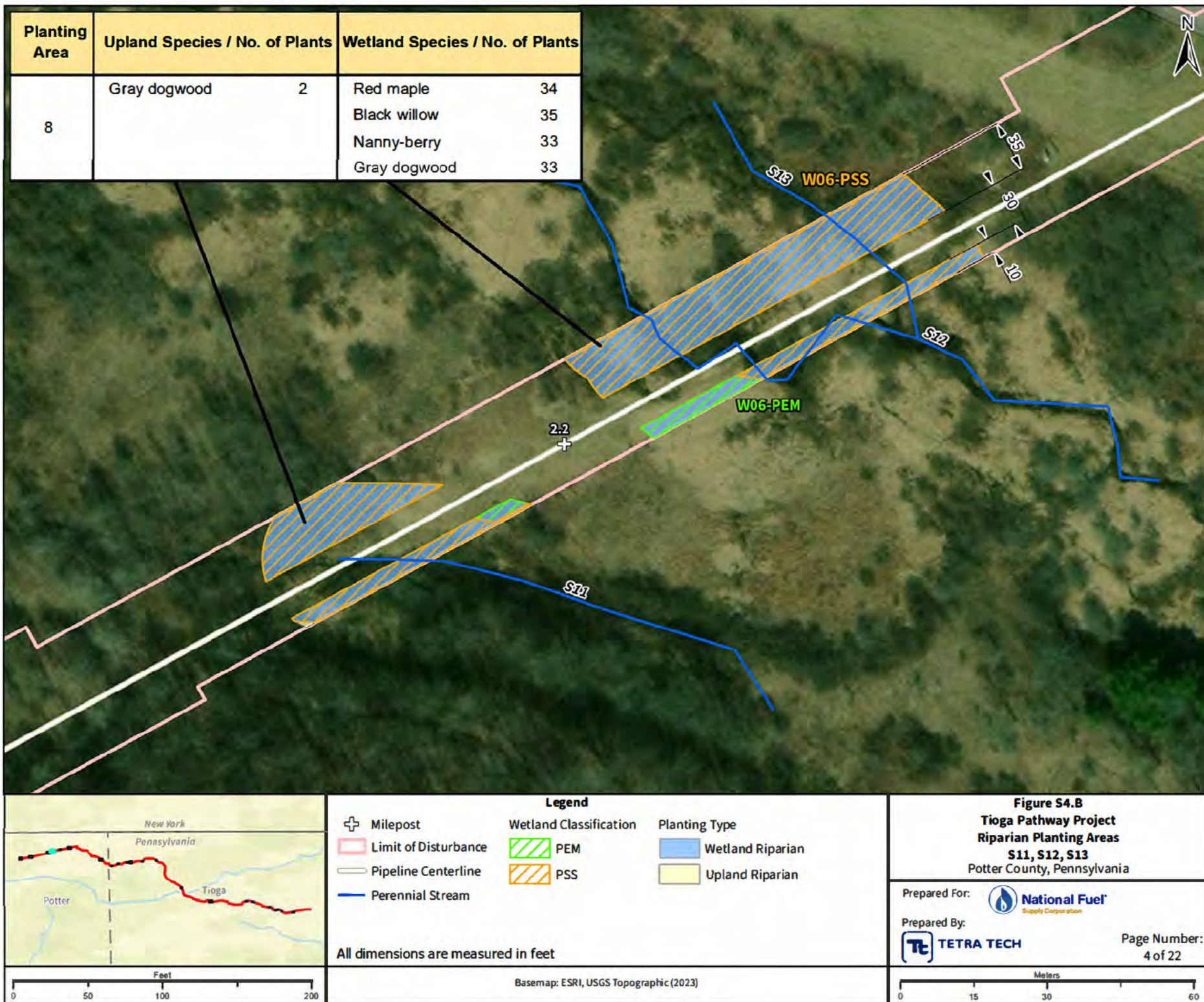
Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S03, S04, S05
Potter County, Pennsylvania

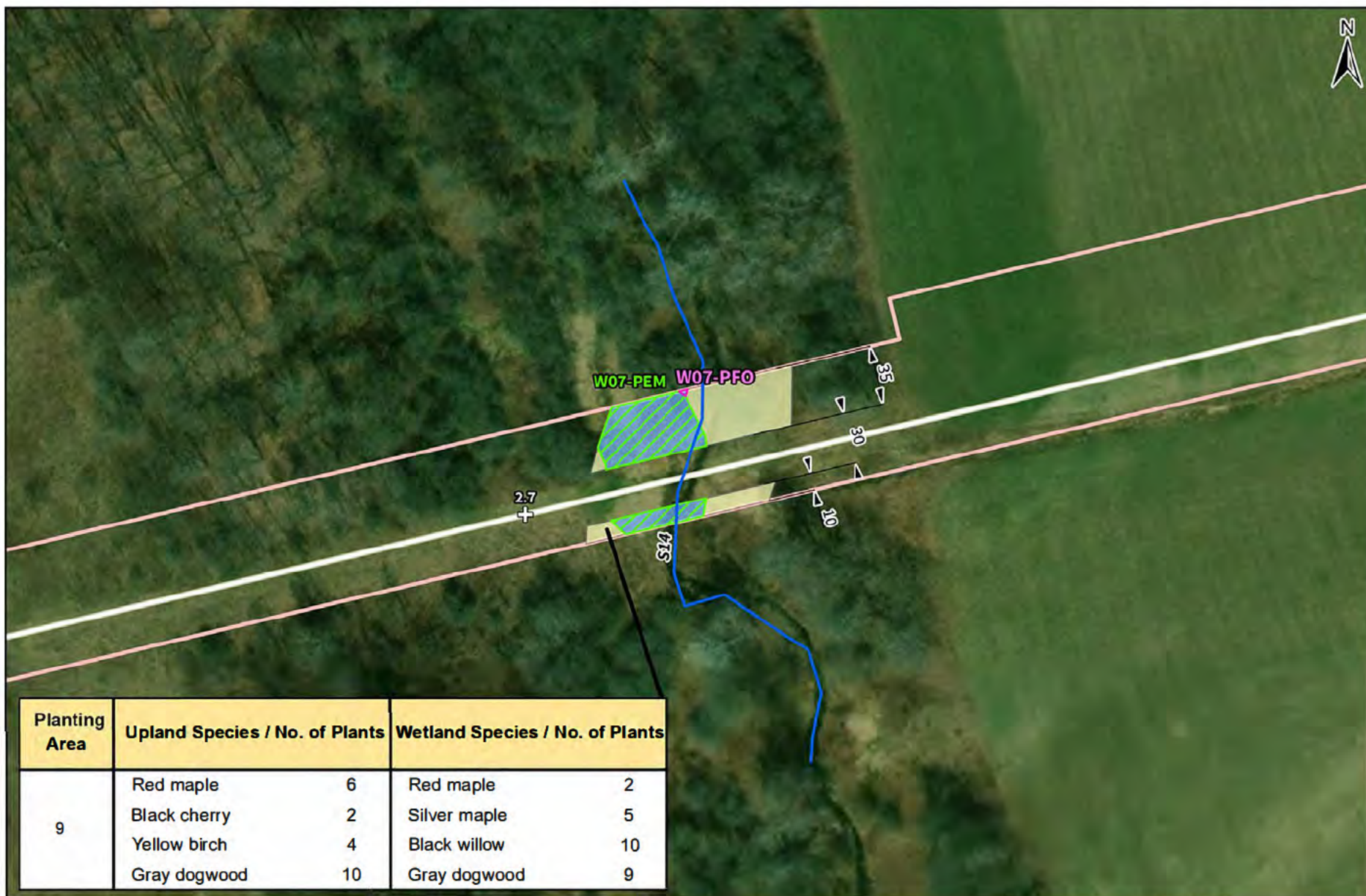
Prepared For: **National Fuel**
Supply Corporation

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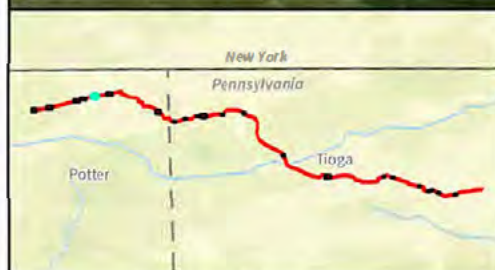
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2 of 22







| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|----|
| 9 | Red maple | 6 | Red maple | 2 |
| | Black cherry | 2 | Silver maple | 5 |
| | Yellow birch | 4 | Black willow | 10 |
| | Gray dogwood | 10 | Gray dogwood | 9 |



| Legend | | |
|-----------------|----------------------------|------------------------------|
| + | Milepost | |
| [Red line] | Limit of Disturbance | |
| [White line] | Pipeline Centerline | |
| [Blue line] | Perennial Stream | |
| [Green hatched] | Wetland Classification PEM | [Blue box] Wetland Riparian |
| [Pink hatched] | Wetland Classification PFO | [Yellow box] Upland Riparian |

