NPDES Stormwater Discharges from MS4
Pollutant Reduction Plan
for
Borough of Perkasie
Bucks County, Pennsylvania

September 2017
Revised August 2025

Prepared For:

Borough of Perkasie
620 W. Chestnut St.
Perkasie, PA 18944
215 257-5065

Prepared By:

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MS4 Pollutant Reduction Plan
for
Borough of Perkasie
Bucks County, Pennsylvania

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Appendices

The Borough of Perkasie, Bucks County (Municipality) is submitting this Pollution Reduction Plan (PRP) in accordance with the requirements of *General Permit PAG-13 for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems* (MS4); specifically, in accordance with the *MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term*. The Municipality must create a PRP due to discharges from their MS4 to Unnamed Tributaries to East Branch Perkiomen Creek and Pleasant Spring Creek, both of which have been listed as impaired for sediment (see Appendix A). All unnamed tributaries as well as Pleasant Spring Creek are tributaries to the East Branch Perkiomen Creek and as such this PRP was created treating each of these streams as being part of the same watershed. Due to parsing, the Municipality's MS4 does not discharge to Threemile Run or Lake Nockamixon and therefore, this PRP does not address these watersheds.

The intent of this MS4 PRP is to establish the existing loading of pollutants discharged from the MS4 to Unnamed Tributaries to East Branch Perkiomen Creek and Pleasant Spring Creek, and to present a plan to reduce these pollutants. This MS4 PRP is organized to follow the "Required PRP Elements" presented in the PRP Instructions included as part of the *PAG-13 MS4 General Permit* instruction package. This PRP will be evaluated and updated by the Municipality on an as-needed basis, based on its effectiveness in reducing pollutant loads in discharges from the regulated small MS4. If this occurs, the Municipality will work with the Pennsylvania Department of Environmental Protection (PADEP) for review and approval of any revisions or updates.

Each MS4 PRP must include the following Required PRP Elements:

Section A: Public Participation
Section B: Map
Section C: Pollutants of Concern
Section D: Determine Existing Loading for Pollutants of Concern
Section E: Select BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Section F: Identify Funding Mechanisms
Section G: Identify Responsible Parties for Operation and Maintenance (O&M) of BMPs

A. Public Participation

As part of the preparation of this MS4 PRP, public participation is required. The MS4 shall complete the public participation measures listed below, and report in the PRP that each was completed:

- A complete copy of the PRP shall be available for public review.
- The applicant shall publish, in a newspaper of general circulation in the area, a public notice containing a statement describing the plan, where it may be reviewed by the public, and the length of time the permittee will provide for the receipt of comments. The public notice must be published at least 45 days prior to the deadline for submission of the PRP to DEP. **(See Appendix B-1)**
- The applicant shall accept written comments for a minimum of 30 days from the date of public notice. **(No public comments were received)**
- The applicant shall accept comments from any interested member of the public at a public meeting or hearing, which may include a regularly scheduled meeting of the governing body of the municipality or municipal authority that is the permittee. **(No public comments were received at the originally posted public meeting held on August 7, 2017)**
- *The updated report is currently under public review until October 2, 2025*
- The applicant shall consider and make a record of the consideration of each timely comment received from the public during the public comment period concerning the plan, identifying any changes made to the plan in response to the comment. **(No comments were received and therefore no changes were made as a result of public comment)**

All required documentation of public participation, as outlined above, is included as Appendix B.

- Date PRP public notice was published in newspaper: July 24, 2017, *revised September 2, 2025*
- Date PRP was made available for public review/comment: July 24, 2017, *revised September 2, 2025*
- End date for receipt of written comments (30 days from the date of public notice): August 23, 2017, *revised October 2, 2025*
- Date PRP listed on the public meeting agenda: July 17, 2017, *revised September 2025*
- Date PRP comments were accepted at a public meeting: August 7, 2017, *Revised September 15, 2025*

B. Map

Mapping is an integral part of developing the PRP and requires a level of detail suitable to determine the existing land uses, impervious/pervious surface coverages, topography and loading for the sediment. The MS4 PRP map shall show land uses and / or impervious / pervious surfaces and the storm sewershed boundary. The MS4 PRP map(s) shall also show the proposed locations of structural BMPs that will be implemented to achieve the required pollutant load reductions. The storm sewershed boundary shown on the Municipality MS4 PRP Map constitutes the storm sewershed to each of the MS4 outfalls within the MS4's jurisdiction that discharge to Unnamed Tributaries to East Branch Perkiomen Creek and Pleasant Spring Creek.

The Municipality MS4 PRP Map identifies the storm sewershed boundary, the existing land uses and impervious/pervious surface coverages, as well as the proposed locations of structural best management practices (BMPs) to be implemented to achieve required pollutant load reductions. The Municipality MS4 PRP Map is included in Appendix C.

The Municipality MS4 PRP Map also shows parsed areas, which are areas within the storm sewershed that are not included in the calculation of land area and existing pollutant loading. All BMPs located within these parsed areas have not been counted toward achieving pollutant reduction objectives. 68% of the Municipality has been parsed (1,110 of the 1,636 acres). Examples of land area that have been parsed include:

- The land area associated with non-municipal stormwater NPDES permit coverage that exists within the urbanized area of a municipality;
- Land area associated with PennDOT roadways and the Pennsylvania Turnpike (roads and right of ways);
- Land areas in which stormwater runoff does not enter the MS4. If an accurate storm sewershed map is developed, these lands may be parsed or excluded as part of that process. Potential examples include homeowner's associations and schools which do not contain municipal roads or other municipal infrastructure.

C. Pollutants of Concern

The Municipality shall calculate the existing loading of sediment in lbs/year; calculate the minimum reduction in loading in lbs/year; select BMP(s) to reduce loading; and demonstrate that the selected BMPs will achieve the minimum reductions.

For PRPs developed for impaired water ["Appendix E" noted in the Requirements Table column in the *MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term*], the pollutants are based on the impairment listing as provided in the *MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term*. If the impairment is based on siltation only, a minimum of 10% sediment reduction is required. If the impairment is based on nutrients only or other surrogates for nutrients (e.g., "Excessive Algal Growth" and "Organic Enrichment/Low D.O."), a minimum 5% TP reduction is required. If the impairment is due to both siltation and nutrients, both sediment (10% reduction) and TP (5% reduction) must be addressed.

The impaired downstream waters are Unnamed Tributaries to East Branch Perkiomen Creek and Pleasant Spring Creek, both of which have impairments for sediment. A minimum 10% reduction is required for sediment. The MS4 PRP presents the minimum reduction in loading for sediment as pounds per year (lbs/yr).

D. Determine Existing Loading for Pollutants of Concern

TABLE D-1 below summarizes the division of the total area of the Municipality.

TABLE D-1: SUMMARY OF AREAS

Area Description	Acres
Parsed	1110
Borough ROW	76
Residential	362
Commercial	66
Open Space	22
Total Area	**1636**

The loading and reduction for sediment was calculated as follows:

The Municipality's permit obligation applies to the land area that drains to the municipal separate storm sewer (See TABLE D-1) from within the jurisdiction of the MS4 permittee (the "storm sewershed") less that of the pre-developed condition (as if the whole Municipality were wooded). The storm sewershed land area that drains to the municipal separate storm sewer from within the jurisdiction of the MS4 to Unnamed Tributaries to East Branch Perkiomen Creek and Pleasant Spring Creek were delineated using PAMAP data known as Light Detection and Ranging (LiDAR) contours. Lands owned by the State or County as well as land areas that drained directly to non-Borough roads, streams, or permitted BMPs were parsed. GIS software was then used to define each zoning area in the Municipality and utilize the total area tool to calculate the total sediment loading to Unnamed Tributaries to East Branch Perkiomen Creek and Pleasant Spring Creek created by the Municipality for the non-parsed areas. Based upon an analysis of the impervious and pervious coverages within the different zoning areas in the Municipality that included event mean concentrations (EMCs) (per Chapter 8 of the BMP Manual) and weighted rainfall volumes for the non-parsed areas the existing sediment load was calculated.

The existing loading condition was calculated for the Municipality on July 10, 2017. The Municipality has a total non-parsed sediment loading of 85,588 lbs/year in the East Branch Perkiomen Creek storm sewershed after factoring in 450 linear feet of streambank stabilization that was performed in 2011. This impairment require a minimum *10*% reduction (8,559 lbs/year). This minimum sediment reduction will result in the Municipality's MS4 having a new sediment load of 77,029.

E. Select BMPs to Achieve the Minimum Required Reductions in Pollutant Loading

Drainage areas to proposed BMP locations were delineated (BMP DA) using the aforementioned LiDAR contours and load reductions for several BMPs were calculated.

The Municipality has a requirement to reduce sediment by 10% in the East Branch Perkiomen Creek storm sewershed. Implementation of BMPs or land use changes must be proposed that will result in meeting the minimum required reduction in pollutant loading with the storm sewershed(s) identified by the MS4. These BMP(s) must be implemented within five (5) years of DEP's approval of coverage under the PAS-13 General Permit, and must be located within the storm sewersheds of the applicable impaired waters, on either public or private property.

The Municipality plans to achieve the sediment reduction by designing, constructing, operating and maintaining BMPs. The Municipality is required to implement this plan over the next five (5) years. Table E-1 is a summary of the proposed BMPs under consideration, including location, type, area treated, and sediment removed:

TABLE E-1: SUMMARY OF BMPS

BMP LOCATION	BMP TYPE	AREA TREATED BY BMP (Acres)	SEDIMENT REMOVED BY BMP (lbs/year)
Spruce St.	Storm Sewer System Solids Removal*	11	Up to 2,895
Arch St.	Storm Sewer System Solids Removal*	15	Up to 3,764
Pleasant Spring Creek	Streambank Restoration	407	Up to 18,266

**The Storm Sewer System Solids Removal units have been installed by Developers and will be owned and maintained by the Borough once dedicated.*

As denoted in Section D, the load after proposed BMPs are implemented for the East Branch Perkiomen Creek Storm Sewershed should be *77,029* lbs/year. As demonstrated above in Table E-1 the proposed total load reduction will be at least *8,559* lbs/year and as much as *24,925* lbs/year, which meets and/or exceeds the minimum required reduction in pollutant loading.

The following table summarizes the sediment load and required sediment reduction for the East Branch Perkiomen Creek Storm Sewershed. Also included is a summary of the proposed BMPs contemplated to achieve the required sediment load reduction.

TABLE E-2: MS4 PRP STRATEGY SUMMARY

Description	Value	Unit
East Branch Perkiomen Creek Small Watershed	1636	acres
Parsed Area - Total	1110	acres
East Branch Perkiomen Creek Storm Sewershed	526	acres
Existing Sediment Load	85,588	lbs/year
Required Sediment Pollutant Load Reduction Percentage	10	%
Minimum Required Pollutant Load Reduction	8,559	lbs/year
Proposed Sediment Load Reduction from BMPs	8,559 to 24,925	lbs/year
Proposed Sediment Total Load with Proposed BMPs Installed	60,663 to 77,029	lbs/year

F. Identify Funding Mechanism(s)

The Municipality intends to apply for all related grants, such as growing greener, to implement these BMPs. The Municipality intends to utilize general fund money to cover the construction costs for the proposed BMPs should grant money not be awarded. The BMPs are not expected to be constructed until the last two years of the new permit cycle.

The two Storm Sewer System Solids Removal units have been provided and installed by developers as part of the land development process. Once dedicated, these units will be owned and maintained by the Borough. The streambank restoration of the Pleasant Spring Creek is being funded by the Borough general funds.

G. Identify Responsible Parties for Operation and Maintenance (O&M) of BMPs

Once implemented, the BMPs must be maintained in order to continue producing the expected pollutant reductions. Applicants must identify the following for each selected BMP:

- The parties responsible for ongoing O&M;
- The activities involved with O&M for each BMP; and
- The frequency at which O&M activities will occur.

Actual O&M activities will be identified by the MS4 in their Annual MS4 Status Reports, submitted under the General Permit. Once the PRP has been approved by PADEP and the Municipality begins design of the BMPs, an O&M manual will be created and submitted to PADEP for review and comment.

Table G-1 OPERATION AND MAINTENANCE OF BMPs

NAME OF BMP	LOCATION OF BMP	OWNER/ RESPONSIBLE PARTY	O&M ACTIVITY & FREQUENCY
Storm Sewer System Solids Removal	Spruce St.	Department of Public Works	Inspection and Pollutant Removal - Quarterly
Storm Sewer System Solids Removal	Arch St.	Department of Public Works	Inspection and Pollutant Removal - Quarterly
Streambank Restoration	Pleasant Spring Creek	N/A	N/A

H. GENERAL INFORMATION

Terms: The term “nutrients” refers to “Total Nitrogen” (TN) and “Total Phosphorus” (TP) unless specifically stated otherwise in PADEP’s latest Integrated Report. The terms “sediment,” “siltation,” and “suspended solids” all refer to inorganic solids and are hereinafter referred to as “sediment.”

Pollutants of Concern and Required Reductions: For all PRPs, MS4s shall calculate existing loading of the pollutant(s) of concern, in lbs/year; calculate the minimum reduction in loading, in lbs/year; select BMP(s) to reduce loading; and demonstrate that the selected BMP(s) will achieve the minimum reductions.

For PRPs developed for impaired waters (Appendix E), the pollutant(s) are based on the impairment listing, as provided in the MS4 Requirements Table. If the impairment is based on siltation only, a minimum 10% sediment reduction is required. If the impairment is based on nutrients only or other surrogates for nutrients (e.g., “Excessive Algal Growth” and “Organic Enrichment/Low D.O.”), a minimum 5% TP reduction is required. If the impaired is due to both siltation and nutrients, both sediment (10% reduction) and TP (5% reduction) must be addressed.

Existing Pollutant Loading: Existing loading must be calculated and reported as of the date of the development of the PRP. MS4s may not claim credit for street sweeping and other non-structural BMPs implemented in the past. If structural BMPs were implemented prior to development of the PRP and continue to be operated and maintained, the MS4 may claim pollutant reduction credit in the form of reduced existing loading.

> **NOTE** – An MS4 may not reduce its obligations for achieving pollutant load reductions through previously installed BMPs. An MS4 may only use such BMPs to reduce its estimate of existing pollutant loading. For example, if a rain garden was installed ten years ago and is expected to remove 100 lbs of sediment annually, and the overall annual loading of sediment in the storm sewershed is estimated to be 1,000 lbs without specifically addressing the rain garden, an MS4 may not claim that the rain garden satisfies its obligations to reduce sediment loading by 10%. The MS4 may, however, use the rain garden to demonstrate that existing loading is 900 lbs instead of 1,000 lbs, and 90 lbs rather than 100 lbs needs to be reduced during the term of permit coverage.

BMP Effectiveness: All MS4s must use the BMP effectiveness values contained within PADEP’s BMP Effectiveness Values document (3800-PM-BCW0100m) or Chesapeake Bay Program expert panel reports for BMPs listed in those resources when determining pollutant load reductions in PRPs. For BMPs not listed in 3800-PM-BCW0100m or expert panel reports, MS4s may use effectiveness values from other technical resources; such resources must be documented in the PRP.

Combining PRPs: If the MS4 discharges into multiple local surface waters impaired for nutrients and/or sediment, one PRP may be submitted to satisfy Appendix E but

calculations and BMP selections must be completed independently for the storm sewershed of each impaired water. If, for example, an MS4 permittee must complete three PRPs according to the MS4 Requirements Table for three separate surface waters, storm sewershed maps must be developed, existing loads must be calculated, and BMPs must be implemented for pollutant reductions independently within those storm sewersheds. In other words, BMPs cannot be implemented in one storm sewershed to count toward pollutant reductions in an entirely separate storm sewershed for a different impaired water.

Where local surface waters are impaired for nutrients and/or sediment, and those waters are tributary to a larger body of water that is also impaired, MS4s can propose BMPs within the upstream impaired waters to meet the pollutant reduction requirements of both the upstream and downstream waters. For example, if Stream A flows through a municipality that is tributary to Stream B, both are impaired and the MS4 has discharges to both streams, the MS4 can implement BMPs in the storm sewershed of Stream A to satisfy pollutant reduction requirements for both Streams A and B. In general, the MS4 permittee would not be able to satisfy pollutant reduction requirements for both streams if BMPs were only implemented in the storm sewershed of Stream B; however, on a case by case basis DEP will consider such proposals where it can be demonstrated that implementing BMPs in the upstream storm sewershed is infeasible.

If, however, Stream A does not flow into Stream B, both are impaired and the MS4 has discharges to both streams, in general DEP would expect that BMPs be implemented in the storm sewershed of both streams to meet pollutant reduction requirements.

MS4s participating in collaborative efforts are encouraged to contact DEP's Bureau of Clean Water during the PRP development phase for feedback on proposed approaches.

Joint PRPs: MS4s may develop and submit a joint PRP, regardless of whether the MS4s will be submitting a "joint NOI" or are already co-permittees. In general, the MS4s participating in a joint PRP should have contiguous land areas. The "study area" to be mapped is the combined storm sewershed for all MS4 jurisdictions.

BMP Selection: MS4s may propose and take credit for only those BMPs that are not required to meet regulatory requirements or otherwise go above and beyond regulatory requirements. For example, a BMP that was installed to meet Chapter 102 NPDES permit requirements for stormwater associated with construction activities may not be used to meet minimum pollutant reductions unless the MS4 can demonstrate that the BMP exceeded regulatory requirements; if this is done, the MS4 may take credit for only those reductions that will occur as a result of exceeding regulatory requirements.

> **NOTE** – Street sweeping may be proposed as a BMP for pollutant loading reductions if 1) street sweeping is not the only method identified for reducing pollutant loading, and 2) the BMP

effectiveness values contained in 3800-PM-BCW0100m or Chesapeake Bay Program expert panel reports are utilized.

Submission of PRP: Attach one copy of the PRP with the NOI or individual permit application that is submitted to the regional office of DEP responsible for reviewing the NOI or application. In addition, one copy of the PRP (not the NOI or application) must be submitted to DEP's Bureau of Clean Water (BCW). BCW prefers electronic copies of PRPs, if possible. Email the electronic version of the PRP, including map(s) (if feasible), to RA-EPPAMS4@pa.gov. If the MS4 determines that submission of an electronic copy is not possible, submit a hard copy to: PA Department of Environmental Protection, Bureau of Clean Water, 400 Market Street, PO Box 8774, Harrisburg, PA 17105-8774.

PRP Implementation and Final Report: Under the PAG-13 General Permit, the permittee must achieve the required pollutant load reductions within 5 years following DEP's approval of coverage under the General Permit, and must submit a report demonstrating compliance with the minimum pollutant load reductions as an attachment to the first Annual MS4 Status Report that is due following completion of the 5th year of General Permit coverage. For example, if DEP issues written approval of coverage to a permittee on June 1, 2018, the required pollutant load reductions must be implemented by June 1, 2023 and the final report documenting the BMPs that were implemented (with appropriate calculations) must be attached to the annual report that is due September 30, 2023. In general, the same methodology used to calculate the existing pollutant loads should be used in the final report to demonstrate the reductions. If BMP effectiveness values are updated in DEP's BMP Effectiveness Values document or Chesapeake Bay Program expert panel reports between the time the PRP is approved and the time the final report is developed, those updated effectiveness values may be used.

Appendix A

MS4 Requirements Table

Appendix A-1: Applicable portion of the MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Bucks County						
PENNDEL BORO	PAG130051	Yes	TMDL Plan	Mill Creek	Appendix C-PCB (4a), Appendix E-Siltation (5)	Other Habitat Alterations, Water/Flow Variability (4c)
				Silver Lake	Appendix E-Excessive Algal Growth, Nutrients, Suspended Solids (5)	Other Habitat Alterations (5)
				Neshaminy Creek	Appendix B-Pathogens (5), Appendix C-PCB (5), Appendix E-Nutrients, Organic Enrichment/Low D.O. (5)	
				Magnolia Lake	Appendix E-Excessive Algal Growth, Nutrients, Organic Enrichment/Low D.O., Suspended Solids (5)	
				Delaware River	Appendix C-PCB (4a)	
				Neshaminy Creek TMDL	TMDL Plan-Siltation, Suspended Solids (4a)	
PERKASIE BORO	PAG130139	No		Unnamed Tributaries to East Branch Perkiomen Creek	Appendix E-Siltation (5)	Flow Alterations, Water/Flow Variability (4c)
				Threemile Run	Appendix E-Nutrients (5)	Flow Alterations (4c)
				Pleasant Spring Creek	Appendix E-Siltation (5)	Water/Flow Variability (4c)
				Lake Nockamixon	Appendix E-Nutrients, Suspended Solids (4a)	
PLUMSTEAD TWP	PAG130106	Yes	TMDL Plan	Lake Galena (Peace Valley PA617)	Appendix E-Suspended Solids (4a), Appendix E-Nutrients (5)	
				Delaware River		Mercury (5)
				Neshaminy Creek	Appendix B-Pathogens (5), Appendix E-Nutrients, Organic Enrichment/Low D.O. (5)	
				Neshaminy Creek TMDL	TMDL Plan-Siltation, Suspended Solids (4a)	
				North Branch Neshaminy Creek		Water/Flow Variability (4c)
				Pine Run	Appendix E-Excessive Algal Growth (5)	
				Deep Run	Appendix E-Nutrients, Siltation (5)	
QUAKERTOWN BORO	PAG130096	No		Beaver Run	Appendix E-Siltation (5)	Water/Flow Variability (4c)
				Unnamed Tributaries to Beaver Run		Other Habitat Alterations (4c)
				Lake Nockamixon	Appendix E-Nutrients, Suspended Solids (4a)	
				Tohickon Creek	Appendix E-Nutrients, Siltation (5)	
RICHLAND TWP	PAI130007	Yes	SP, IP	Tohickon Creek	Appendix E-Nutrients, Siltation (5)	
				Lake Nockamixon	Appendix E-Nutrients, Suspended Solids (4a)	
				Delmont Lake		Exotic Species (5)
				Unnamed Tributaries to Beaver Run		Other Habitat Alterations (4c)
				Unnamed Tributaries to Unami Creek	Appendix E-Siltation (5)	Water/Flow Variability (4c)
				Beaver Run	Appendix E-Siltation (5)	Water/Flow Variability (4c)
				Morgan Creek	Appendix E-Nutrients, Siltation (5)	
RICHLANDTOWN BORO		No		Tohickon Creek	Appendix E-Nutrients, Siltation (5)	
				Lake Nockamixon	Appendix E-Nutrients, Suspended Solids (4a)	

Appendix B

Public Participation

Appendix B-1: Public Notice & Proof of Advertisement
Appendix B-2: Public Comments Received (None Received)
Appendix B-3: Public Meeting Agenda and Meeting Minutes

Bucks County, SS.

Ad Content Proof

PERKASIE BOROUGH
620 W CHESTNUT STREET
PERKASIE, PA 189440096

3-2152576065
0007144835-01

Ethelmae Palmer being duly affirmed according to law, deposes and says that he/she is the Legal Billing Co-ordinator of the CALKINS NEWSPAPER INCORPORATED, Publisher of The Intelligencer, a newspaper of general circulation, published and having its place of business at Doylestown, Bucks County, Pa. and Horsham, Montgomery County, Pa.; that said newspaper was established in 1886; that securely attached hereto is a facsimile of the printed notice which is exactly as printed and published in said newspaper on

July 24, 2017

and is a true copy thereof; and that this affiant is not interested in said subject matter of advertising; and all of the allegations in this statement as to the time, place and character of publication are true.

Ethelmae Palmer
LEGAL BILLING CO-ORDINATOR

Affirmed and subscribed to me before me this 8th day of September 2017 A.D.

Ann Clark

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Ann Clark, Notary Public
Tullytown Boro, Bucks County
My Commission Expires April 30, 2019
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

NOTICE
OF PUBLIC COMMENT PERIOD
AND PUBLIC MEETING
BOROUGH OF PERKASIE

For the **NPDES Stormwater Discharges from MS4 Pollutant Reduction Plan (PRP) for Borough of Perkasie**. The PRP outlines the measures the Borough intends to implement to reduce certain pollutants discharged from the Borough's Municipal Separate Storm Sewer System (MS4). The PRP includes a calculation of the existing loading of the pollutants of concern, a calculation of the minimum reduction required, and a selection of potential Best Management Practices (BMPs) intended to achieve the minimum required reduction. The Borough is soliciting written comments on the PRP. Interested persons may submit written comments during the 30-day period of **July 24 through August 23, 2017**. The document may be reviewed during the comment period at Perkasie Borough Hall, 620 W. Chestnut St., Perkasie, PA 18944 weekdays from 9AM - 4PM or on the Borough website homepage http://perkasieborough.org/. Written and verbal comments will be accepted at a public meeting on **August 7, 2017 (7PM)** at Perkasie Borough Hall. Comments must be submitted in writing to the address above (Attn: Borough Manager) or by email to manager@perkasieborough.org and must include originator's name and address. Comments submitted by facsimile will not be accepted.
1t Jy 24

MINUTES OF PERKASIE BOROUGH
COUNCIL COMMITTEES MEETING
AUGUST 7, 2017

620 West Chestnut Street
Perkasie, Pennsylvania

ATTENDANCE:

Council Member:	Matt Aigeldinger
	Scott Bomboy
	Chuck Brooks
	Aaron Clark
	Suzanne Kravitz
	Steve Pizzollo
	Jim Purcell
	Jim Ryder
	Steve Rose
Mayor:	John Hollenbach
Borough Manager:	Andrea L. Coaxum
Police Chief:	Steve Hillias
Finance Director:	Joe Berardi
Public Works Director:	Dan Gilbert (absent)
Electric Superintendent:	Harold Stone (absent)
Borough Solicitor:	Jeff Garton
Borough Engineer:	Doug Rossino

Borough Council President Jim Ryder convened the meeting at 7:00 PM. Mayor Hollenbach gave the Invocation followed by the Pledge of Allegiance.

PUBLIC HEARING

Jeff Garton introduced the subject indicating the purpose of the hearing was to take public comment on the application of the Perkasie Borough Industrial Development Authority (PIDA). He explained that Perkasie Borough would need to approve the issuance by the PIDA of its tax-exempt note for a personal care facility, G.D.L Farms, located on Street Road in Warrington Township. The floor was opened for comments from the public for which there was none.

Upon motion by Ryder, seconded by Pizzollo, Council unanimously closed the hearing.

Upon motion by Pizzollo, seconded by Rose, Council unanimously approved Resolution #2017-32 approving the issuance by the Perkasie Borough Industrial Authority of its tax exempt note or bond for a facility located in Warrington Township, Bucks County, Pennsylvania, and authorizing the taking of all such act not inconsistent with the resolution.

PUBLIC HEARING

A public hearing was held to receive comments on the NPDES Stormwater Discharges from Pollutant Reduction Plan (PRP) for the Borough of Perkasie. The PRP outlines the measure the Borough intends to implement to reduce certain pollutants discharged from the Borough's Municipal Separate Storm Sewer System. No comments were received. Upon motion by Rose, seconded by Purcell, Council unanimously closed the hearing.

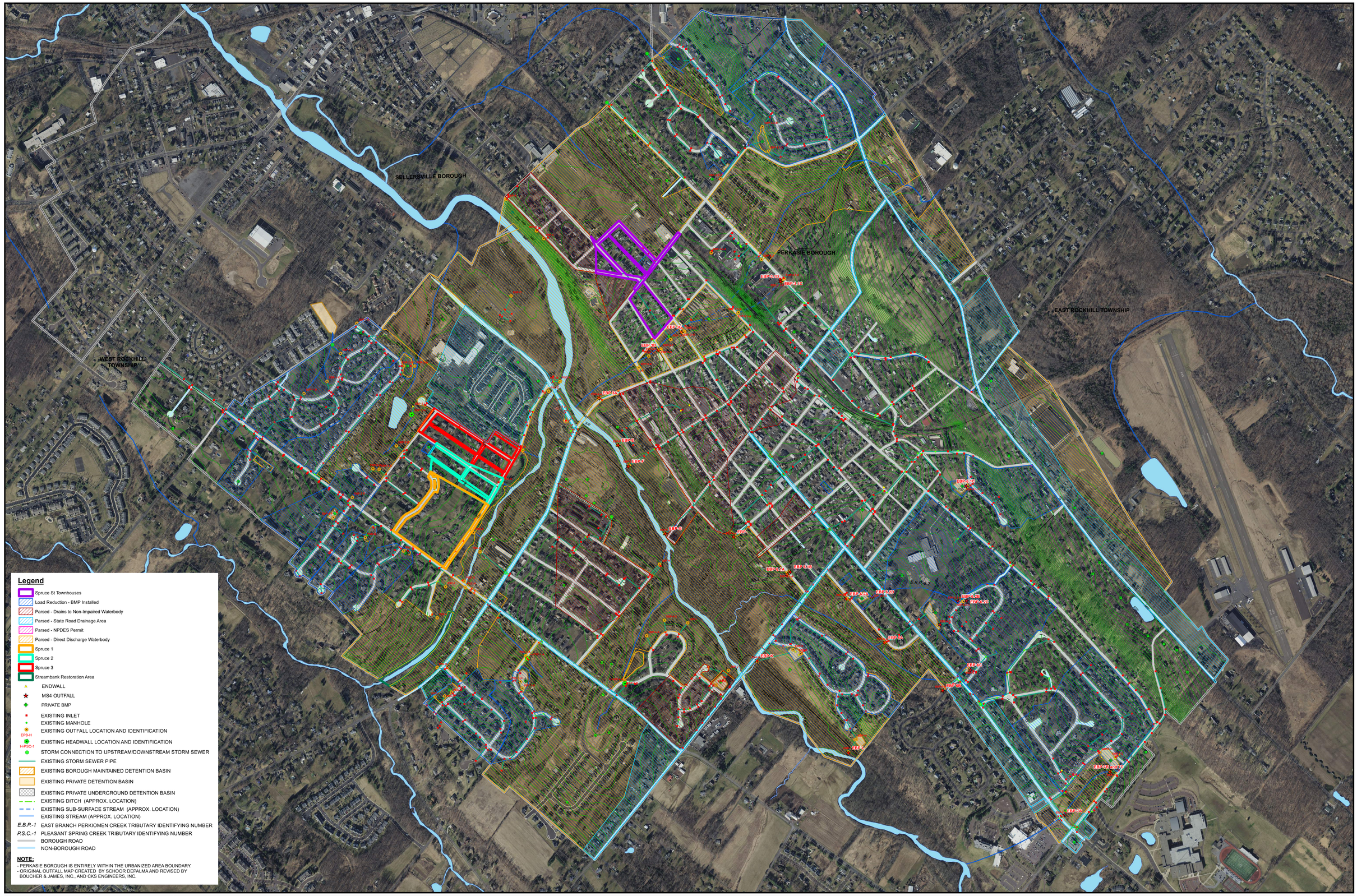
NOTICE OF PUBLIC COMMENT PERIOD AND PUBLIC MEETING
BOROUGH OF PERKASIE

For revisions to the **NPDES Stormwater Discharges from MS4 Pollutant Reduction Plan (PRP) for Borough of Perkasie**. The PRP outlines the measures the Borough intends to implement to reduce certain pollutants discharged from the Borough's Municipal Separate Storm Sewer System (MS4). The PRP includes a calculation of the existing loading of the pollutants of concern, a calculation of the minimum reduction required, and a selection of potential Best Management Practices (BMPs) intended to achieve the minimum required reduction. The PRP has been revised to update the location of streambank stabilization along Pleasant Spring Creek and to add a second underground sediment removal device location. Borough is soliciting written comments on the revised PRP. Interested persons may submit written comments during the 30-day period of September 2 through October 2, 2025. The document may be reviewed during the comment period at Perkasie Borough Hall, 620 W. Chestnut St., Perkasie, PA 18944 weekdays from 9AM - 4PM or on the Borough website homepage http://perkasieborough.org/. Written and verbal comments will be accepted at a public meeting on September 15, 2025 (7PM) at Perkasie Borough Hall. Comments must be submitted in writing to the address above (Attn: Borough Manager) or by email to manager@perkasieborough.org and must include originator's name and address. Comments submitted by facsimile will not be accepted.

Appendix C

Maps

Appendix C-1: Perkasie Borough Storm Sewer Collection Map (See attached)



Legend

- Spruce St Townhouses
- Load Reduction - BMP Installed
- Parsed - Drains to Non-Impaired Waterbody
- Parsed - State Road Drainage Area
- Parsed - NPDES Permit
- Parsed - Direct Discharge Waterbody
- Spruce 1
- Spruce 2
- Spruce 3
- Streambank Restoration Area
- ENDWALL
- MS4 OUTFALL
- PRIVATE BMP
- EXISTING INLET
- EXISTING MANHOLE
- EXISTING OUTFALL LOCATION AND IDENTIFICATION (EPB-H)
- EXISTING HEADWALL LOCATION AND IDENTIFICATION (H-PSC-1)
- STORM CONNECTION TO UPSTREAM/DOWNSTREAM STORM SEWER
- EXISTING STORM SEWER PIPE
- EXISTING BOROUGH MAINTAINED DETENTION BASIN
- EXISTING PRIVATE DETENTION BASIN
- EXISTING PRIVATE UNDERGROUND DETENTION BASIN
- EXISTING DITCH (APPROX. LOCATION)
- EXISTING SUB-SURFACE STREAM (APPROX. LOCATION)
- EXISTING STREAM (APPROX. LOCATION)
- *E.B.P.-1* EAST BRANCH PERKIOMEN CREEK TRIBUTARY IDENTIFYING NUMBER
- *P.S.C.-1* PLEASANT SPRING CREEK TRIBUTARY IDENTIFYING NUMBER
- BOROUGH ROAD
- NON-BOROUGH ROAD

NOTE:

- PERKASIE BOROUGH IS ENTIRELY WITHIN THE URBANIZED AREA BOUNDARY.
- ORIGINAL OUTFALL MAP CREATED BY SCHOOR DEPALMA AND REVISED BY BOUCHER & JAMES, INC., AND CKS ENGINEERS, INC.

REVISION NO.	DATE	REVISION
5	9/26/25	*PRIVATE BMP LOCATIONS ADDED*
4	6/2/17	*MINOR REVISIONS FROM FIELD COLLECTION*
3	12/14/15	*MINOR REVISIONS FROM FIELD COLLECTION*
2	11/04/15	*ROAD PROGRAM AND SUBDIVISION UPDATES*
1	12/23/14	*MINOR REVISIONS*

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
65 E. Butler Avenue, Suite 100, New Britain, PA 18901
215-345-4330

CREATED : SEPTEMBER 26, 2025

Perkasie Borough

Bucks County, Pennsylvania

STORM SEWER COLLECTION SYSTEM MAP

0 395 790 1,580 Feet

1 inch = 400 feet

N W S E

Appendix D

Existing Loading for Pollutants of Concern

Appendix D-1: EMC Table
Appendix D-2: ROW Calculations
Appendix D-3: Non-Parsed Area Calculations
Appendix D-4: Total Existing Load & Required Reduction Calculation

Appendix D-1: EMC Table

	Land Cover Classification	TSS (mg/l)	Average Annual Runoff (in/year)
Pervious Surfaces	Forest	39	4.63
	Meadow	47	4.10
	Fertilized Planting Area	55	5.53
	Native Planting Area	55	3.62
	Lawn, Low-Input	180	6.59
	Lawn, High-Input	180	5.53
	Golf Course Fairway/Green	305	6.59
	Grassed Athletic Field	200	7.39
Impervious Surfaces	Rooftop	21	43.51
	High Traffic Street/Highway	261	39.80
	Medium Traffic Street	113	23.96
	Low Traffic/Residential Street	86	22.47
	Residential Driveway, Play Courts, etc.	60	43.51
	High Traffic Parking Lot	120	43.51
	Low Traffic Parking Lot	58	43.51

Pollutant Load (lbs/year) = 2.7 (Conversion factor) x Nutrient Concentration (EMC, mg/l) x Volume (Acre-FT)

Appendix D-2: ROW Calculations

Pollutant Load From Public Streets & ROW										
Street Name	Section of Roadway	ROW Width (Feet)	Length of Road (feet)	Width of Road (feet)	Width of Lawn (feet)	Area of Lawn (SF)	Area of Road (SF)	Lawn (mg/l)	Road (mg/l)	Load (lbs/year)
8th Street	Market St to Race St	34	1,120	26	8	8,960	29,120	180	86	346
Arch Street	8th St to 9th St	32	380	26	6	2,280	9,880	180	86	113
E. Spruce Street	S. Main St to cul-de-sac	50	690	32	18	12,420	22,080	180	86	296
Market Street Alley	entire road	32	455	32	0	0	14,560	180	86	145
Race Street	8th St to 9th St	32	220	32	0	0	7,040	180	86	70
Callowhill Street	Ridge Rd to beyond 6th St	34	2,585	30	4	10,340	77,550	180	86	837
Jefferson Drive	entire road	50	1,555	28	22	34,210	43,540	180	86	644
Park Avenue	Country Ridge to the railroad	40	1,400	32	8	11,200	44,800	180	86	516
Race Street	5th St to 6th St	32	515	32	0	0	16,480	180	86	165
Revere Way	entire road	50	375	30	20	7,500	11,250	180	86	158
S. 6th Street	Spruce St to Elm Ave	42	1,250	28	14	17,500	35,000	180	86	457
Vine Street	3rd St to 6th St	32	1,250	32	0	0	40,000	180	86	399
7th Street	1025 7th St to 1108 7th St	32	720	32	0	0	23,040	180	86	230
8th Street	Buttonwood St to Callowhill St	32	325	27	5	1,625	8,775	180	86	98
10th Street	Race St to Vine St	32	290	18	14	4,060	5,220	180	86	77
Buttonwood Street	7th St to 8th St	34	250	18	16	4,000	4,500	180	86	69
Dill Avenue	E. Walnut to E. Chestnut	32	650	30	2	1,300	19,500	180	86	101
Grandview Avenue	entire road	42	1,370	32	10	13,700	43,840	180	86	522
Highland Drive	entire road	50	1,188	34	16	19,000	40,375	180	86	519
Lexington Way	entire road	50	440	30	20	8,800	13,200	180	86	186
Old Post Road	entire road	50	494	32	18	8,892	15,808	180	86	212
Park Avenue	Ridge Road to Country Ridge	42	1,470	24	18	26,460	35,280	180	86	514
Pleasant Run Place	entire road	50	420	28	22	9,240	11,760	180	86	174
7th Street	Callowhill St. to 901 7th St	32	1,930	32	0	0	61,760	180	86	616
8th Street/Vine Street	Callowhill St./7th St	32	675	31	1	675	20,925	180	86	213
Clover Lane	entire road	50	1,370	24	26	35,620	32,880	180	86	546
Fern Drive	entire road	50	520	26	24	12,480	13,520	180	86	211
Lombard Street	entire road	50	644	26	24	15,450	16,738	180	86	262
Pine Street	entire road	34	405	26	8	3,240	10,530	180	86	125
Rustic Drive	entire road	48	1,120	30	18	20,160	33,600	180	86	459
Spring Court	entire road	50	440	26	24	10,560	11,440	180	86	179
Spring Lane	entire road	50	1,515	26	24	36,360	39,390	180	86	616

Street Name	Section of Roadway	ROW Width (Feet)	Length of Road (feet)	Width of Road (feet)	Width of Lawn (feet)	Area of Lawn (SF)	Area of Road (SF)	Lawn (mg/l)	Road (mg/l)	Load (lbs/year)
7th Street	Market St to Callowhill St.	32	3,475	32	0	0	111,200	180	86	1,110
8th Street	Chestnut St to Market St	32	495	32	0	0	15,840	180	86	158
Buttonwood Street	7th St to 5th St	40	1,225	32	8	9,800	39,200	180	86	451
Elm Avenue	5th St to 6th St	46	345	26	20	6,900	8,970	180	86	132
Marshall Street	Buttonwood St to Callowhill St	26	310	22	4	1,240	6,820	180	86	76
Penn Alley	entire road	20	460	18	2	920	8,280	180	86	88
Race Street	3rd St to 5th St(Incl. "tail" at 3rd)	32	875	32	0	0	28,000	180	86	279
S. 6th Street	Chestnut St to Walnut St	32	350	32	0	0	11,200	180	86	112
S. 8th Street	Pine St to Park Ave	30	400	25	5	2,000	10,000	180	86	112
Summit Avenue	entire road	40	1,145	18	22	25,190	20,610	180	86	360
W. Walnut Street	Constitution Ave to 5th St	32	1,800	32	0	0	57,600	180	86	575
3rd Street	Park Ave to Walnut St	34	860	32	2	1,720	27,520	180	86	285
5th Street	Entire Road Except Parced Portions	32	2,723	32	0	0	87,136	180	86	870
7th Street	Park Ave to Market St	34	2,165	32	2	4,330	69,280	180	86	718
7th Street	1108 7th St to Blooming Glen Dr	32	700	32	0	0	22,400	180	86	224
9th Street	Railroad to Borough Line	44	5,590	38	6	33,540	212,420	180	86	2,326
10th Street	10th St cul-de-sac	20	220	18	2	440	3,960	180	86	42
Arch Street	3rd St to 7th St	34	1,620	32	2	3,240	51,840	180	86	537
Arch Street	9th St to end (past 10th)	34	565	30	4	2,260	16,950	180	86	183
Arthur Avenue	Entire Road Except Parced Portions	40	505	38	2	1,010	19,186	180	86	198
Cedar Avenue	4th St to 5th St	18	355	18	0	0	6,390	180	86	64
E. Spruce Street	S. Main St to Constitution Ave	34	2,660	34	0	0	90,440	180	86	903
Hillcrest Road	entire road within Borough	20	630	18	2	1,260	11,340	180	86	121
N. 6th Street	Market St to Buttonwood St	32	2,200	26	6	13,200	57,200	180	86	652
Park Avenue	Railroad to 3rd St	32	1,390	32	0	0	44,480	180	86	444
S. Main Street	Spruce St to Borough Line	40	4,275	33	7	29,925	141,075	180	86	1,591
S. Main Street	Walnut St to Spruce St	40	650	32	8	5,200	20,800	180	86	239
W. Chestnut Street	8th St to 9th St	32	385	32	0	0	12,320	180	86	123
2nd Street	Market St to Arch St	42	380	16	26	9,880	6,080	180	86	121
3rd Street	Market St to Race St	34	690	32	3	1,725	21,735	180	86	228
3rd Street	Race St to Callowhill St	34	1,130	31	3	3,390	35,030	180	86	370
4th Street	Park Ave to Walnut St	32	1,000	32	0	0	32,000	180	86	319
4th Street	Market St to Vine St	32	750	32	1	375	23,625	180	86	238
7th Street	901 7th St to 1025 7th St	34	1,200	32	2	2,400	38,400	180	86	398
12th Street	Stub from Park Ave	30	325	14	16	5,200	4,550	180	86	77
12th Street	Borough Line to Cul-de-Sac	50	1,110	32	18	19,980	35,520	180	86	477

Street Name	Section of Roadway	ROW Width (Feet)	Length of Road (feet)	Width of Road (feet)	Width of Lawn (feet)	Area of Lawn (SF)	Area of Road (SF)	Lawn (mg/l)	Road (mg/l)	Load (lbs/year)
Callowhill Street	5th St to 6th St, portion	40	250	32	8	2,000	8,000	180	86	92
E. Market Street	entire road	34	1,370	32	2	2,740	43,840	180	86	454
Fairview Avenue	entire road	40	1,455	22	18	26,190	32,010	180	86	480
Highwood Court	entire road	50	330	28	22	7,260	9,240	180	86	137
Hunters Run Road	entire road	50	1,610	26	24	38,640	41,860	180	86	655
Marshall Street	Race St to Callowhill St	26	580	23	3	1,740	13,340	180	86	144
Oak Avenue	entire road	40	335	22	18	6,030	7,370	180	86	110
Race Street	6th St to 7th St	38	485	32	6	2,910	15,520	180	86	173
Race Street	Ridge Ave to 9th St	38	700	30	8	5,600	21,000	180	86	244
Ridge Avenue	entire road	34	1,770	28	6	10,620	49,560	180	86	560
Shadywood Drive	5th St to Shadywood Pl	50	1,800	30	20	36,000	54,000	180	86	760
Tunnel Road	entire road excl. PennDOT portion	34	100	25	9	900	2,500	180	86	30
Vine Street	9th St to Ridge Ave	32	740	24	8	5,920	17,760	180	86	214
Virginia Avenue	Entire Road Except Parced Portions	40	668	32	8	5,340	21,360	180	86	246
W. Market Street	6th St to the railroad	34	775	32	2	1,550	24,800	180	86	257
W. Spruce Street	3rd St to 4th St	32	350	32	0	0	11,200	180	86	112
W. Spruce Street	4th St to 5th St	32	340	32	0	0	10,880	180	86	109
W. Spruce Street	5th St to 7th St	32	600	32	0	0	19,200	180	86	192
W. Walnut Street	7th St to 5th St	40	750	32	8	6,000	24,000	180	86	276
					Total	**680,597**	**2,650,218**			**30,521**

Appendix D-3: Non-Parsed Area Calculations

Residential Analysis									
Zone	Building Coverage (%)	Approx. Lot Coverage (%)	Total Area (SF)	Total Area (Acres)	Rooftop (Acres)	Driveway (Acres)	Planting Areas (Acres)	Lawns (Acres)	Total Load (lbs/year)
R-1A	25	30	6505422.64	149	37.25	7.45	37.25	67.05	32,473
R-1B	25	30	5255142.68	121	30.25	6.05	30.25	54.45	26,375
R-2	25	30	3234119.92	74	18.5	3.7	18.5	33.3	16,128
R-3	25	30	764889.6	18	4.5	0.9	4.5	8.1	3,923

Commercial Analysis									
Zone	Building Coverage (%)	Approx. Lot Coverage (%)	Total Area (SF)	Total Area (Acres)	Rooftop (Acres)	Low Traffic Parking (Acres)	Planting Areas (Acres)	Lawns (Acres)	Total Load (lbs/year)
C-2	25	30	1008644.23	23	5.75	1.15	6.9	9.2	4,609
I-2	25	30	1853040.69	43	10.75	2.15	12.9	17.2	8,617

Open Space Analysis					
Total Area (SF)	Total Area (Acres)	Wooded (Acres)	Meadow (Acres)	Lawn (Acres)	Total Load (lbs/year)
951401.34	22	5	1	16	4,515

Appendix D-4: Total Existing Sediment Load & Required Reduction Calculation

Area Calculations											
Total Borough Area (SF)	Total Borough Area (Acres)	Parsed Areas (SF)	Parsed Areas (Acres)	Borough ROW (SF)	Borough ROW (Acres)	Residential (SF)	Residential (Acres)	Commercial (SF)	Commercial (Acres)	Open Space (SF)	Open Space (Acres)
71,256,090	1,636	48,352,614	1,110	3,330,815	76	15,759,575	362	2,861,685	66	951,401	22
			68%								

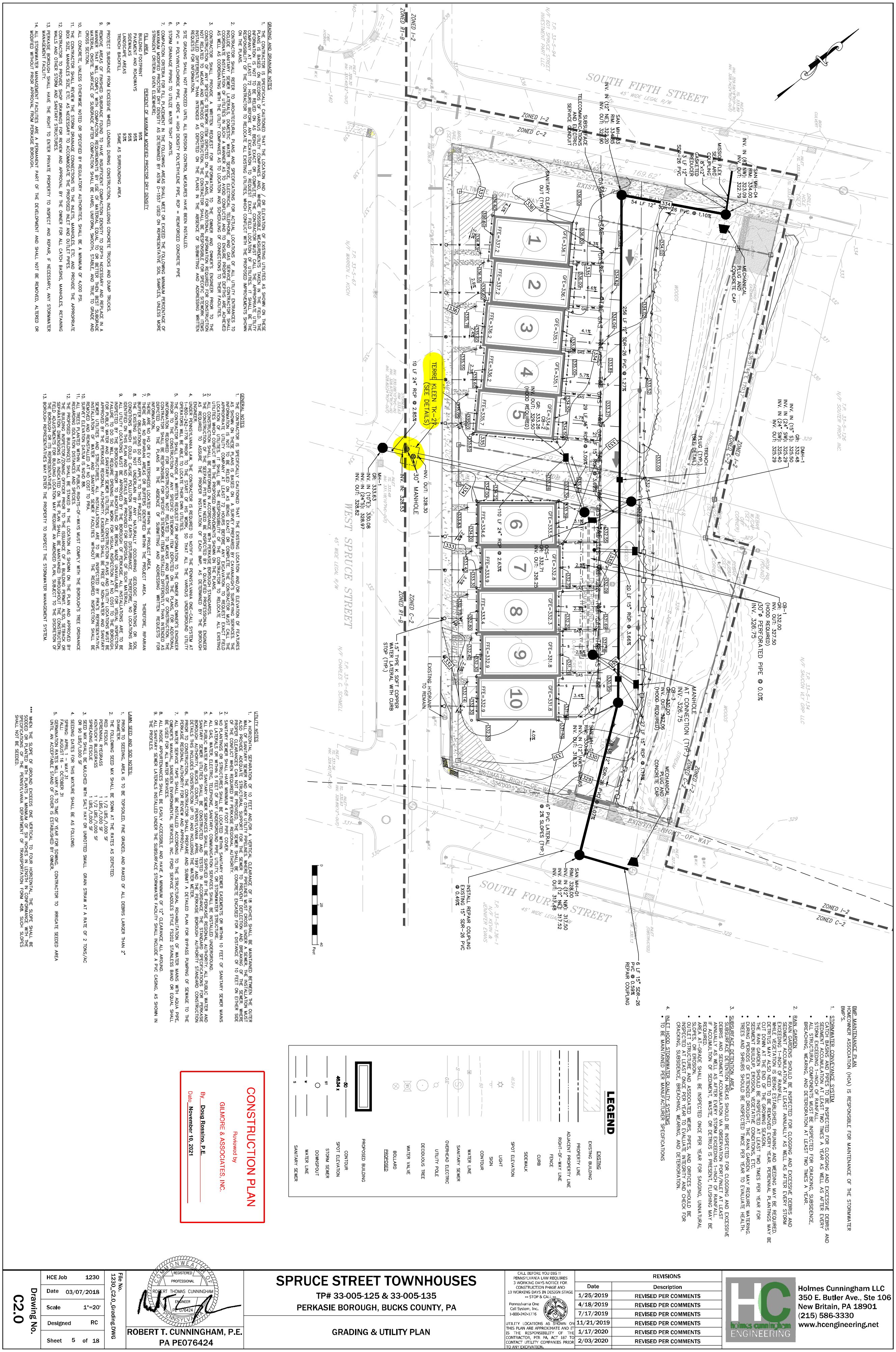
Sediment									
	Borough Load (lbs/year)		ROW Load (lbs/year)		Residential Load (lbs/year)		Commercial Load (lbs/year)		Open Space Load (lbs/year)
	127,161		30,521		78,899		13,226		4,515
	If Non-Parced Areas were all wooded (lbs/year)	Municipality Not Able to Reduce Coverage Beyond Original Landscape							
	21,376								
	2011 - 450 LF Lenape Park Streambank Restoration (lbs/year)	Recently Performed Work Within the Watershed							
	20,196								
	Modified Borough Load (lbs/year)	Borough Load Less Wooded Load							
	85,588								
	10% Reduction Required (lbs/year)	5-year Permit Reduction Required							
	8,559								

Appendix E

Loading Reduction Calculations and O&M

Appendix E-1: Spruce Street Storm Sewer System Solids Removal BMP
Appendix E-2: Arch Street Storm Sewer System Solids Removal BMP

Appendix E-1: Spruce Street Storm Sewer System Solids Removal BMP



SECTION _

SPECIFICATION FOR TERRE KLEEN™ HYDRODYNAMIC SEPARATOR US Patent No. US 6,676,832 B2

BY
TERRE HILL STORMWATER SYSTEMS, Division of Terre Hill Concrete products
485 WEAVERLAND VALLEY ROAD
TERRE HILL, PA 17581
TEL.: (717) 445-3100 FAX: (717) 445-0242.
www.terrestorm.com

Verify latest version of specifications

PART 1-GENERAL

1.1 DESCRIPTION

A. This work shall consist of manufacturing, delivering to the job site and installing a **Terre Kleen™ (US Patent No. US 6,676,832 B2);** an inclined plate cell hydrodynamic separator (containing the specified number of inclined plates for each unit) at each location as shown on the contract plans. The unit shall treat all stormwater without loss of floatable matter, such as trash, debris, litter and oil and grease captured in the oil booms; there shall be no scour of settled sediment from the baffled sediment hopper located under the inclined plates in the grit chamber. External by-pass structures are not allowed. Each unit has a primary chamber and grit chamber. The primary chamber separates oil, grease and floatable debris contained in a fully baffled area to prevent loss or re-suspension of captured oil, grease, and floatable trash and debris including captured sediment. This chamber is followed by an inclined plate sedimentation unit placed above a protected sediment collection hopper in a grit chamber into which the stormwater flows after passing through a nutrient screen in the divider wall between the two chambers. The grit chamber hopper shall contain a sediment sludge stainless steel spray assembly located in the grit chamber to facilitate clean out and maintenance of the unit that shall be pressurized with water causing dislodging

of the settled sludge below the inclined plate settler for drainage towards the vacuum suction points.

B. The unit shall contain an internal flow through duct located between the primary chamber and the grit chamber. Flows in excess of the design flow shall pass through the unit through the internal flow through duct.

C. This product is produced by Terre Hill Concrete Products under the name **"Terre Kleen™".** All rights are reserved**.(US Patent No. 6,676,832 B2)**

D. The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate separator shall operate based on the hydrostatic pressure differential between the inlet and outlet pipe. The flow is split in proportion to the number of inclined plate cells. The cells treat the water in parallel and combine the flow at the overflow weir. The inclined plate cell surfaces facilitate sliding of the sediment to the hopper below where it is protected from scour from subsequent flows. The design of the device shall prevent loss of captured pollutants including oil, grease, trash, debris, and sediment through scouring or other causes during all flows and conditions. The nutrient screen shall be positioned to allow passage of all flows without allowing loss of captured pollutants.

E. The internal flow through duct provides additional flow area in addition to the inclined plate cells. All flows pass through the primary chamber so as to capture oil grease and floatable trash and debris and to allow by-pass of the excess flows only in the internal flow through duct while requiring design flows to continue to be treated in both the primary and the sedimentation grit chamber. The internal by-pass shall not allow loss of any captured pollutants during excess flows.

F. Both the primary and the grit chambers shall be accessible through removable covers at grade for the removal of floatable material, water and the settled solids and floating particulates using a standard vacuum truck. No confined space entry shall be required for removal of captured pollutants.

G. The grit chamber hopper shall contain a sediment sludge stainless steel spray assembly located in the grit chamber to facilitate clean out and maintenance of the unit that shall be pressurized with water causing dislodging of the settled sludge below the inclined plate settler for drainage towards the vacuum suction points.

H. Captured sediment storage shall be not less than 0.7 Ft^3/Ft^2 of settling area in the Terre Kleen.

I. Oil Storage shall be not less than 1.5 gallons/Ft^2 in the in the **Terre Kleen™ (US Patent No. US 6,676,832 B2)**

1.2 SUBMITTALS

A. Shop drawings shall be submitted as described in Division 1 – General Requirements.

B. Certifications by a Professional Engineer licensed in the state of installation shall be submitted that the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator structure conforms to the standards listed in this Specification.

1.3 REFERENCES

A. ASTM International (ASTM):
A-48 Specification for Gray Iron Castings
C-32 Specification for Sewer and Manhole Brick
C-270 Specification for Mortar for Unit Masonry
C-478 Specification for Precast Reinforced Concrete Manhole Sections
C-913 Standard Specification for Precast Concrete Water and Wastewater Structures
US Patent No. US 6676832 B2; Surface water purifying catch basin.

B. Federal Specifications (FS):
FS-SS-S-210 Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints

1.4 MANUFACTURERS

A. The products furnished by named manufacturers are specified as a standard of quality and performance.

B. The manufacture of the concrete structure shall be performed at a precast production facility certified by the National Precast Concrete Association (NPCA).

C. The manufacturer of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** shall be licensed to produce and or sell the entire device or any components thereof by Terre Hill Concrete Products of Terre Hill Pennsylvania 717-445-3100.

PART 2- PRODUCTS

2.1 MATERIALS AND DESIGN

A. The reinforced concrete vault structure shall be designed for HS-25 traffic loading, and existing soil pressure, ground water pressure and buoyancy. The materials and structural design shall be per ASTM C-478 and ASTM C-913. The concrete shall have a minimum compressive strength of 5000 psi.

B. The access cover shall be designed for HS-25 traffic loading and shall provide a minimum of 27 1/2 inches clear opening. Manhole frame and cover shall be East Jordan or Quirin manufactured from gray iron conforming to ASTM A-48 Class 35B. The cover shall contain the words “Stormwater Treatment System” and the Terre Kleen™ logo as approved by Terre Hill Concrete Products.

C. Butyl mastic sealant for joints shall conform to ASTM C-990 and Federal Specifications (FSFS-SS-S-210 Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints

D. Pipe openings shall be sized to accept pipes of the specified sizes and shall be sealed with hydraulic cement conforming to ASTM C-595M.

E. The metal components of the inclined cell separator, baffle wall Aluminum Alloy 5052 (UNS # A95052) or equal.

F. The hinge pins of the inclined cell separator shall be manufactured from stainless steel AISI Type 304L (UNS # S30403).

G. All fasteners used in combination or connecting the inclined cell separator to the concrete structure shall be made from stainless steel AISI 316 (UNS # 31600) and the threads shall be properly lubricated with Permatex anti-seize Item 80078 lubricant or equal. All surfaces of aluminum components that are to be embedded or in contact with fresh, unhydrated concrete shall be coated with

Koppers Bitumastic 300M.

H. Per 57 Ft^2 of sedimentation area, four (4) Ø 2 ¼" x 12" long sorbent booms with an absorption capacity of ¼ gallon per lineal foot shall be placed in the primary chamber for the absorption of gasoline; diesel fuel, lube oil, jet fuel, transformer oils, chlorinated solvents, aromatic solvents, hydraulic oils, light crude. The sorbent boom or Rubberizer® boom shall be manufactured by Haz-Mat Response Technologies Inc. or approved equal.

2.2 PERFORMANCE

A. The inlet pipe shall discharge the storm water into the primary chamber. In the primary chamber, the separator shall facilitate the floatation of liquids and particles lighter than the density of water. Floatable solids, greater than 19mm [3/4"], and liquids shall be retained in the primary chamber, and shall not be subject to loss through re-suspension or any other cause. Emulsified oils are not captured and are not part of the floatable mass.

B. The heavy fraction of the solids shall settle in the bottom of the primary chamber.

C. Particles in the range of 50 to 500 micro meters (µM) kept in suspension due to turbulence in the primary chamber shall pass through a nutrient screen with a maximum screen opening of 16mm x 16mm [5/8"x 5/8"] and enter the grit chamber (sediment grit chamber) through a parallelogram port at the bottom of the inclined cell walls. This opening shall be approximately mid-elevation between the inlet pipe invert and the vault invert.

D. The solids and water between the inclined cell plate walls shall travel in an inclined direction toward the overflow weir at the top of the inclined plate cell. During this process, the solids shall settle and slide down towards the bottom of each plate cell and drop into the receiving hopper of the sedimentation grit chamber. The water shall discharge at the top of the cell, pass across a V-notch weir and cascade onto a baffle plate and drain to the effluent outlet pipe.

E. The particles that shall be removed in the grit chamber shall be silt, fine sand, and sand. The typical density of these particles is

2400 kg/M^3 [150lbs/ft^3], and their size between 2 microns and 1000 microns with a d_{50}= 70 Micron. The projected sedimentation surface area of the grit chamber shall be the cumulative horizontal projection of the sedimentation cell-floors that make up the sedimentation grit chamber. The total projected sedimentation surface area of the sedimentation cells, contained within the total structure footprint shall not be less than as follows:

Model	Structure Size		Sedimentation Surface Area
1. Terre Kleen 09	4'6" x 7'0"	(31.50 ft²)	57 ft²
2. Terre Kleen 18	6'6" x 7'0"	(45.50 ft²)	115 ft²
3. Terre Kleen 27	8'6" x 7'0"	(59.50 ft²)	172 ft²
4. Terre Kleen 36	10'6" x 7'0"	(73.50 ft²)	230 ft²
5. Terre Kleen 45	12'6" x 7'0"	(87.50 ft²)	288 ft²
6. Terre Kleen 54	14'6" x 7'0"	(101.50 ft²)	345 ft²
7. Terre Kleen 63	16'6" x 7'0"	(115.50 ft²)	403 ft²

F. The design flow in M^3/sec [GPM or CFS] for each **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator water quality treatment device shall be as noted on the drawings.

PART 3-INSTALLATION

3.1 INCLINED PLATE SEPARATOR FABRICATION

A. Fabrication of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator water quality device shall be in strict accordance with the design.

B. The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator water quality device shall be provided with mounting brackets for installation into the precast concrete structure with stainless steel mounting anchors.

C. The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator shall be provided with a flow channel on the effluent side of the settler and a clean-out opening next to the channel.

D. The nutrient screen shall be placed as an extension of the baffle wall at the entrance to the parallelogram port in the divider wall.

E. Certified welders experienced in the welding of specified thin metals shall place all welds.

F. The fabricator shall remove shop soils, discoloration, and welding slag.

3.2 PRECAST CONCRETE STRUCTURE

A. The utility contractor installing the precast concrete structure shall be responsible installing the structure so as to stop the infiltration or loss of water into or out of the precast concrete structure.

B. The precast concrete structure shall be installed level and plumb at the specified elevation shown on the signed, approved plans, on a compacted stone sub base 150mm [6”] thick.

C Excavation and backfill shall be as specified in the signed, approved plans.

3.3 MANUFACTURER INSTALLATION TECHNICAL ASSISTANCE

A At the time and place of installation of any **Terre Kleen™ (US Patent No. US 6,676,832 B2)** the manufacturer, Terre Hill Concrete Products will provide a Product Liaison on site to offer technical assistance to the installation contractor to assure proper installation of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** in accordance with the signed, approved plans.

3.4 OPERATION AND MAINTENANCE

A The maintenance of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** is the responsibility of the Owner. Each site has unique site conditions. It is the responsibility of the Owner to establish a schedule according to the conditions of the specific **Terre Kleen™ (US Patent No. US 6,676,832 B2)** location. Failure to clean the sediment from the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** and to replace oil absorption booms will cause the

Terre Kleen™ (US Patent No. US 6,676,832 B2) to not maintain its design performance capabilities. It is strongly recommended that the Owner follow the prescribe maintenance specifications and procedures published by Terre Hill Concrete Products and copy thereof given to the installation contractor for delivery to the Owner.(A copy of the Maintenance Procedures are attached hereto and made a part hereof.)

PART 4 Maintenance Procedures for Terre Kleen™

4.1 General

A Inspection and maintenance must be performed on a regular basis, All captured pollutants must be removed from the **Terre Kleen™ (US Patent No. US 6,676,832 B2)**. During the first year after installation inspections should be performed every three (3) months to determine the type and amount of pollutants in the **Terre Kleen™ (US Patent No. US 6,676,832 B2)**. Site conditions and weather will influence the rate of pollutant capture. A schedule of regular maintenance can then be established based upon the quarterly inspections.

4.2 Pollutant Removal

A Access to both the primary and grit chambers is provided by manhole openings. The gross pollutants such as litter and the oil absorption booms should be removed first. A vacuum truck or similar equipment is then utilized to remove the water and the sediment. Disposal of all of the removed pollutants should be properly documented in accordance with all applicable regulations. Removal may be done anytime after a rain event.

At all times keep sparks and flames away from the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** as it may contain flammable material.

The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** is designed for inspection and cleaning from grade. If “confined entry” is desired, trained and certified personnel using OSHA regulation equipment is required.

Manhole covers and inlet grates must be put back securely to the frames after inspection or maintenance.

4.3 Documentation

A Proper documentation should include:

a) dates and results of each inspection;
b) proposed and installed repairs, renovations, improvements;
c) type and amount of captured pollutants;
d) disposal of pollutants;
e) preparation and submittal of reports;
f) document nutrient and sediment trading credits.

4.4 Measurement

A A carefully lowered stadia rod or similar instrument may be used to determine amount of captured sediment. The sludge dispersion manifold can assist in the removal of sediment. Manifold pipes mounted to the floor of the grit chamber connect to a hose that leads to the grade level manhole. The hose is pressurized by the vacuum truck's spray nozzle. The pressurized manifold sprays water through small horizontal holes in the manifold pipes, which liquefies and disperses the sludge blanket for removal by the suction nozzle.

5.0 Additional Requirements

A. Unit fabrication and field installation shall be in accordance with manufacturer's requirements unless directed otherwise by the county Engineer.

B. The units that are located in the street or highway right of way shall be able to support a HS-25 loading without structural failure. Load carrying ability of the unit shall be verified by signed and sealed calculations prepared by an engineered licensed in New Jersey. Calculations shall be submitted for review and approved with the appropriate shop drawings for each unit.

C. Each unit must meet the dimensional limitations and requirements shown on the plans including but not limited to limit of disturbance, cover to finished grade, invert-in and invert-out.

D. Units must be able to accept inlet castings as wellas manhole rim and cover without any loss of performance of the unit.

E. It is anticipated that the units will be installed in areas of high ground water. In addition to the dewatering operations described elsewhere, the Contractor shall provide buoyancy calculations indicating a safety factor of two (2) against flotation. Buoyancy calculations shall be performed for the situation that the dewatering operation has failed and the unit has not been backfilled as of yet. Calculations shall be prepared and signed and sealed by an Engineer licensed in New Jersey.

F. In areas of high ground water, compacted one inch (1") diameter

crushed stone shall be used as backfill to the top of the ground water table.

G. The Contractor shall submit for approval, shop drawings for the units and any pipe coupling device that may be used.

6.0 LIMITED WARRANTY

Terre Hill Stormwater Systems provides the following Express Written Limited Warranty in lieu of any other warranty, whether oral , written , express, or implied. (the Warranty). All other warranties, representations, remedies, guarantees claims, or legal or equitable causes of action, in contract, tort or otherwise; including the Implied Warranties of Merchantability and Fitness for a Particular Purpose are excluded.

1. **This Warranty applies solely to the Terre Kleen™ (US Patent No. US 6,676,832 B2) products manufactured by Terre Hill Stormwater Systems and sold to the original purchaser (the Purchaser)**
2. **The structural integrity of the Terre Kleen™ (US Patent No. US 6,676,832 B2); when installed in accordance with Terre Hill Stormwater System's written installation specifications, and in accordance with site conditions, requirements of all laws and regulations, are warranted to the Purchaser against defective materials and workmanship for four (4) years from the date of installation.**
3. **Terre Hill Stormwater Systems agrees to provide the labor and material to remove the installed Terre Kleen™ (US Patent No. US 6,676,832 B2) and reinstall the Terre Kleen™ (US Patent No. US 6,676,832 B2), upon satisfactory proof of a breach of this Warranty.**
4. **Excluded from Warranty are claims resulting from or caused by damage; alteration; accident; misuse; abuse involving the Terre Kleen™ (US Patent No. US 6,676,832 B2), or negligence of the Purchaser or any third party. to the Terre Kleen™ (US Patent No. US 6,676,832 B2)**
5. **Terre Hill Stormwater Systems sole liability to the Purchaser shall be as expressly set forth in this Warranty, whether the claim is based upon contract, tort, equity or any other legal or equitable theory.**
6. **Under no circumstances shall Terre Hill Stormwater Systems be**

liable to Purchaser or any third party for product liability claims ; or the cost of goods or services related to the purchase or installation of the Terre Kleen™ (US Patent No. US 6,676,832 B2).

The Warranty is contingent upon verification of installation in strict accordance with the Terre Hill Stormwater Systems specifications, and use of the product strictly for the application specified. The construction plans for installation of the product shall be approved in writing by Terre Hill Stormwater Systems, and the construction installation plans shall be sealed by a professional engineer, licensed to perform civil engineering in the jurisdiction wherein the product will be installed.

All conditions for product usage as specified by Terre Hill Stormwater Systems must be satisfied in order for any of the terms of the Warranty to be valid, in full or in part.

The Warranty guarantees that any product of the Terre Hill Stormwater System will equal or exceed the Terre Hill Stormwater System written performance claim for stormwater treatment.

This Warranty of Terre Hill Stormwater Systems does not extend to incidental, consequential, special, or indirect claims , expenses or damages. Terre Hill Stormwater Systems shall not be liable for penalties or liquidated damages, including loss of profits or production and overhead costs; or other loss or expense incurred by the Purchaser or any third party.

The Warranty is limited to those claims filed in writing with Terre Hill Stormwater Systems, a Division of Terre Hill Concrete Products on or before four (4) years from the date of substantial completion of installation. The written claim shall specify and describe the alleged defect upon which the breach of Warranty is claimed in reasonable detail.

The Warranty with all of its obligations, rights and limitations and protections shall apply to Terre Hill Concrete Products.

END OF SECTION

TK Specs dated 09.26.12

Appendix E-1: Spruce Street Storm Sewer System Solids Removal BMP

Spruce Street System Drainage Area

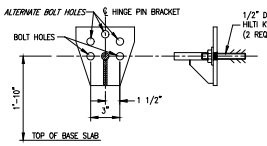
Street Name	Section of Roadway	ROW Width (Feet)	Length of Road (feet)	Width of Road (feet)	Width of Lawn (feet)	Area of Lawn (SF)	Area of Road (SF)	Lawn (mg/l)	Road (mg/l)		Load (lbs/year)
S. 6th Street	Park Ave to Elm Ave	42	640	28	14	8,960	17,920	180	86		234
5th Street	Arthur Ave to Elm St	32	490	32	0	0	15,680	180	86		157
Arthur Avenue	entire road	40	670	38	2	1,340	25,460	180	86		262
Park Avenue	Railroad to 3rd St	32	880	32	0	0	28,160	180	86		281
			2,680	130		**10,300**	**87,220**				**934**

Residential Analysis

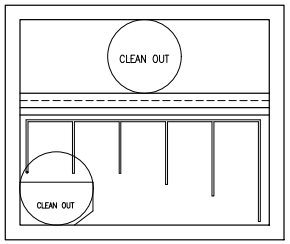
Zone	Building Coverage (%)	Approx. Lot Coverage (%)	Total Area (SF)	Total Area (Acres)	Rooftop (Acres)	Driveway (Acres)	Traffic Parking (Acres)	Planting Areas (Acres)	Lawns (Acres)	Ball Fields (Acres)	Total Load (lbs/year)
R-1A, R-1B, R-2, R-3	25	30	393782	9	2.25	0.45	0	2.25	4.05	0	**1961**

*Toatl Load values from NPDES Stormwater Discharges From MS4 Pollutant Reduction Plan for Borough of Perkasie, as prepared by Gilmore & Associates, Inc. Dated September 2017

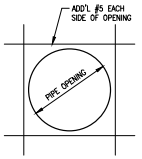
Appendix E-1: Spruce Street Storm Sewer System Solids Removal BMP



HINGE PIN BRACKET ATTACHMENT
(2) REQUIRED



SLUDGE DISPERSION MANIFOLD



ADD'L REINF. AT PIPE OPENINGS

APPROX. WEIGHTS

TOP SLAB	8,600 LBS.
RISER (WITH BAFFLE WALL)	6,150 LBS.
RISER (WITH TERRE KLEEN INSTALLED)	19,300 LBS.
BASE PIECE	13,100 LBS.

HANDLING NOTE:
APPROX. WEIGHTS DO NOT INCLUDE THE WEIGHT OF ADDITIONAL RIGGING EQUIPMENT OR APPARATUS REQUIRED FOR HANDLING.

GENERAL NOTES:

TYPE II OR TYPE III CEMENT MAY BE USED.
CONCRETE: f'c = 5,000 PSI @ 28 DAYS.

DEFORMED STEEL CONFORMS TO ASTM A615 GRADE 60. WELDED WIRE FABRIC CONFORMS TO ASTM 1064.

BITUMEN CONSEAL CS-102B JOINT MATERIAL MANUFACTURED BY CONCRETE SEALANTS, INC. AND CONFORMS TO FEDERAL SPECIFICATIONS SS-S-210A. JOINT SEALANT MUST BE INSTALLED IN ACCORDANCE WITH CONCRETE SEALANTS, INC. RECOMMENDATIONS.

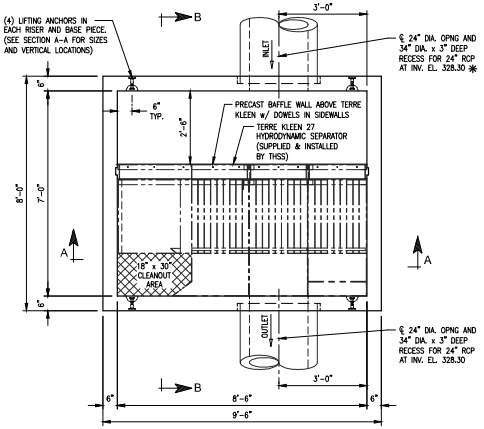
ANNULAR SPACE BETWEEN PIPE AND HOLE TO BE FILLED, BY CONTRACTOR, WITH AN APPROVED NON-SHRINK GROUT OR CONCRETE (AS SPECIFIED).

ALL PIPES TO BE CUT FLUSH WITH INSIDE WALL, AFTER GROUT HAS DRIED.

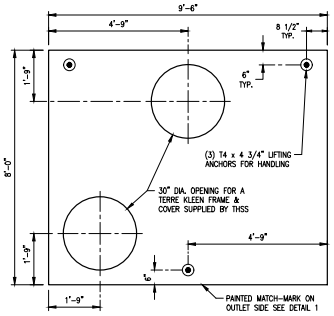
DROP-IN ANCHORS TO BE HILTI 316 STAINLESS STEEL KWIK BOLT II 1/2" DIA. x 3 3/4" (ITEM NO. 00238491) AS MANUFACTURED BY HILTI CORP.

LIFTING ANCHORS MANUFACTURED BY DAYTON SUPERIOR, OR EQUAL. ANCHORS TYPICAL FOR HANDLING.