All dimensions are measured in feet

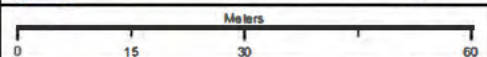
Basemap: ESRI, USGS Topographic (2023)

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S14
 Potter County, Pennsylvania

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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|--|
| 10 | Eastern hemlock | 19 | Not Applicable | |
| | Shagbark hickory | 18 | | |
| | Black cherry | 10 | | |

| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|----|
| 11 | Eastern hemlock | 15 | Black willow | 10 |
| | Red maple | 8 | Gray dogwood | 4 |
| | Witch hazel | 4 | Silky dogwood | 4 |
| | Gray dogwood | 15 | | |



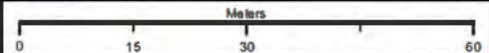
Basemap: ESRI, USGS Topographic (2023)

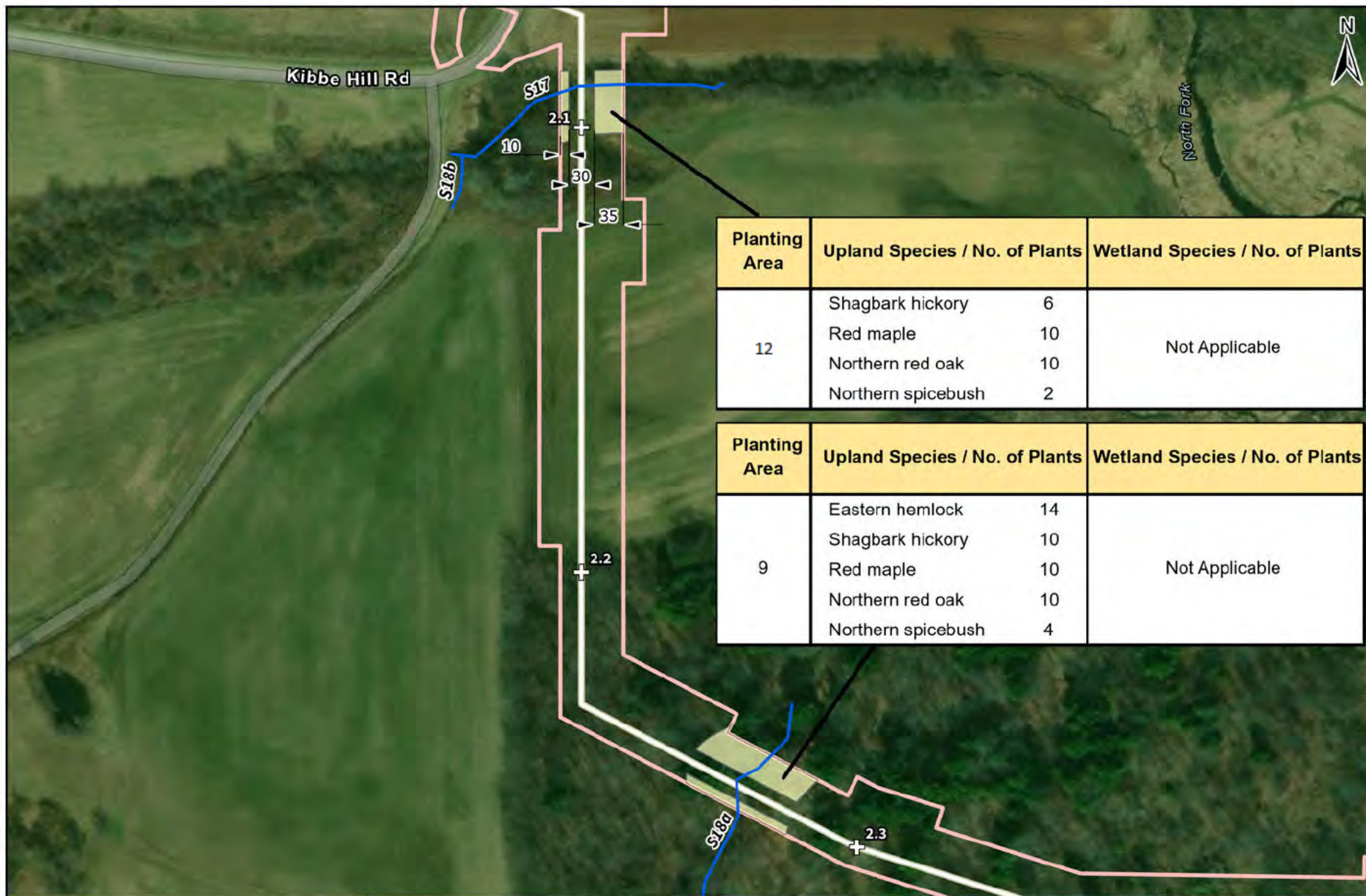
Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S15, S16
Potter County, Pennsylvania

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Legend

- ⊕ Milepost
- Limit of Disturbance
- Pipeline Centerline
- Perennial Stream
- Planting Type
- Upland Riparian

All dimensions are measured in feet

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S17, S18a
 Potter County, Pennsylvania

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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|---|---------------------------------|---|
| 14 | Red maple | 5 | Southern arrow-wood | 2 |
| | Witch hazel | 5 | Gray dogwood | 2 |
| | Gray dogwood | 5 | | |

| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|----|
| 15 | Yellow birch | 13 | Black willow | 10 |
| | Gray dogwood | 25 | Silver maple | 2 |
| | Northern spicebush | 12 | Southern arrow-wood | 3 |



- Legend**
- Milepost
 - Limit of Disturbance
 - Pipeline Centerline
 - Perennial Stream
 - Wetland Classification
 - PEM
 - Planting Type
 - Wetland Riparian
 - Upland Riparian

All dimensions are measured in feet

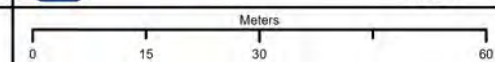
Basemap: ESRI, USGS Topographic (2023)

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S19, S20
 Tioga County, Pennsylvania

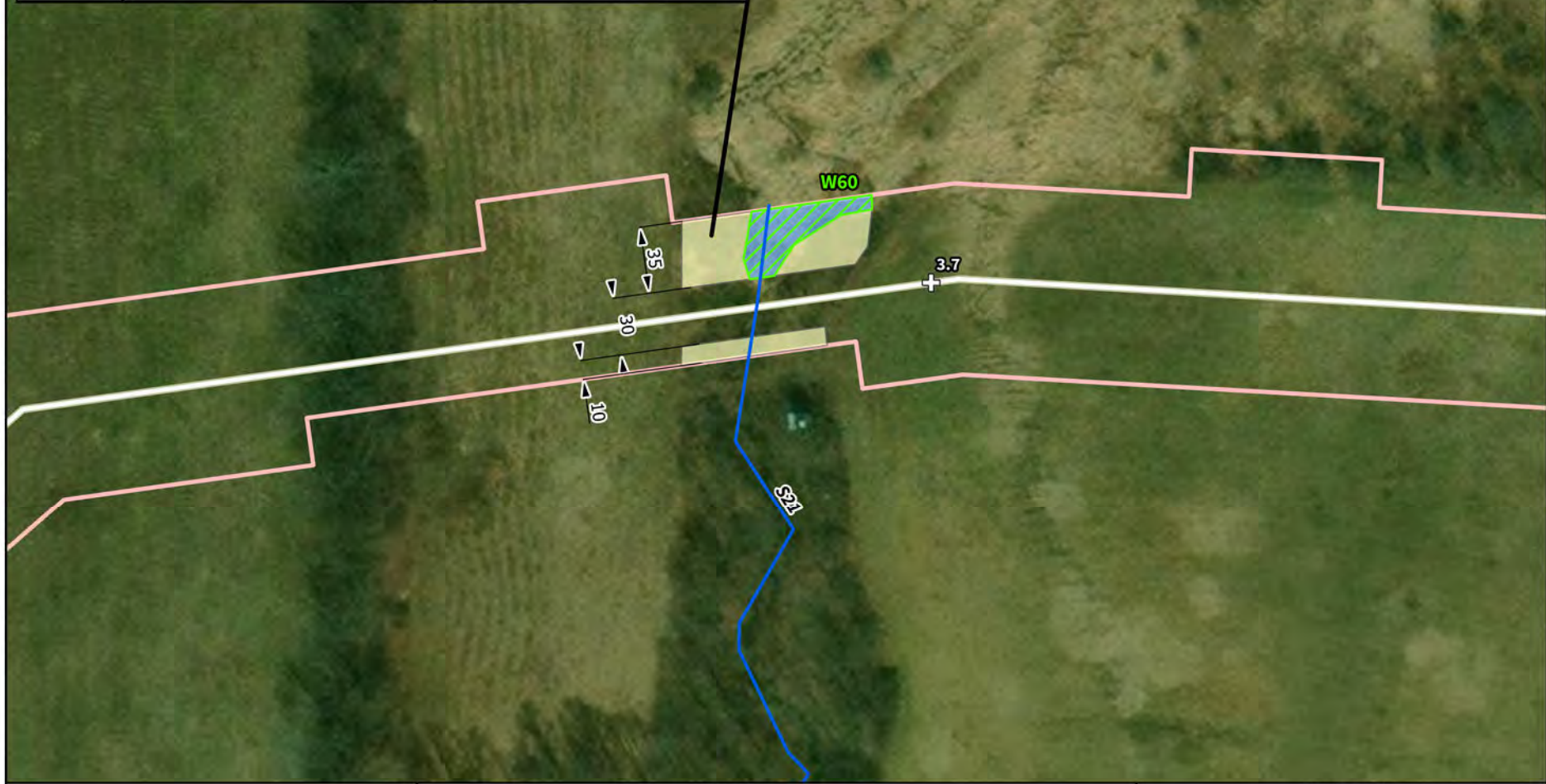
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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|---|
| 16 | Red maple | 10 | Silky dogwood | 4 |
| | Northern red oak | 10 | Silver maple | 2 |
| | Witch hazel | 4 | Brookside alder | 4 |