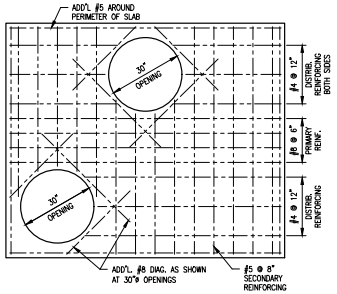
INSTALLATION AND MAINTENANCE MUST BE IN ACCORDANCE WITH THE MANUFACTURERS WRITTEN INSTRUCTIONS AND COMPLY WITH LOCAL ORDINANCES AND NPDES PHASE II REGULATIONS.



PLAN
BELOW TOP SLAB



PLAN - TOP SLAB



TOP SLAB ADD'L. REINFORCING

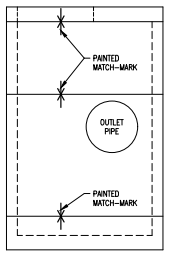
✱ NOTE TO REVIEWER:
FOR MANUFACTURING PURPOSES, THE INLET PIPE IS LOWERED TO MATCH OUTLET PIPE INVERT.

NOTE TO CONTRACTOR:
THE INLET PIPE IS LOWERED TO MATCH OUTLET PIPE INVERT. THE TRENCH WILL NEED TO BE 2 3/4" DEEPER TO ACCOMMODATE THE LOWERED INLET PIPE.

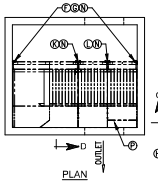
TERRE KLEEN 27 PARTS LIST - PREINSTALLED

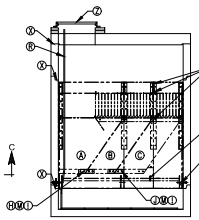
NO	PART	QUANTITY
A	TK09F ASSEMBLED TERRE KLEEN (DWG D147-A1, REV G; -A2, REV H; -A3, REV H)	1
B	TK09M ASSEMBLED TERRE KLEEN (DWG D148-A1, REV F; -A2, REV F; -A3, REV G)	1
C	TK09E ASSEMBLED TERRE KLEEN (DWG D149-A1, REV F; -A2, REV F; -A3, REV F)	1
D	HINGE PIN BRACKET - D147-1-C	2
E	1/2" DIA. x 3 3/4" LONG 316 S.S. KWIK BOLT HILTI No. 00238491	4
F	CLAMP BAR - D147-2-B	2
G	OIL SKIRT - D147-4-A (54" LONG)	2
H	SPLICE BAR - D148-2M	1
J	SPLICE BAR - D149-2M	1
K	OIL SPLICE BAR - D148-2N	1
L	OIL SPLICE BAR - D149-2N	1
M	1/2"ø x 1 1/4" S.S. HEX HEAD BOLT, LOCK WASHER, & HEX NUT	22 EACH
N	1/4"-20 x 1" STAINLESS STEEL HEX HEAD BOLT & 1/4" DIA. FENDER WASHER	54 EACH
P	TK09E SHELF FILLER TK27-MISC-B	1
R	SLUDGE DISPERSION MANIFOLD (TK27-SDM-file no)	1 ASS'Y.
S	OIL BAFFLE EXTENSION ANGLE - TK09-MISC-file no-A	1
T	4'-0" LONG OIL BAFFLE EXTENSION ANGLE	1
V	1/4"-20 x 1" STAINLESS STEEL HEX HEAD BOLT, (2) FENDER WASHERS & HEX NUT	6 SETS
Z	USE PERMATEX ANTI-SEIZE LUBRICANT ON ALL STAINLESS STEEL THREADS	AS REQ'D.

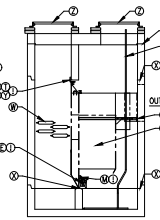
INSTALLATION NOTE: OIL BAFFLE EXTENSION ANGLE MUST BE ADJUSTED TO FIT TO PRECAST BAFFLE WALL IN RISER SECTION, BOLTS TIGHTENED, THEN APPLY CAULK TO SEAL JOINT BETWEEN ANGLE AND BAFFLE WALL.



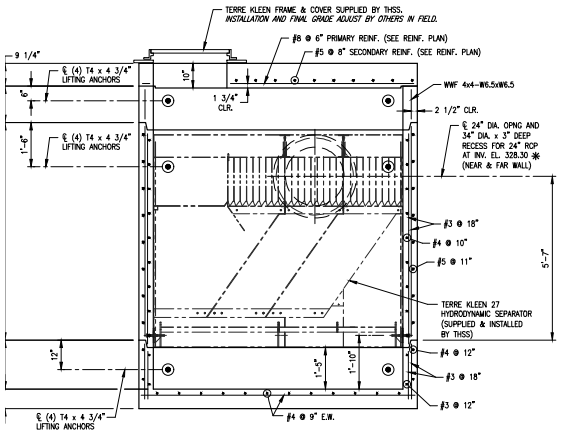
DETAIL 1
✱ CONTRACTOR TO ALIGN MATCH-MARK DURING SETTING OF PRECAST PIECES





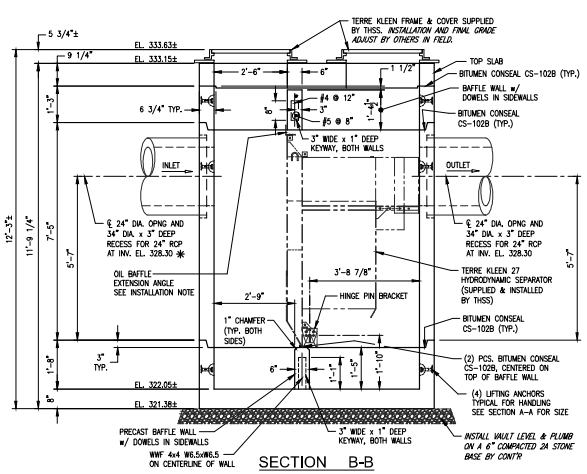


TERRE KLEEN 27 ASSEMBLY

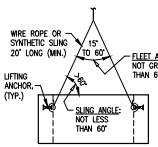


SECTION A-A

NOTE: ALL REINFORCEMENT CLEARANCES TO BE 1 1/2" UNLESS NOTED OTHERWISE.



SECTION B-B



RIGGING DIAGRAM

LIFTING AND RIGGING

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING PROPERLY SIZED CRANE TO HANDLE AND LIFT THE TERRE KLEEN.

2. CONTRACTOR IS RESPONSIBLE FOR PROPER RIGGING AND LIFTING IN ACCORDANCE WITH THE LATEST DATED APPROVED DRAWINGS AND INSTALLATION INSTRUCTIONS.

3. CONTRACTOR SHALL NOT USE RIGGING EQUIPMENT OR APPARATUSES WHICH WILL RESULT IN A FLEET ANGLE GREATER THAN 60° OR A SLING ANGLE LESS THAN 60°.

4. CONTRACTOR SHALL ONLY USE PERSONNEL TRAINED AND CERTIFIED UNDER OSHA CRANES & DERRICKS IN CONSTRUCTION STANDARD PURSUANT TO 29 CFR 1912.1400 SUBPART CC INCLUDING RIGGING SAFETY AND SIGNAL PERSON QUALIFICATIONS TO PERFORM ALL RIGGING, LIFTING AND SIGNALLY FOR THE TERRE KLEEN.

5. NO CHAINS ARE TO BE USED AS RIGGING EQUIPMENT OR APPARATUS FOR THE TERRE KLEEN.

THE RIGGING DIAGRAM IS FOR ILLUSTRATION ONLY. IT IS NOT TO BE RELIED UPON FOR ANY ACTUAL RIGGING OR LIFTING OF THE TERRE KLEEN.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROPER LIFTING AND RIGGING OF THE TERRE KLEEN.

RIGGING MUST BE USED TO EQUALIZE THE LOADING ON ALL LIFTING ANCHORS FOR A 4-POINT PICK. FOUR CABLES ATTACHED TO A COMMON RING OR HOOK WILL RESULT IN ONLY TWO ANCHORS CARRYING THE ENTIRE LOAD, WHICH MAY RESULT IN STRUCTURE DAMAGE AND/OR PERSONAL INJURY.

MISC. ITEMS SHIPPED BY THCP

NO	ITEM	REQUIRED
W	RUBBERIZER SORBENT BOOMS	12
X	BITUMEN CONSEAL CS-102B	115 L.F.
Y	SILICONE CAULK	2 TUBES
Z	TERRE KLEEN FRAME AND COVER	2 SETS

NOTE TO REVIEWER: PLEASE INDICATE REVIEW/APPROVAL STATUS, ALONG WITH SIGNATURE AND DATE, DIRECTLY ON THIS DRAWING.

TERRE KLEEN™ is a registered US Patent (US Patent 6,676,832 B2)

TERRE HILL STORMWATER SYSTEMS
Improving your world.
TERRE HILL, PA. (717)445-3100

TERRE KLEEN ™ 27
8'-6" x 7'-0" PRECAST
WATER QUALITY CHAMBER

JOB: SPRUCE STREET TOWNHOUSES
BUCKS COUNTY, PA

CONT'R: BLOOMING GLEN CONTRACTORS (H&K)

ENG'R:

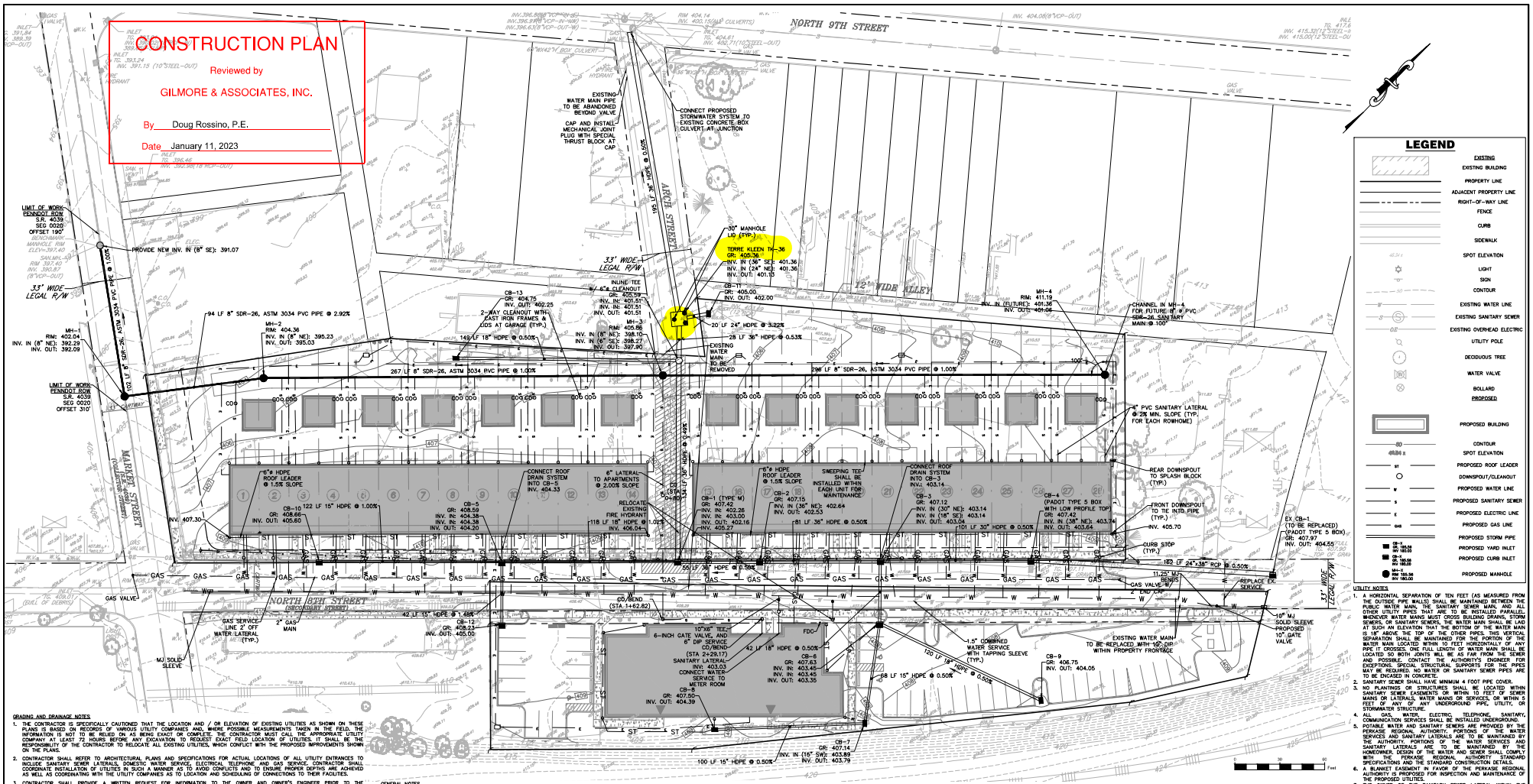
BY: RLK | DATE: 11-29-21 | SHT. 1 OF 1

TK # 324

FILE NO. 1900233

REVISIONS

Appendix E-2: Arch Street Storm Sewer System Solids Removal BMP



GRADING AND DRAINAGE NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND / OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES, WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
2. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ACTUAL LOCATIONS OF ALL UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS, DOMESTIC WATER SERVICE, ELECTRICAL TELEPHONE AND GAS SERVICE. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO AVOID CONFLICTS AND TO ENSURE PROPER DEPTHS ARE ACHIEVED AS WELL AS COORDINATING WITH THE UTILITY COMPANIES AS TO LOCATION AND SCHEDULING OF CONNECTIONS TO THEIR FACILITIES.
3. CONTRACTOR SHALL PROVIDE A WRITTEN REQUEST FOR INFORMATION TO THE OWNER AND OWNER'S ENGINEER PRIOR TO THE CONSTRUCTION OF ANY SPECIFIC SITEWORK ITEM DEPICTED ON THE PLANS, FOR ADDITIONAL INFORMATION REQUIRED FOR CONSTRUCTION NOT RELATED TO MEANS AND METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SPECIFIC SITEWORK ITEMS INSTALLED DIFFERENTLY THAN INTENDED AS DEPICTED ON THE PLANS IN THE ABSENCE OF SUBMITTING AND ADDRESSING WRITTEN REQUESTS FOR INFORMATION.
4. SITE GRADING SHALL NOT PROCEED UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
5. PVC = POLYVINYLCHORIDE PIPE, HDPE = HIGH DENSITY POLYETHYLENE PIPE, RCP = REINFORCED CONCRETE PIPE
6. STORM DRAINAGE PIPING TO UTILIZE WATER TIGHT JOINTS.
7. COMPACTION CRITERIA FOR FILL PLACEMENT IN THE FOLLOWING AREAS SHALL MEET OR EXCEED THE FOLLOWING MINIMUM PERCENTAGE OF MAXIMUM MODIFIED PROCTOR DRY DENSITY AS DETERMINED BY ASTM D-1557 USED ON REPRESENTATIVE SOIL SAMPLES, UNLESS MORE STRINGENT CRITERIA GIVEN ELSEWHERE:

FILL AREA	PERCENT OF MAXIMUM MODIFIED PROCTOR DRY DENSITY
BUILDING FOOTPRINT	95%
PAVEMENT AND ROADWAYS	95%
SIDEWALKS	95%
LANDSCAPE AREAS	93%
TRENCH BACKFILL	SAME AS SURROUNDING AREA

8. PROTECT SUBGRADE FROM EXCESSIVE WHEEL LOADING DURING CONSTRUCTION, INCLUDING CONCRETE TRUCKS AND DUMP TRUCKS.
9. REMOVE AREAS OF FINISHED SUBGRADE FOUND TO HAVE INSUFFICIENT COMPACTION DENSITY TO DEPTH NECESSARY AND REPLACE IN A MANNER THAT WILL COMPLY WITH COMPACTION REQUIREMENTS BY USE OF MATERIAL EQUAL TO OR BETTER THEN BEST SUBGRADE MATERIAL ONSITE. SURFACE OF SUBGRADE AFTER COMPACTION SHALL BE HARD, UNIFORM, SMOOTH, STABLE, AND TRUE TO GRADE AND CROSS SECTION.
10. ALL CONCRETE, UNLESS OTHERWISE NOTED OR SPECIFIED BY REGULATORY AUTHORITIES, SHALL BE A MINIMUM OF 4,000 PSI.
11. THE CONTRACTOR SHALL REVIEW THE STORM DRAINAGE CONNECTIONS TO THE INLETS, MANHOLES, ETC. AND PROVIDE THE APPROPRIATE BOX SIZE, MANHOLES SIZE, ETC. AS NECESSARY TO ACCOMMODATE THE PROPOSED INLET AND OUTLET PIPES.
12. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL BY THE OWNER FOR ALL CATCH BASINS, MANHOLES, RETAINING WALLS AND OTHER STORM AND SANITARY STRUCTURES.
13. PERKASIE BOROUGH SHALL HAVE THE RIGHT TO ENTER PRIVATE PROPERTY TO INSPECT AND REPAIR, IF NECESSARY, ANY STORMWATER MANAGEMENT FACILITY.
14. ALL STORMWATER MANAGEMENT FACILITIES ARE A PERMANENT PART OF THE DEVELOPMENT AND SHALL NOT BE REMOVED, ALTERED OR MODIFIED WITHOUT PRIOR APPROVAL FROM PERKASIE BOROUGH.

GENERAL NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE EXISTING LOCATION AND/OR ELEVATION OF FEATURES AS SHOWN ON THESE PLANS IS BASED ON A SURVEY PREPARED BY CAVANAUGH'S SURVEYING SERVICES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
2. PUBLIC WATER AND SANITARY SEWER FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PRA'S STANDARD SPECIFICATIONS, AND STANDARD CONSTRUCTION DETAILS.
3. UNDER PENNSYLVANIA LAW, THE CONTRACTOR IS REQUIRED TO NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM AT 1-800-242-1776 PRIOR TO THE START OF HIS WORK, SO THAT ALL THE VARIOUS UNDERGROUND UTILITY OPERATORS SHALL BE ABLE TO LOCATE THEIR OWN UTILITIES.
4. THE CONTRACTOR SHALL PROVIDE A WRITTEN REQUEST FOR INFORMATION TO THE OWNER AND OWNER'S ENGINEER PRIOR TO THE CONSTRUCTION OF ANY SPECIFIC SITEWORK ITEM DEPICTED ON THE PLANS, FOR ADDITIONAL INFORMATION REQUIRED FOR CONSTRUCTION NOT RELATED TO MEANS AND METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SPECIFIC SITEWORK ITEMS INSTALLED DIFFERENTLY THAN INTENDED AS DEPICTED ON THE PLANS IN THE ABSENCE OF SUBMITTING AND ADDRESSING WRITTEN REQUESTS FOR INFORMATION.
5. THERE ARE NO HQ OR EV WATERSHEDS LOCATED WITHIN THE PROJECT AREA.
6. THERE ARE NO RIPARIAN AREAS OR BUFFERS IDENTIFIED WITHIN THE PROJECT AREA. THEREFORE, RIPARIAN BUFFER OBLIGATIONS DO NOT APPLY TO THIS PROJECT.
7. THE EXISTING SITE IS NOT UNDERLAIN BY ANY HAZARDOUS OR OTHER UNDESIRABLE FOUNDATIONS OR SOIL CONDITIONS WHICH COULD CAUSE POLLUTION DURING EARTH DISTURBANCE. THEREFORE, NO LOCATIONS ARE IDENTIFIED ON THIS PLAN AND NO DETAILS ARE PROVIDED FOR DISPOSAL OF SUCH MATERIAL.
8. ALL UTILITY LOCATIONS MUST BE APPROVED BY THE BOROUGH OF PERKASIE. ALL INSTALLATIONS ARE TO BE INSPECTED BY THE BOROUGH PRIOR TO BACKFILLING OR BEING MADE UNAVAILABLE FOR VISUAL INSPECTION. FAILURE TO DO SO WILL REQUIRE OPENING THE WORK FOR VISUAL INSPECTION AT NO COST TO THE BOROUGH. ALL PUBLIC WATER (UP TO AND INCLUDING THE WATER METER) AND ALL BELOW GRADE SANITARY SEWER INSTALLATION SHALL BE INSPECTED BY THE PERKASIE REGIONAL AUTHORITY'S AUTHORIZED AGENT.
9. SURVEY ELEVATION DATUM IS NGVD 88.
10. ALL TREES PLANTED WITHIN THE PUBLIC RIGHTS-OF-WAYS MUST COMPLY WITH THE BOROUGH'S TREE ORDINANCE REGARDING ISOLATION DISTANCES AND SPECIES.
11. THE PROPOSED BUILDING(S) SHALL BE STAKED IN THE LOCATION AS SHOWN ON THE PLAN AND APPROVED BY THE BUILDING INSPECTOR/ZONING OFFICER PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. ALSO, SETBACK OR SEPARATION DIMENSIONS AS INDICATED ON THE PLAN SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION. FIELD ADJUSTMENTS FOR BUILDING LOCATION MAY REQUIRE AN AMENDED PLAN, SUBJECT TO THE DISCRETION OF THE BOROUGH OR ITS REPRESENTATIVES.
12. BOROUGH REPRESENTATIVES MAY ENTER THE PROPERTY TO INSPECT THE STORMWATER MANAGEMENT SYSTEM.

BMP MAINTENANCE PLAN

STORMWATER BMPS WITHIN MUNICIPAL RIGHTS-OF-WAY AND TRAIL EASEMENT ARE PROPOSED TO BE MAINTAINED BY THE MUNICIPALITY. THE PROPERTY OWNER/HOA IS RESPONSIBLE FOR MAINTENANCE OF THE STORMWATER BMPS OUTSIDE THE RIGHT-OF-WAY AND TRAIL EASEMENT.

1. STORMWATER CONVEYANCE SYSTEM
   - CATCH BASINS AND PIPES TO BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION AT LEAST TWO TIMES A YEAR AS WELL AS AFTER EVERY STORM EXCEEDING 1-INCH OF RAINFALL.
   - ALL STRUCTURAL COMPONENTS MUST BE INSPECTED FOR CRACKING, SUBSIDENCE.
   - HYDRODYNAMIC SEPARATOR — TERRE KLEEN TK-36
   - HYDRODYNAMIC SEPARATORS AND OTHER WATER QUALITY DEVICES SHALL BE CLEANED AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

LAWN SEED AND SOD NOTES:

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. THE FOLLOWING SEED MIX SHALL BE SOWN AT THE RATES AS DEPICTED:

RED FESCUE	1 1/2 LBS./1,000 SF
PERENNIAL RYEGRASS	1 LBS./1,000 SF
KENTUCKY BLUEGRASS	1 1/2 LBS./1,000 SF
SPREADING FESCUE	1 LBS./1,000 SF

3. SEED MIX SHALL BE MULCHED WITH SALT HAY OR UNROTTED SMALL GRAIN STRAW AT A RATE OF 2 TONS/AC OR 90 LBS/1,000 SF
4. SEEDING DATES FOR THIS MIXTURE SHALL BE AS FOLLOWS:
   SPRING: APRIL 1 — MAY 31
   FALL: AUGUST 16 — OCTOBER 31
5. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.
   *** WHEN THE SLOPE OF GROUND EXCEEDS ONE VERTICAL TO FOUR HORIZONTAL, THE SLOPE SHALL BE SODDED OR PLANTED WITH PLANTS A MINIMUM OF SIX INCHES IN LENGTH IN CONFORMANCE WITH THE SPECIFICATIONS OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION FORM 408. SUCH SLOPES SHALL NOT BE SEEDED.

UTILITY NOTES

1. A HORIZONTAL SEPARATION OF TEN FEET (AS MEASURED FROM THE OUTSIDE PIPE WALLS) SHALL BE MAINTAINED BETWEEN THE PUBLIC WATER MAIN, THE SANITARY SEWER MAIN, AND ALL OTHER UTILITY PIPES THAT ARE TO BE INSTALLED PARALLEL. WHENEVER WATER MAINS MUST CROSS BUILDING DRAINS, STORM SEWERS, OR SANITARY SEWERS, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS 18" ABOVE THE TOP OF THE OTHER PIPES. THIS VERTICAL SEPARATION SHALL BE MAINTAINED FOR THE PORTION OF THE WATER MAIN LOCATED WITHIN 10 FEET HORIZONTALLY OF ANY PIPE IT CROSSES. ONE FULL LENGTH OF WATER MAIN SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE SEWER AND POSSIBLE. CONTACT THE AUTHORITY'S ENGINEER FOR EXCEPTIONS. SPECIAL STRUCTURAL SUPPORT FOR THE PIPES MAY BE REQUIRED. NO WATER OR SANITARY SEWER PIPES ARE TO BE ENCASED IN CONCRETE.
2. SANITARY SEWER SHALL HAVE MINIMUM 4 FOOT PIPE COVER.
3. NO PLANTINGS OR STRUCTURES SHALL BE LOCATED WITHIN SANITARY SEWER EASEMENTS OR WITHIN 10 FEET OF SEWER MAINS OR LATERALS, WATER MAINS OR SERVICES, OR WITHIN 5 FEET OF ANY OF ANY UNDERGROUND UTILITY OR STORMWATER STRUCTURE.
4. ALL GAS, WATER, ELECTRIC, TELEPHONE, SANITARY, COMMUNICATION SERVICES SHALL BE INSTALLED UNDERGROUND.
5. POTABLE WATER AND SANITARY SEWERS ARE PROVIDED BY THE PERKASIE REGIONAL AUTHORITY. PORTIONS OF THE WATER SERVICES AND SANITARY LATERALS ARE TO BE MAINTAINED BY THE AUTHORITY. PORTIONS OF THE WATER SERVICES AND SANITARY LATERALS ARE TO BE MAINTAINED BY THE HOMEOWNER. DESIGN OF THE WATER AND SEWER SHALL BE IN ACCORDANCE WITH THE REGIONAL AUTHORITY'S STANDARD SPECIFICATIONS AND THE STANDARD CONSTRUCTION DETAILS.
6. A BLANKET EASEMENT IN FAVOR OF THE PERKASIE REGIONAL AUTHORITY IS PROPOSED FOR INSPECTION AND MAINTENANCE OF THE PROPOSED UTILITIES.
7. THE OWNER OF THE SANITARY SEWER LATERAL WITHIN THE EASEMENT ON LOTS 14 AND 15 SHALL BE RESPONSIBLE FOR REPLACEMENT OF SURFACE FEATURES UPON MAINTENANCE OR REPLACEMENT OF THE SANITARY SEWER LINE.
8. UTILITY LATERALS FOR THE PROPOSED APARTMENT BUILDING SHALL BE STUBBED AT THE CURB LINE UNTIL SUCH TIME THAT CONSTRUCTION OF THE BUILDING COMMENCES. AT THAT TIME, THE LATERALS SHALL BE CONNECTED TO SERVICE THE BUILDING.
9. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND RESPONSIBLE FOR ASSOCIATED COSTS INCLUDING AGENCY INSPECTIONS.
10. AN AUTOCAD DWG FILE IS REQUIRED TO BE SUBMITTED TO THE PRA AT THE TIME OF DRAWING APPROVAL.

REVISIONS		
	Date	Description
1	3/30/2022	Revised per Borough Engineer comments
2	4/28/2022	Revised per Borough Engineer comments
3	6/21/2022	Revised per Borough Engineer comments
4	8/5/2022	Revised per Borough Engineer comments
5	10/14/2022	Revised per Borough Engineer comments
6	11/4/2022	Revised per Borough Engineer comments

File No. 1414_C3.0_UTILITY.DWG

CALL BEFORE YOU DIG !!!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE
= STOP & CALL =
Pennsylvania One Call System, Inc. 1-800-242-1776
UTILITY LOCATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR, PER PA. ACT 187, TO CONTACT UTILITY COMPANIES PRIOR TO ANY EXCAVATION.

Holmes Cunningham LLC
409 E. Butler Ave
Unit 5
Doylestown, PA 18901
(215) 586-3330
www.hcengineering.net

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL KRISTIN RANDI HOLMES PE073604

KRISTIN R. HOLMES, P.E.
PA PE073604

8TH STREET COMMONS

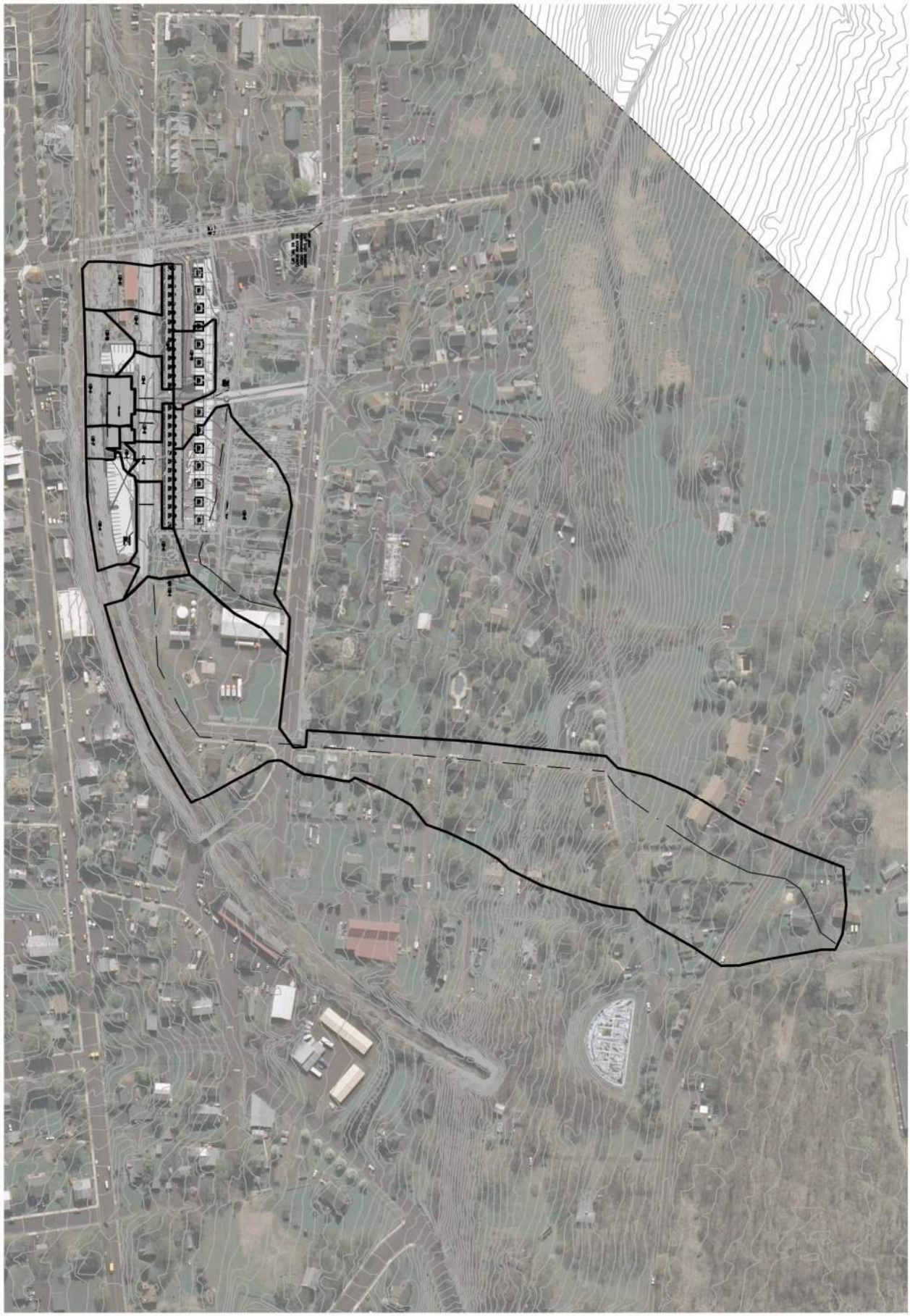
TMP # 33-005-438; 33-005-456 & 33-005-458-001
PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

DRAINAGE & UTILITY PLAN

HCE Job	1414
Date	1/28/2022
Scale	1"=30'
Designer	RS
Sheet	12 of 30

Drawing No. C3.0

Appendix E-2: Arch Street Storm Sewer System Solids Removal BMP



File No. 1414_Figure2+3+4.dwg	REVISIONS		Holmes Cunningham LLC 409 E. Butler Ave. Unit 5 Doylestown, PA 18901 (215) 586-3330 www.hcengineering.net	8TH STREET COMMONS TMP # 33-005-438; 33-005-456 & 33-005-458-001 PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA	Date 1/28/2022 Scale 1"=200' Designed BEB HCE Job 1414 Sheet 1 of 1	Drawing No. Figure 4
	Date	Description		UPSTREAM INLET DRAINAGE AREA MAP		

Arch Street System Drainage Area

Street Name	Section of Roadway	ROW Width (Feet)	Length of Road (feet)	Width of Road (feet)	Width of Lawn (feet)	Area of Lawn (SF)	Area of Road (SF)	Lawn (mg/l)	Road (mg/l)		Load (lbs/year)
8th Street	Market St to Race St	34	1,120	26	8	8,960	29,120	180	86		346
Arch Street	8th St to 9th St	32	380	26	6	2,280	9,880	180	86		113
Race Street	8th St to 9th St	32	220	32	0	0	7,040	180	86		70
Race Street	Ridge Ave to 9th St	38	700	30	8	5,600	21,000	180	86		244
Ridge Avenue	entire road	34	500	28	6	3,000	14,000	180	86		158
Total			2,920	142		**19,840**	**81,040**				**931**

Residential Analysis

Zone	Building Coverage (%)	Approx. Lot Coverage (%)	Total Area (SF)	Total Area (Acres)	Rooftop (Acres)	Driveway (Acres)	Traffic Parking (Acres)	Planting Areas (Acres)	Lawns (Acres)	Ball Fields (Acres)	Total Load (lbs/year)
R-1A, R-1B, R-2, R-3	25	30	570636	13	3.25	0.65	0	3.25	5.85	0	**2833**

*Toatl Load values from NPDES Stormwater Discharges From MS4 Pollutant Reduction Plan for Borough of Perkasie, as prepared by Gilmore & Associates, Inc. Dated September 2017

January 30, 2023

Hydro International
94 Hutchins Dr.
Portland, ME 04102

RE: Stormwater Treatment Device Submittal
8th Street Commons
TMP # 33-005-438; 33-005-456 & 33-005-458-001
North Eighth Street and Market Street
Perkasie Borough, Bucks Count PA
PROJECT # 1414

Holmes Cunningham LLC
409 E. Butler Ave, Unit 5
Doylestown, PA 18901

Kristin R. Holmes, P.E.

☒ APPROVED ☐ FURNISHED AS CORRECTED
☐ REJECTED ☐ REVISE AND RESUBMIT ☐ SUBMIT SPECIFIED ITEM

This review was performed only for general conformance with the design concept of the design concept of the project and general conformance with the information given in the Contract Documents. Modifications or comments made on the shop drawings during this review do not relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item does not include approval of the assembly of which the item is a component. Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences, and procedures of construction; coordination of the work of all trades; and for performing all work in a safe and satisfying manner.

GILMORE & ASSOCIATES, INC.

Date 2/09/23 By Douglas C. Rossino, PE

This letter is from the team at Hydro International and Ferguson Waterworks regarding the shop drawing submittal on the referenced project. Hydro International's First Defense is being submitted as an equal to the specified Terre Kleen as shown on DRAINAGE & UTILITY PLAN site plan page 12 of 30 and detailed on page 24 of 30. Both units are approved for 50% TSS removal through the regional third-party agency NJCAT with reciprocity in Pennsylvania.

The table below displays the product Maximum Treatment Flow Rate from the regional third party testing agency NJCAT, and the maximum treatment flow rates.

Product	*MTFR from 3rd Party NJCAT	Peak Treatment
Terre Kleen TK 36	4.37 cfs	37.9 cfs
8' First Defense Optimum	7.23 cfs	50 cfs

*Per Sizing Tables listed on following page

If we have assumed anything in error, we are available at the contact information below. Thank you for the time and the ability to serve mutual clients.

Regards.