Legend

| | | |
|--|---|--|
| <p>⊕ Milepost</p> <p>Limit of Disturbance</p> <p>Pipeline Centerline</p> <p>Perennial Stream</p> | <p>Wetland Classification</p> <p>PEM</p> | <p>Planting Type</p> <p>Wetland Riparian</p> <p>Upland Riparian</p> |
|--|---|--|

All dimensions are measured in feet

Basemap: ESRI, USGS Topographic (2023)

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S21
Tioga County, Pennsylvania

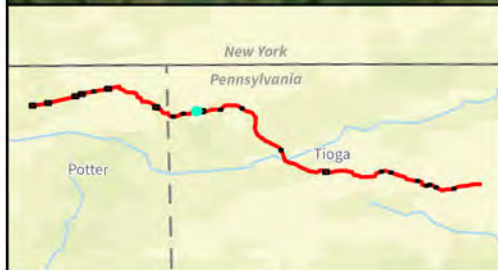
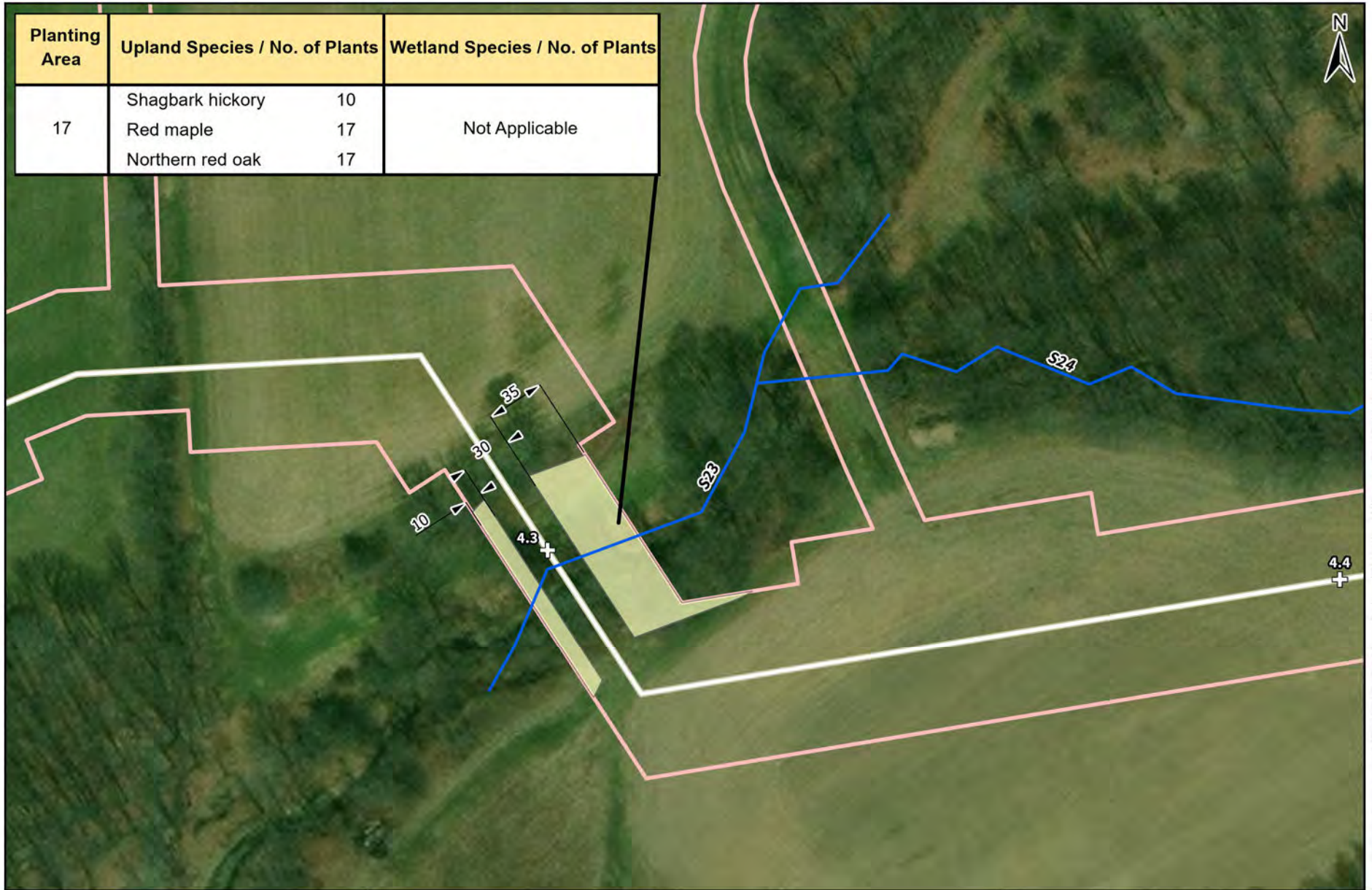
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Meters
0 15 30 60

| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants |
|---------------|--------------------------------|----|---------------------------------|
| 17 | Shagbark hickory | 10 | Not Applicable |
| | Red maple | 17 | |
| | Northern red oak | 17 | |



- Legend**
- ✚ Milepost
 - Limit of Disturbance
 - Pipeline Centerline
 - Perennial Stream
 - Planting Type
 - Upland Riparian

All dimensions are measured in feet

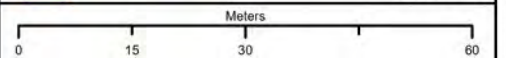
Basemap: ESRI, USGS Topographic (2023)

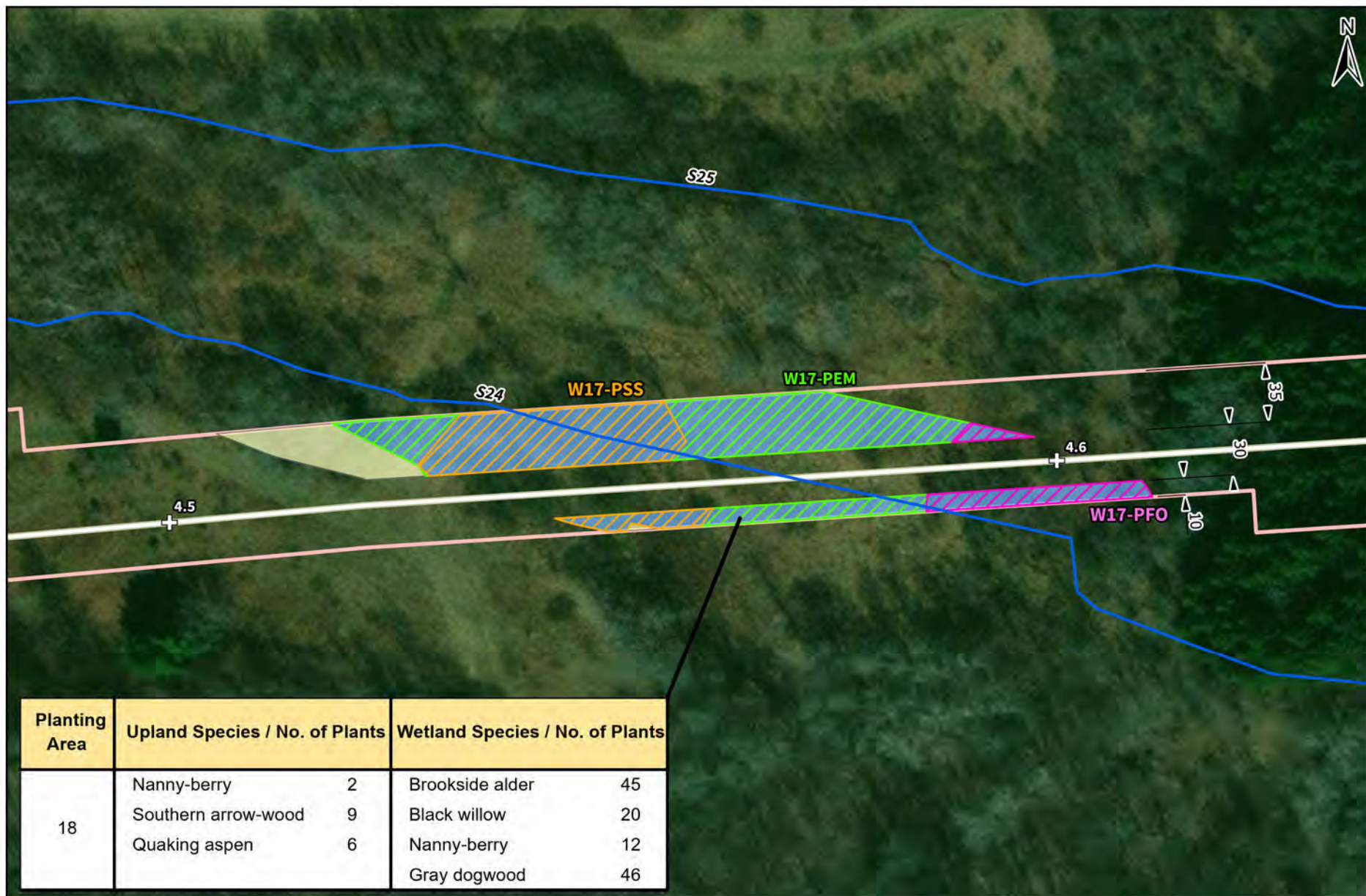
Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S23
 Tioga County, Pennsylvania