Nick Burns, EIT
Mid Atlantic Regional Sales Manager
703.424.3340
nburns@hydro-int.com

Table 1. FD Optimum Model and MTFRs

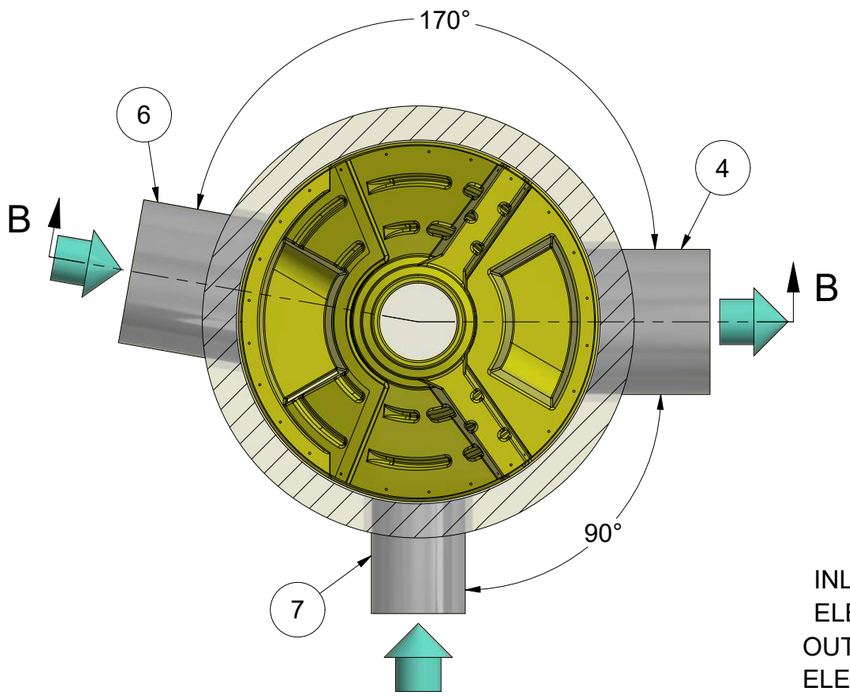
FD Optimum Model	Manhole Diameter (ft)	MTFR (cfs)
3-ft	3	1.02
4-ft	4	1.81
5-ft	5	2.83
6-ft	6	4.07
7-ft	7	5.53
8-ft	8	7.23
10-ft	10	11.33

https://nj.gov/dep/stormwater/pdf/First_Defense_Optimum_Vortex_Certification_20210719.pdf

Table 2. MTFR Terre Kleen

Model	Inclined Plates	MTFR[1] (cfs)
TK09	9	1.27
TK18	18	2.31
TK27	27	3.34
TK36	36	4.37
TK45	45	5.40
TK54	54	6.43
TK63	63	7.46

https://nj.gov/dep/stormwater/pdf/Terre_Kleen-NJDEP%20Certification%202-17-2017.pdf



SECTION A-A
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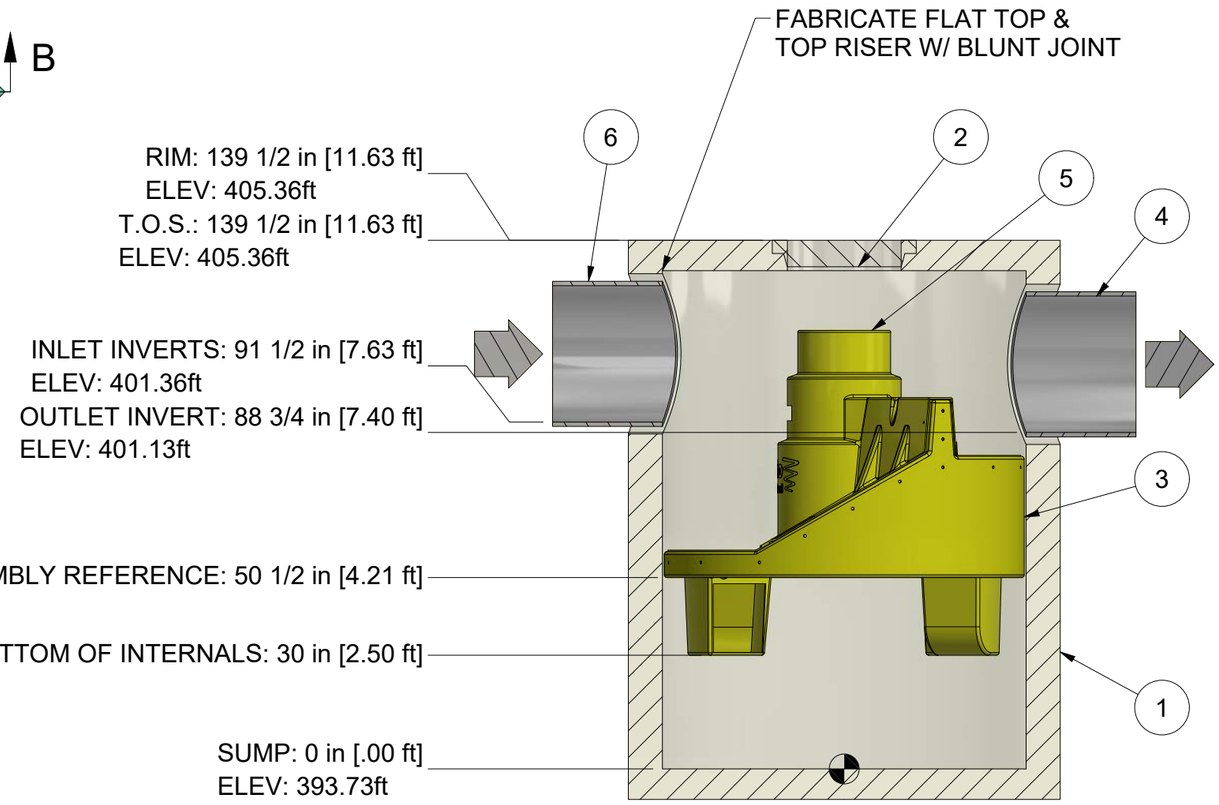


SECTION B-B
SCALE 1:40

1. MANHOLE WALL AND SLAB THICKNESS ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.
4. CONTRACTOR IS RESPONSIBLE FOR MATERIALS AND LABOR TO BRING CASTINGS TO FINISHED GRADE
5. ACTUAL DEPTH OF STRUCTURE MAY VARY DEPENDING ON AVAILABLE PRECAST FORMS. CONTRACTOR TO MEASURE HEIGHT OF STRUCTURE TO ENSURE THAT DEPTH OF EXCAVATION IS CORRECT.
6. UNIT MUST BE INSTALLED ON A LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM OF 6" LEVEL ROCK BASE UNLESS SPECIFIED. CONTRACTOR IS RESPONSIBLE TO VERIFY BASE SPECIFICATIONS.
7. ALL PIPES SHALL BE SEALED WATERTIGHT WITH A NON-SHRINK GROUT OR BOOTS AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.

CAPACITIES:
1. PEAK HYDRAULIC FLOW: 50.0 cfs (1415 l/s)

PRODUCT SPECIFICATIONS:
A. The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
B. The treatment system shall fit within the limits of excavation (area and depth) as shown in the project plans and will not exceed the dimensions for the design flow rates specified herein.
C. The treatment system shall convey the Peak On-line Flow Rates of up to 50 cfs without causing upstream surcharge conditions.
D. The treatment system shall be capable of capturing and retaining fine silt and sand size particles.
E. Unit shall conform to HS20-44 load ratings.

PARTS LIST

ITEM	QTY	SIZE (in)	DESCRIPTION	TYPE
1	1	96	I.D. PRECAST MANHOLE	
2	1	30	FRAME AND COVER (ROUND)	
3	1		LEDGER SUPPORT	
4	1	36	OUTLET PIPE (BY OTHERS)	HDPE
5	1		SEPARATION MODULE	
6	1	36	INLET PIPE (BY OTHERS)	HDPE
7	1	24	INLET PIPE (BY OTHERS)	HDPE

REVISION HISTORY			
REV	BY	DESCRIPTION	DATE
-	WCS	FIRST RELEASE	1/26/2023

PROJECTION

IF IN DOUBT ASK

DATE: 1/26/2023	SCALE: 1:40
DRAWN BY: WCS	CHECKED BY: EKM
APPROVED BY	

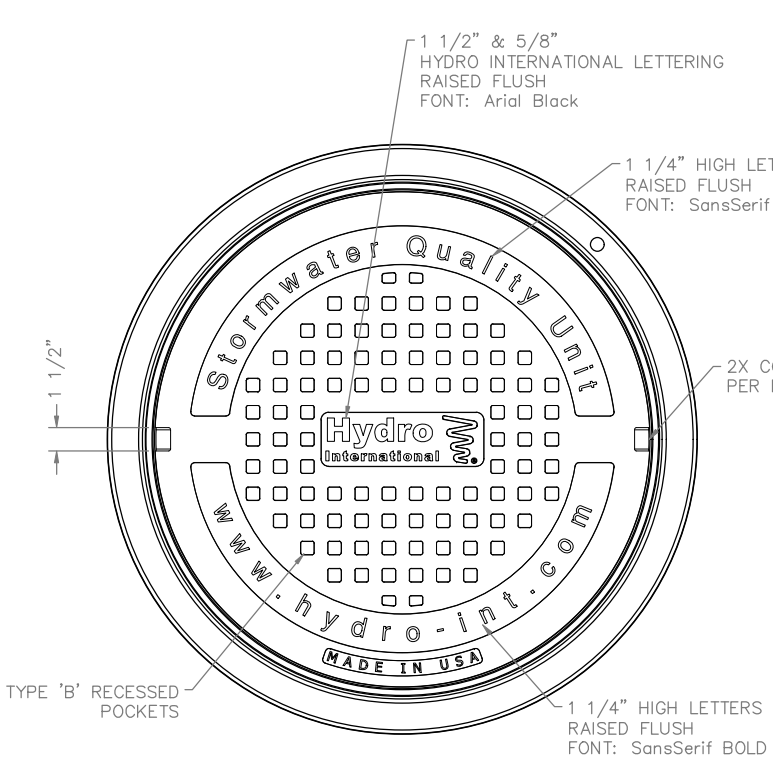
Title
8-ft DIAMETER
FIRST DEFENSE OPTIMUM

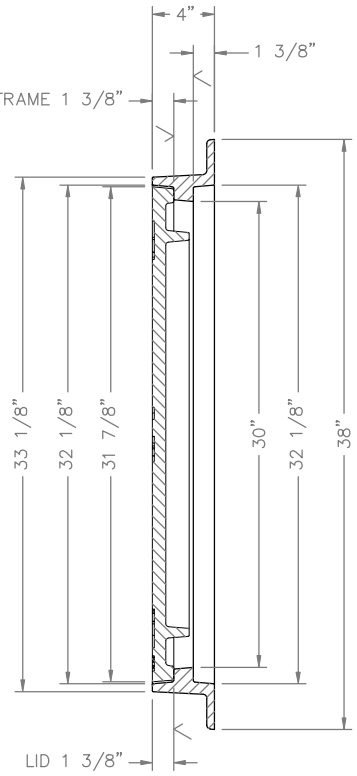
FD-1
8TH STREET COMMONS - PERKASIE BOROUGH
PERKASIE BOROUGH, PA

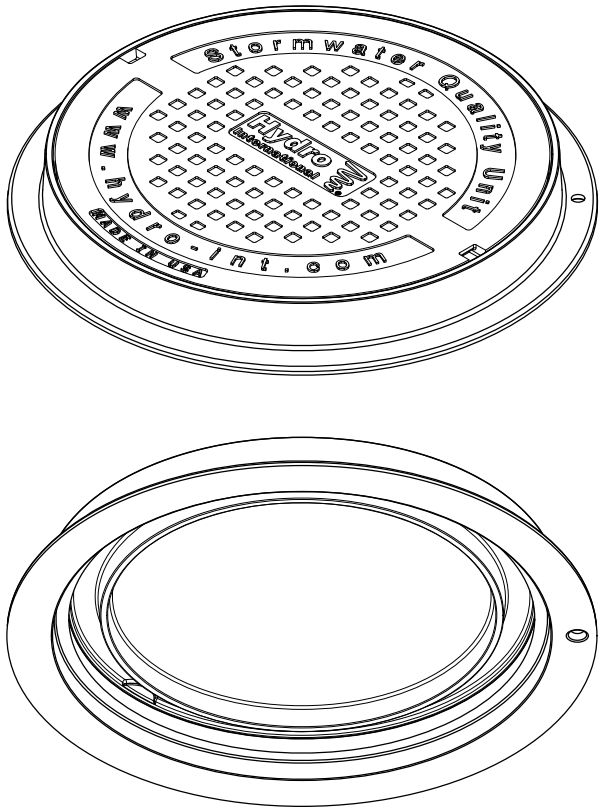
Patent: www.hydro-int.com/patents

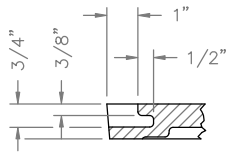
Hydro International®
hydro-int.com

WEIGHT:	MATERIAL:
STOCK NUMBER: 1	
DRAWING NO.: 22_12_3003-8ftFDO-1	
SHEET SIZE: B	SHEET: 1 OF 1
Rev: -	









PICKHOLE DETAIL
SCALE: QURATER

Approved by Patrick J. Yebba
8/24/2022

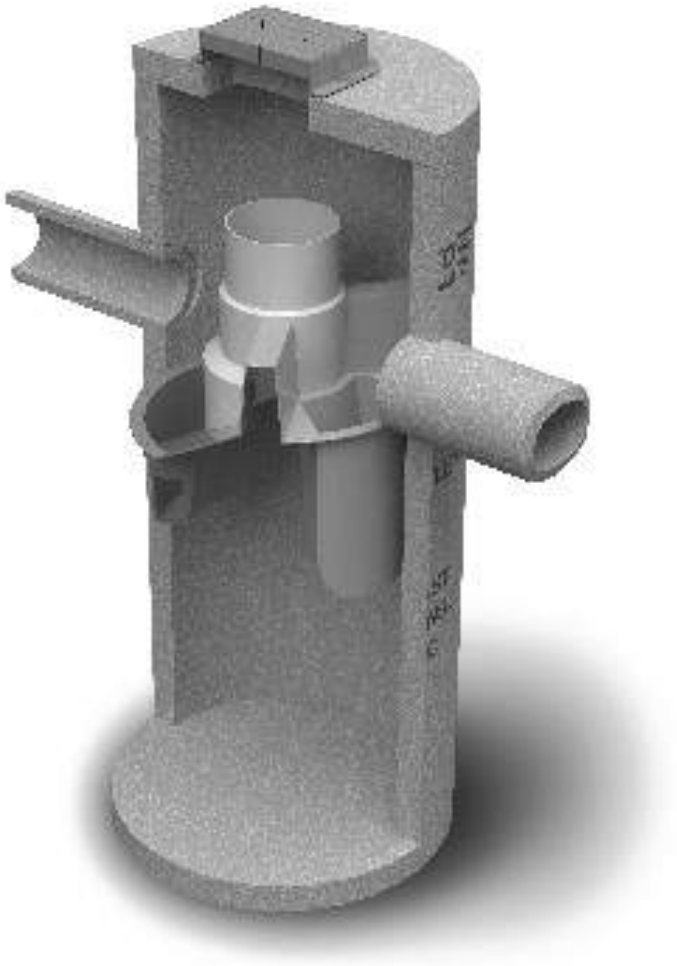
NOTES:
- ALL DIMENSIONS SHOWN ARE IN ENGLISH
- LOAD RATING: H-20 / HS-20
- COMPONENT NOS.: FRAME 0000-4612, LID 0000-4613
- EQUIPMENT NOS.: FRAME D00004612, K00004612
  LID D99993230, K99993231
- MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
- FINISH: NO PAINT
- WEIGHT: FRAME ≈133#, LID ≈200# WAS T2728

DR. RKB	SCALE 1/8"=1"	TITLE: HYDRO INTERNATIONAL REVERSIBLE FRAME & LID – ø30" C.O.	
CH. NJK			
APP. HSH	NEENAH FOUNDRY		
DATE 08-22-2022	NEENAH WISCONSIN 54956 PHONE 800-558-5075	NF-0320 110	B
www.nfco.com	LINCOLN, NEBRASKA 68529 PHONE 800-234-7466		

REV	DATE	DESCRIPTION	DR	CH	APP
A	XX-XX-XXXX	XXX	XXX	XXX	XXX

CAD DWG. REF: 0320110.DWG- 0

Hydro International



Operation and Maintenance Manual

First Defense® High Capacity and First Defense®Optimum

Vortex Separator for Stormwater Treatment

Table of Contents

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

I. First Defense® by Hydro International

Introduction

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations to accommodate a wide range of pipe sizes, peak flows and depth constraints.

The two product models described in this guide are the First Defense® High Capacity and the First Defense® Optimum; they are inspected and maintained identically.

Operation

The First Defense® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The First Defense® has been designed to allow for easy and safe access for inspection, monitoring and clean-out procedures. Neither entry into the unit nor removal of the internal components is necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

Pollutant Capture and Retention

The internal components of the First Defense® have been designed to optimize pollutant capture. Sediment is captured and retained in the base of the unit, while oil and floatables are stored on the water surface in the inner volume (Fig.1).

The pollutant storage volumes are isolated from the built-in bypass chamber to prevent washout during high-flow storm events. The sump of the First Defense® retains a standing water level between storm events. This ensures a quiescent flow regime at the onset of a storm, preventing resuspension and washout of pollutants captured during previous events.

Accessories such as oil absorbent pads are available for enhanced oil removal and storage. Due to the separation of the oil and floatable storage volume from the outlet, the potential for washout of stored pollutants between clean-outs is minimized.

Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for “offline” arrangements using separate junction manholes
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

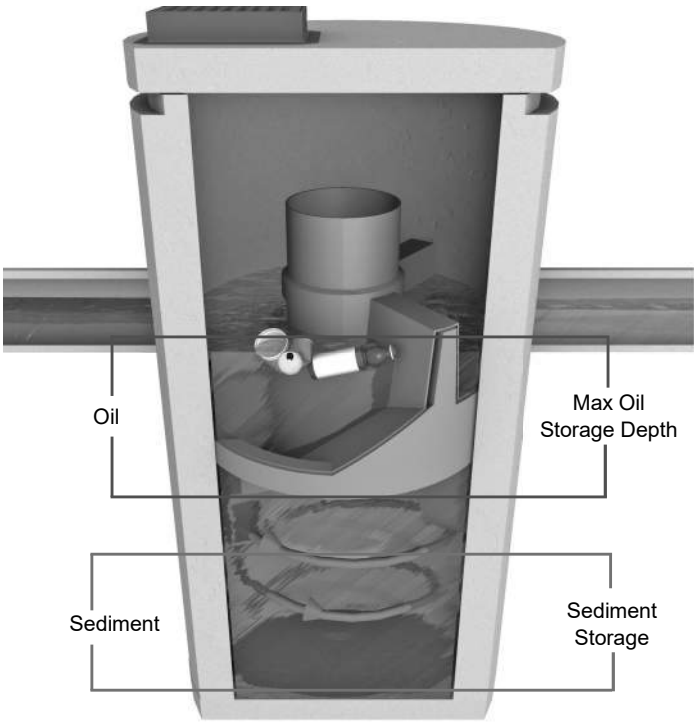


Fig.1 Pollutant storage volumes in the First Defense®.

II. Model Sizes & Configurations

The First Defense® inlet and internal bypass arrangements are available in several model sizes and configurations. The components have modified geometries allowing greater design flexibility to accommodate various site constraints.

All First Defense® models include the internal components that are designed to remove and retain total suspended solids (TSS), gross solids, floatable trash and hydrocarbons (Fig.2). First Defense® model sizes (diameter) are shown in Table 1.

III. Maintenance

First Defense® Components

1. **Built-In Bypass**
2. **Inlet Pipe**
3. **Inlet Chute**
4. **Floatables Draw-off Port**
5. **Outlet Pipe**
6. **Floatables Storage**
7. **Sediment Storage**
8. **Inlet Grate or Cover**

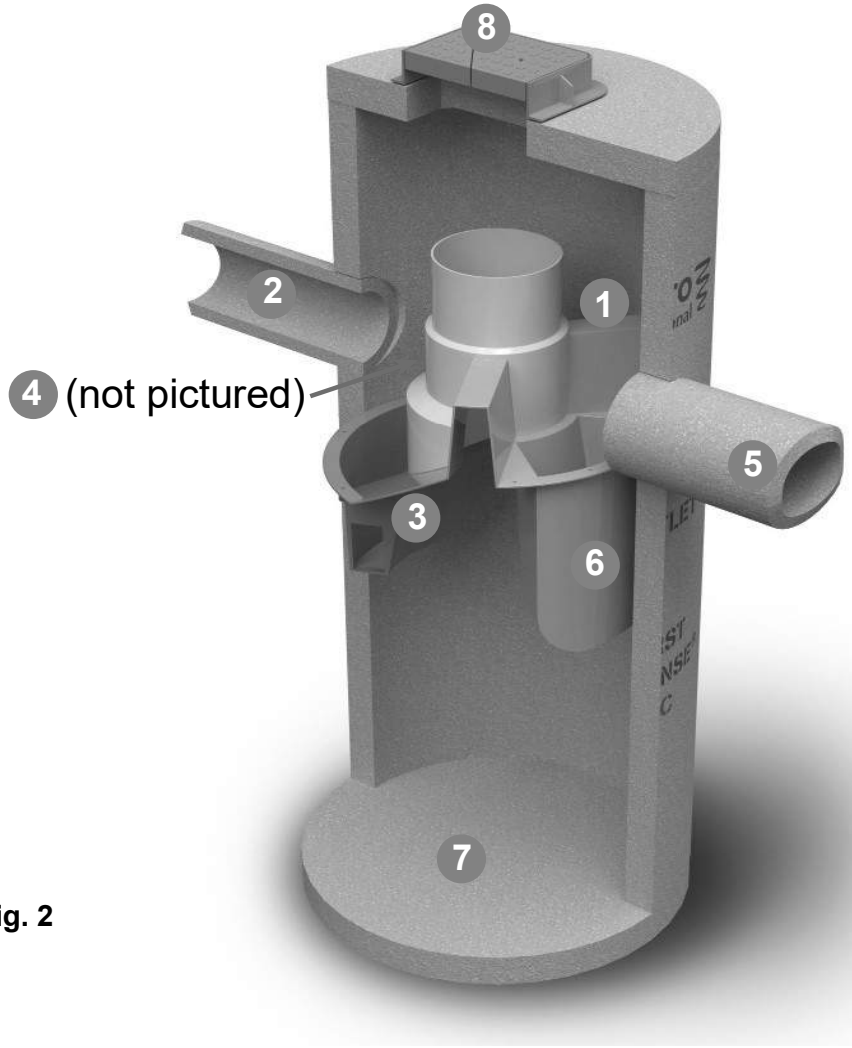


Fig. 2

Table 1

First Defense® Model Sizes
(ft / m) diameter
3 / 0.9
4 / 1.2
5 / 1.5
6 / 1.8
7 / 2.1
8 / 2.4
10 / 3.0

Overview

The First Defense® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the First Defense®. The First Defense® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the First Defense® will no longer be able to store removed sediment and oil.

The First Defense® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the First Defense®, nor do they require the internal components of the First Defense® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

Maintenance Equipment Considerations

The internal components of the First Defense® have a centrally located circular shaft through which the sediment storage sump can be accessed with a sump vac hose. The open diameter of this access shaft is 15 inches in diameter (Fig.3). Therefore, the nozzle fitting of any vactor hose used for maintenance should be less than 15 inches in diameter.

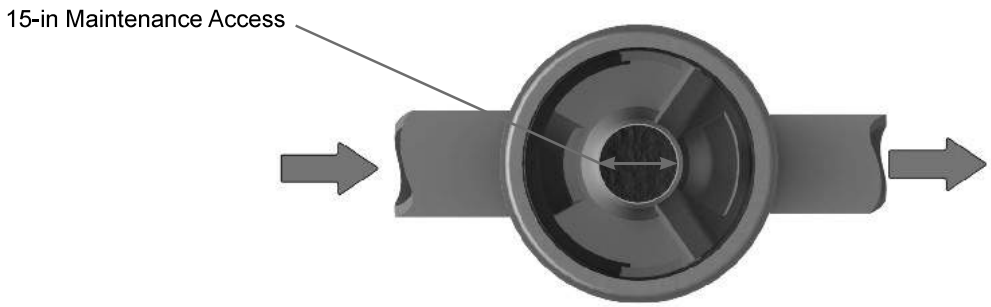


Fig.3 The central opening to the sump of the First Defense®is 15 inches in diameter.

Determining Your Maintenance Schedule

The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge-Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil / flotables removal, for First Defense® typically takes less than 30 minutes and removes a combined water/oil volume of about 765 gallons.

Inspection Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. Fig.4 shows the standing water level that should be observed.

4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the components and water surface.

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel.

6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.

7. Securely replace the grate or lid.

8. Take down safety equipment.

9. Notify Hydro International of any irregularities noted during inspection.

Floatables and Sediment Clean Out

Floatables clean out is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.4).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose to be lowered to the base of the sump.

Scheduling

- Floatables and sump clean out are typically conducted once a year during any season.

- Floatables and sump clean out should occur as soon as possible following a spill in the contributing drainage area.

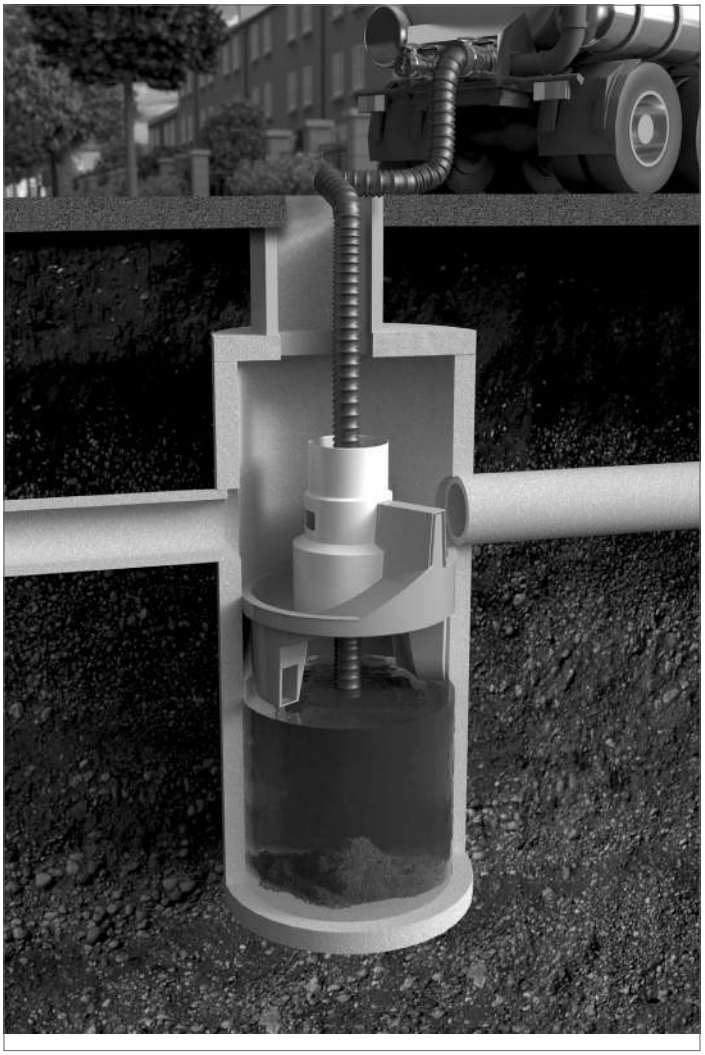


Fig.4 Floatables are removed with a vactor hose

Recommended Equipment

- Safety Equipment (traffic cones, etc)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge Judge®)
- Vactor truck (flexible hose recommended)
- First Defense® Maintenance Log

Floatables and Sediment Clean Out Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.
2. Remove the grate or lid to the manhole.
3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.
4. Remove oil and floatables stored on the surface of the water with the vactor hose or with the skimmer or net
5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (page 9).
6. Once all floatables have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris off the sump floor
7. Retract the vactor hose from the vessel.
8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components, blockages, or irregularly high or low water levels.
9. Securely replace the grate or lid.

Maintenance at a Glance

Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Oil and Floatables Removal	- Once per year, with sediment removal - Following a spill in the drainage area
Sediment Removal	- Once per year or as needed - Following a spill in the drainage area
NOTE: For most clean outs the entire volume of liquid does not need to be removed from the manhole. Only remove the first few inches of oils and floatables from the water surface to reduce the total volume of liquid removed during a clean out.	

First Defense® Installation Log

HYDRO INTERNATIONAL REFERENCE NUMBER:	
SITE NAME:	
SITE LOCATION:	
OWNER:	CONTRACTOR:
CONTACT NAME:	CONTACT NAME:
COMPANY NAME:	COMPANY NAME:
ADDRESS:	ADDRESS:
TELEPHONE:	TELEPHONE:
FAX:	FAX:

INSTALLATION DATE: / /

MODEL SIZE (CIRCLE ONE): [3-FT] [4-FT] [5-FT] [6-FT] [7-FT] [8-FT] [10-FT]

INLET (CIRCLE ALL THAT APPLY): GRATED INLET (CATCH BASIN) INLET PIPE (FLOW THROUGH)

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

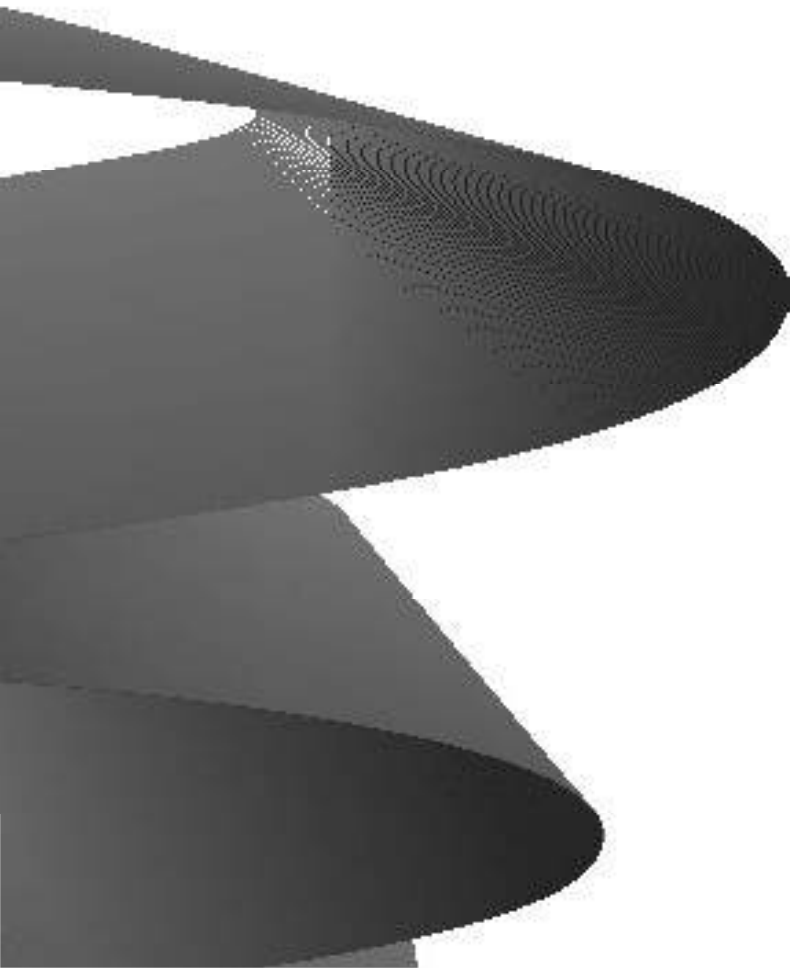
First Defense® Inspection and Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment Depth Measured	Volume of Sediment Removed	Site Activity and Comments

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International



Stormwater Solutions

94 Hutchins Drive
Portland, ME 04102

Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com

Turning Water Around...®

FD_O+M_K_2105

PADEP WORKSHEETS 11, 12, 13

Worksheet 11: BMPs for Pollution Prevention

See: pg. 7, Section D, #4 for BMP descriptions

RC + VC + WQ

Terre Box: Retention

Detention

Underground Detention

Terre Arch: Subsurface Infiltration Bed

Infiltration Basin

WQ

Terre Kleen: Oil/Grit Separator

Terre Bio Retention Garden

Terre Urban Protector

Worksheet 12: WQ Analysis: Pollutant Loading

Worksheet 13: BMP Pollutant Reduction

Terre Box: RC-VC

Terre Arch: RC-VC-WQ: (TSS-TP-Metals)

Terre Kleen: WQ: Oil, Grease, Trash, Vegetation: (95%)

Nitrogen (50%): via captured vegetation

Phosphorus (50%): attached to TSS + captured vegetation

Metals (50%): attached to TSS

TSS: (80%) net weighted annual removal

Terre Bio Retention Garden (Tree Filter): WQ:

Phosphorus: 73.74%

Nitrogen: 68.43%

Metals: 81.83%

TSS: 85.43%

SECTION _

SPECIFICATION FOR TERRE KLEEN™ HYDRODYNAMIC SEPARATOR US Patent No. US 6,676,832 B2

BY
TERRE HILL STORMWATER SYSTEMS, Division of Terre Hill Concrete products
485 WEAVERLAND VALLEY ROAD
TERRE HILL, PA 17581
TEL.: (717) 445-3100 FAX: (717) 445-0242.
www.terrestorm.com

Verify latest version of specifications

PART 1-GENERAL

1.1 DESCRIPTION

A. This work shall consist of manufacturing, delivering to the job site and installing a **Terre Kleen™ (US Patent No. US 6,676,832 B2);** an inclined plate cell hydrodynamic separator (containing the specified number of inclined plates for each unit) at each location as shown on the contract plans. The unit shall treat all stormwater without loss of floatable matter, such as trash, debris, litter and oil and grease captured in the oil booms; there shall be no scour of settled sediment from the baffled sediment hopper located under the inclined plates in the grit chamber. External by-pass structures are not allowed. Each unit has a primary chamber and grit chamber. The primary chamber separates oil, grease and floatable debris contained in a fully baffled area to prevent loss or re-suspension of captured oil, grease, and floatable trash and debris including captured sediment. This chamber is followed by an inclined plate sedimentation unit placed above a protected sediment collection hopper in a grit chamber into which the stormwater flows after passing through a nutrient screen in the divider wall between the two chambers. The grit chamber hopper shall contain a sediment sludge stainless steel spray assembly located in the grit chamber to facilitate clean out and maintenance of the unit that shall be pressurized with water causing dislodging

of the settled sludge below the inclined plate settler for drainage towards the vacuum suction points.

B. The unit shall contain an internal flow through duct located between the primary chamber and the grit chamber. Flows in excess of the design flow shall pass through the unit through the internal flow through duct.

C. This product is produced by Terre Hill Concrete Products under the name **"Terre Kleen™".** All rights are reserved**.(US Patent No. 6,676,832 B2)**

D. The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate separator shall operate based on the hydrostatic pressure differential between the inlet and outlet pipe. The flow is split in proportion to the number of inclined plate cells. The cells treat the water in parallel and combine the flow at the overflow weir. The inclined plate cell surfaces facilitate sliding of the sediment to the hopper below where it is protected from scour from subsequent flows. The design of the device shall prevent loss of captured pollutants including oil, grease, trash, debris, and sediment through scouring or other causes during all flows and conditions. The nutrient screen shall be positioned to allow passage of all flows without allowing loss of captured pollutants.

E. The internal flow through duct provides additional flow area in addition to the inclined plate cells. All flows pass through the primary chamber so as to capture oil grease and floatable trash and debris and to allow by-pass of the excess flows only in the internal flow through duct while requiring design flows to continue to be treated in both the primary and the sedimentation grit chamber. The internal by-pass shall not allow loss of any captured pollutants during excess flows.

F. Both the primary and the grit chambers shall be accessible through removable covers at grade for the removal of floatable material, water and the settled solids and floating particulates using a standard vacuum truck. No confined space entry shall be required for removal of captured pollutants.

G. The grit chamber hopper shall contain a sediment sludge stainless steel spray assembly located in the grit chamber to facilitate clean out and maintenance of the unit that shall be pressurized with water causing dislodging of the settled sludge below the inclined plate settler for drainage towards the vacuum suction points.

H. Captured sediment storage shall be not less than 0.7 Ft^3/Ft^2 of settling area in the Terre Kleen.

I. Oil Storage shall be not less than 1.5 gallons/Ft^2 in the in the **Terre Kleen™ (US Patent No. US 6,676,832 B2)**

1.2 SUBMITTALS

A. Shop drawings shall be submitted as described in Division 1 – General Requirements.

B. Certifications by a Professional Engineer licensed in the state of installation shall be submitted that the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator structure conforms to the standards listed in this Specification.

1.3 REFERENCES

A. ASTM International (ASTM):
A-48 Specification for Gray Iron Castings
C-32 Specification for Sewer and Manhole Brick
C-270 Specification for Mortar for Unit Masonry
C-478 Specification for Precast Reinforced Concrete Manhole Sections
C-913 Standard Specification for Precast Concrete Water and Wastewater Structures
US Patent No. US 6676832 B2; Surface water purifying catch basin.

B. Federal Specifications (FS):
FS-SS-S-210 Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints

1.4 MANUFACTURERS

A. The products furnished by named manufacturers are specified as a standard of quality and performance.

B. The manufacture of the concrete structure shall be performed at a precast production facility certified by the National Precast Concrete Association (NPCA).

C. The manufacturer of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** shall be licensed to produce and or sell the entire device or any components thereof by Terre Hill Concrete Products of Terre Hill Pennsylvania 717-445-3100.

PART 2- PRODUCTS

2.1 MATERIALS AND DESIGN

A. The reinforced concrete vault structure shall be designed for HS-25 traffic loading, and existing soil pressure, ground water pressure and buoyancy. The materials and structural design shall be per ASTM C-478 and ASTM C-913. The concrete shall have a minimum compressive strength of 5000 psi.

B. The access cover shall be designed for HS-25 traffic loading and shall provide a minimum of 27 1/2 inches clear opening. Manhole frame and cover shall be East Jordan or Quirin manufactured from gray iron conforming to ASTM A-48 Class 35B. The cover shall contain the words “Stormwater Treatment System” and the Terre Kleen™ logo as approved by Terre Hill Concrete Products.

C. Butyl mastic sealant for joints shall conform to ASTM C-990 and Federal Specifications (FSFS-SS-S-210 Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints

D. Pipe openings shall be sized to accept pipes of the specified sizes and shall be sealed with hydraulic cement conforming to ASTM C-595M.

E. The metal components of the inclined cell separator, baffle wall Aluminum Alloy 5052 (UNS # A95052) or equal.

F. The hinge pins of the inclined cell separator shall be manufactured from stainless steel AISI Type 304L (UNS # S30403).

G. All fasteners used in combination or connecting the inclined cell separator to the concrete structure shall be made from stainless steel AISI 316 (UNS # 31600) and the threads shall be properly lubricated with Permatex anti-seize Item 80078 lubricant or equal. All surfaces of aluminum components that are to be embedded or in contact with fresh, unhydrated concrete shall be coated with

Koppers Bitumastic 300M.

H. Per 57 Ft^2 of sedimentation area, four (4) Ø 2 ¼" x 12" long sorbent booms with an absorption capacity of ¼ gallon per lineal foot shall be placed in the primary chamber for the absorption of gasoline; diesel fuel, lube oil, jet fuel, transformer oils, chlorinated solvents, aromatic solvents, hydraulic oils, light crude. The sorbent boom or Rubberizer® boom shall be manufactured by Haz-Mat Response Technologies Inc. or approved equal.

2.2 PERFORMANCE

A. The inlet pipe shall discharge the storm water into the primary chamber. In the primary chamber, the separator shall facilitate the floatation of liquids and particles lighter than the density of water. Floatable solids, greater than 19mm [3/4"], and liquids shall be retained in the primary chamber, and shall not be subject to loss through re-suspension or any other cause. Emulsified oils are not captured and are not part of the floatable mass.

B. The heavy fraction of the solids shall settle in the bottom of the primary chamber.

C. Particles in the range of 50 to 500 micro meters (µM) kept in suspension due to turbulence in the primary chamber shall pass through a nutrient screen with a maximum screen opening of 16mm x 16mm [5/8"x 5/8"] and enter the grit chamber (sediment grit chamber) through a parallelogram port at the bottom of the inclined cell walls. This opening shall be approximately mid-elevation between the inlet pipe invert and the vault invert.

D. The solids and water between the inclined cell plate walls shall travel in an inclined direction toward the overflow weir at the top of the inclined plate cell. During this process, the solids shall settle and slide down towards the bottom of each plate cell and drop into the receiving hopper of the sedimentation grit chamber. The water shall discharge at the top of the cell, pass across a V-notch weir and cascade onto a baffle plate and drain to the effluent outlet pipe.

E. The particles that shall be removed in the grit chamber shall be silt, fine sand, and sand. The typical density of these particles is

2400 kg/M^3 [150lbs/ft^3], and their size between 2 microns and 1000 microns with a d_{50}= 70 Micron. The projected sedimentation surface area of the grit chamber shall be the cumulative horizontal projection of the sedimentation cell-floors that make up the sedimentation grit chamber. The total projected sedimentation surface area of the sedimentation cells, contained within the total structure footprint shall not be less than as follows:

Model	Structure Size		Sedimentation Surface Area
1. Terre Kleen 09	4'6" x 7'0"	(31.50 ft²)	57 ft²
2. Terre Kleen 18	6'6" x 7'0"	(45.50 ft²)	115 ft²
3. Terre Kleen 27	8'6" x 7'0"	(59.50 ft²)	172 ft²
4. Terre Kleen 36	10'6" x 7'0"	(73.50 ft²)	230 ft²
5. Terre Kleen 45	12'6" x 7'0"	(87.50 ft²)	288 ft²
6. Terre Kleen 54	14'6" x 7'0"	(101.50 ft²)	345 ft²
7. Terre Kleen 63	16'6" x 7'0"	(115.50 ft²)	403 ft²

F. The design flow in M^3/sec [GPM or CFS] for each **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator water quality treatment device shall be as noted on the drawings.

PART 3-INSTALLATION

3.1 INCLINED PLATE SEPARATOR FABRICATION

A. Fabrication of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator water quality device shall be in strict accordance with the design.

B. The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator water quality device shall be provided with mounting brackets for installation into the precast concrete structure with stainless steel mounting anchors.

C. The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** inclined plate hydrodynamic separator shall be provided with a flow channel on the effluent side of the settler and a clean-out opening next to the channel.

D. The nutrient screen shall be placed as an extension of the baffle wall at the entrance to the parallelogram port in the divider wall.

E. Certified welders experienced in the welding of specified thin metals shall place all welds.

F. The fabricator shall remove shop soils, discoloration, and welding slag.

3.2 PRECAST CONCRETE STRUCTURE

A. The utility contractor installing the precast concrete structure shall be responsible installing the structure so as to stop the infiltration or loss of water into or out of the precast concrete structure.

B. The precast concrete structure shall be installed level and plumb at the specified elevation shown on the signed, approved plans, on a compacted stone sub base 150mm [6”] thick.

C Excavation and backfill shall be as specified in the signed, approved plans.

3.3 MANUFACTURER INSTALLATION TECHNICAL ASSISTANCE

A At the time and place of installation of any **Terre Kleen™ (US Patent No. US 6,676,832 B2)** the manufacturer, Terre Hill Concrete Products will provide a Product Liaison on site to offer technical assistance to the installation contractor to assure proper installation of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** in accordance with the signed, approved plans.

3.4 OPERATION AND MAINTENANCE

A The maintenance of the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** is the responsibility of the Owner. Each site has unique site conditions. It is the responsibility of the Owner to establish a schedule according to the conditions of the specific **Terre Kleen™ (US Patent No. US 6,676,832 B2)** location. Failure to clean the sediment from the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** and to replace oil absorption booms will cause the

Terre Kleen™ (US Patent No. US 6,676,832 B2) to not maintain its design performance capabilities. It is strongly recommended that the Owner follow the prescribe maintenance specifications and procedures published by Terre Hill Concrete Products and copy thereof given to the installation contractor for delivery to the Owner.(A copy of the Maintenance Procedures are attached hereto and made a part hereof.)

PART 4 Maintenance Procedures for Terre Kleen™

4.1 General

A Inspection and maintenance must be performed on a regular basis, All captured pollutants must be removed from the **Terre Kleen™ (US Patent No. US 6,676,832 B2)**. During the first year after installation inspections should be performed every three (3) months to determine the type and amount of pollutants in the **Terre Kleen™ (US Patent No. US 6,676,832 B2)**. Site conditions and weather will influence the rate of pollutant capture. A schedule of regular maintenance can then be established based upon the quarterly inspections.

4.2 Pollutant Removal

A Access to both the primary and grit chambers is provided by manhole openings. The gross pollutants such as litter and the oil absorption booms should be removed first. A vacuum truck or similar equipment is then utilized to remove the water and the sediment. Disposal of all of the removed pollutants should be properly documented in accordance with all applicable regulations. Removal may be done anytime after a rain event.

At all times keep sparks and flames away from the **Terre Kleen™ (US Patent No. US 6,676,832 B2)** as it may contain flammable material.

The **Terre Kleen™ (US Patent No. US 6,676,832 B2)** is designed for inspection and cleaning from grade. If “confined entry” is desired, trained and certified personnel using OSHA regulation equipment is required.

Manhole covers and inlet grates must be put back securely to the frames after inspection or maintenance.

4.3 Documentation

A Proper documentation should include:

a) dates and results of each inspection;
b) proposed and installed repairs, renovations, improvements;
c) type and amount of captured pollutants;
d) disposal of pollutants;
e) preparation and submittal of reports;
f) document nutrient and sediment trading credits.

4.4 Measurement

A A carefully lowered stadia rod or similar instrument may be used to determine amount of captured sediment. The sludge dispersion manifold can assist in the removal of sediment. Manifold pipes mounted to the floor of the grit chamber connect to a hose that leads to the grade level manhole. The hose is pressurized by the vacuum truck's spray nozzle. The pressurized manifold sprays water through small horizontal holes in the manifold pipes, which liquefies and disperses the sludge blanket for removal by the suction nozzle.

5.0 Additional Requirements

A. Unit fabrication and field installation shall be in accordance with manufacturer's requirements unless directed otherwise by the county Engineer.

B. The units that are located in the street or highway right of way shall be able to support a HS-25 loading without structural failure. Load carrying ability of the unit shall be verified by signed and sealed calculations prepared by an engineered licensed in New Jersey. Calculations shall be submitted for review and approved with the appropriate shop drawings for each unit.

C. Each unit must meet the dimensional limitations and requirements shown on the plans including but not limited to limit of disturbance, cover to finished grade, invert-in and invert-out.

D. Units must be able to accept inlet castings as wellas manhole rim and cover without any loss of performance of the unit.

E. It is anticipated that the units will be installed in areas of high ground water. In addition to the dewatering operations described elsewhere, the Contractor shall provide buoyancy calculations indicating a safety factor of two (2) against flotation. Buoyancy calculations shall be performed for the situation that the dewatering operation has failed and the unit has not been backfilled as of yet. Calculations shall be prepared and signed and sealed by an Engineer licensed in New Jersey.

F. In areas of high ground water, compacted one inch (1") diameter

crushed stone shall be used as backfill to the top of the ground water table.

G. The Contractor shall submit for approval, shop drawings for the units and any pipe coupling device that may be used.

6.0 LIMITED WARRANTY

Terre Hill Stormwater Systems provides the following Express Written Limited Warranty in lieu of any other warranty, whether oral , written , express, or implied. (the Warranty). All other warranties, representations, remedies, guarantees claims, or legal or equitable causes of action, in contract, tort or otherwise; including the Implied Warranties of Merchantability and Fitness for a Particular Purpose are excluded.

1. **This Warranty applies solely to the Terre Kleen™ (US Patent No. US 6,676,832 B2) products manufactured by Terre Hill Stormwater Systems and sold to the original purchaser (the Purchaser)**
2. **The structural integrity of the Terre Kleen™ (US Patent No. US 6,676,832 B2); when installed in accordance with Terre Hill Stormwater System's written installation specifications, and in accordance with site conditions, requirements of all laws and regulations, are warranted to the Purchaser against defective materials and workmanship for four (4) years from the date of installation.**
3. **Terre Hill Stormwater Systems agrees to provide the labor and material to remove the installed Terre Kleen™ (US Patent No. US 6,676,832 B2) and reinstall the Terre Kleen™ (US Patent No. US 6,676,832 B2), upon satisfactory proof of a breach of this Warranty.**
4. **Excluded from Warranty are claims resulting from or caused by damage; alteration; accident; misuse; abuse involving the Terre Kleen™ (US Patent No. US 6,676,832 B2), or negligence of the Purchaser or any third party. to the Terre Kleen™ (US Patent No. US 6,676,832 B2)**
5. **Terre Hill Stormwater Systems sole liability to the Purchaser shall be as expressly set forth in this Warranty, whether the claim is based upon contract, tort, equity or any other legal or equitable theory.**
6. **Under no circumstances shall Terre Hill Stormwater Systems be**

liable to Purchaser or any third party for product liability claims ; or the cost of goods or services related to the purchase or installation of the Terre Kleen™ (US Patent No. US 6,676,832 B2).

The Warranty is contingent upon verification of installation in strict accordance with the Terre Hill Stormwater Systems specifications, and use of the product strictly for the application specified. The construction plans for installation of the product shall be approved in writing by Terre Hill Stormwater Systems, and the construction installation plans shall be sealed by a professional engineer, licensed to perform civil engineering in the jurisdiction wherein the product will be installed.

All conditions for product usage as specified by Terre Hill Stormwater Systems must be satisfied in order for any of the terms of the Warranty to be valid, in full or in part.

The Warranty guarantees that any product of the Terre Hill Stormwater System will equal or exceed the Terre Hill Stormwater System written performance claim for stormwater treatment.

This Warranty of Terre Hill Stormwater Systems does not extend to incidental, consequential, special, or indirect claims , expenses or damages. Terre Hill Stormwater Systems shall not be liable for penalties or liquidated damages, including loss of profits or production and overhead costs; or other loss or expense incurred by the Purchaser or any third party.

The Warranty is limited to those claims filed in writing with Terre Hill Stormwater Systems, a Division of Terre Hill Concrete Products on or before four (4) years from the date of substantial completion of installation. The written claim shall specify and describe the alleged defect upon which the breach of Warranty is claimed in reasonable detail.

The Warranty with all of its obligations, rights and limitations and protections shall apply to Terre Hill Concrete Products.

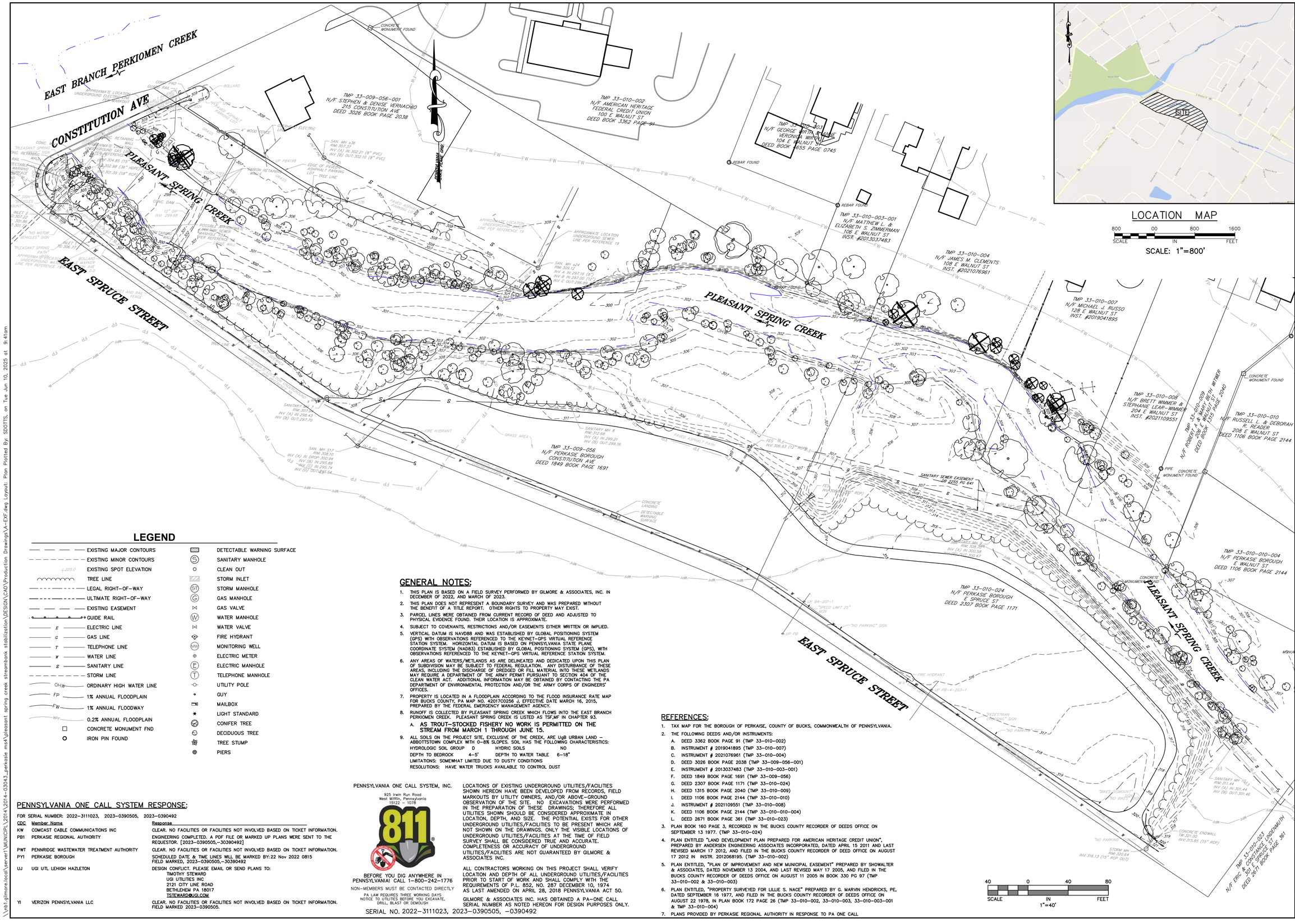
END OF SECTION

TK Specs dated 09.26.12

Appendix F

Streambank Restoration

Appendix F-1: Pleasant Spring Creek Streambank Stabilization Plans



LOCATION MAP

SCALE: 1"=800'

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EXISTING SPOT ELEVATION
- TREE LINE
- LEGAL RIGHT-OF-WAY
- ULTIMATE RIGHT-OF-WAY
- EXISTING EASEMENT
- GUIDE RAIL
- ELECTRIC LINE
- GAS LINE
- TELEPHONE LINE
- WATER LINE
- SANITARY LINE
- STORM LINE
- ORDINARY HIGH WATER LINE
- 1% ANNUAL FLOODPLAIN
- 1% ANNUAL FLOODWAY
- 0.2% ANNUAL FLOODPLAIN
- CONCRETE MONUMENT FND
- IRON PIN FOUND
- DETECTABLE WARNING SURFACE
- SANITARY MANHOLE
- CLEAN OUT
- STORM INLET
- STORM MANHOLE
- GAS MANHOLE
- GAS VALVE
- WATER MANHOLE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- ELECTRIC METER
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- UTILITY POLE
- MAILBOX
- GUY
- LIGHT STANDARD
- CONIFER TREE
- DECIDUOUS TREE
- TREE STUMP
- PIERS

GENERAL NOTES:

1. THIS PLAN IS BASED ON A FIELD SURVEY PERFORMED BY GILMORE & ASSOCIATES, INC. IN DECEMBER OF 2022, AND MARCH OF 2023.
2. THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY AND WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. OTHER RIGHTS TO PROPERTY MAY EXIST.
3. PARCEL LINES WERE OBTAINED FROM CURRENT RECORD OF DEED AND ADJUSTED TO PHYSICAL EVIDENCE FOUND. THEIR LOCATION IS APPROXIMATE.
4. SUBJECT TO COVENANTS, RESTRICTIONS AND/OR EASEMENTS EITHER WRITTEN OR IMPLIED.
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6. ANY AREAS OF WATERS/WETLANDS AS ARE DELINEATED AND DEDICATED UPON THIS PLAN OF SUBDIVISION MAY BE SUBJECT TO FEDERAL REGULATION. ANY DISTURBANCE OF THESE AREAS, INCLUDING THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO THESE WETLANDS MAY REQUIRE A DEPARTMENT OF THE ARMY PERMIT PURSUANT TO SECTION 404 OF THE CLEAN WATER ACT. ADDITIONAL INFORMATION MAY BE OBTAINED BY CONTACTING THE PA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND/OR THE ARMY CORPS OF ENGINEERS' OFFICES.
7. PROPERTY IS LOCATED IN A FLOODPLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP FOR BUCKS COUNTY, PA MAP NO. 42017C0256 J, EFFECTIVE DATE MARCH 16, 2015, PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
8. RUNOFF IS COLLECTED BY PLEASANT SPRING CREEK WHICH FLOWS INTO THE EAST BRANCH PERKIOMEN CREEK. PLEASANT SPRING CREEK IS LISTED AS TSF,MF IN CHAPTER 93.
   A. **AS TROUT-STOCKED FISHERY NO WORK IS PERMITTED ON THE STREAM FROM MARCH 1 THROUGH JUNE 15.**
9. ALL SOILS ON THE PROJECT SITE, EXCLUSIVE OF THE CREEK, ARE UgB URBAN LAND – ABBOTTSTOWN COMPLEX WITH 0-8% SLOPES. SOIL HAS THE FOLLOWING CHARACTERISTICS:
   HYDROLOGIC SOIL GROUP D HYDRIC SOILS NO
   DEPTH TO BEDROCK 4-5' DEPTH TO WATER TABLE 6-18"
   LIMITATIONS: SOMEWHAT LIMITED DUE TO DUSTY CONDITIONS
   RESOLUTIONS: HAVE WATER TRUCKS AVAILABLE TO CONTROL DUST

REFERENCES:

1. TAX MAP FOR THE BOROUGH OF PERKAISE, COUNTY OF BUCKS, COMMONWEALTH OF PENNSYLVANIA.
2. THE FOLLOWING DEEDS AND/OR INSTRUMENTS:
   A. DEED 3362 BOOK PAGE 91 (TMP 33-010-002)
   B. INSTRUMENT # 2019041895 (TMP 33-010-007)
   C. INSTRUMENT # 2021076961 (TMP 33-010-004)
   D. DEED 3026 BOOK PAGE 2038 (TMP 33-009-056-001)
   E. INSTRUMENT # 2013037483 (TMP 33-010-003-001)
   F. DEED 1849 BOOK PAGE 1691 (TMP 33-009-056)
   G. DEED 2307 BOOK PAGE 1171 (TMP 33-010-024)
   H. DEED 1315 BOOK PAGE 2040 (TMP 33-010-009)
   I. DEED 1106 BOOK PAGE 2144 (TMP 33-010-010)
   J. INSTRUMENT # 2021109551 (TMP 33-010-008)
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6. PLAN ENTITLED, "PROPERTY SURVEYED FOR LILLIE S. NACE" PREPARED BY G. MARVIN HENDRICKS, PE, DATED SEPTEMBER 16 1977, AND FILED IN THE BUCKS COUNTY RECORDER OF DEEDS OFFICE ON AUGUST 22 1978, IN PLAN BOOK 172 PAGE 26 (TMP 33-010-002, 33-010-003, 33-010-003-001 & TMP 33-010-004)
7. PLANS PROVIDED BY PERKASIE REGIONAL AUTHORITY IN RESPONSE TO PA ONE CALL

PENNSYLVANIA ONE CALL SYSTEM RESPONSE:

FOR SERIAL NUMBER: 2022-3111023, 2023-0390505, 2023-0390492

CDC	Member Name	Response
KW	COMCAST CABLE COMMUNICATIONS INC	CLEAR. NO FACILITIES OR FACILITIES NOT INVOLVED BASED ON TICKET INFORMATION.
PB1	PERKASIE REGIONAL AUTHORITY	ENGINEERING COMPLETED. A PDF FILE OR MARKED UP PLANS WERE SENT TO THE REQUESTOR. [2023-0390505,-30390492]
PWT	PENNRIDGE WASTEWATER TREATMENT AUTHORITY	CLEAR. NO FACILITIES OR FACILITIES NOT INVOLVED BASED ON TICKET INFORMATION.
PY1	PERKASIE BOROUGH	SCHEDULED DATE & TIME LINES WILL BE MARKED BY:22 Nov 2022 0815 FIELD MARKED, 2023-0390505,-30390492
UJ	UGI UTIL LEHIGH HAZLETON	DESIGN CONFLICT. PLEASE EMAIL OR SEND PLANS TO: TIMOTHY STEWARD UGI UTILITIES INC 2121 CITY LINE ROAD BETHLEHEM PA 18017 TSTEWARD@UGI.COM
Y1	VERIZON PENNSYLVANIA LLC	CLEAR. NO FACILITIES OR FACILITIES NOT INVOLVED BASED ON TICKET INFORMATION. FIELD MARKED 2023-0390505.

PENNSYLVANIA ONE CALL SYSTEM, INC.
925 Irwin Run Road
West Mifflin, Pennsylvania
15122 – 1078

811

BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA! CALL 1-800-242-1776

NON-MEMBERS MUST BE CONTACTED DIRECTLY

PA LAW REQUIRES THREE WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH

SERIAL NO. 2022-3111023, 2023-0390505, -0390492

LOCATIONS OF EXISTING UNDERGROUND UTILITIES/FACILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM RECORDS, FIELD MARKOUTS BY UTILITY OWNERS, AND/OR ABOVE-GROUND OBSERVATION OF THE SITE. NO EXCAVATIONS WERE PERFORMED IN THE PREPARATION OF THESE DRAWINGS; THEREFORE ALL UTILITIES SHOWN SHOULD BE CONSIDERED APPROXIMATE IN LOCATION, DEPTH, AND SIZE. THE POTENTIAL EXISTS FOR OTHER UNDERGROUND UTILITIES/FACILITIES TO BE PRESENT WHICH ARE NOT SHOWN ON THE DRAWINGS. ONLY THE VISIBLE LOCATIONS OF UNDERGROUND UTILITIES/FACILITIES AT THE TIME OF FIELD SURVEY SHALL BE CONSIDERED TRUE AND ACCURATE. COMPLETENESS OR ACCURACY OF UNDERGROUND UTILITIES/FACILITIES ARE NOT GUARANTEED BY GILMORE & ASSOCIATES INC.

ALL CONTRACTORS WORKING ON THIS PROJECT SHALL VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES/FACILITIES PRIOR TO START OF WORK AND SHALL COMPLY WITH THE REQUIREMENTS OF P.L. 852, NO. 287 DECEMBER 10, 1974 AS LAST AMENDED ON APRIL 28, 2018 PENNSYLVANIA ACT 50.

GILMORE & ASSOCIATES INC. HAS OBTAINED A PA-ONE CALL SERIAL NUMBER AS NOTED HEREON FOR DESIGN PURPOSES ONLY.

SCALE: 1"=40'

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
CORPORATE HEADQUARTERS
65 EAST BUTLER AVENUE, SUITE 100, NEW BRITAIN, PA 18901 • (215) 345-4330 • www.gilmore-assoc.com

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — RUSSELL CROSS — LAND SURVEYOR — PENNSYLVANIA

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKG

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

EXISTING FEATURES PLAN

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.: 1403043

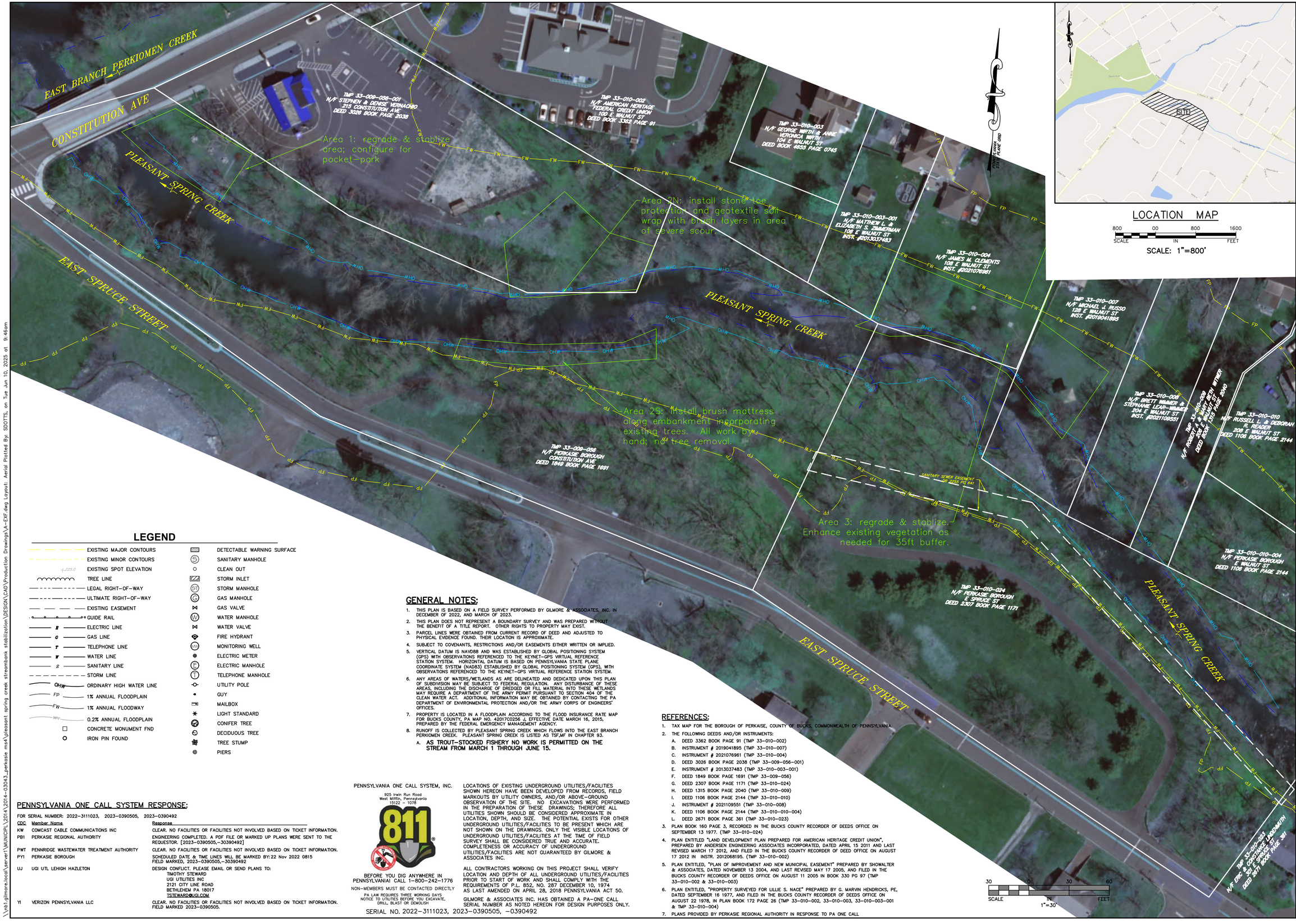
OWNERS INFO:
PERKASIE BOROUGH
620 W CHESTNUT ST, BOX 96
PERKASIE, PA 18944
215-257-5065

MUNICIPAL FILE No.: 1403043

TAX MAP PARCEL No.: 33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1

TOTAL AREA: PER LOD	TOTAL LOTS: 5
DATE: 7/02/24	SCALE: 1"=40'
DRAWN BY: XXX	CHECKED BY: XXX

SHEET NO.: 1 OF 10



LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EXISTING SPOT ELEVATION (225.0)
- TREE LINE
- LEGAL RIGHT-OF-WAY
- ULTIMATE RIGHT-OF-WAY
- EXISTING EASEMENT
- GUIDE RAIL
- ELECTRIC LINE
- GAS LINE
- TELEPHONE LINE
- WATER LINE
- SANITARY LINE
- STORM LINE
- ORDINARY HIGH WATER LINE (OHW)
- 1% ANNUAL FLOODPLAIN (FP)
- 1% ANNUAL FLOODWAY (FW)
- 0.2% ANNUAL FLOODPLAIN (WFF)
- CONCRETE MONUMENT FND
- IRON PIN FOUND
- DETECTABLE WARNING SURFACE
- SANITARY MANHOLE
- CLEAN OUT
- STORM INLET
- STORM MANHOLE
- GAS MANHOLE
- GAS VALVE
- WATER MANHOLE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- ELECTRIC METER
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- UTILITY POLE
- GUY
- MAILBOX
- LIGHT STANDARD
- CONIFER TREE
- DECIDUOUS TREE
- TREE STUMP
- PIERS

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PENNSYLVANIA ONE CALL SYSTEM RESPONSE:

FOR SERIAL NUMBER: 2022-3111023, 2023-0390505, 2023-0390492

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UJ	UGI UTL LEHIGH HAZLETON	DESIGN CONFLICT. PLEASE EMAIL OR SEND PLANS TO: TIMOTHY STEWARD UGI UTILITIES INC 2121 CITY LINE ROAD BETHLEHEM PA 18017 TSTEWARD@UGI.COM
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SERIAL NO. 2022-3111023, 2023-0390505, -0390492

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REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKD

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

AERIAL PHOTOGRAPH PLAN

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.: 1403043

OWNERS INFO:
PERKASIE BOROUGH
620 W CHESTNUT ST, BOX 96
PERKASIE, PA 18944
215-257-5065

MUNICIPAL FILE No.: 1403043

TAX MAP PARCEL No.: 33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1

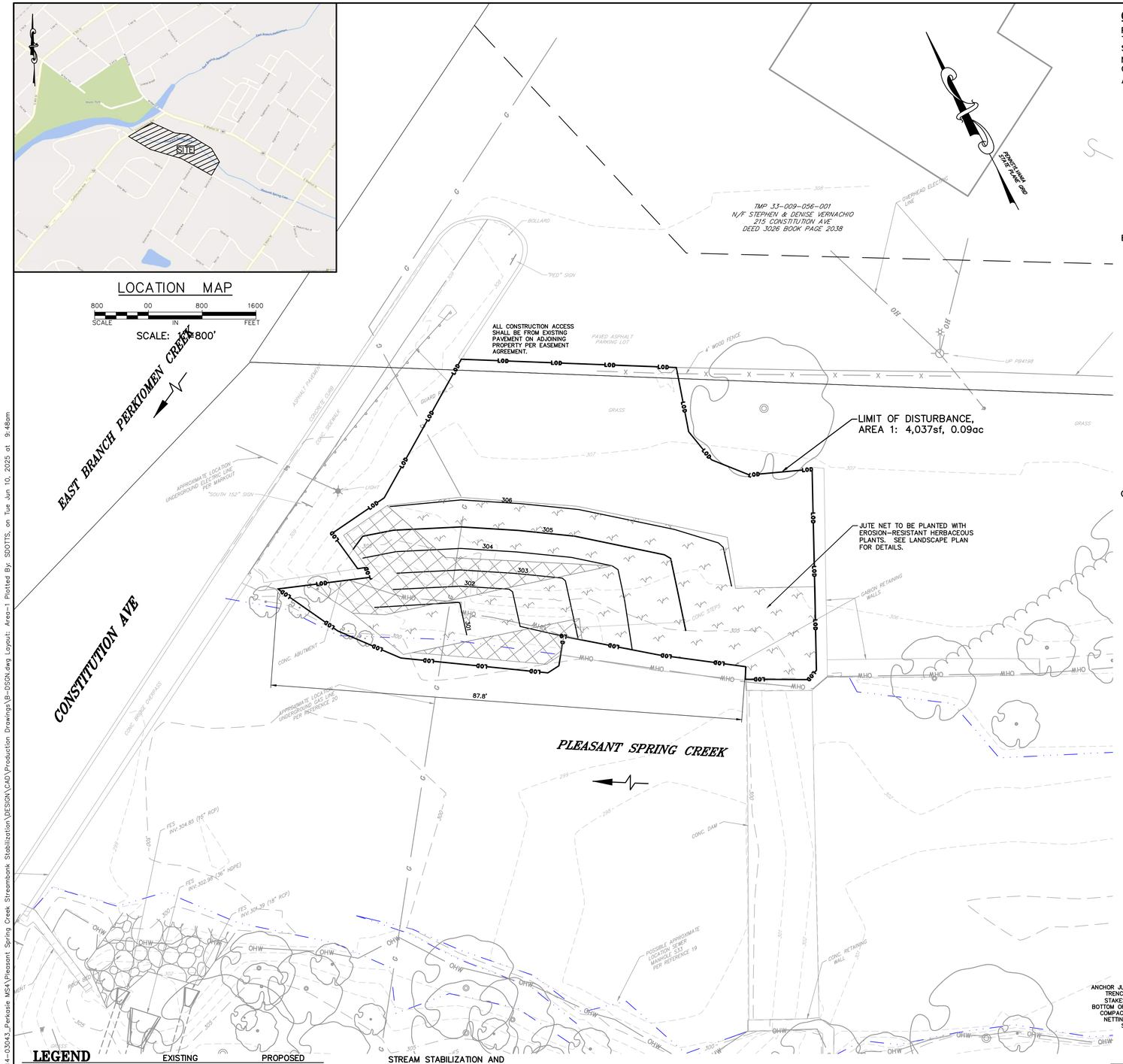
TOTAL AREA:	TOTAL LOTS:
PER LOD	5
DATE:	SCALE:
7/02/24	1"=30'
DRAWN BY:	CHECKED BY:
XXX	XXX

SHEET NO.: 2 OF 10

LOCATION MAP

SCALE: 1" = 800'

800 00 800 1600
SCALE IN FEET



LEGEND

	EXISTING	PROPOSED
EDGE OF PAVE		
PROPERTY LINE		
MAJOR CONTOURS	210	210
MINOR CONTOURS	212	212
SPOT ELEVATION	+225.0	+225.0
FENCE LINE	x x x x	
EASEMENT		
GUIDE RAIL		
STORM LINE & INLET		
WATERS OF US		
ORDINARY HIGH WATER LINE	OHW	
1% ANNUAL FLOODPLAIN	FP	FP
1% ANNUAL FLOODWAY	FW	FW
SIGN		
UTILITY POLE		

STREAM STABILIZATION AND ENHANCEMENT LEGEND

- TP TP — TREE PROTECTION FENCE
- 12" COIR FIBER LOG
- GEOTEXTILE SOIL WRAP w/ BRUSH LAYERING
- JUTE FABRIC WITH LIVE STAKES
- JUTE FABRIC WITH HERBACEOUS PLANTS
- BRUSH MATTRESS OVER EXISTING SLOPE
- LOD — LIMIT OF DISTURBANCE: ALL DISTURBANCES ARE RELATED TO CHAPTER 105 WORK.