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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|---|---------------------------------|----|
| 18 | Nanny-berry | 2 | Brookside alder | 45 |
| | Southern arrow-wood | 9 | Black willow | 20 |
| | Quaking aspen | 6 | Nanny-berry | 12 |
| | | | Gray dogwood | 46 |



| Legend | | |
|------------------|----------------------------|---|
| + | Milepost | |
| [Pink outline] | Limit of Disturbance | |
| [Yellow line] | Pipeline Centerline | |
| [Blue line] | Perennial Stream | |
| [Green hatched] | Wetland Classification PEM | [Blue box] Planting Type Wetland Riparian |
| [Pink hatched] | PFO | [Yellow box] Upland Riparian |
| [Orange hatched] | PSS | |

All dimensions are measured in feet

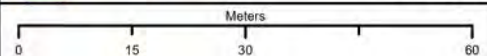
Basemap: ESRI, USGS Topographic (2023)

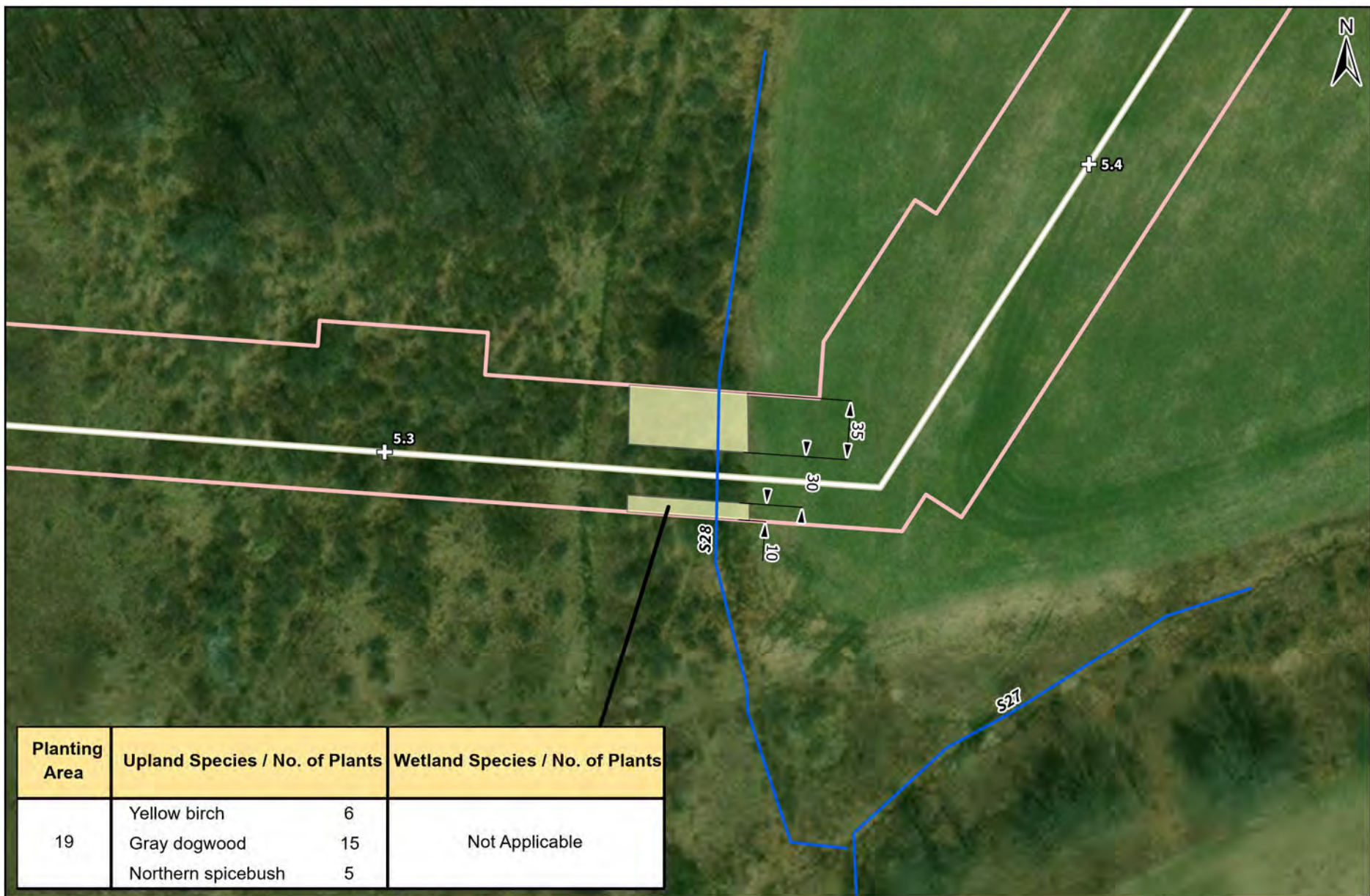
Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S24
 Tioga County, Pennsylvania

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| Planting Area | Upland Species / No. of Plants | Wetland Species / No. of Plants |
|---------------|--------------------------------|---------------------------------|
| 19 | Yellow birch 6 | Not Applicable |
| | Gray dogwood 15 | |
| | Northern spicebush 5 | |



- Legend**
- ⊕ Milepost
 - Limit of Disturbance
 - Pipeline Centerline
 - Perennial Stream
 - Planting Type
 - Upland Riparian

All dimensions are measured in feet

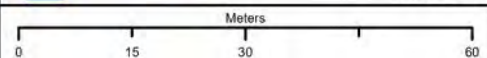
Basemap: ESRI, USGS Topographic (2023)

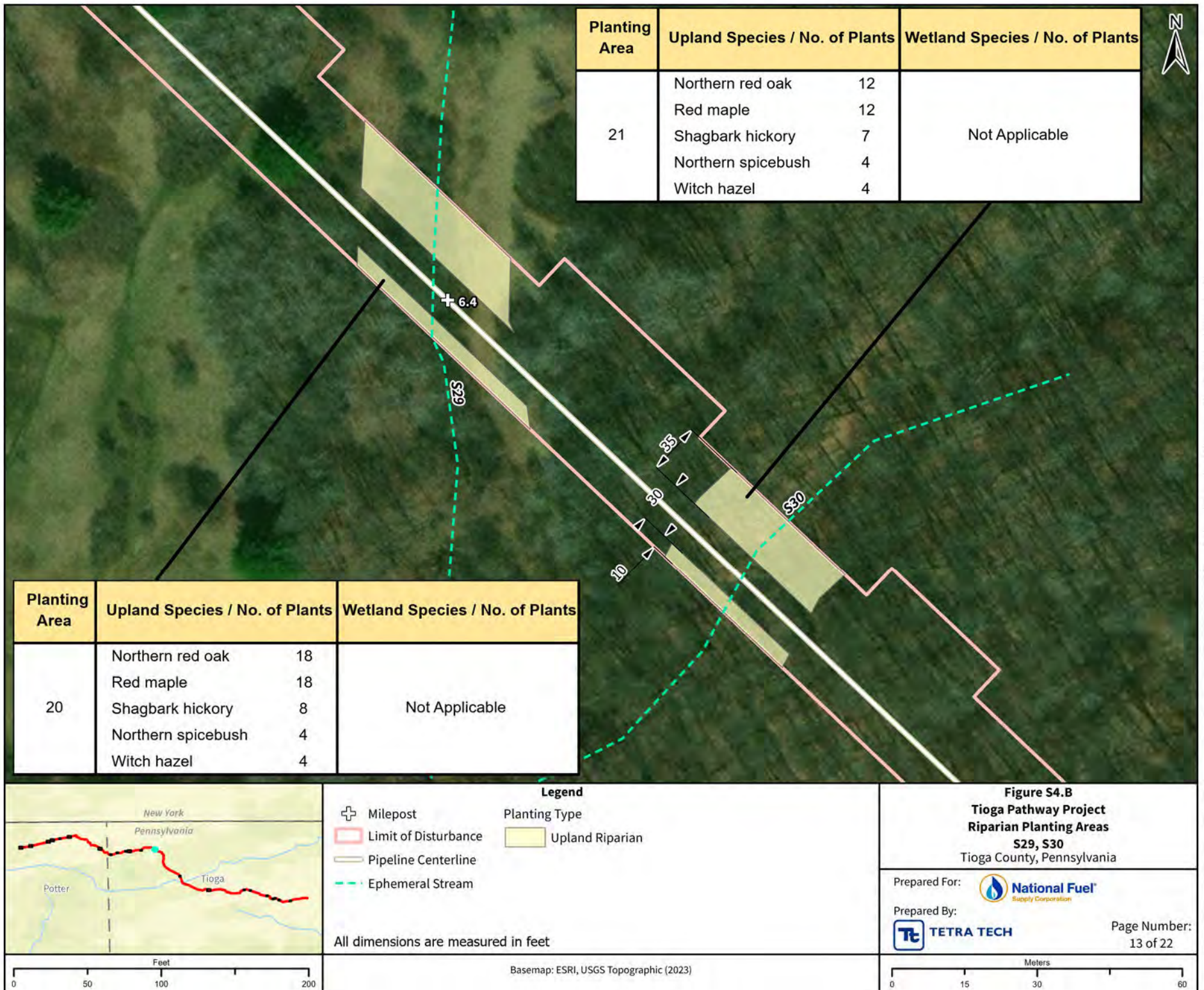
Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S28
 Tioga County, Pennsylvania

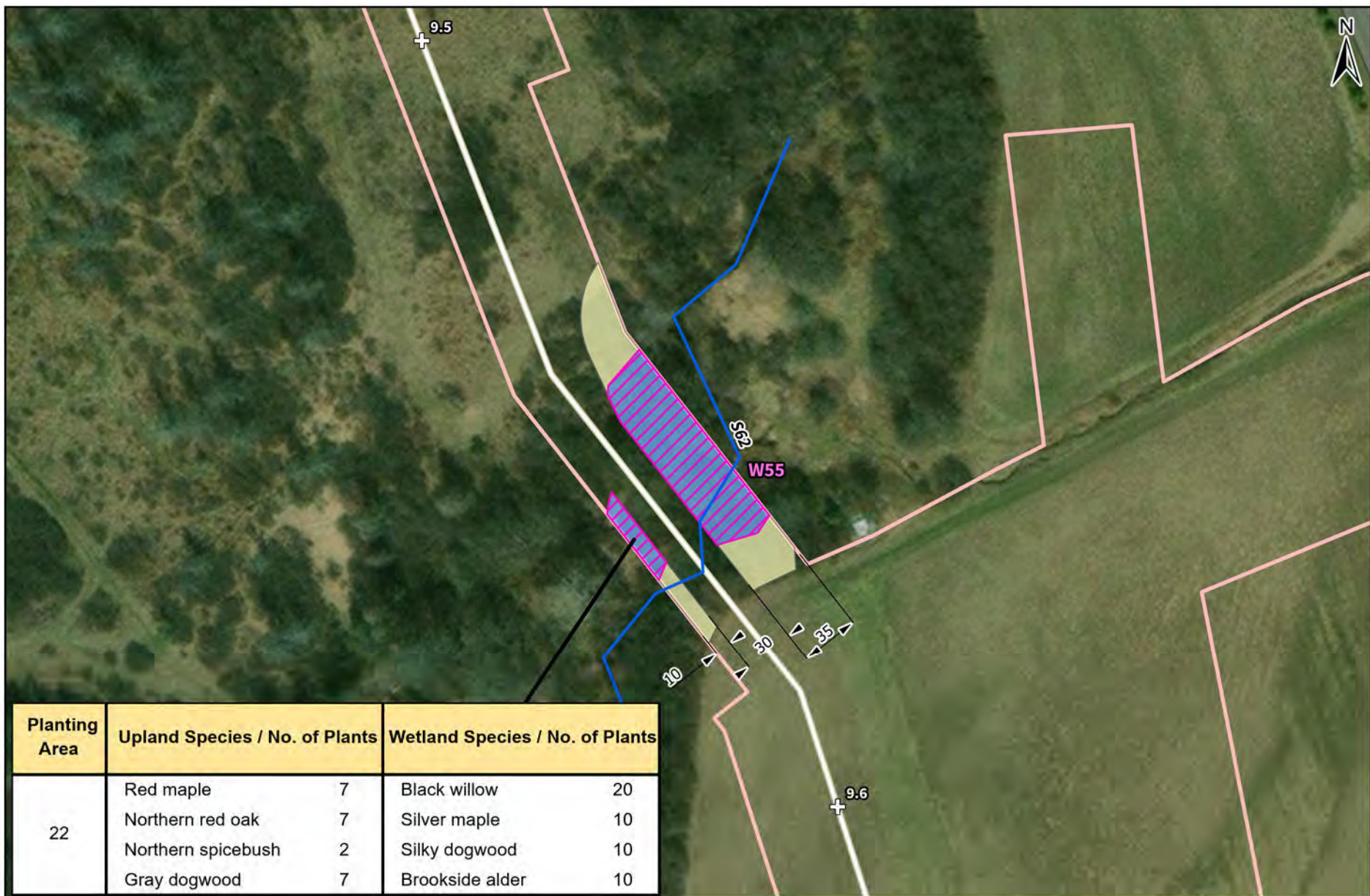
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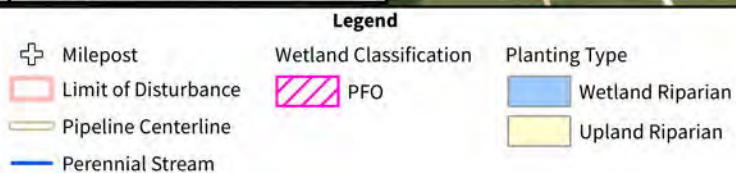
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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|---|---------------------------------|----|
| 22 | Red maple | 7 | Black willow | 20 |
| | Northern red oak | 7 | Silver maple | 10 |
| | Northern spicebush | 2 | Silky dogwood | 10 |
| | Gray dogwood | 7 | Brookside alder | 10 |



All dimensions are measured in feet

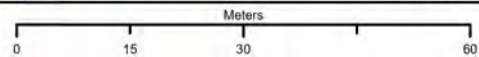
Basemap: ESRI, USGS Topographic (2023)