TOTAL 32,288 SF 0.74 AC

LIVE STAKES SHALL CONSIST OF THE FOLLOWING SPECIES, CLUSTERED BY SPECIES IN GROUPS OF 15–25:

KEY	BOTANICAL NAME	COMMON NAME
CA	CORNUS AMOMUM	SILKY DOGWOOD
CS	CORNUS SERICEA	RED TWIG DOGWOOD
PO	PHYSOCARPUS OPULIFOLIUS	NINEBARK
SC	SAMBUCUS CANADESIS	ELDERBERRY
SD	SALIX DISCOLOR	PUSSY WILLOW
VD	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM

NOTES:
- SPECIES AND QUANTITIES OF EACH SHALL BE SUBMITTED FOR APPROVAL AT TIME OF INSTALLATION BASED ON AVAILABILITY
- 0.5"–1.5" DIAMETER, 2–3 FT. LONG, DORMANT CUTTINGS
- SIDE BRANCHES CLEANLY REMOVED WITH BARK INTACT
- BASAL END SHALL BE CUT AT AN ANGLE FOR EASE OF INSTALLATION; TOP SHALL BE SQUARE CUT

CHAPTER 105 WATERWAY WORK GENERAL NOTES:

PLEASANT SPRING CREEK IS LISTED AS TROUT–STOCKED FISHERY. TSF STREAMS ARE PROTECTED AND NO WORK IS PERMITTED ON THE STREAM FROM MARCH 1 THRU JUNE 15.

NO WORK MAY COMMENCE FOR THE STREAM RESTORATION UNTIL CHAPTER 105 & USACOE AUTHORIZATION IS OBTAINED.

A. STAGING

1. THE CONTRACTOR SHALL ESTABLISH A SCHEDULE FOR CONSTRUCTION ACCESS, LAYDOWN AND MATERIAL STORAGE, AND EQUIPMENT STORAGE AREAS THAT SHALL BE COMPLETED PRIOR TO THE START STREAM CHANNEL OR WETLANDS AREA WORK.
2. THE CONTRACTOR SHALL ESTABLISH A SCHEDULE FOR WORK WITHIN THE STREAM CHANNEL THAT MINIMIZES DISTURBANCE AND MAXIMIZES THE STABILIZATION OF THE STREAM CHANNEL THAT WILL OCCUR EACH DAY POSSIBLE OR PRACTICAL. THE CONTRACTOR SHALL ESTABLISH A SCHEDULE THAT MINIMIZES THE TOTAL TIME TO COMPLETE THE CONSTRUCTION AND STABILIZE THE WORK AREA.
3. THE CONTRACTOR SHALL HAVE ALL MATERIALS AND EQUIPMENT AT THE APPROPRIATE STAGING AREA FOR THE PROPOSED WORK PRIOR TO BEGINNING THE STREAM RESTORATION.
4. THE ENGINEER SHALL APPROVE THE SCHEDULE FOR EACH WORK AREA AND ENSURE TO THE BEST OF HIS ABILITY THAT SUFFICIENT MATERIALS AND EQUIPMENT ARE AVAILABLE PRIOR TO THE CONTRACTOR BEGINNING THE PARTICULAR RESTORATION AREA.
5. AT THE DISCRETION OF THE CONSERVATION DISTRICT AND/OR TOWNSHIP, A PRECONSTRUCTION MEETING SHALL BE HELD, A MINIMUM OF 7 DAYS PRIOR TO START OF WORK, INCLUDING THE SITE CONTRACTOR, TOWNSHIP ENGINEER, CONSERVATION DISTRICT, AND PLAN DESIGNER.

B. ESC MEASURES FOR CHANNEL WORK

1. ALL WORK SHALL BE PERFORMED FROM THE TOP OF BANK. AT NO TIME SHALL EQUIPMENT ENTER THE STREAM FLOW. IF IT BECOMES NECESSARY TO CROSS THE STREAM, A "DRY CROSSING" SHALL BE INSTALLED PER THE DETAIL ON SHEET 3 OR TEMPORARY COFFERDAMS SHALL BE INSTALLED AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE CONSTRUCTION AREA AT THE STREAM CROSSING AND THE NORMAL FLOW SHALL BE BYPASS PUMPED AROUND THE WORK AREA. WHENEVER POSSIBLE THE WORK SHOULD BE SCHEDULED FOR THE LOW FLOW SEASON.
2. ALL PUMPED WATER FROM THE EXCAVATED AREAS MUST BE FILTERED PRIOR TO BEING DISCHARGED INTO THE WATERS OF THE UNITED STATES. A FILTER BAG DESILTING DEVICE OR OTHER APPROVED DESILTING DEVICE SHALL BE USED TO FILTER THE PUMPED WATER. THE FILTER BAG OR OTHER APPROVED DEVICE SHALL BE LOCATED IN A WELL–VEGETATED AREA WITH A SLOPE NOT EXCEEDING FIVE PERCENT (5%). SEE 'PUMPED WATER FILTER BAG DETAIL' OF ADDITIONAL REQUIREMENTS AND SPECIFICATIONS.
3. ALL IN–CHANNEL EXCAVATIONS SHALL BE ACCOMPLISHED FROM THE TOP OF THE BANKS WHERE POSSIBLE. WHERE WORK CAN NOT BE ACCOMPLISHED FROM THE TOP OF BANKS, TEMPORARY DAMS SHALL BE CONSTRUCTED UPSTREAM AND DOWNSTREAM OF WORK AREA BEFORE ANY EQUIPMENT WORKS IN THE CHANNEL. UPON COMPLETION OF THE STREAM CROSSING, ALL DISTURBED AREAS SHALL BE RESTORED TO THE PRECONSTRUCTION CONDITION AND STABILIZED.
4. A BYPASS PUMP SHALL BE LOCATED ON–SITE DURING CONSTRUCTION TO BE INSTALLED AND UTILIZED IF AND/OR WHEN THE COFFERDAMS ARE DAMAGED OR OVERTAKEN BY THE CREEK DURING RAINFALL EVENTS. ALL PUMPED WATER SHALL DISCHARGE TO A SEDIMENT FILTER BAG LOCATED ON UNDISTURBED AREA. THE BYPASS PUMP SHALL BE USED UNTIL THE COFFERDAMS ARE REPLACED TO THEIR FULL FUNCTIONALITY.
5. ALL EXCAVATED CHANNEL MATERIALS THAT WILL BE USED AS BACKFILL SHALL BE PLACED IN A TEMPORARY STOCKPILE OUTSIDE THE STREAM CHANNEL AND ANY WETLAND AREAS. A COMPOST SOCK FILTER DEVICE SHALL BE INSTALLED BETWEEN THE TEMPORARY STOCKPILE AND THE WETLANDS/WATERWAY. TOPSOIL, STREAM BED MATERIAL, AND SUBSOILS SHALL BE STOCKPILED SEPARATELY. ALL EXCAVATED MATERIAL NOT PLANNED TO BE USED FOR BACKFILL OR RESTORATION SHALL BE IMMEDIATELY REMOVED TO AN APPROVED DISPOSAL SITE.

C. SEQUENCE OF CONSTRUCTION:

SEE THE SEQUENCE OF CONSTRUCTION ON SHEET 9 – EROSION & SEDIMENT CONTROL PLAN. SPECIFIC INSTALLATION NOTES FOR STABILIZATION MEASURES IS PROVIDED ON STREAM RESTORATION PLANS, SHEET 3 THRU 5.

UPON COMPLETION OF THE BANK STABILIZATION MEASURES, RIPARIAN BUFFERS SHALL BE RESTORED PER THE LANDSCAPE PLANS, SHEETS 6 THRU 8.

INSTALLATION: Jute Fabric w/ Live Stakes

1. REGRADE SLOPE AS NEEDED FOR STABILITY. 3:1 OR GREATER IS PREFERABLE.
2. SEED SLOPES WITH SHADE SEED MIX PER SPECIFICATION AND INSTALL EROSION CONTROL FABRIC.
   - A. EROSION CONTROL FABRIC SHALL BE WOVEN JUTE NETTING WITH UNIFORM OPEN PLAIN WEAVE MESH.
     1) MESH SHALL BE APPROXIMATELY 50% OPEN AREA, WEIGHING APPROXIMATELY 20 oz. PER SQUARE YARD.
     2) NETTING SHALL BE UNDYED, FLEXIBLE, NON–TREATED BIODEGRADABLE JUTE OR COIR FIBERS WOVEN INTO DIMENSIONALLY STABLE UNIFORM MESH.
   - B. DIG ANCHOR TRENCH(ES) AT TOP AND BOTTOM OF SLOPE AND INSTALL JUTE FABRIC AS NOTED ON PLANS AND PER MANUFACTURER'S RECOMMENDATIONS.
3. TAMP LIVE STAKES INTO THE GROUND, USING DEAD BLOW HAMMER, AT RIGHT ANGLE TO THE SLOPE AND DIVERTED DOWNSTREAM.
   - A. LIVE STAKES SHALL BE STORED IN A DARK AREA AT A CONSTANT TEMPERATURE OF NO GREATER THAN 38°F.
   - B. LIVE STAKES SHALL BE SHIPPED AND STORED IN SEALED PLASTIC CONTAINERS. THE CONTAINERS SHALL CONTAIN SUFFICIENT MOISTURE TO SUSTAIN 100% MOISTURE.
   - C. LIVE STAKES SHALL BE INSTALLED IMMEDIATELY AFTER DELIVERY WHILE STILL DORMANT.
   - D. PLANTING SHALL OCCUR DURING THE GROWING SEASON AFTER THE AVERAGE TEMPERATURE IS NO LESS THAN 44°F AND NO GREATER THAN AN AVERAGE OF 70°F.
   - F. ALL PLANTINGS SHALL BE CORRECTLY WATERED AFTER INSTALLATION.
4. LIVE STAKES SHALL BE INSTALLED AT TRIANGULAR SPACING OF 2' TO 3' ON CENTER, IN SPECIES GROUPS OF 15–25 PER GROUP.
5. STAKES SHALL BE ORIENTED WITH BUDS UPWARD, BASAL END DOWNWARD. IF STAKE SPLITS DURING INSTALLATION, IT SHALL BE REMOVED AND REPLACED. AN IRON BAR MAY BE USED TO MAKE PILOT HOLE IN FIRM SOIL.
6. 4/5 OF THE LENGTH OF THE LIVE STAKE SHALL BE INSTALLED INTO THE GROUND. SOIL SHALL BE FIRMLY PACKED AROUND STAKE AFTER INSTALLATION.

GENERAL NOTES:

1. THIS PLAN IS BASED ON A FIELD SURVEY PERFORMED BY GILMORE & ASSOCIATES, INC. IN DECEMBER OF 2022, AND MARCH OF 2023.
2. THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY AND WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. OTHER RIGHTS TO PROPERTY MAY EXIST.
3. PARCEL LINES WERE OBTAINED FROM CURRENT RECORD OF DEED AND ADJUSTED TO PHYSICAL EVIDENCE FOUND. THEIR LOCATION IS APPROXIMATE.
4. SUBJECT TO COVENANTS, RESTRICTIONS AND/OR EASEMENTS EITHER WRITTEN OR IMPLIED.
5. VERTICAL DATUM IS NAVD88 AND WAS ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS) WITH OBSERVATIONS REFERENCED TO THE KEYNET–GPS VIRTUAL REFERENCE STATION SYSTEM. HORIZONTAL DATUM IS BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM (NAD83) ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS), WITH OBSERVATIONS REFERENCED TO THE KEYNET–GPS VIRTUAL REFERENCE STATION SYSTEM.
6. ANY AREAS OF WATERS/WETLANDS AS ARE DELINEATED AND DEDICATED UPON THIS PLAN OF SUBDIVISION MAY BE SUBJECT TO FEDERAL REGULATION. ANY DISTURBANCE OF THESE AREAS, INCLUDING THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO THESE WETLANDS MAY REQUIRE A DEPARTMENT OF THE ARMY PERMIT PURSUANT TO SECTION 404 OF THE CLEAN WATER ACT. ADDITIONAL INFORMATION MAY BE OBTAINED BY CONTACTING THE PA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND/OR THE ARMY CORPS OF ENGINEERS' OFFICES.
7. PROPERTY IS LOCATED IN A FLOODPLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP FOR BUCKS COUNTY, PA MAP NO. 42017C0256 J, EFFECTIVE DATE MARCH 16, 2015, PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
8. RUNOFF IS COLLECTED BY PLEASANT SPRING CREEK WHICH FLOWS INTO THE EAST BRANCH PERKIOMEN CREEK. PLEASANT SPRING CREEK IS LISTED AS TSF,MF IN CHAPTER 93.
   - A. AS TROUT–STOCKED FISHERY NO WORK IS PERMITTED ON THE STREAM FROM MARCH 1 THROUGH JUNE 15.

CERTIFICATION

I, SHARON K. DOTTS, PE, CPESC, DO HEREBY CERTIFY, PURSUANT TO THE PENALTIES OF 18 PA. C.S.A. SEC. 4904, TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 105 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

FLOODPLAIN SEED MIX

SEED MIX SHALL BE ERNMX–154, AS PROVIDED BY ERNST CONSERVATION SEEDS, OR APPROVED EQUAL CONSISTING OF THE FOLLOWING SPECIES AT 20 LBS/ACRE:

20.0% ELYMUS VIRGINICUS ,PA ECOTYPE	VIRGINIA WILDRYE, PA ECOTYPE
14.5% PANICUM CLANDESTINUM, TIOGA	DEERTONGUE, TIOGA
14.0% ANDROPOGON GERARDII, 'NIAGARA'	BIG BLUESTEM, 'NIAGARA'
14.0% SORGHASTRUM NUTANS, PA ECOTYPE	INDIANGRASS, PA ECOTYPE
10.0% CAREX VULPINOIDEA, PA ECOTYPE	FOX SEDGE, PA ECOTYPE
6.3% CAREX LURIDA, PA ECOTYPE	LURID SEDGE, PA ECOTYPE
6.3% CAREX SCOPARIA, PA ECOTYPE	BLUNT BROOM SEDGE, PA ECOTYPE
3.0% VERBENA HASTATA, PA ECOTYPE	BLUE VERVAIN, PA ECOTYPE
2.0% ASCLEPIAS INCARNATA, PA ECOTYPE	SWAMP MILKWEED, PA ECOTYPE
2.0% JUNCUS EFFUSUS	SOFT RUSH
2.0% ZIZIA AUREA, PA ECOTYPE	GOLDEN ALEXANDERS, PA ECOTYPE
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0.6% SOLIDAGO RUGOSA, PA ECOTYPE	WRINKLELEAF GOLDENROD, PA ECOTYPE
0.5% ASTER LANCEOLATUS	LANCE LEAVED ASTER
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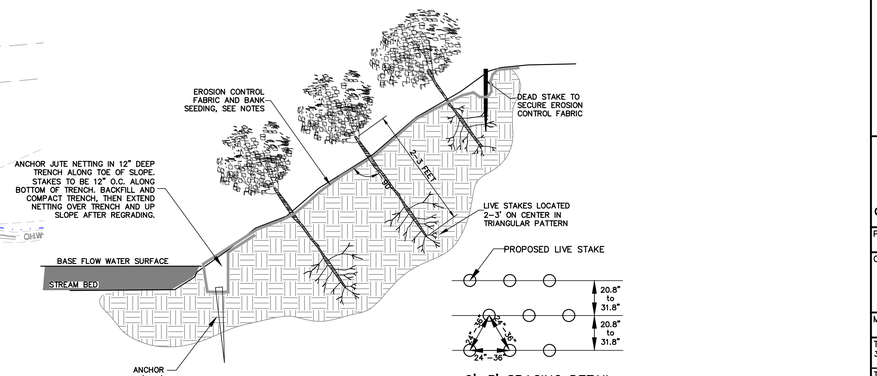
0.5% ASTER PUNICEUS, PA ECOTYPE	PURPLESTEM ASTER, PA ECOTYPE
0.5% HELENIUM AUTUMNALE, PA ECOTYPE	COMMON SNEEZEWEED, PA ECOTYPE
0.4% EUPATORIUM PERFOLIATUM, PA ECOTYPE	BONESET, PA ECOTYPE
0.4% EUTHAMIA GRAMINIFOLIA, PA ECOTYPE	GRASSLEAF GOLDENROD, PA ECOTYPE
0.4% MONARDA FISTULOSA, PA ECOTYPE	WILD BERGAMOT, PA ECOTYPE
0.3% LYCOPUS AMERICANUS, PA ECOTYPE	AMERICAN WATER HOREHOUND, PA ECOTYPE
0.3% MIMULUS RINGENS, PA ECOTYPE	SQUARE STEMMED MONKEYFLOWER, PA ECOTYPE
0.3% SCIRPUS CYPERINUS, PA ECOTYPE	WOOLGRASS, PA ECOTYPE
0.2% LOBELIA SIPHILITICA, PA ECOTYPE	GREAT BLUE LOBELIA, PA ECOTYPE

COVER CROP SHALL CONSIST OF GRAIN RYE AT 30 LBS/ACRE



LIVE STAKES DETAIL WITH BIOLOG (CROSS SECTION)

NOT TO SCALE

10 0 10 20
SCALE IN FEET
1"=10'

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
CORPORATE HEADQUARTERS
65 EAST BUTLER AVENUE, SUITE 100, NEW BRITAIN, PA 18901 • (215) 345-4330 • www.gilmore-assoc.com

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — Sharon K. Dotts — ENGINEER NO. PE-045420-E

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKD

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

STREAM RESTORATION PLAN – AREA 1

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.: 1403043

OWNERS INFO:
PERKASIE BOROUGH
620 W CHESTNUT ST, BOX 96
PERKASIE, PA 18944
215–257–5065

MUNICIPAL FILE No.: 1403043

TAX MAP PARCEL No.: 33–009–56, 33–10–24, 33–10–04, 33–10–07, 33–09–56–1

TOTAL AREA: PER LOD	TOTAL LOTS: 5
DATE: 7/02/24	SCALE: 1"=10'
DRAWN BY: XXX	CHECKED BY: XXX

SHEET NO.: 3 OF 10

\\NB1.gilmore.local\SERVER1\MUNICIPL\2014\2014-03043_Perkasie MS4\Pleasant Spring Creek Streambank Stabilization\DESIGN\CAD\Production Drawings\B-DSGN.dwg Layout: Area-1 Plotted By: SDOTTS, on Tue Jun 10, 2025 at 9:48am

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   A. **AS TROUT-STOCKED FISHERY NO WORK IS PERMITTED ON THE STREAM FROM MARCH 1 THROUGH JUNE 15.**

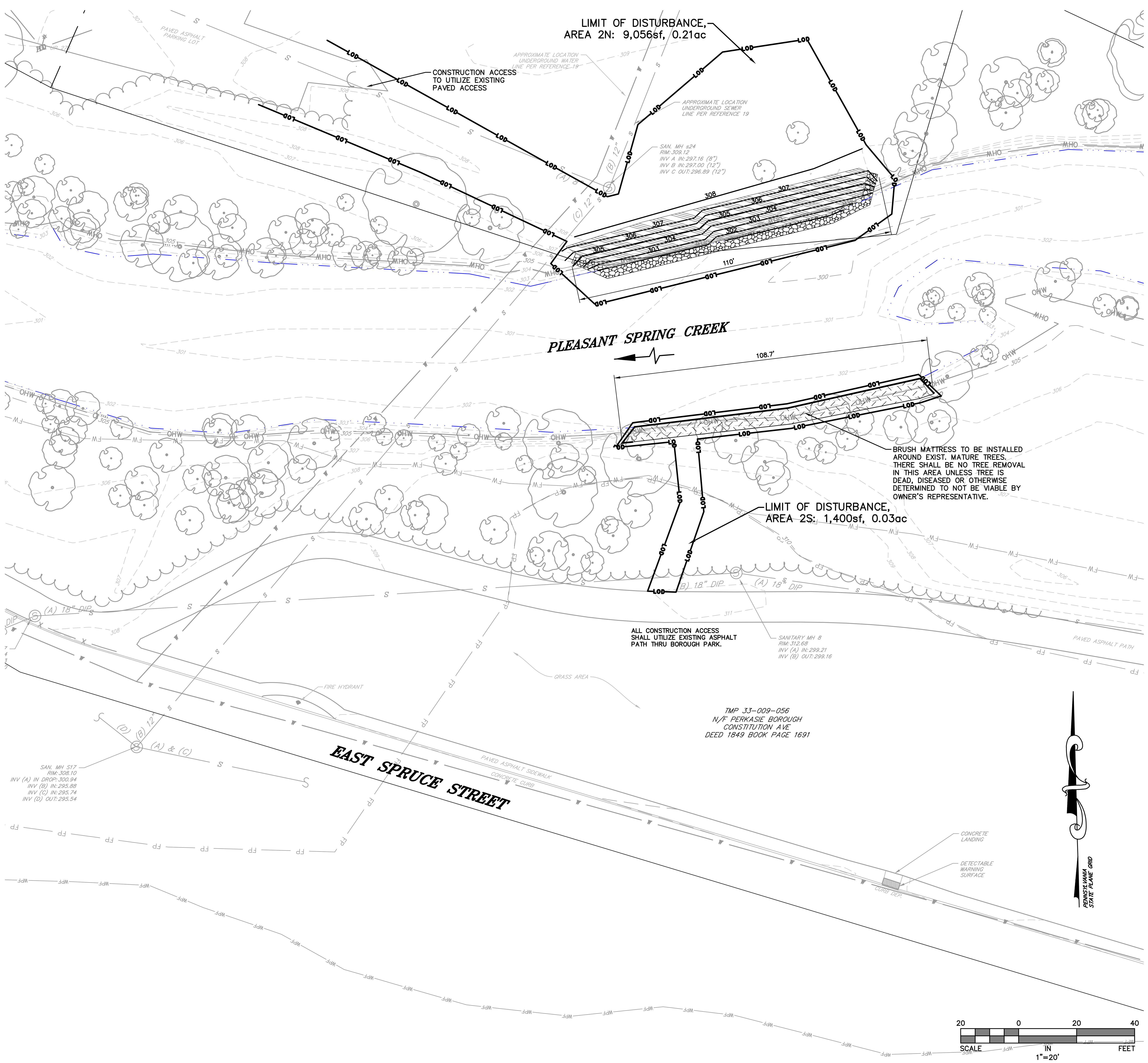
STREAM STABILIZATION AND ENHANCEMENT LEGEND

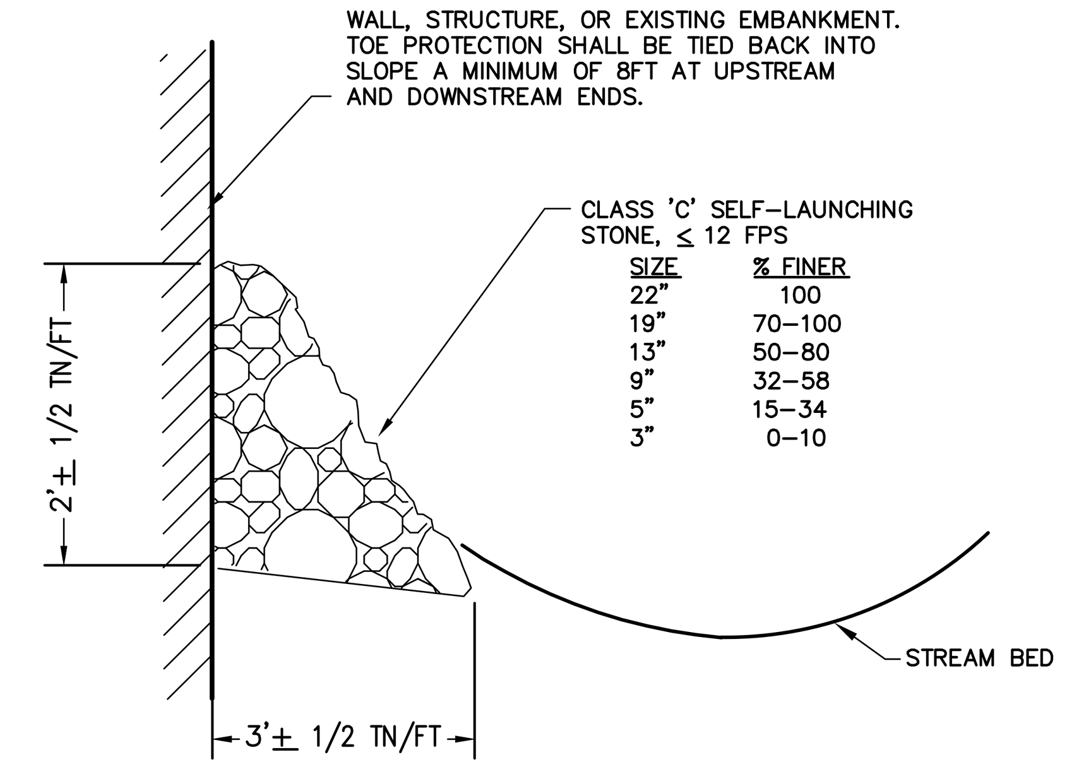
- TP —— TP: TREE PROTECTION FENCE
- 12" COIR FIBER LOG
- GEOTEXTILE SOIL WRAP w/ BRUSH LAYERING
- JUTE FABRIC WITH LIVE STAKES
- JUTE FABRIC WITH HERBACEOUS PLANTS
- BRUSH MATTRESS OVER EXISTING SLOPE
- LOD: LIMIT OF DISTURBANCE: ALL DISTURBANCES ARE RELATED TO CHAPTER 105 WORK.

TOTAL 32,288 SF 0.74 AC

LEGEND

	EXISTING	PROPOSED
EDGE OF PAVE		
PROPERTY LINE		
MAJOR CONTOURS	210	210
MINOR CONTOURS	212	212
SPOT ELEVATION	+225.0	+225.0
FENCE LINE		
EASEMENT		
GUIDE RAIL		
STORM LINE & INLET		
WATERS OF US		
ORDINARY HIGH WATER LINE	OHW	
1% ANNUAL FLOODPLAIN	FP	
1% ANNUAL FLOODWAY	FW	
SIGN		
UTILITY POLE		





LONGITUDINAL PEAKED STONE TOE PROTECTION (LPSTP) DETAIL

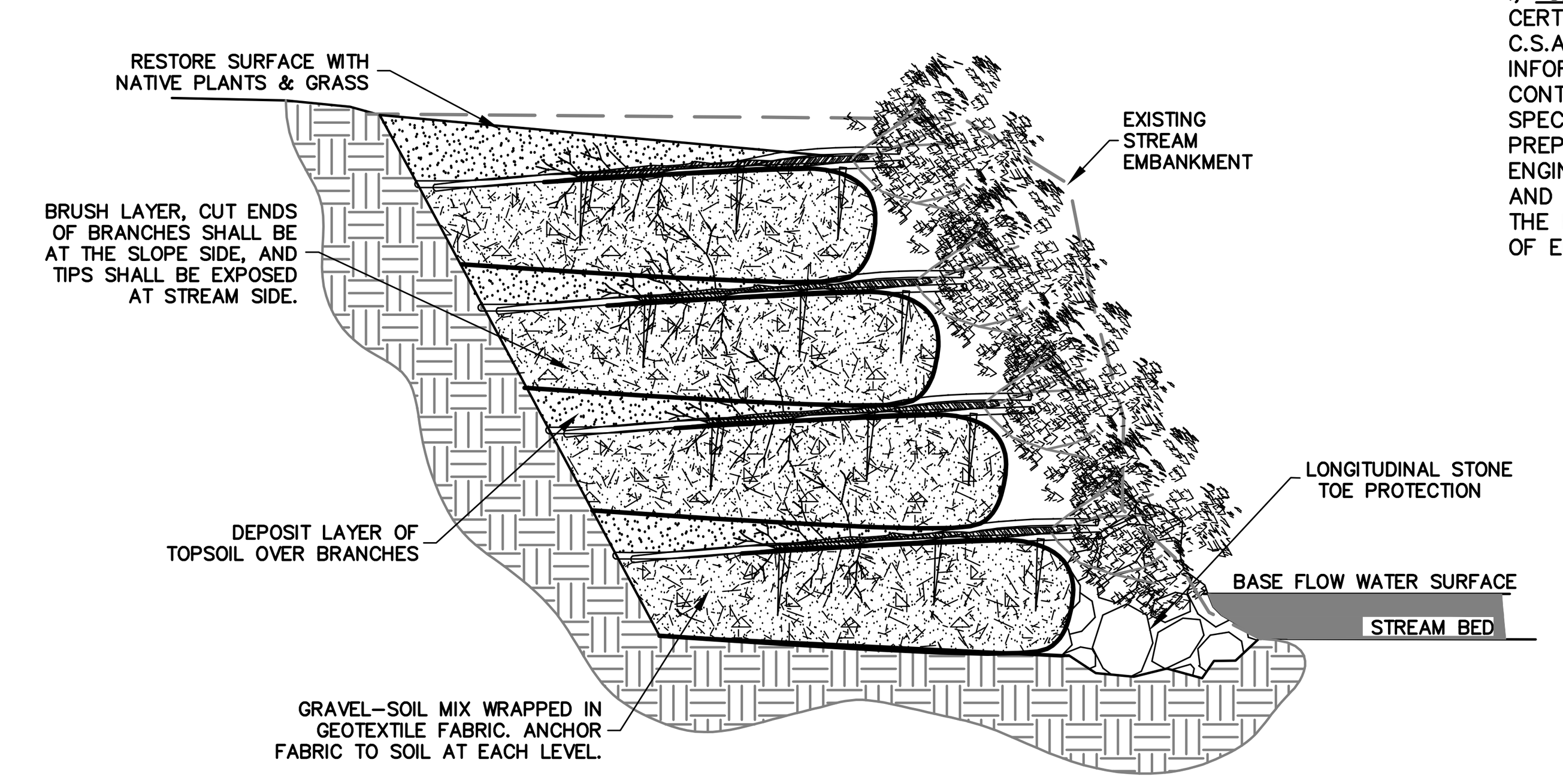
NOT TO SCALE

INSTALLATION:

1. PERFORM WORK DURING PERIODS OF LOW WATER OR ISOLATE WITH COFFERDAM TO WORK IN DRY CONDITIONS.
2. EXCAVATE BANK TO A DEPTH SUFFICIENT TO PROVIDE A 2:1 SLOPE OR GREATER IN FINISHED CONDITION. SOIL WRAP SHALL HAVE A MINIMUM DEPTH OF 2 FEET.
3. PLACE GEOFABRIC IN EXCAVATION WITH EXCESS AT STREAM SIDE FOR WRAP. PLACE 12–18 INCHES OF SOIL, MIXED WITH 1 1/2" STONE, OVER GEOFABRIC. WRAP REMAINING FABRIC OVER SOIL AND ANCHOR IN PLACE.
4. PLACE DORMANT CUTTINGS ON TOP OF SOIL WRAP WITH BASAL (CUT) ENDS AT THE SLOPE FACE AND TIPS EXTENDING BEYOND THE SOIL WRAP. BRANCHES SHALL BE PLACED RANDOMLY WITH REGARD TO SIZE, AGE, AND SPECIES.
   A. BRANCHES SHALL BE APPROXIMATELY 1 INCH IN DIAMETER.
   B. SPECIES SHALL BE AS NOTED IN TABLE AND CLUSTERED IN GROUPS OF 20–30.
   C. BRANCHES SHALL FORM CONTINUOUS LAYER.
5. PLACE LAYER OF TOPSOIL OVER CUTTINGS AND LIGHTLY COMPACT FOR GOOD CONTACT WITH BRANCHES.
6. REPEAT STEPS 3–5 UNTIL DESIRED HEIGHT IS REACHED.
7. TOPSOIL SURFACE AREA AND TIE INTO EXISTING GRADES. SEED WITH NATIVE SPECIES PER PLAN AND MULCH AS NEEDED.

CERTIFICATION

I, SHARON K. DOTTS, PE, CPESC, DO HEREBY CERTIFY, PURSUANT TO THE PENALTIES OF 18 PA. C.S.A. SEC. 4904, TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 105 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



GEOTEXTILE SOIL WRAP w/ BRUSH LAYERING DETAIL (CROSS SECTION)

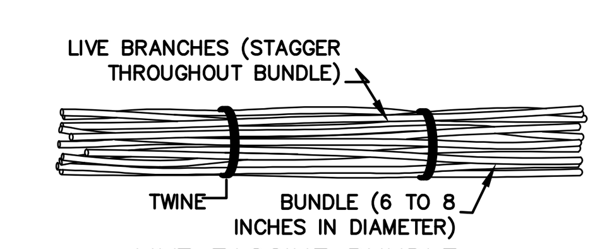
NOT TO SCALE

LIVE STAKES SHALL CONSIST OF THE FOLLOWING SPECIES, CLUSTERED BY SPECIES IN GROUPS OF 15–25:

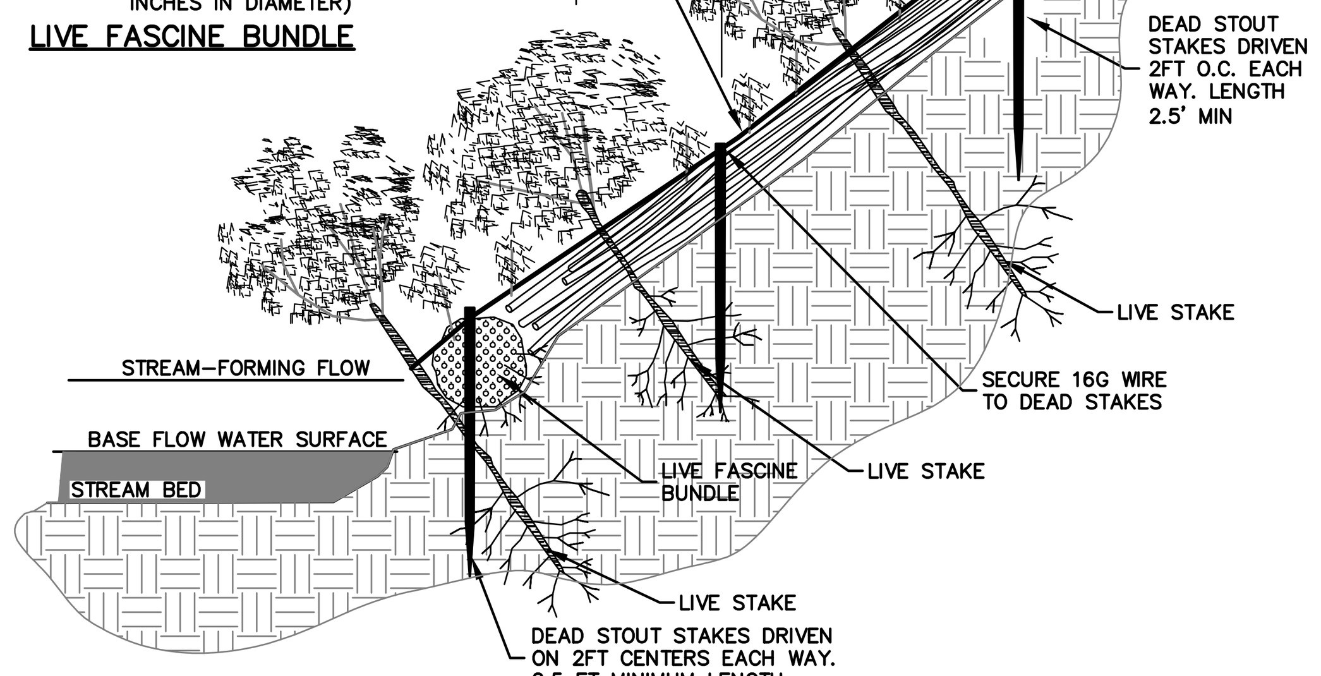
KEY	BOTANICAL NAME	COMMON NAME
CA	CORNUS AMOMUM	SILKY DOGWOOD
CS	CORNUS SERICEA	RED TWIG DOGWOOD
PO	PHYSOCARPUS OPULIFOLIUS	NINEBARK
SC	SAMBUCUS CANADESIS	ELDERBERRY
SD	SALIX DISCOLOR	PUSSY WILLOW
VD	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM

NOTES:

- SPECIES AND QUANTITIES OF EACH SHALL BE SUBMITTED FOR APPROVAL AT TIME OF INSTALLATION BASED ON AVAILABILITY
- 0.5"–1.5" DIAMETER, 2–3 FT. LONG, DORMANT CUTTINGS
- SIDE BRANCHES CLEANLY REMOVED WITH BARK INTACT
- BASAL END SHALL BE CUT AT AN ANGLE FOR EASE OF INSTALLATION; TOP SHALL BE SQUARE CUT



LIVE FASCINE BUNDLE



BRUSH MATTRESS DETAIL (CROSS SECTION)

NOT TO SCALE

INSTALLATION: Brush Mattress

1. PREPARE LIVE STAKES AND LIVE FASCINE BUNDLES AS DESCRIBED IN RESPECTIVE DETAILS.
2. EXCAVATE 12"x12" TRENCH AT TOE OF SLOPE.
3. INSTALL AN EVEN MIX OF LIVE AND DEAD STOUT STAKES OVER FACE OF SLOPE SPACED 2FT ON CENTER. STAKES SHALL EXTEND 1FT ABOVE SURFACE.
4. PLACE BRANCH CUTTINGS IN A LAYER 1–3 BRANCHES THICK, WITH BASAL ENDS LOCATED IN EXCAVATED TRENCH.
   A. BRANCHES SHALL BE 6–9 FEET LONG; BRANCHES MAY BE SHORTER BUT SHALL EXTEND THE FULL LENGTH OF THE SLOPE TO BE STABILIZED.
   B. BRANCHES SHALL BE APPROXIMATELY 1 INCH IN DIAMETER AND FLEXIBLE ENOUGH TO CONFORM TO VARIATIONS IN SLOPE FACE.
   C. SPECIES SHALL BE AS PREVIOUSLY SPECIFIED FOR LIVE STAKES AND/OR FASCINES.
5. STRETCH NO. 16 SMOOTH WIRE DIAGONALLY FROM ONE DEAD STOUT STAKE TO ANOTHER BY TIGHTLY WRAPPING WIRE AROUND EACH STAKE NO CLOSER THAN 6" FROM TOP.
6. TAMP AND DRIVE ALL STAKES, LIVE AND DEAD, INTO THE GROUND UNTIL BRANCHES ARE TIGHTLY SECURED TO SLOPE BY THE WIRE MESH.
7. INSTALL LIVE FASCINE IN THE TRENCH OVER THE BASAL ENDS OF THE BRANCHES. SECURE WITH DEAD STOUT STAKES THROUGH THE FASCINE SPACED AT 2' O.C.
8. FILL VOIDS BETWEEN BRUSH MATTRESS AND LIVE FASCINE WITH TOPSOIL TO PROMOTE ROOTING. TOP SURFACE OF BRUSH MATTRESS AND FASCINE SHALL REMAIN SLIGHTLY EXPOSED.

FLOODPLAIN SEED MIX

SEED MIX SHALL BE ERNMX-154, AS PROVIDED BY ERNST CONSERVATION SEEDS, OR APPROVED EQUAL CONSISTING OF THE FOLLOWING SPECIES AT 20 LBS/ACRE:

20.0%	ELYMUS VIRGINICUS ,PA ECOTYPE	VIRGINIA WILDRYE, PA ECOTYPE
14.5%	PANICUM CLANDESTINUM, TIOGA	DEERTONGUE, TIOGA
14.0%	ANDROPOGON GERARDII, 'NIAGARA'	BIG BLUESTEM, 'NIAGARA'
14.0%	SORGHASTRUM NUTANS, PA ECOTYPE	INDIANGRASS, PA ECOTYPE
10.0%	CAREX VULPINOIDEA, PA ECOTYPE	FOX SEDGE, PA ECOTYPE
6.3%	CAREX LURIDA, PA ECOTYPE	LURID SEDGE, PA ECOTYPE
6.3%	CAREX SCOPARIA, PA ECOTYPE	BLUNT BROOM SEDGE, PA ECOTYPE
3.0%	VERBENA HASTATA, PA ECOTYPE	BLUE VERVAIN, PA ECOTYPE
2.0%	ASCLEPIAS INCARNATA, PA ECOTYPE	SWAMP MILKWEED, PA ECOTYPE
2.0%	JUNCUS EFFUSUS	SOFT RUSH
2.0%	ZIZIA AUREA, PA ECOTYPE	GOLDEN ALEXANDERS, PA ECOTYPE
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0.6%	SOLIDAGO RUGOSA, PA ECOTYPE	WRINKLELEAF GOLDENROD, PA ECOTYPE
0.5%	ASTER LANCEOLATUS	LANCE LEAVED ASTER
0.5%	ASTER NOVAE-ANGLIAE, PA ECOTYPE	NEW ENGLAND ASTER, PA ECOTYPE
0.5%	ASTER PUNICEUS, PA ECOTYPE	PURPLESTEM ASTER, PA ECOTYPE
0.5%	HELENIUM AUTUMNALE, PA ECOTYPE	COMMON SNEEZEWEED, PA ECOTYPE
0.4%	EUPATORIUM PERFOLIATUM, PA ECOTYPE	BONESET, PA ECOTYPE
0.4%	EUTHAMIA GRAMINIFOLIA, PA ECOTYPE	GRASSLEAF GOLDENROD, PA ECOTYPE
0.4%	MONARDA FISTULOSA, PA ECOTYPE	WILD BERGAMOT, PA ECOTYPE
0.3%	LYCOPUS AMERICANUS, PA ECOTYPE	AMERICAN WATER HOREHOUND, PA ECOTYPE
0.3%	MIMULUS RINGENS, PA ECOTYPE	SQUARE STEMMED MONKEYFLOWER, PA ECOTYPE
0.3%	SCIRPUS CYPERINUS, PA ECOTYPE	WOOLGRASS, PA ECOTYPE
0.2%	LOBELIA SIPHILITICA, PA ECOTYPE	GREAT BLUE LOBELIA, PA ECOTYPE

COVER CROP SHALL CONSIST OF GRAIN RYE AT 30 LBS/ACRE

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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
Sharon K. Dotts
ENGINEER
NO. PE-045420-E

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKD

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

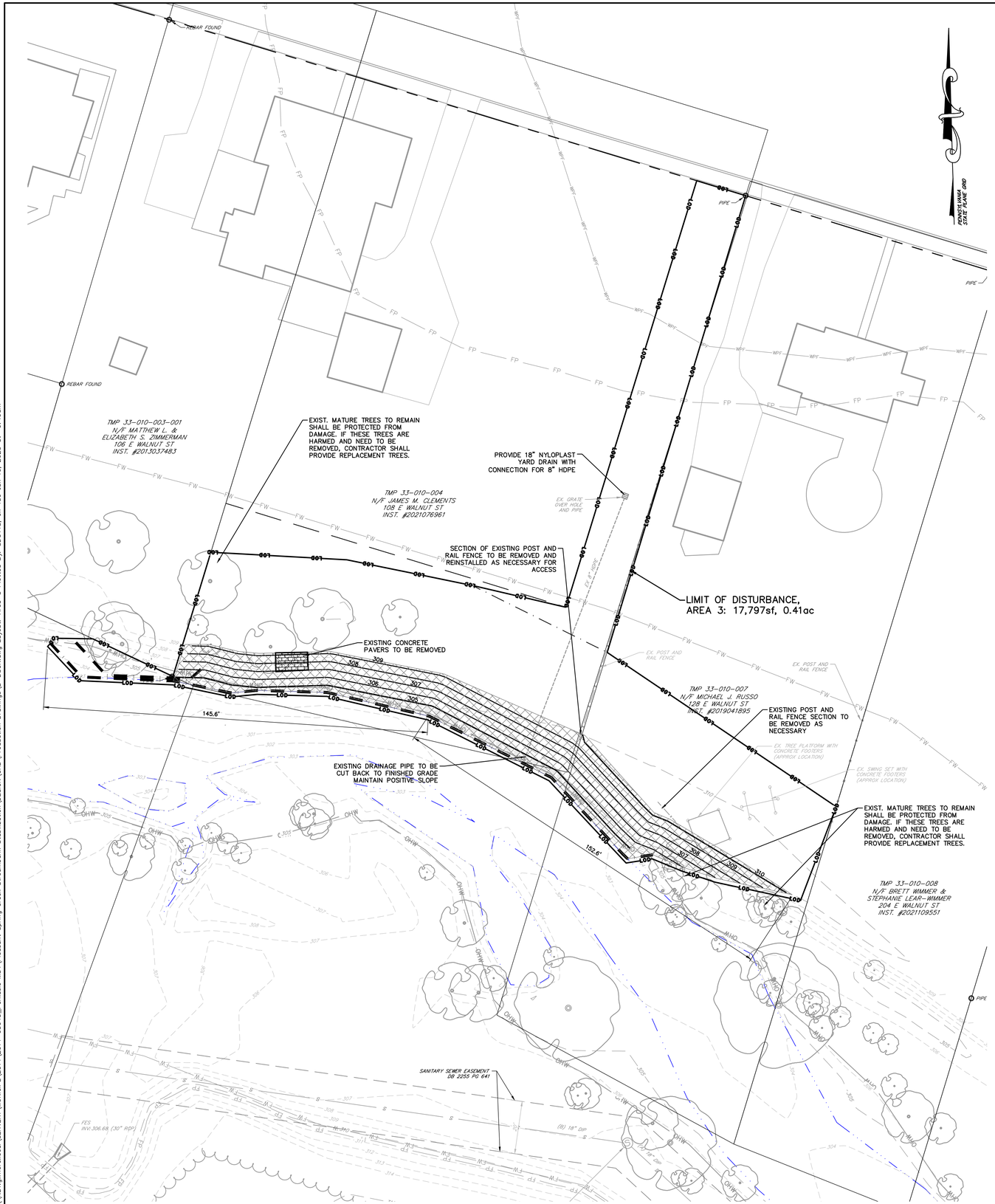
PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

STREAM RESTORATION PLAN – AREA 2

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.: 1403043	
OWNERS INFO: PERKASIE BOROUGH, 620 W CHESTNUT ST, BOX 96, PERKASIE, PA 18944, 215-257-5065	
MUNICIPAL FILE No.: 1403043	
TAX MAP PARCEL No.: 33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1	
TOTAL AREA: PER LOD	TOTAL LOTS: 5
DATE: 7/02/24	SCALE: 1"=20'
DRAWN BY: XXX	CHECKED BY: XXX

SHEET NO.: 4 OF 10



INSTALLATION: Jute Fabric w/ Live Stakes

1. REGRADE SLOPE AS NEEDED FOR STABILITY. 3:1 OR GREATER IS PREFERABLE.
2. SEED SLOPES WITH SHADE SEED MIX PER SPECIFICATION AND INSTALL EROSION CONTROL FABRIC.
   A. EROSION CONTROL FABRIC SHALL BE WOVEN JUTE NETTING WITH UNIFORM OPEN PLAIN WEAVE MESH.
      1) MESH SHALL BE APPROXIMATELY 50% OPEN AREA, WEIGHING APPROXIMATELY 20 oz. PER SQUARE YARD.
      2) NETTING SHALL BE UNDYED, FLEXIBLE, NON-TREATED BIODEGRADABLE JUTE OR COIR FIBERS WOVEN INTO DIMENSIONALLY STABLE UNIFORM MESH.
   B. DIG ANCHOR TRENCH(ES) AT TOP AND BOTTOM OF SLOPE AND INSTALL JUTE FABRIC AS NOTED ON PLANS AND PER MANUFACTURER'S RECOMMENDATIONS.
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   C. LIVE STAKES SHALL BE INSTALLED IMMEDIATELY AFTER DELIVERY WHILE STILL DORMANT.
   D. PLANTING SHALL OCCUR DURING THE GROWING SEASON AFTER THE AVERAGE TEMPERATURE IS NO LESS THAN 44°F AND NO GREATER THAN AN AVERAGE OF 70°F.
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4. LIVE STAKES SHALL BE INSTALLED AT TRIANGULAR SPACING OF 2' TO 3' ON CENTER, IN SPECIES GROUPS OF 15-25 PER GROUP.
5. STAKES SHALL BE ORIENTED WITH BUDS UPWARD, BASAL END DOWNWARD. IF STAKE SPLITS DURING INSTALLATION, IT SHALL BE REMOVED AND REPLACED. AN IRON BAR MAY BE USED TO MAKE PILOT HOLE IN FIRM SOIL.
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3. PARCEL LINES WERE OBTAINED FROM CURRENT RECORD OF DEED AND ADJUSTED TO PHYSICAL EVIDENCE FOUND. THEIR LOCATION IS APPROXIMATE.
4. SUBJECT TO COVENANTS, RESTRICTIONS AND/OR EASEMENTS EITHER WRITTEN OR IMPLIED.
5. VERTICAL DATUM IS NAVD88 AND WAS ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS) WITH OBSERVATIONS REFERENCED TO THE KEYNET-GPS VIRTUAL REFERENCE STATION SYSTEM. HORIZONTAL DATUM IS BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM (NAD83) ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS), WITH OBSERVATIONS REFERENCED TO THE KEYNET-GPS VIRTUAL REFERENCE STATION SYSTEM.
6. ANY AREAS OF WATERS/WETLANDS AS ARE DELINEATED AND DEDICATED UPON THIS PLAN OF SUBDIVISION MAY BE SUBJECT TO FEDERAL REGULATION. ANY DISTURBANCE OF THESE AREAS, INCLUDING THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO THESE WETLANDS MAY REQUIRE A DEPARTMENT OF THE ARMY PERMIT PURSUANT TO SECTION 404 OF THE CLEAN WATER ACT. ADDITIONAL INFORMATION MAY BE OBTAINED BY CONTACTING THE PA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND/OR THE ARMY CORPS OF ENGINEERS' OFFICES.
7. PROPERTY IS LOCATED IN A FLOODPLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP FOR BUCKS COUNTY, PA MAP NO. 42017C0256 J, EFFECTIVE DATE MARCH 16, 2015, PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
8. RUNOFF IS COLLECTED BY PLEASANT SPRING CREEK WHICH FLOWS INTO THE EAST BRANCH PERKIOMEN CREEK. PLEASANT SPRING CREEK IS LISTED AS TSF,MF IN CHAPTER 93.
   A. **AS TROUT-STOCKED FISHERY NO WORK IS PERMITTED ON THE STREAM FROM MARCH 1 THROUGH JUNE 15.**

CERTIFICATION

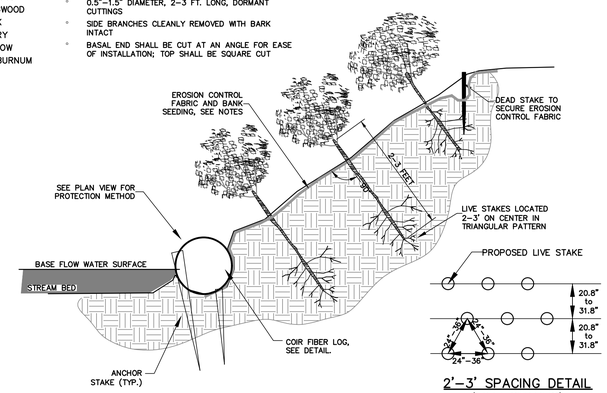
I, SHARON K. DOTTS, PE, CPESC, DO HEREBY CERTIFY, PURSUANT TO THE PENALTIES OF 18 PA. C.S.A. SEC. 4904, TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 105 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — Sharon K. Dotts — ENGINEER NO. PE-045404-E

LIVE STAKES SHALL CONSIST OF THE FOLLOWING SPECIES, CLUSTERED BY SPECIES IN GROUPS OF 15-25:

KEY	BOTANICAL NAME	COMMON NAME
CA	CORNUS AMOMUM	SILKY DOGWOOD
CS	CORNUS SERICEA	RED TWIG DOGWOOD
PO	PHYSOCARPUS OPULIFOLIUS	NINEBARK
SC	SAMBUCUS CANADESIS	ELDERBERRY
SD	SALIX DISCOLOR	PUSSY WILLOW
VD	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM

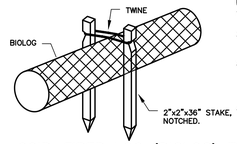
NOTES:
- SPECIES AND QUANTITIES OF EACH SHALL BE SUBMITTED FOR APPROVAL AT TIME OF INSTALLATION BASED ON AVAILABILITY
- 0.5"-1.5" DIAMETER, 2-3 FT. LONG, DORMANT CUTTINGS
- SIDE BRANCHES CLEANLY REMOVED WITH BARK INTACT
- BASAL END SHALL BE CUT AT AN ANGLE FOR EASE OF INSTALLATION; TOP SHALL BE SQUARE CUT



2'-3' SPACING DETAIL (LIVE STAKES)

LIVE STAKES DETAIL WITH BIOLOG (CROSS SECTION)

NOT TO SCALE



NOTES:
1. DRIVE STAKES THRU NETTING WITH NOTCHES ABOVE LOG.
2. TIE TWINE BETWEEN STAKES OVER THE LOG, THEN DRIVE THE STAKES IN UNTIL LOG IS SECURE.
3. STAKES SHALL BE A MAXIMUM OF 10' ON CENTER. ADDITIONAL STAKES SHALL BE INSTALLED ON STREAM SIDE OF LOG, MIDWAY BETWEEN TIE-DOWN STAKES.
4. AFTER LOG IS SECURE, INSTALL SOFT RUSH (*JUNCUS EFFUSUS*) PLUGS INTO LOG AT 10" ON CENTER.

COIR-FIBER LOG (BIOLOG) TIE-DOWN DETAIL

NOT TO SCALE

FLOODPLAIN SEED MIX

SEED MIX SHALL BE ERNMX-154, AS PROVIDED BY ERNST CONSERVATION SEEDS, OR APPROVED EQUAL CONSISTING OF THE FOLLOWING SPECIES AT 20 LBS/ACRE:

20.0% ELYMUS VIRGINICUS ,PA ECOTYPE	VIRGINIA WILDRYE, PA ECOTYPE
14.5% PANICUM CLANDESTINUM, TIOGA	DEERTONGUE, TIOGA
14.0% ANDROPOGON GERARDII, 'NIAGARA'	BIG BLUESTEM, 'NIAGARA'
14.0% SORGHASTRUM NUTANS, PA ECOTYPE	INDIANGRASS, PA ECOTYPE
10.0% CAREX VULPINOIDEA, PA ECOTYPE	FOX SEDGE, PA ECOTYPE
6.3% CAREX LURIDA, PA ECOTYPE	LURID SEDGE, PA ECOTYPE
6.3% CAREX SCOPARIA, PA ECOTYPE	BLUNT BROOM SEDGE, PA ECOTYPE
3.0% VERBENA HASTATA, PA ECOTYPE	BLUE VERVAIN, PA ECOTYPE
2.0% ASCLEPIAS INCARNATA, PA ECOTYPE	SWAMP MILKWEED, PA ECOTYPE
2.0% JUNCUS EFFUSUS	SOFT RUSH
2.0% ZIZIA AUREA, PA ECOTYPE	GOLDEN ALEXANDERS, PA ECOTYPE
1.0% VERBENA URTICIFOLIA, PA ECOTYPE	WHITE VERVAIN, PA ECOTYPE
0.6% SOLIDAGO RUGOSA, PA ECOTYPE	WRINKLELEAF GOLDENROD, PA ECOTYPE
0.5% ASTER LANCEOLATUS	LANCE LEAVED ASTER
0.5% ASTER NOVAE-ANGLIAE, PA ECOTYPE	NEW ENGLAND ASTER, PA ECOTYPE
0.5% ASTER PUNICEUS, PA ECOTYPE	PURPLESTEM ASTER, PA ECOTYPE
0.5% HELENIUM AUTUMNALE, PA ECOTYPE	COMMON SNEEZEWEED, PA ECOTYPE
0.4% EUPATORIUM PERFOLIATUM, PA ECOTYPE	BONESET, PA ECOTYPE
0.4% EUTHAMIA GRAMINIFOLIA, PA ECOTYPE	GRASSLEAF GOLDENROD, PA ECOTYPE
0.4% MONARDA FISTULOSA, PA ECOTYPE	WILD BERGAMOT, PA ECOTYPE
0.3% LYCOPUS AMERICANUS, PA ECOTYPE	AMERICAN WATER HOREHOUND, PA ECOTYPE
0.3% MIMULUS RINGENS, PA ECOTYPE	SQUARE STEMMED MONKEYFLOWER, PA ECOTYPE
0.3% SCIRPUS CYPERINUS, PA ECOTYPE	WOOLGRASS, PA ECOTYPE
0.2% LOBELIA SIPHILITICA, PA ECOTYPE	GREAT BLUE LOBELIA, PA ECOTYPE

COVER CROP SHALL CONSIST OF GRAIN RYE AT 30 LBS/ACRE

LEGEND

	EXISTING	PROPOSED
EDGE OF PAVE		
PROPERTY LINE		
MAJOR CONTOURS	210	210
MINOR CONTOURS	212	212
SPOT ELEVATION	225.0	225.0
FENCE LINE	x x x x	
EASEMENT		
GUIDE RAIL		
STORM LINE & INLET		
WATERS OF US		
ORDINARY HIGH WATER LINE	OHW	
1% ANNUAL FLOODPLAIN	FP	FP
1% ANNUAL FLOODWAY	FW	FW
SIGN		
UTILITY POLE		

SCALE: 1" = 20' (20 0 20 40 FEET)

STREAM STABILIZATION AND ENHANCEMENT LEGEND

- TP — TP — TREE PROTECTION FENCE
- 12" COIR FIBER LOG
- GEOTEXTILE SOIL WRAP w/ BRUSH LAYERING
- JUTE FABRIC WITH LIVE STAKES
- JUTE FABRIC WITH HERBACEOUS PLANTS
- BRUSH MATTRESS OVER EXISTING SLOPE
- LOD — LIMIT OF DISTURBANCE- ALL DISTURBANCES ARE RELATED TO CHAPTER 105 WORK.

TOTAL 32,288 SF 0.74 AC

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
CORPORATE HEADQUARTERS
65 EAST BUTLER AVENUE, SUITE 100, NEW BRITAIN, PA 18901 • (215) 345-4330 • www.gilmore-assoc.com

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKG

FOR FIELD UPDATE

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

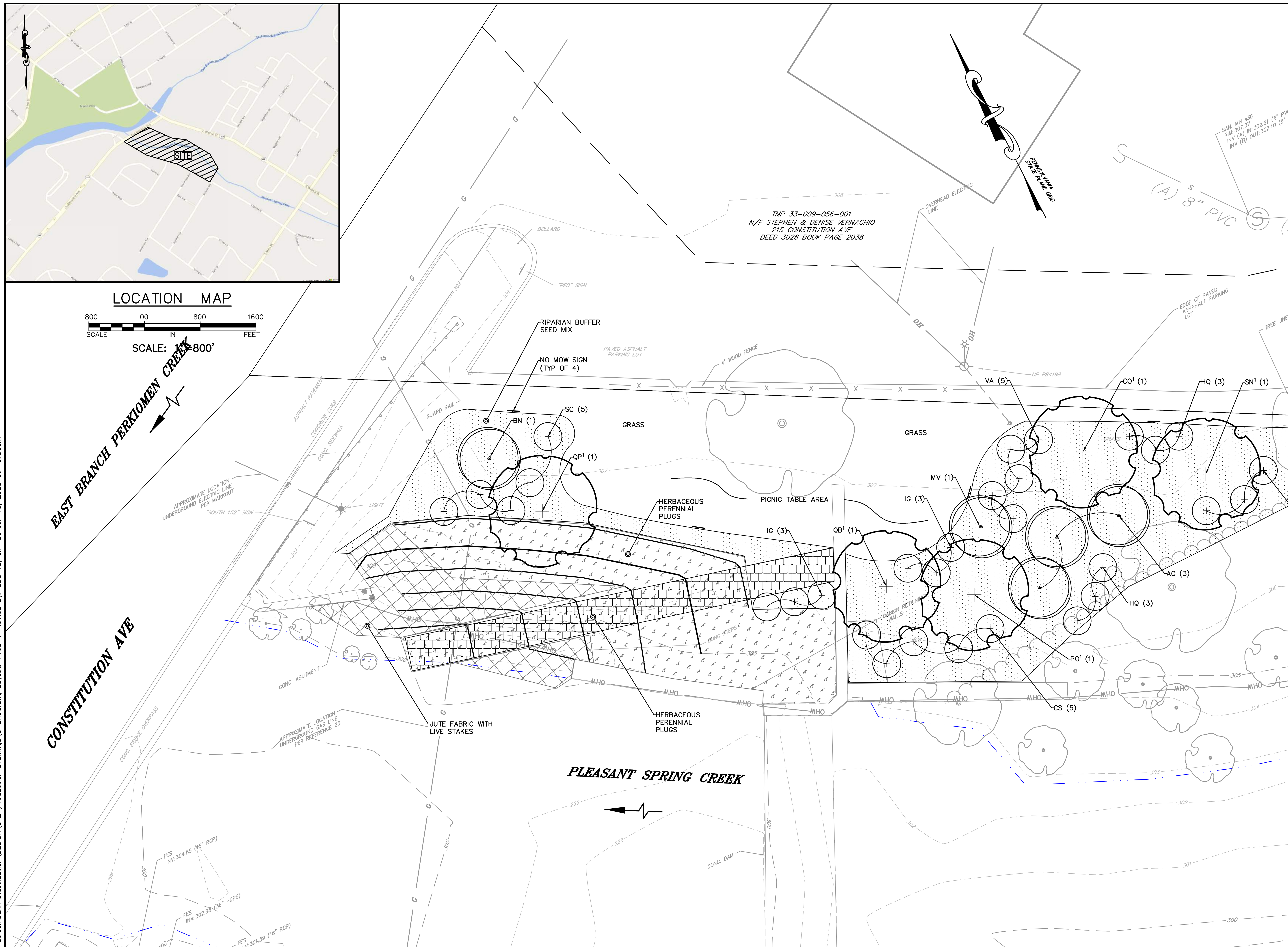
STREAM RESTORATION PLAN – AREA 3

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.:	1403043
OWNERS INFO:	PERKASIE BOROUGH 620 W CHESTNUT ST, BOX 96 PERKASIE, PA 18944 215-257-5065
MUNICIPAL FILE No.:	1403043
TAX MAP PARCEL No.:	33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1
TOTAL AREA:	PER LOD
TOTAL LOTS:	5
DATE:	7/02/24
SCALE:	1"=20'
DRAWN BY:	XXX
CHECKED BY:	XXX
SHEET NO.:	5 OF 10

PLANT SCHEDULE - AREA 1

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
CANOPY TREES						
CO[1]	1	CELTIS OCCIDENTALIS	HACKBERRY	2 " CAL	B&B	
PO[1]	1	PLATANUS OCCIDENTALIS	SYCAMORE	2 " CAL	B&B	
QB[1]	1	QUERCUS BICOLOR	SWAMP WHITE OAK	2 " CAL	B&B	
QP[1]	1	QUERCUS PHELLOS	WILLOW OAK	2 " CAL	B&B	
SN[1]	1	SALIX NIGRA	BLACK WILLOW	2 " CAL	B&B	
UNDERSTORY TREES						
AC	3	AMELANCHIER CANADENSIS	SERVICEBERRY	6' HT MIN	B&B	MULTI-STEM
BN	1	BETULA NIGRA	RIVER BIRCH	6' HT MIN	B&B	MULTI-STEM
MV	1	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	6' HT MIN	B&B	MULTI-STEM
SHRUBS						
CS	5	CORNUS SERICEA	REDTWIG DOGWOOD	36" MIN	CONT	
HQ	6	HYDRANGEA QUERCIFOLIA	OAKLEAF HYDRANGEA	36" MIN	CONT	
IG	6	ILEX GLABRA	INKBERRY HOLLY	36" MIN	CONT	
SC	8	SAMBUCUS CANADENSIS	ELDERBERRY	36" MIN	CONT	
VA	5	VIBURNUM ACERIFOLIUM	MAPLELEAF VIBURNUM	36" MIN	CONT	
HERBACEOUS PERENNIALS						
AI	350	ASCLEPIAS INCARNATA	SWAMP MILKWEED	50 LP	PLUG	12" O.C.
AN	200	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	50 LP	PLUG	12" O.C.
JE	350	JUNCUS EFFUSUS	SOFT RUSH	50 LP	PLUG	12" O.C.
PV	350	PANICUM VIRGATUM	SWITCHGRASS	50 LP	PLUG	12" O.C.
RH	250	RUDBECKIA HIRTA	BLACKEYED SUSAN	50 LP	PLUG	12" O.C.
HERBACEOUS PERENNIALS						
JT	500	JUNCUS TENUIS	PATH RUSH	50 LP	PLUG	12" O.C.



PLUG PLANTING NOTES

1. MULCH AREA TO BE PLUGGED WITH 2" COMPOSTED LEAF MULCH.
2. USE AN AUGER OR OTHER APPROPRIATE TOOL TO EXCAVATE HOLES ON 1 FOOT CENTERS IN A STAGGERED PATTERN.
3. PLANT PLUGS THROUGH MATTING AND LEAF MULCH.
4. PLANT PLUGS IN RANDOM PATTERNS AND ODD NUMBERED GROUPINGS OF 3, 5, OR 7 PER GROUP. EVENLY DISTRIBUTE WARM SEASON GRASSES THROUGHOUT PLANTING.
5. ENSURE ROOT CONTACT WITH SOIL. DO NOT BACKFILL WITH LEAF MULCH.
6. THOROUGHLY SOAK PLUGGED AREA WITH WATER UNTIL SOIL IS MOIST TO A DEPTH OF 4".

RIPARIAN BUFFER MIX

1. SEED MIX SHALL BE ERNMX-178, AS PROVIDED BY ERNST CONSERVATION SEEDS, OR APPROVED EQUAL CONSISTING OF THE FOLLOWING SPECIES, OR AS CURRENTLY FORMULATED, AT 20 LB/ACRE WITH A COVER CROP AT 30 LB PER ACRE.

20.00% ELYMUS VIRGINICUS, (VIRGINIA WILDRYE)
20.00% PANICUM CLANDESTINUM, TIOGA (DEERTONGUE, TIOGA)
18.00% ADROPOGON GERARDII, 'NIAGARA' (BIG BLUESTEM 'NIAGARA')
18.00% SORGHASTRUM NUTANS (INDIANGRASS)
10.00% PANICUM VIRGATUM, 'SHELTER' (SWITCHGRASS, 'SHELTER')
3.00% RUDBECKIA HIRTA, (BLACKEYED SUSAN)
3.00% VERBENA HASTATA, (BLUE VERVAIN)
2.50% ASCLEPIAS INCARNATA, (SWAMP MILKWEED)
2.00% ASTER NOVAE-ANGLIAE, (NEW ENGLAND ASTER)
1.50% ZIZIA AUREA, (GOLDEN ALEXANDERS)
0.80% SOLIDAGO RUGOSA, (WRINKLELEAF GOLDENROD)
0.50% MONARDS FISTULOSA, (WILD BERGAMOT)
0.30% EUPATORIUM PERFOLIATUM, (BONESET)
0.30% HELENIUM AUTUMNALE, (COMMON SNEEZEWEED)
0.10% ASTER UMBELLATUS, (FLAT TOPPED WHITE ASTER)

TOTAL: 100%

SEED MIX ESTABLISHMENT SPECIFICATIONS

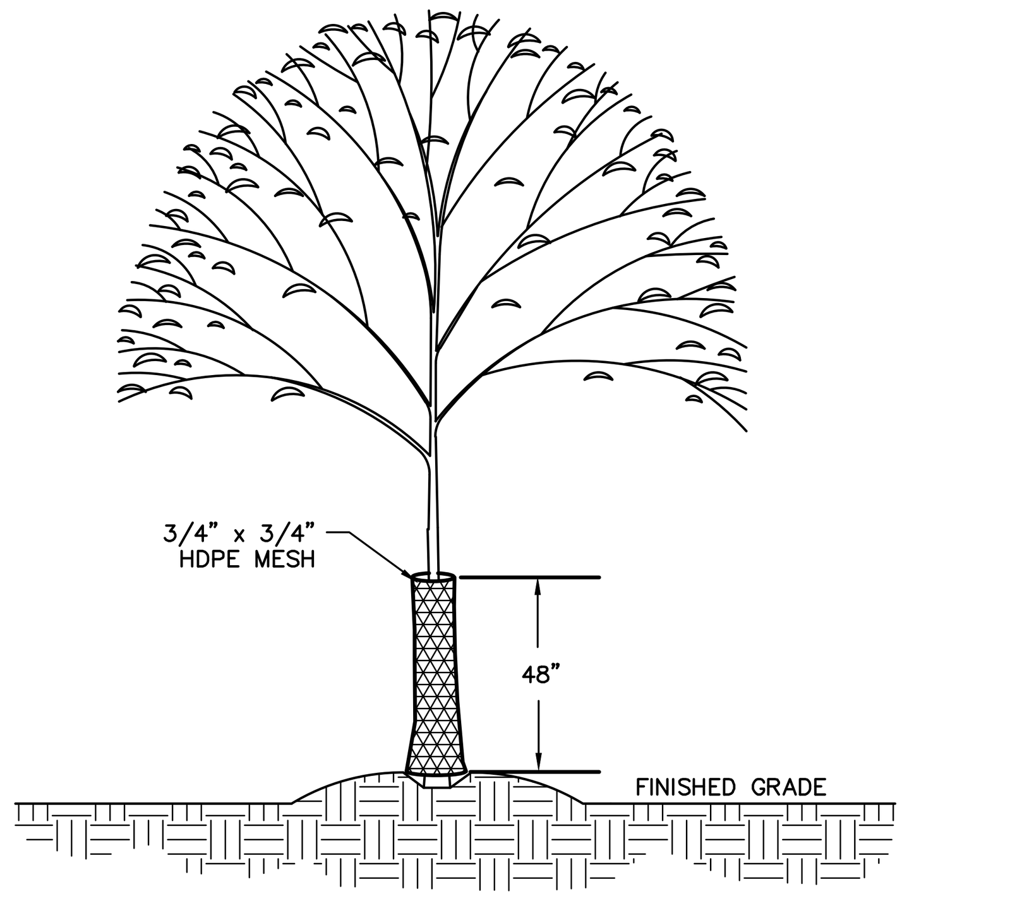
INSTALLATION: SPRAY AREAS TO BE SEEDED WITH A SYSTEMIC HERBICIDE ONE (1) MONTH PRIOR TO THE INSTALLATION OF THE SPECIFIED SEED MIXTURE. AFTER TWO (2) WEEKS OF HERBICIDE APPLICATION, AREAS TO BE SEEDED SHALL BE TREATED AGAIN IF PERSISTENT WEEDS RE-GERMINATE. ONLY AFTER ALL EXISTING VEGETATION TO BE REMOVED IS ERADICATED SHALL THE FOLLOWING SEED INSTALLATION STEPS TAKE PLACE:

1. ALL AREAS TO BE SEEDED SHALL BE CLEARED OF ALL REMAINING DEBRIS AND VEGETATION.
2. TILL ALL AREAS TO BE SEEDED TO A MINIMUM DEPTH OF FOUR (4) INCHES, AND ADD ANY SPECIFIED SOIL AMENDMENTS TO THE TILLED AREAS.
3. SPREAD SEED AT RECOMMENDED RATE EVENLY ACROSS THE ENTIRE SITE.
4. FINE RAKE ALL AREAS PREVIOUSLY SEEDED TO ENSURE GOOD SOIL TO SEED CONTACT.
5. SPREAD A THIN COAT OF STRAW TO REDUCE EROSION.
6. WATER ENTIRE AREA THOROUGHLY, AVOID OVER WATERING.

FIRST YEAR MAINTENANCE: SEED MIXTURE SHALL BE INSPECTED FOR INVASIVE WEED SPECIES. IF WEED SPECIES APPEAR IN THE SEEDED AREA SPOT TREAT BY PULLING. ALLOW SEED MIXTURE TO REACH A HEIGHT OF 12-18 INCHES IN HEIGHT, MOW TO A HEIGHT OF APPROXIMATELY SIX (6) INCHES WITH A WEED EATER.

SECOND YEAR MAINTENANCE: MOW ONCE IN SPRING AS CLOSE TO GROUND AS POSSIBLE. ALLOW PLANTS TO GROW TO FULL HEIGHT.

CONSECUTIVE FOLLOWING YEARS: MOW EVERY OTHER YEAR AND SPOT TREAT INVASIVE PLANT SPECIES.



TREE BARK PROTECTION
NOT TO SCALE

10 0 10 20
SCALE IN FEET
1"=10'

GENERAL LANDSCAPE NOTES

1. PLANT MATERIAL SHALL BE FURNISHED AND INSTALLED AS INDICATED INCLUDING ALL LABOR, MATERIALS, PLANTS EQUIPMENT, INCIDENTALS AND CLEAN UP.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT CORRECT GRADES AND ALIGNMENT.
3. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABITS, WELL DEVELOPED BRANCHES, BE DENSELY FOLIATED, HAVE VIGOROUS ROOT SYSTEMS AND BE FREE OF DEFECTS AND INJURIES.
4. ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE WELFARE OF THE PLANT MATERIAL, SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF PLANT MATERIAL.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR TO BE IN VIGOROUS GROWING CONDITION. PROVISIONS SHALL BE MADE FOR A GUARANTEE OF AT LEAST ONE (1) YEAR FOR TREES AND SHRUBS. REPLACEMENT SHALL BE MADE AT THE BEGINNING OF THE FIRST SUCCEEDING PLANTING SEASON. ALL REPLACEMENTS SHALL HAVE A GUARANTEE EQUAL TO THAT STATED ABOVE.
6. INSOFAR AS IT IS PRACTICABLE, PLANT MATERIALS SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT STOCK NOT PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE (3) DAY PERIOD AFTER DELIVERY.
7. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH THE 2014 "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMAN INC., OR LATEST EDITION.
8. ALL PLANTS SHALL BE PLANTED IN TOPSOIL THAT IS THOROUGHLY WATERED AND TAMPED AS BACK FILLING PROGRESSES. NOTHING BUT SUITABLE TOPSOIL, FREE OF DRY SOD, STIFF CLAY, LITTER, ETC., SHALL BE USED FOR PLANTING.
9. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. **PLANTING OPERATIONS SHALL OCCUR BETWEEN APRIL 1, THROUGH JUNE 15 AND SEPTEMBER 1 THROUGH NOVEMBER 1 OF EACH CALENDAR YEAR. IF FAVORABLE PLANTING CONDITIONS EXTEND BEYOND DATES INDICATED HEREIN, AN EXTENSION MAY BE GRANTED BY THE LANDSCAPE ARCHITECT RESPONSIBLE FOR THESE PLANS.**
10. SET ALL PLANTS PLUMB AND STRAIGHT. SET AT SUCH A LEVEL THAT AFTER SETTLEMENT, A NORMAL OR NATURAL RELATIONSHIP TO THE CROWN OF THE PLANT WITH THE GROUND SURFACE WILL BE ESTABLISHED. LOCATE PLANT IN THE CENTER OF THE PLANTING PIT.
11. EACH TREE AND SHRUB SHALL BE PRUNED IN ACCORDANCE WITH STANDARD HORTICULTURAL PRACTICE TO PRESERVE NATURAL CHARACTER OF THE PLANT. PRUNING SHALL BE DONE WITH CLEAN, SHARP TOOLS.
12. LANDSCAPING CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO PLACEMENT OF LANDSCAPE MATERIAL. CONTRACTOR SHALL NOT PLACE LANDSCAPING MATERIAL ON TOP OF UTILITY PIPING.
13. PLAN QUANTITIES SUPERSEDE PLANT LIST.