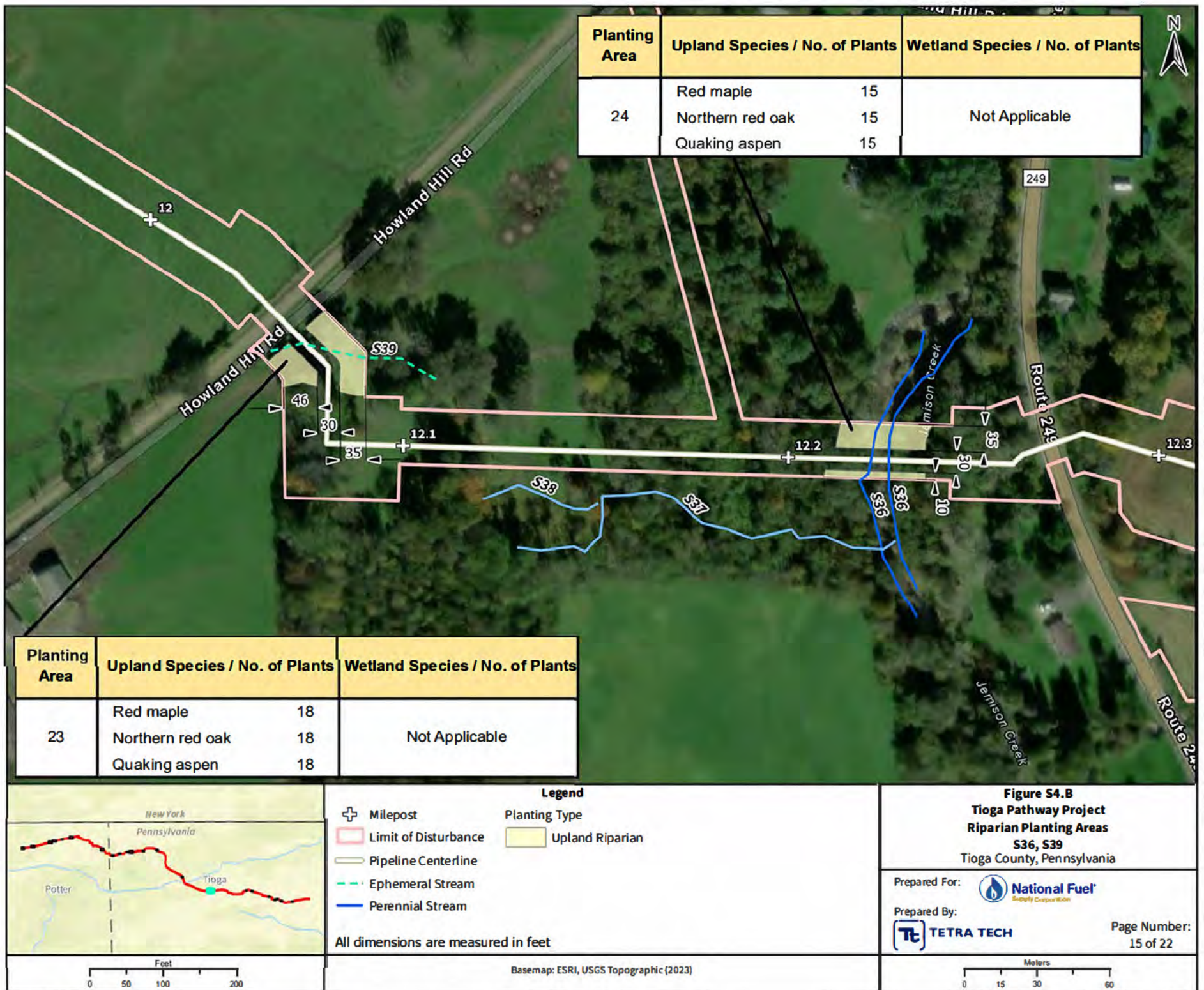
Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S62
 Tioga County, Pennsylvania

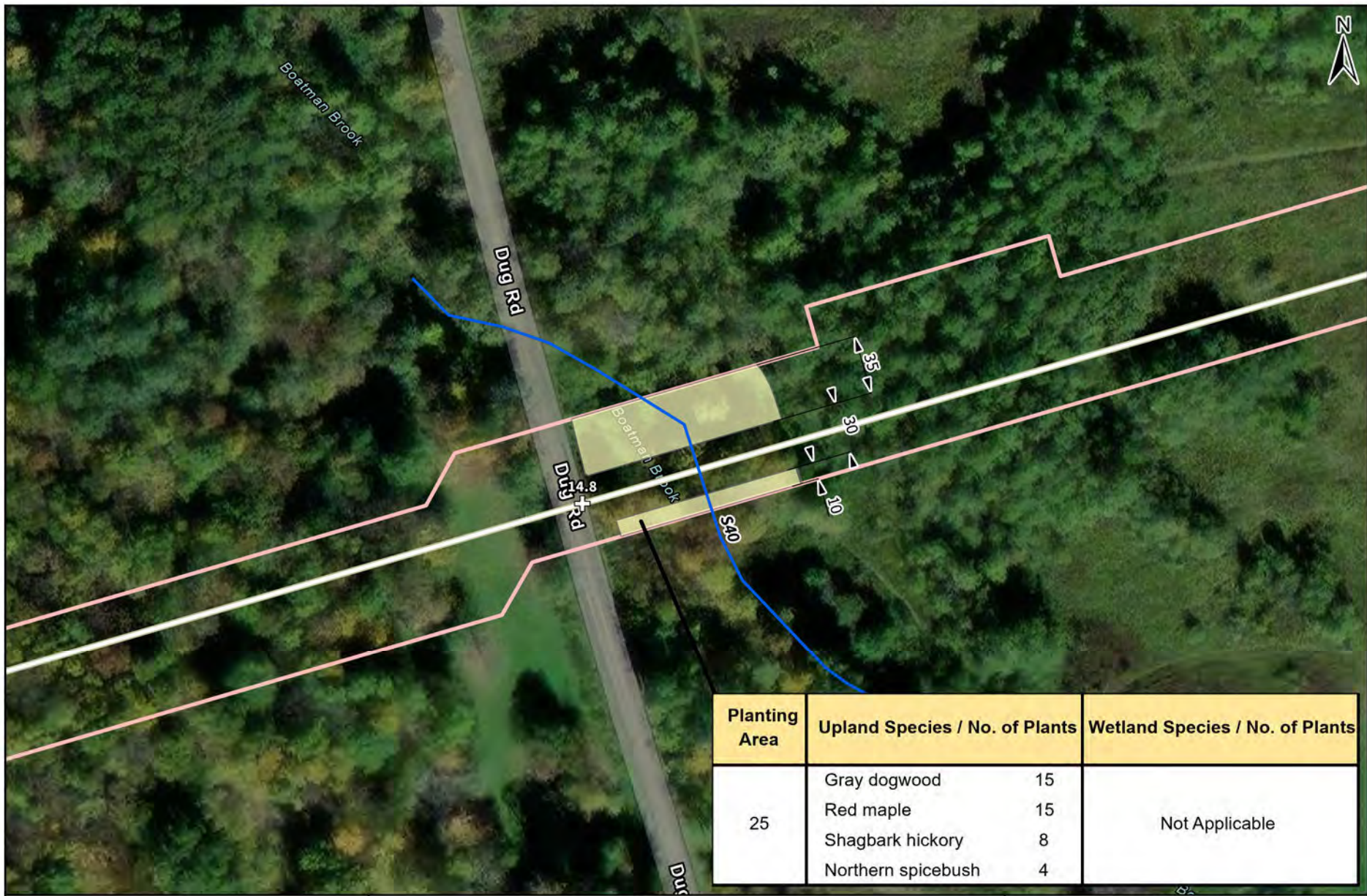
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Legend

+ Milepost
 [Red Outline] Limit of Disturbance
 [Yellow Outline] Pipeline Centerline
 [Blue Line] Perennial Stream

Planting Type
 [Blue Box] Wetland Riparian
 [Yellow Box] Upland Riparian

All dimensions are measured in feet

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S40
 Tioga County, Pennsylvania

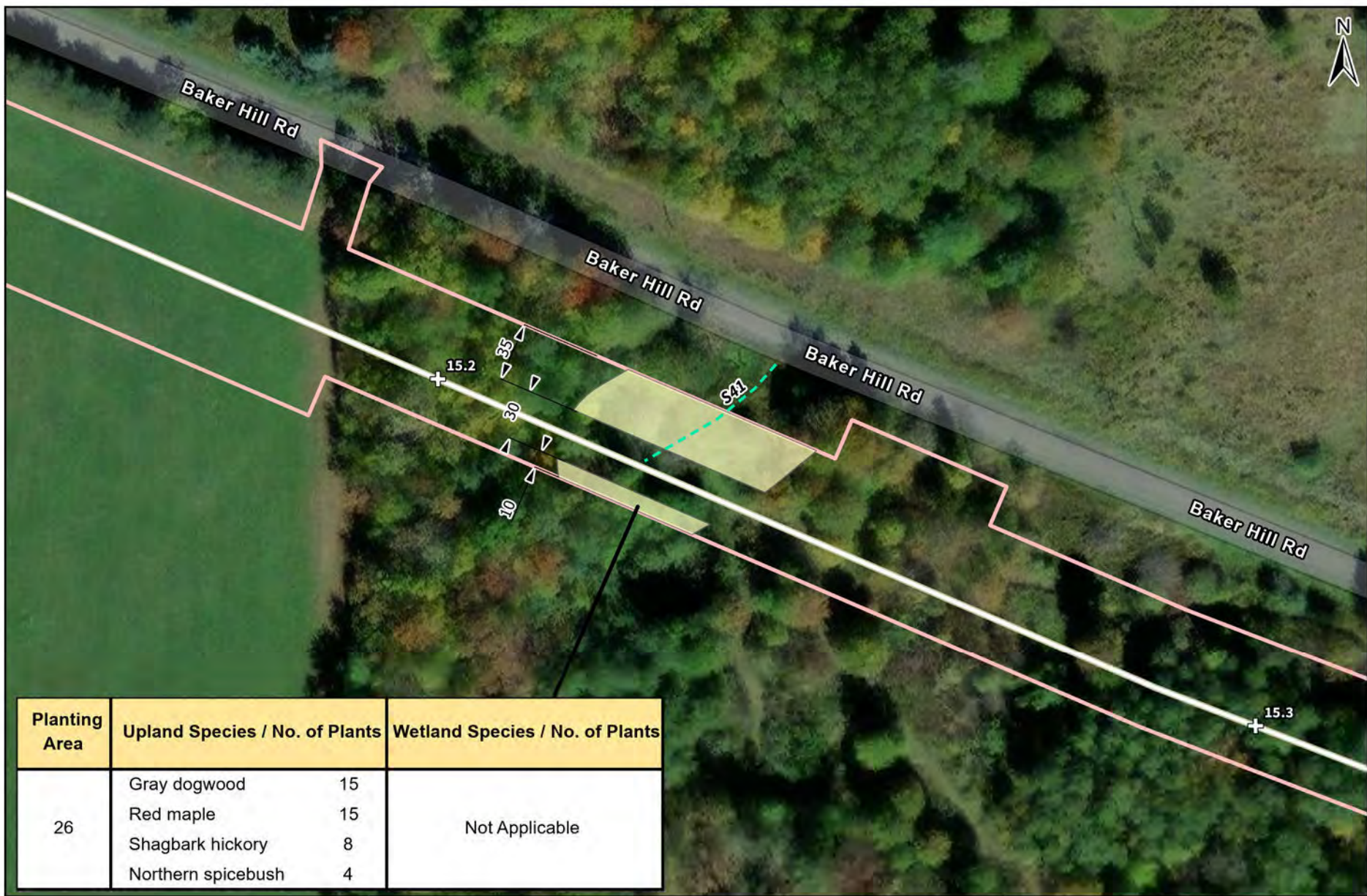
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Basemap: ESRI, USGS Topographic (2023)

Scale: 0 15 30 60 Meters



| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants |
|---------------|--------------------------------|----|---------------------------------|
| 26 | Gray dogwood | 15 | Not Applicable |
| | Red maple | 15 | |
| | Shagbark hickory | 8 | |
| | Northern spicebush | 4 | |



Legend

+ Milepost
 [Pink Line] Limit of Disturbance
 [White Line] Pipeline Centerline
 [Dashed Green Line] Ephemeral Stream

Planting Type

[Yellow Box] Upland Riparian

All dimensions are measured in feet

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S41
 Tioga County, Pennsylvania

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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|---|---------------------------------|----|
| 27 | Gray dogwood | 1 | Black willow | 10 |
| | Red maple | 1 | Brookside alder | 1 |
| | Northern red oak | 1 | Silky dogwood | 2 |
| | Yellow birch | 1 | Southern arrow-wood | 2 |



- Legend**
- Milepost
 - Limit of Disturbance
 - Pipeline Centerline
 - Intermittent Stream
 - Wetland Classification
 - PEM
 - Planting Type
 - Wetland Riparian
 - Upland Riparian

All dimensions are measured in feet

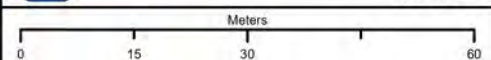
Basemap: ESRI, USGS Topographic (2023)

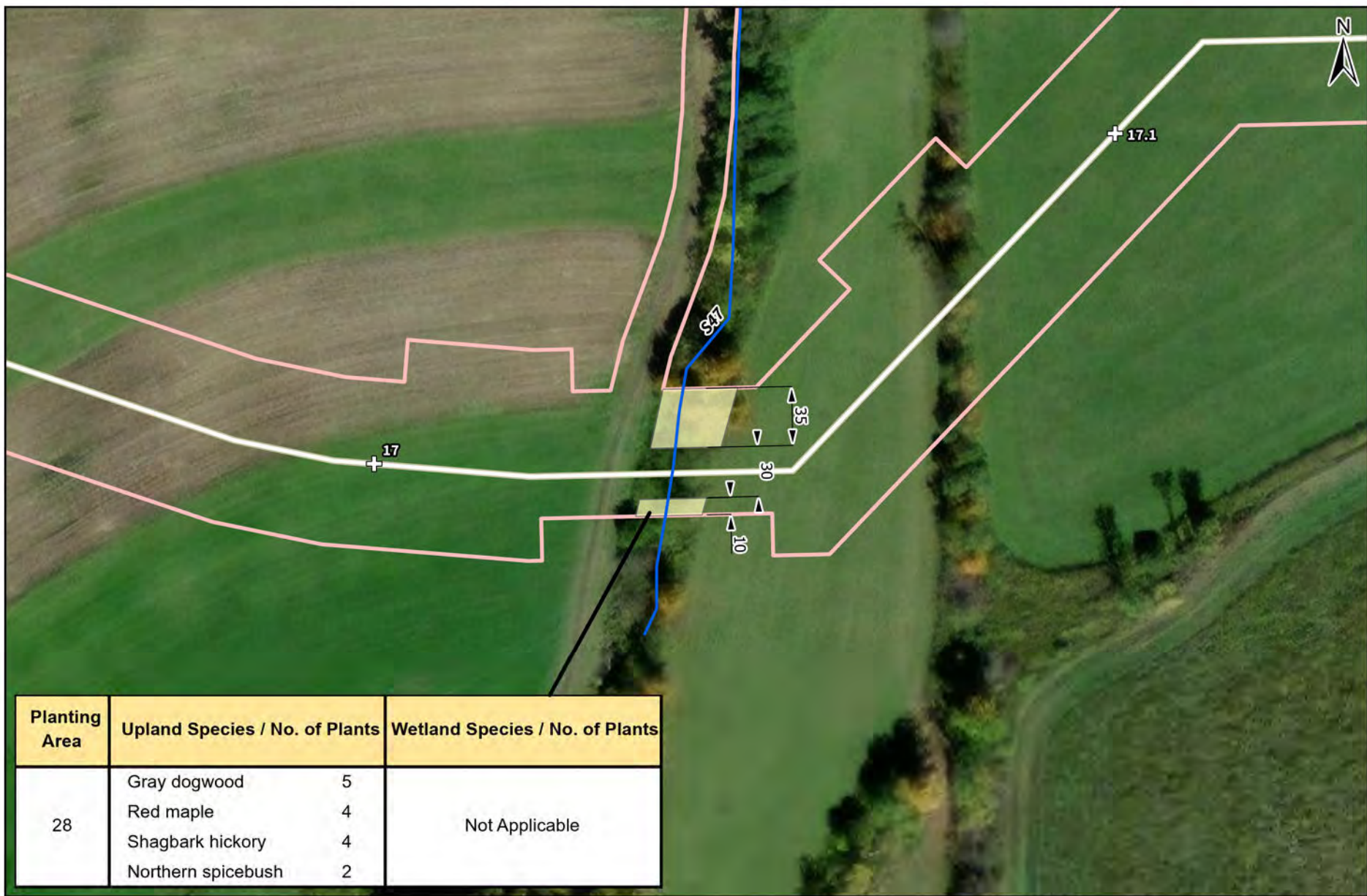
Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S45
 Tioga County, Pennsylvania

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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants |
|---------------|--------------------------------|---|---------------------------------|
| 28 | Gray dogwood | 5 | Not Applicable |
| | Red maple | 4 | |
| | Shagbark hickory | 4 | |
| | Northern spicebush | 2 | |



- Legend**
- ✚ Milepost
 - Limit of Disturbance
 - Pipeline Centerline
 - Perennial Stream
 - Planting Type
 - Upland Riparian

All dimensions are measured in feet

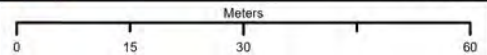
Basemap: ESRI, USGS Topographic (2023)

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S47
 Tioga County, Pennsylvania

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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|----|---------------------------------|----|
| 29 | Eastern hemlock | 20 | Silver maple | 14 |
| | Red maple | 37 | Black willow | 15 |



Legend

- ⊕ Milepost
- Limit of Disturbance (pink outline)
- Pipeline Centerline (yellow line)
- Ephemeral Stream (dashed green line)
- Perennial Stream (solid blue line)
- Wetland Classification: PFO (pink hatched area)
- Planting Type: Wetland Riparian (blue hatched area), Upland Riparian (yellow hatched area)

All dimensions are measured in feet

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S48, S49
 Tioga County, Pennsylvania

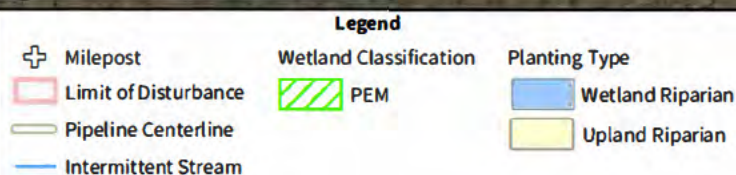
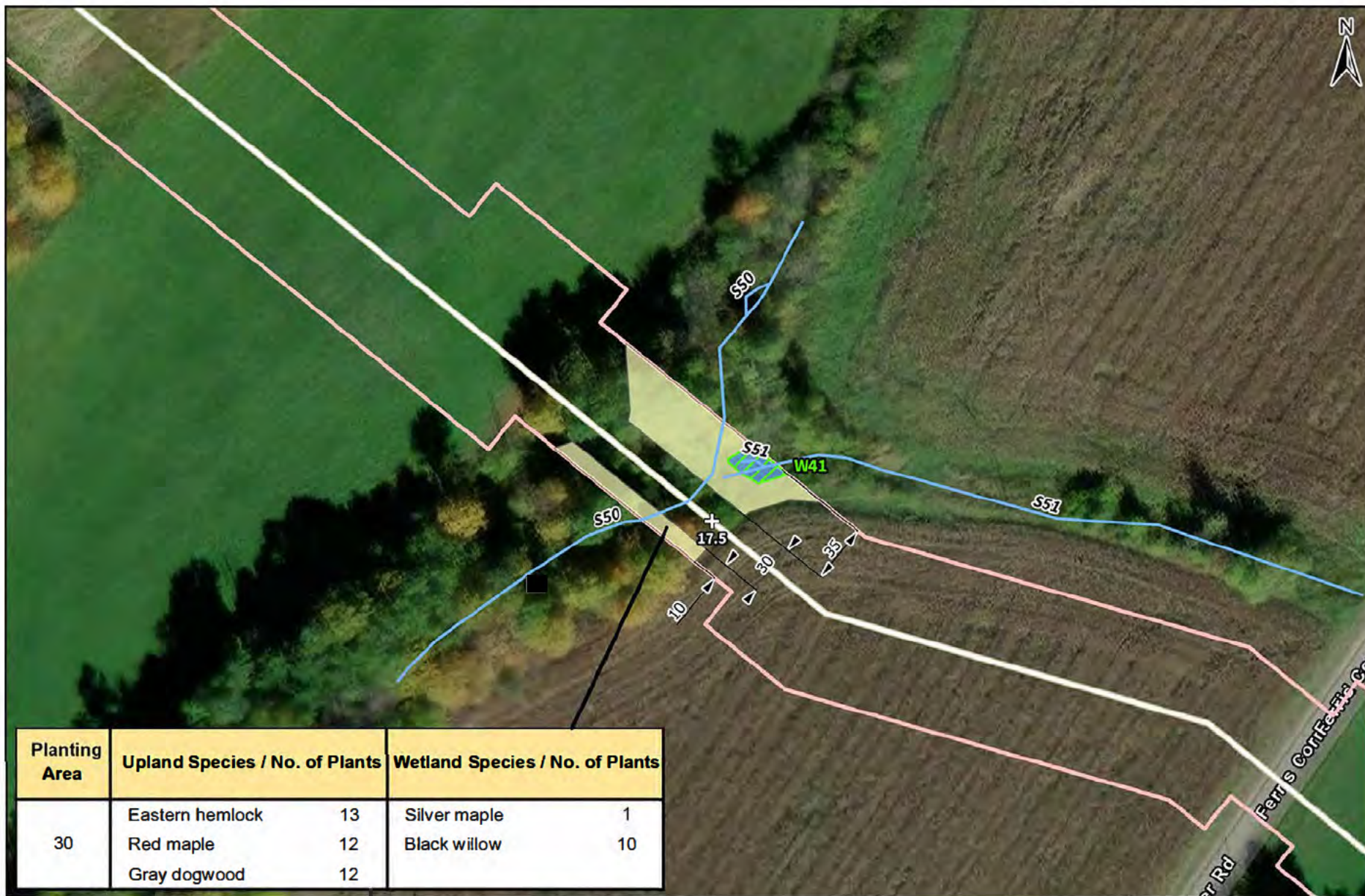
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Basemap: ESRI, USGS Topographic (2023)

Scale: 0 to 60 Meters



All dimensions are measured in feet

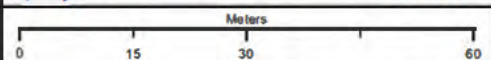
Basemap: ESRI, USGS Topographic (2023)

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S50, S51
 Tioga County, Pennsylvania

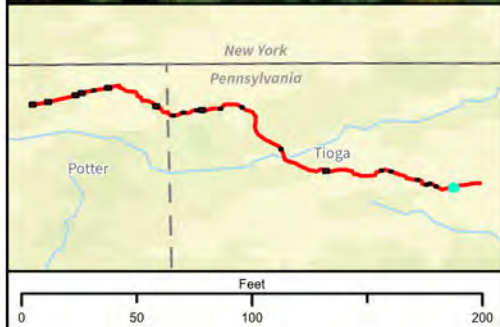
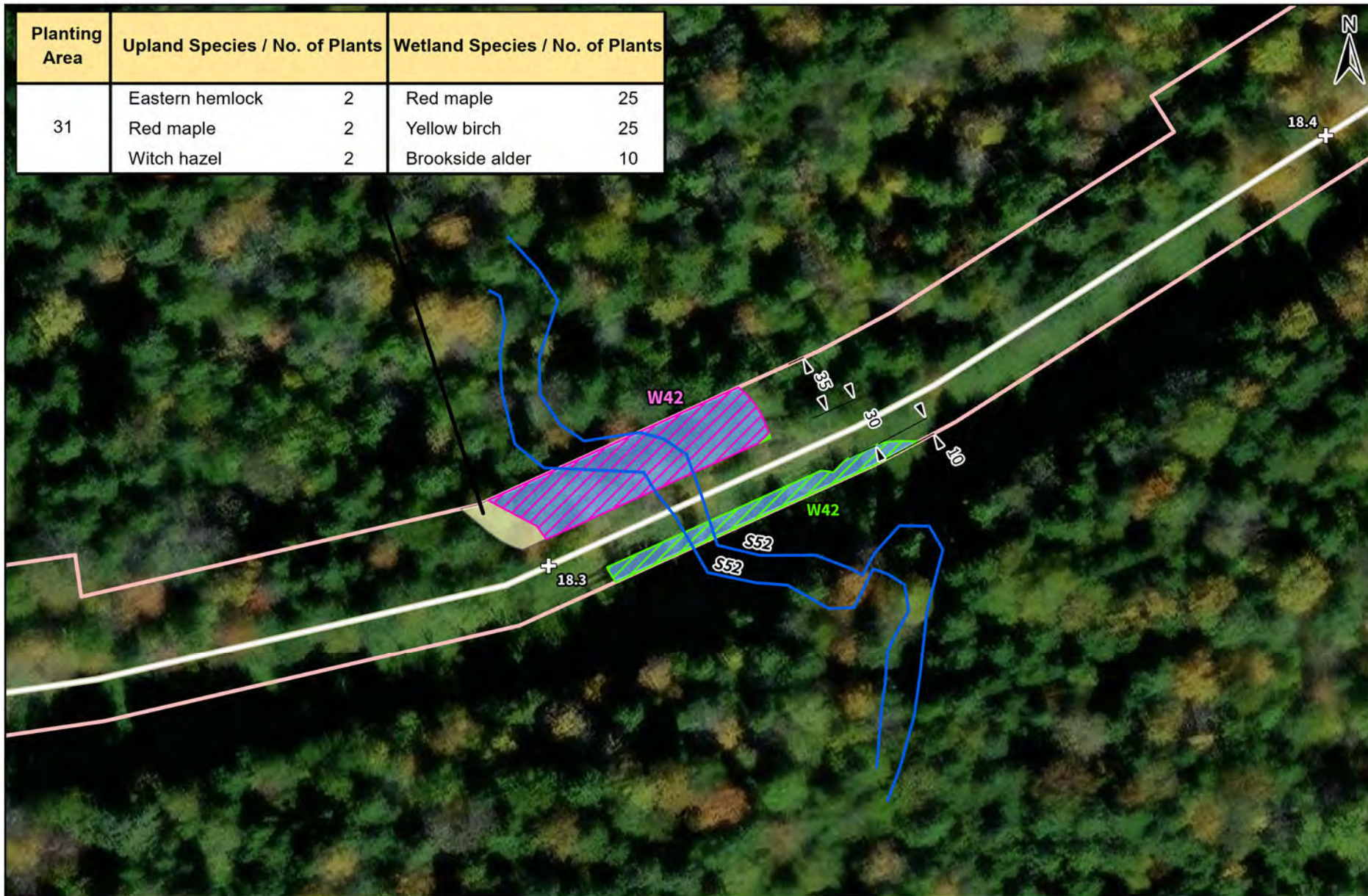
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| Planting Area | Upland Species / No. of Plants | | Wetland Species / No. of Plants | |
|---------------|--------------------------------|---|---------------------------------|----|
| 31 | Eastern hemlock | 2 | Red maple | 25 |
| | Red maple | 2 | Yellow birch | 25 |
| | Witch hazel | 2 | Brookside alder | 10 |



Legend

| | | |
|--|--|--|
| <p>⊕ Milepost</p> <p>Limit of Disturbance</p> <p>Pipeline Centerline</p> <p>Perennial Stream</p> | <p>Wetland Classification</p> <p>PEM</p> <p>PFO</p> | <p>Planting Type</p> <p>Wetland Riparian</p> <p>Upland Riparian</p> |
|--|--|--|

All dimensions are measured in feet

Basemap: ESRI, USGS Topographic (2023)

Figure S4.B
Tioga Pathway Project
Riparian Planting Areas
S52
Tioga County, Pennsylvania

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Meters
0 15 30 60