14. THE LANDSCAPE PLAN IS INTENDED FOR LANDSCAPE PURPOSES ONLY.

LEGEND

	EXISTING	PROPOSED
EDGE OF PAVE		
PROPERTY LINE		
MAJOR CONTOURS	210	210
MINOR CONTOURS	212	212
SPOT ELEVATION	225.0	225.0
FENCE LINE		
EASEMENT		
GUIDE RAIL		
STORM LINE & INLET		
WATERS OF US		
ORDINARY HIGH WATER LINE	OHW	
1% ANNUAL FLOODPLAIN	FP	
1% ANNUAL FLOODWAY	FW	
SIGN		
UTILITY POLE		

STREAM STABILIZATION AND ENHANCEMENT LEGEND

TP	TREE PROTECTION FENCE
	12" COIR FIBER LOG
	GEOTEXTILE SOIL WRAP w/ BRUSH LAYERING
	JUTE FABRIC WITH LIVE STAKES
	JUTE FABRIC WITH HERBACEOUS PLANTS
	BRUSH MATTRESS OVER EXISTING SLOPE
LOD	LIMIT OF DISTURBANCE: ALL DISTURBANCES ARE RELATED TO CHAPTER 105 WORK.

TOTAL 32,288 SF 0.74 AC

\\nb1.gilmore.local\server1\MUNICIPL\2014\2014-03043_perkasie ms4\pleasant spring creek streambank stabilization\DESIGN\CAD\Production Drawings\C-LNDS.dwg Layout: Area-1 Plotted By: SDOTTS, on Tue Jun 10, 2025 at 9:50am

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PENNSYLVANIA CYNTHIA MARIE CULP REGISTRATION NUMBER LA003364 REGISTERED LANDSCAPE ARCHITECT

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKD

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

RIPARIAN BUFFER LANDSCAPE PLAN – AREA 1

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.: 1403043	
OWNERS INFO: PERKASIE BOROUGH, 620 W CHESTNUT ST, BOX 96, PERKASIE, PA 18944, 215-257-5065	
MUNICIPAL FILE No.: 1403043	
TAX MAP PARCEL No.: 33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1	
TOTAL AREA: PER LOD	TOTAL LOTS: 5
DATE: 7/02/24	SCALE: 1"=10'
DRAWN BY: XXX	CHECKED BY: XXX

SHEET NO.: 6 OF 10

LOCATION MAP

800 00 800 1600
SCALE IN FEET

SCALE: 1"=800'

RIPARIAN BUFFER MIX

1. SEED MIX SHALL BE ERNMX-178, AS PROVIDED BY ERNST CONSERVATION SEEDS, OR APPROVED EQUAL CONSISTING OF THE FOLLOWING SPECIES, OR AS CURRENTLY FORMULATED, AT 20 LB/ACRE WITH A COVER CROP AT 30 LB PER ACRE.

20.0%	ELYMUS VIRGINICUS, (VIRGINIA WILDRYE)
20.0%	PANICUM CLANDESTINUM, TIOGA (DEERTONGUE, TIOGA)
18.0%	ADROPOGON GERARDII, 'NIAGARA' (BIG BLUESTEM 'NIAGARA')
18.0%	SORGHASTRUM NUTANS (INDIANGRASS)
10.0%	PANICUM VIRGATUM, 'SHELTER' (SWITCHGRASS, 'SHELTER')
3.0%	RUDBECKIA HIRTA, (BLACKEYED SUSAN)
3.0%	VERBENA HASTATA, (BLUE VERVAIN)
2.5%	ASCLEPIAS INCARNATA, (SWAMP MILKWEED)
2.0%	ASTER NOVAE-ANGLIAE, (NEW ENGLAND ASTER)
1.5%	ZIZIA AUREA, (GOLDEN ALEXANDERS)
0.8%	SOLIDAGO RUGOSA, (WRINKLELEAF GOLDENROD)
0.5%	MONARDS FISTULOSA, (WILD BERGAMOT)
0.3%	EUPATORIUM PERFOLIATUM, (BONESET)
0.3%	HELENIUM AUTUMNALE, (COMMON SNEEZEWEED)
0.1%	ASTER UMBELLATUS, (FLAT TOPPED WHITE ASTER)

TOTAL: 100%

SEED MIX ESTABLISHMENT SPECIFICATIONS

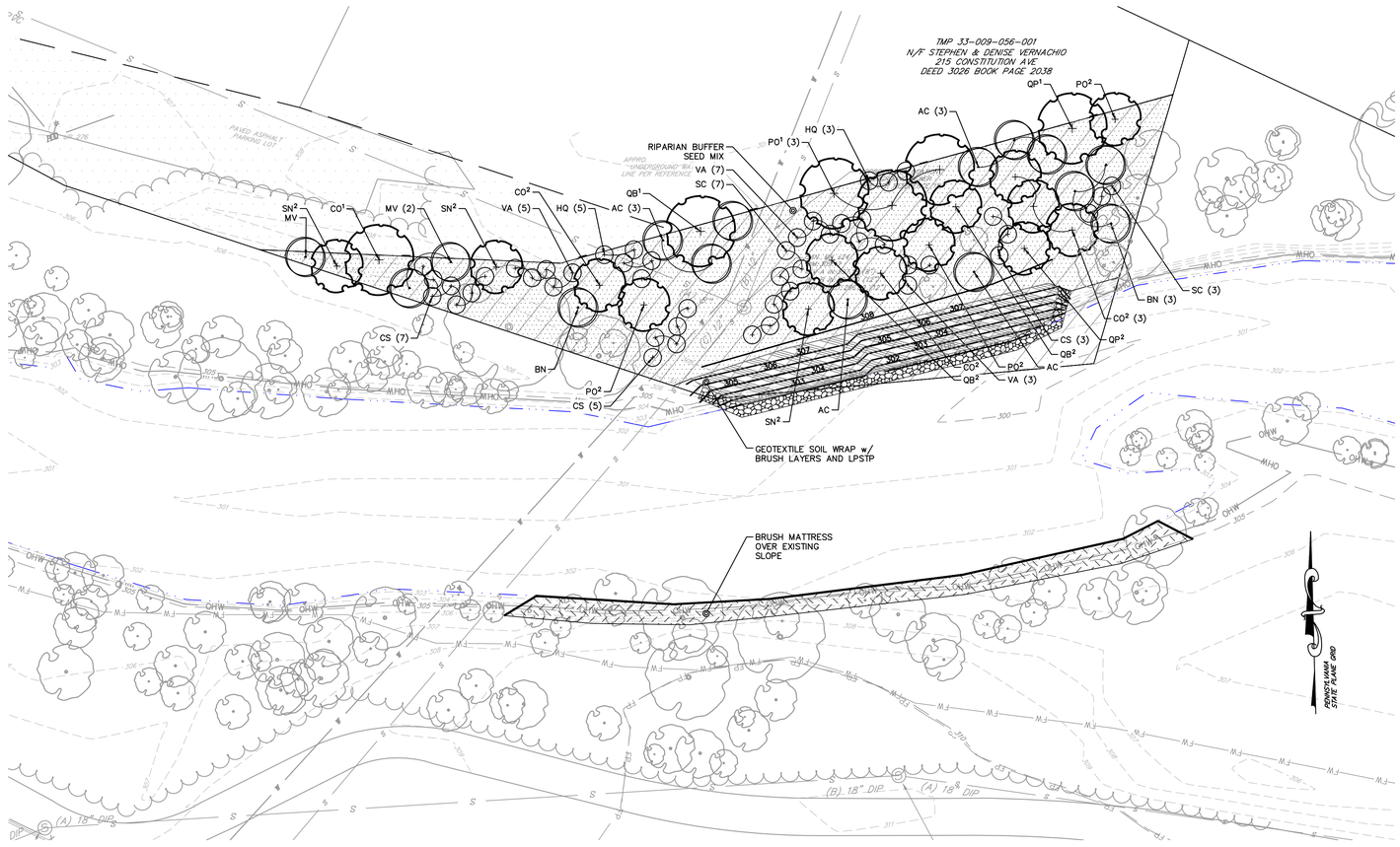
INSTALLATION: SPRAY AREAS TO BE SEEDED WITH A SYSTEMIC HERBICIDE ONE (1) MONTH PRIOR TO THE INSTALLATION OF THE SPECIFIED SEED MIXTURE. AFTER TWO (2) WEEKS OF HERBICIDE APPLICATION, AREAS TO BE SEEDED SHALL BE TREATED AGAIN IF PERSISTENT WEEDS RE-GERMINATE. ONLY AFTER ALL EXISTING VEGETATION TO BE REMOVED IS ERADICATED SHALL THE FOLLOWING SEED INSTALLATION STEPS TAKE PLACE:

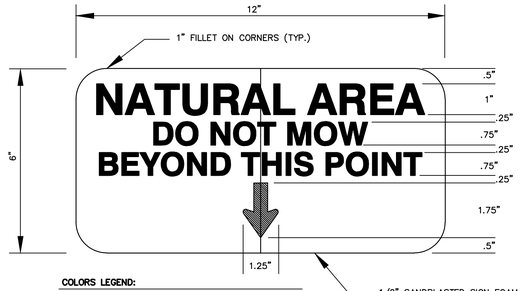
1. ALL AREAS TO BE SEEDED SHALL BE CLEARED OF ALL REMAINING DEBRIS AND VEGETATION.
2. TILL ALL AREAS TO BE SEEDED TO A MINIMUM DEPTH OF FOUR (4) INCHES, AND ADD ANY SPECIFIED SOIL AMENDMENTS TO THE TILLED AREAS.
3. SPREAD SEED AT RECOMMENDED RATE EVENLY ACROSS THE ENTIRE SITE.
4. FINE RAKE ALL AREAS PREVIOUSLY SEEDED TO ENSURE GOOD SOIL TO SEED CONTACT.
5. SPREAD A THIN COAT OF STRAW TO REDUCE EROSION.
6. WATER ENTIRE AREA THOROUGHLY, AVOID OVER WATERING.

FIRST YEAR MAINTENANCE: SEED MIXTURE SHALL BE INSPECTED FOR INVASIVE WEED SPECIES. IF WEED SPECIES APPEAR IN THE SEEDED AREA SPOT TREAT BY PULLING. ALLOW SEED MIXTURE TO REACH A HEIGHT OF 12-18 INCHES IN HEIGHT, MOW TO A HEIGHT OF APPROXIMATELY SIX (6) INCHES WITH A WEED EATER.

SECOND YEAR MAINTENANCE: MOW ONCE IN SPRING AS CLOSE TO GROUND AS POSSIBLE. ALLOW PLANTS TO GROW TO FULL HEIGHT.

CONSECUTIVE FOLLOWING YEARS: MOW EVERY OTHER YEAR AND SPOT TREAT INVASIVE PLANT SPECIES.





*SIGNS SHALL BE PLACED AT 50' INTERVALS ALONG THE PERIMETER OF THE AREA DESIGNATED "MOWING LIMIT" ON LANDSCAPE PLAN. SIGNS SHALL BE INSTALLED AT A HEIGHT OF APPROXIMATELY 18" ABOVE GRADE, TO 2" x2" RECYCLED PLASTIC STAKES.

MOW LIMIT SIGN

NOT TO SCALE

GENERAL LANDSCAPE NOTES

1. PLANT MATERIAL SHALL BE FURNISHED AND INSTALLED AS INDICATED INCLUDING ALL LABOR, MATERIALS, PLANTS EQUIPMENT, INCIDENTALS AND CLEAN UP.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT CORRECT GRADES AND ALIGNMENT.
3. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABITS, WELL DEVELOPED BRANCHES, BE DENSELY FOLIATED, HAVE VIGOROUS ROOT SYSTEMS AND BE FREE OF DEFECTS AND INJURIES.
4. ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE WELFARE OF THE PLANT MATERIAL, SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF PLANT MATERIAL.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR TO BE IN VIGOROUS GROWING CONDITION. PROVISIONS SHALL BE MADE FOR A GUARANTEE OF AT LEAST ONE (1) YEAR FOR TREES AND SHRUBS. REPLACEMENT SHALL BE MADE AT THE BEGINNING OF THE FIRST SUCCEEDING PLANTING SEASON. ALL REPLACEMENTS SHALL HAVE A GUARANTEE EQUAL TO THAT STATED ABOVE.
6. INSOFAR AS IT IS PRACTICABLE, PLANT MATERIALS SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT STOCK NOT PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE (3) DAY PERIOD AFTER DELIVERY.
7. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH THE 2014 "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMAN INC., OR LATEST EDITION.
8. ALL PLANTS SHALL BE PLANTED IN TOPSOIL THAT IS THOROUGHLY WATERED AND TAMPED AS BACK FILLING PROGRESSES. NOTHING BUT SUITABLE TOPSOIL, FREE OF DRY SOD, STIFF CLAY, LITTER, ETC., SHALL BE USED FOR PLANTING.
9. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. **PLANTING OPERATIONS SHALL OCCUR BETWEEN APRIL 1, THROUGH JUNE 15 AND SEPTEMBER 1 THROUGH NOVEMBER 1 OF EACH CALENDAR YEAR. IF FAVORABLE PLANTING CONDITIONS EXTEND BEYOND DATES INDICATED HEREIN, AN EXTENSION MAY BE GRANTED BY THE LANDSCAPE ARCHITECT RESPONSIBLE FOR THESE PLANS.**
10. SET ALL PLANTS PLUMB AND STRAIGHT. SET AT SUCH A LEVEL THAT AFTER SETTLEMENT, A NORMAL OR NATURAL RELATIONSHIP TO THE CROWN OF THE PLANT WITH THE GROUND SURFACE WILL BE ESTABLISHED. LOCATE PLANT IN THE CENTER OF THE PLANTING PIT.
11. EACH TREE AND SHRUB SHALL BE PRUNED IN ACCORDANCE WITH STANDARD HORTICULTURAL PRACTICE TO PRESERVE NATURAL CHARACTER OF THE PLANT. PRUNING SHALL BE DONE WITH CLEAN, SHARP TOOLS.
12. LANDSCAPING CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO PLACEMENT OF LANDSCAPE MATERIAL. CONTRACTOR SHALL NOT PLACE LANDSCAPING MATERIAL ON TOP OF UTILITY PIPING.
13. PLAN QUANTITIES SUPERSEDE PLANT LIST.
14. **THE LANDSCAPE PLAN IS INTENDED FOR LANDSCAPE PURPOSES ONLY.**

LEGEND

	EXISTING	PROPOSED
EDGE OF PAVE		
PROPERTY LINE		
MAJOR CONTOURS	210	210
MINOR CONTOURS	212	212
SPOT ELEVATION	225.0	+225.0
FENCE LINE	x x x x	
EASEMENT		
GUIDE RAIL		
STORM LINE & INLET		
WATERS OF US		
ORDINARY HIGH WATER LINE	OHW	
1% ANNUAL FLOODPLAIN	FP	FP
1% ANNUAL FLOODWAY	FW	FW
SIGN		
UTILITY POLE		

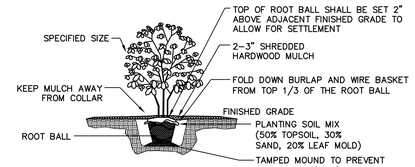
STREAM STABILIZATION AND ENHANCEMENT LEGEND

TP TP	TREE PROTECTION FENCE
	12" COIR FIBER LOG
	GEOTEXTILE SOIL WRAP w/ BRUSH LAYERING
	JUTE FABRIC WITH LIVE STAKES
	JUTE FABRIC WITH HERBACEOUS PLANTS
	BRUSH MATTRESS OVER EXISTING SLOPE
LOD	LIMIT OF DISTURBANCE: ALL DISTURBANCES ARE RELATED TO CHAPTER 105 WORK.

TOTAL 32,288 SF 0.74 AC

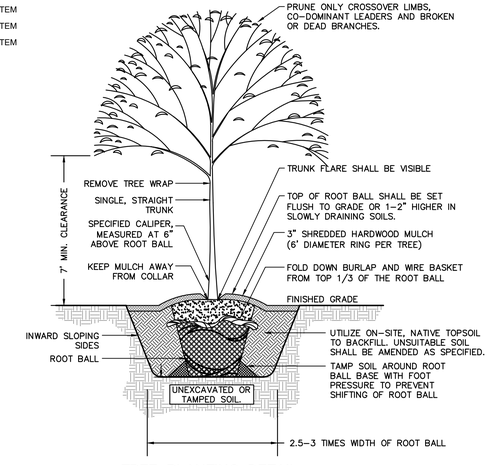
PLANT SCHEDULE - AREA 2

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
CANOPY TREES						
CO1	1	CELTIS OCCIDENTALIS	HACKBERRY	2-2 1/2" CAL	B&B	
CO2	5	CELTIS OCCIDENTALIS	HACKBERRY	10 GAL	CONT	
PO1	3	PLATANUS OCCIDENTALIS	SYCAMORE	2-2 1/2" CAL	B&B	
PO2	3	PLATANUS OCCIDENTALIS	SYCAMORE	10 GAL	CONT	
QB1	1	QUERCUS BICOLOR	SWAMP WHITE OAK	2-2 1/2" CAL	B&B	
QB2	2	QUERCUS BICOLOR	SWAMP WHITE OAK	10 GAL	CONT	
QP1	1	QUERCUS PHELLOS	WILLOW OAK	2-2 1/2" CAL	B&B	
QP2	1	QUERCUS PHELLOS	WILLOW OAK	10 GAL	CONT	
SN2	3	SALIX NIGRA	BLACK WILLOW	10 GAL	CONT	
UNDERSTORY TREES						
AC	8	AMELANCHIER CANADENSIS	SERVICEBERRY	6' HT MIN	B&B	MULTI-STEM
BN	4	BETULA NIGRA	RIVER BIRCH	6' HT MIN	B&B	MULTI-STEM
MV	3	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	6' HT MIN	B&B	MULTI-STEM
SHRUBS						
CS	15	CORNUS SERICEA	REDTWIG DOGWOOD	36" MIN	CONT	
HQ	8	HYDRANGEA QUERCIFOLIA	OAKLEAF HYDRANGEA	36" MIN	CONT	
SC	10	SAMBUCUS CANADENSIS	ELDERBERRY	36" MIN	CONT	
VA	15	VIBURNUM ACERIFOLIUM	MAPLELEAF VIBURNUM	36" MIN	CONT	



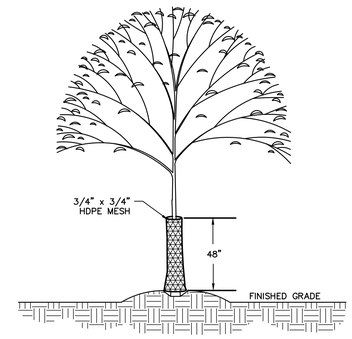
SHRUB PLANTING AND SHRUB BED PREPARATION

NOT TO SCALE



TREE PLANTING DETAIL

NOT TO SCALE



TREE BARK PROTECTION

NOT TO SCALE

10 0 10 20
SCALE IN 1"=10' FEET

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
CORPORATE HEADQUARTERS
65 EAST BUTLER AVENUE, SUITE 100, NEW BRITAIN, PA 18901 • (215) 345-4330 • www.gilmore-assoc.com

COMMONWEALTH OF PENNSYLVANIA — VICTORIA MARIE [illegible] — REGISTERED LANDSCAPE ARCHITECT — REGISTRATION NUMBER [illegible] — EXPIRATION DATE [illegible]

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKG

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

RIPARIAN BUFFER LANDSCAPE PLAN – AREA-2

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.: 1403043

OWNERS INFO:
PERKASIE BOROUGH
620 W CHESTNUT ST, BOX 96
PERKASIE, PA 18944
215-257-5065

MUNICIPAL FILE No.: 1403043

TAX MAP PARCEL No.: 33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1

TOTAL AREA:	TOTAL LOTS:
PER LOD	5
DATE:	SCALE:
7/02/24	1"=10'
DRAWN BY:	CHECKED BY:
XXX	XXX

SHEET NO.: 7 OF 10

PLANT SCHEDULE - AREA 3

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
CANOPY TREES						
CO^1	2	CELTIS OCCIDENTALIS	HACKBERRY	2-2 1/2" CAL	B&B	
CO^2	9	CELTIS OCCIDENTALIS	HACKBERRY	10 GAL	CONT	
PO^1	5	PLATANUS OCCIDENTALIS	SYCAMORE	2-2 1/2" CAL	B&B	
PO^2	6	PLATANUS OCCIDENTALIS	SYCAMORE	10 GAL	CONT	
QB1	2	QUERCUS BICOLOR	SWAMP WHITE OAK	2-2 1/2" CAL	B&B	
QB^2	1	QUERCUS BICOLOR	SWAMP WHITE OAK	10 GAL	CONT	
QP1	1	QUERCUS PHELLOS	WILLOW OAK	2-2 1/2" CAL	B&B	
QP^2	8	QUERCUS PHELLOS	WILLOW OAK	10 GAL	CONT	
SN^1	1	SALIX NIGRA	BLACK WILLOW	2-2 1/2" CAL	B&B	
SN^2	6	SALIX NIGRA	BLACK WILLOW	10 GAL	CONT	
UNDERSTORY TREES						
AC	7	AMELANCHIER CANADENSIS	SERVICEBERRY	6' HT MIN	B&B	MULTI-STEM
BN	6	BETULA NIGRA	RIVER BIRCH	6' HT MIN	B&B	MULTI-STEM
MV	6	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	6' HT MIN	B&B	MULTI-STEM
SHRUBS						
CS	25	CORNUS SERICEA	REDTWIG DOGWOOD	36" MIN	CONT	
HQ	10	HYDRANGEA QUERCIFOLIA	OAKLEAF HYDRANGEA	36" MIN	CONT	
SC	15	SAMBUCUS CANADENSIS	ELDERBERRY	36" MIN	CONT	
VA	21	VIBURNUM ACERIFOLIUM	MAPLELEAF VIBURNUM	36" MIN	CONT	

RIPARIAN BUFFER MIX

1. SEED MIX SHALL BE ERNMX–178, AS PROVIDED BY ERNST CONSERVATION SEEDS, OR APPROVED EQUAL CONSISTING OF THE FOLLOWING SPECIES, OR AS CURRENTLY FORMULATED, AT 20 LB/ACRE WITH A COVER CROP AT 30 LB PER ACRE.
   - 20.00% ELYMUS VIRGINICUS, (VIRGINIA WILDRYE)
   - 20.00% PANICUM CLANDESTINUM, TIOGA (DEERTONGUE, TIOGA)
   - 18.00% ADROPOGON GERARDII, 'NIAGARA' (BIG BLUESTEM 'NIAGARA')
   - 18.00% SORGHASTRUM NUTANS (INDIANGRASS)
   - 10.00% PANICUM VIRGATUM, 'SHELTER' (SWITCHGRASS, 'SHELTER')
   - 3.00% RUDBECKIA HIRTA, (BLACKEYED SUSAN)
   - 3.00% VERBENA HASTATA, (BLUE VERVAIN)
   - 2.50% ASCLEPIAS INCARNATA, (SWAMP MILKWEED)
   - 2.00% ASTER NOVAE–ANGLIAE, (NEW ENGLAND ASTER)
   - 1.50% ZIZIA AUREA, (GOLDEN ALEXANDERS)
   - 0.80% SOLIDAGO RUGOSA, (WRINKLELEAF GOLDENROD)
   - 0.50% MONARDS FISTULOSA, (WILD BERGAMOT)
   - 0.30% EUPATORIUM PERFOLIATUM, (BONESET)
   - 0.30% HELENIUM AUTUMNALE, (COMMON SNEEZEWEED)
   - 0.10% ASTER UMBELLATUS, (FLAT TOPPED WHITE ASTER)

   TOTAL: 100%

SEED MIX ESTABLISHMENT SPECIFICATIONS

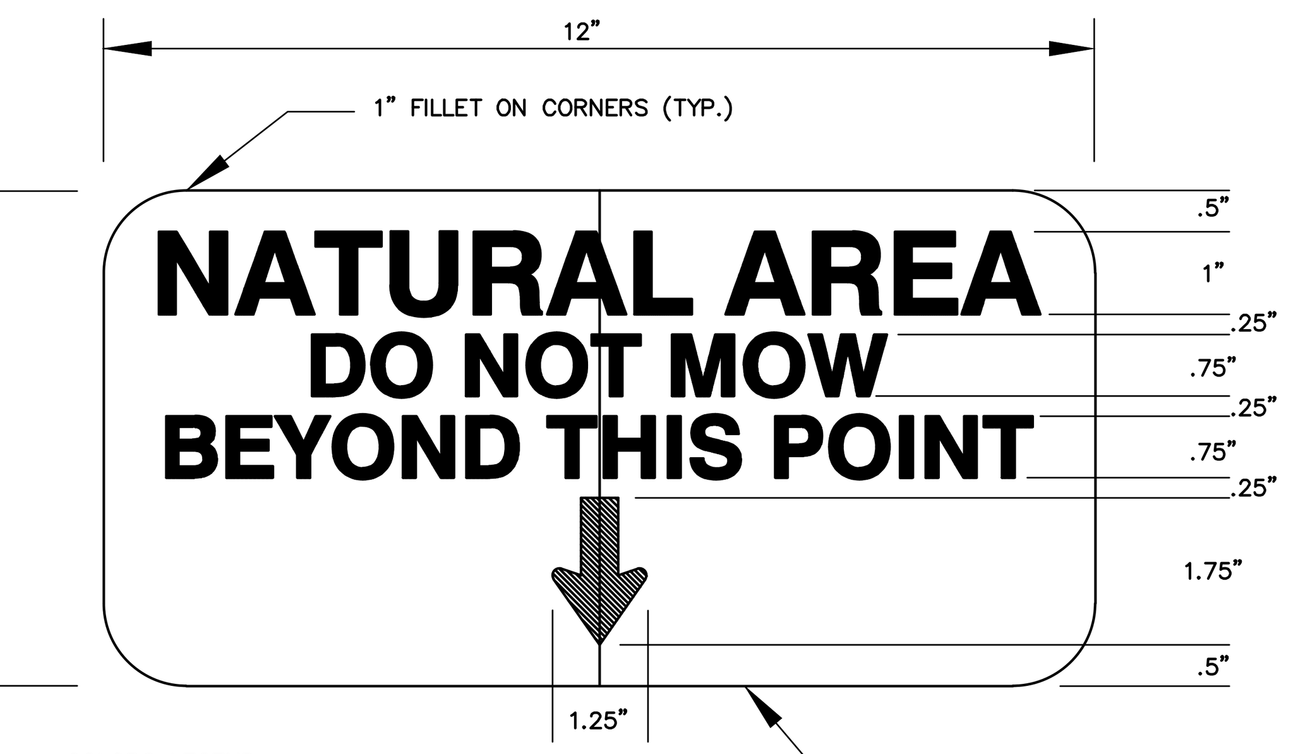
INSTALLATION: SPRAY AREAS TO BE SEEDED WITH A SYSTEMIC HERBICIDE ONE (1) MONTH PRIOR TO THE INSTALLATION OF THE SPECIFIED SEED MIXTURE. AFTER TWO (2) WEEKS OF HERBICIDE APPLICATION, AREAS TO BE SEEDED SHALL BE TREATED AGAIN IF PERSISTENT WEEDS RE–GERMINATE. ONLY AFTER ALL EXISTING VEGETATION TO BE REMOVED IS ERADICATED SHALL THE FOLLOWING SEED INSTALLATION STEPS TAKE PLACE:

1. ALL AREAS TO BE SEEDED SHALL BE CLEARED OF ALL REMAINING DEBRIS AND VEGETATION.
2. TILL ALL AREAS TO BE SEEDED TO A MINIMUM DEPTH OF FOUR (4) INCHES, AND ADD ANY SPECIFIED SOIL AMENDMENTS TO THE TILLED AREAS.
3. SPREAD SEED AT RECOMMENDED RATE EVENLY ACROSS THE ENTIRE SITE.
4. FINE RAKE ALL AREAS PREVIOUSLY SEEDED TO ENSURE GOOD SOIL TO SEED CONTACT.
5. SPREAD A THIN COAT OF STRAW TO REDUCE EROSION.
6. WATER ENTIRE AREA THOROUGHLY, AVOID OVER WATERING.

FIRST YEAR MAINTENANCE: SEED MIXTURE SHALL BE INSPECTED FOR INVASIVE WEED SPECIES. IF WEED SPECIES APPEAR IN THE SEEDED AREA SPOT TREAT BY PULLING. ALLOW SEED MIXTURE TO REACH A HEIGHT OF 12–18 INCHES IN HEIGHT, MOW TO A HEIGHT OF APPROXIMATELY SIX (6) INCHES WITH A WEED EATER.

SECOND YEAR MAINTENANCE: MOW ONCE IN SPRING AS CLOSE TO GROUND AS POSSIBLE. ALLOW PLANTS TO GROW TO FULL HEIGHT.

CONSECUTIVE FOLLOWING YEARS: MOW EVERY OTHER YEAR AND SPOT TREAT INVASIVE PLANT SPECIES.



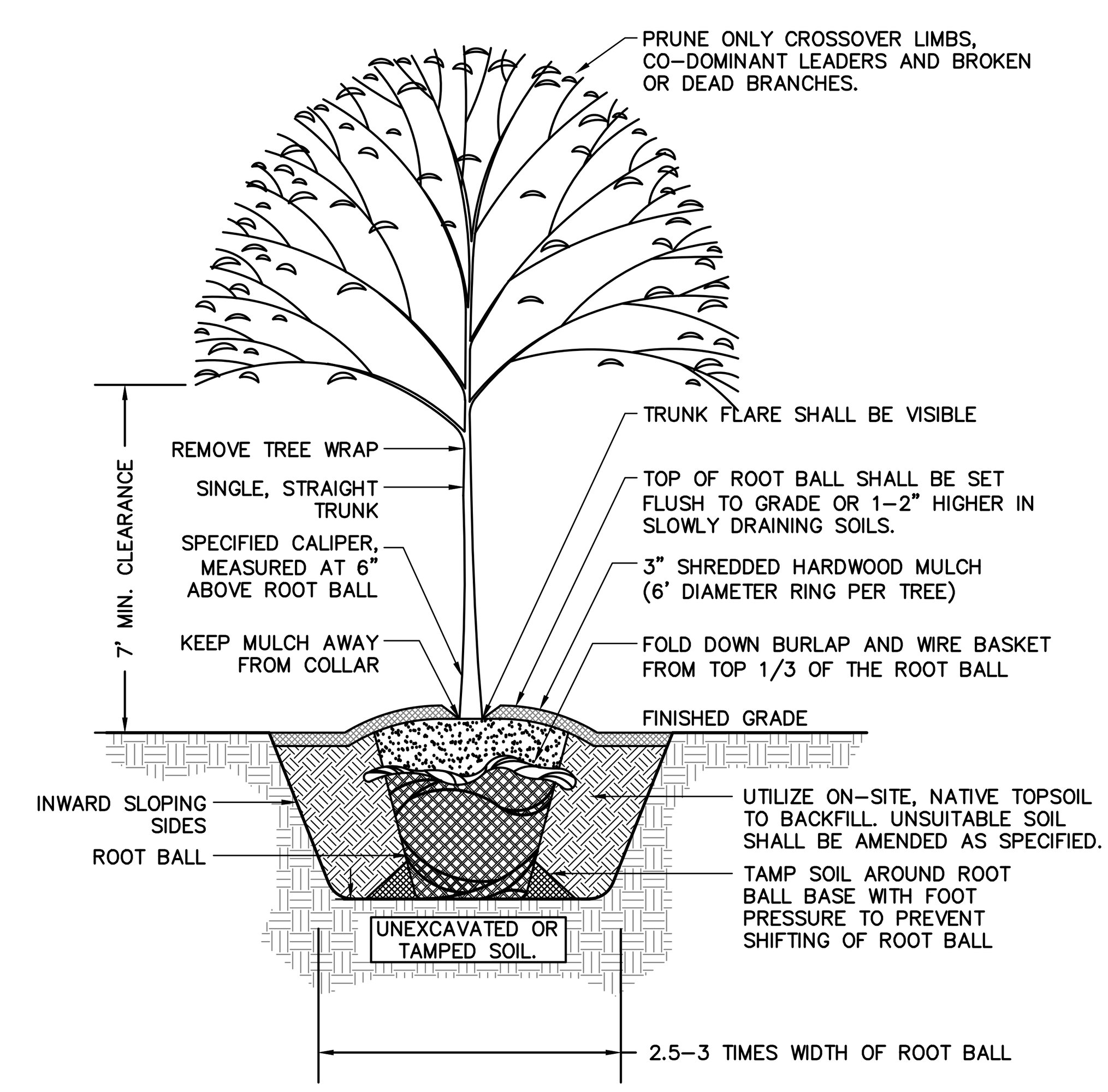
COLORS LEGEND:

BACKGROUND–	LIGHT TAN (NON–REFLECTORIZED)
SYMBOL–	RED (NON–REFLECTORIZED)
LETTERS–	DARK GREEN (NON–REFLECTORIZED)

*SIGNS SHALL BE PLACED AT 50' INTERVALS ALONG THE PERIMETER OF THE AREA DESIGNATED "MOWING LIMIT" ON LANDSCAPE PLAN. SIGNS SHALL BE INSTALLED AT A HEIGHT OF APPROXIMATELY 18" ABOVE GRADE, TO 2" x2" RECYCLED PLASTIC STAKES.

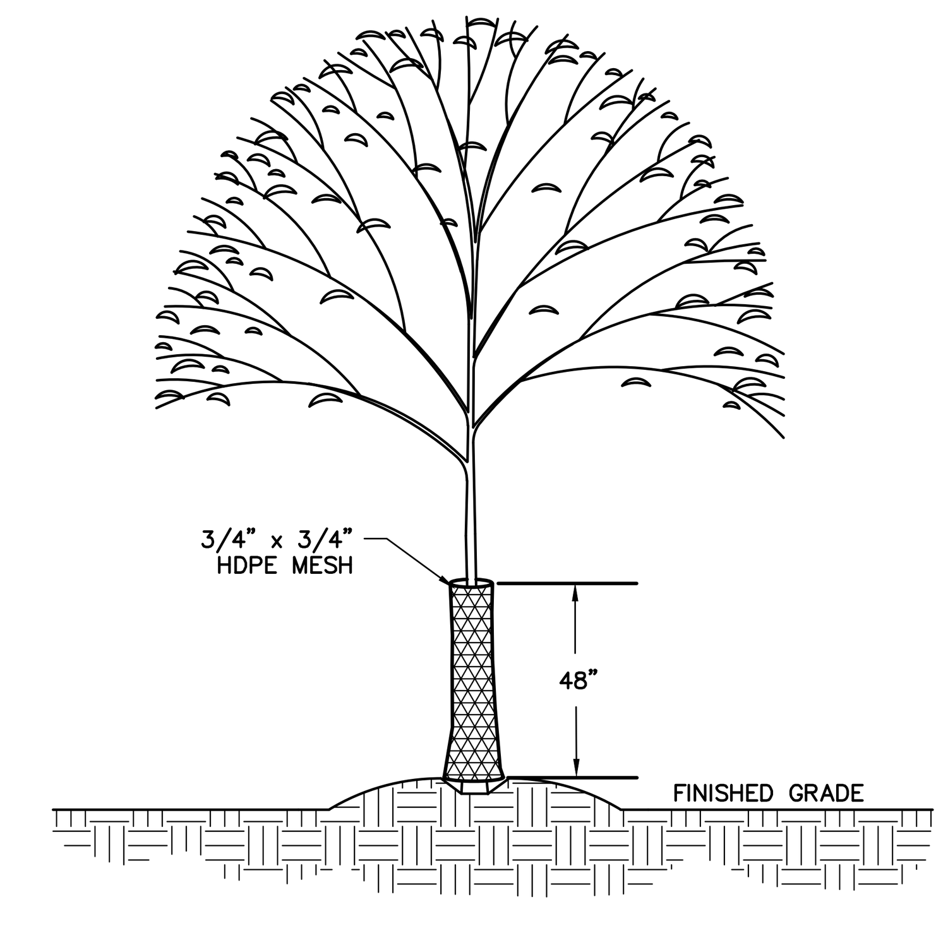
MOW LIMIT SIGN

NOT TO SCALE



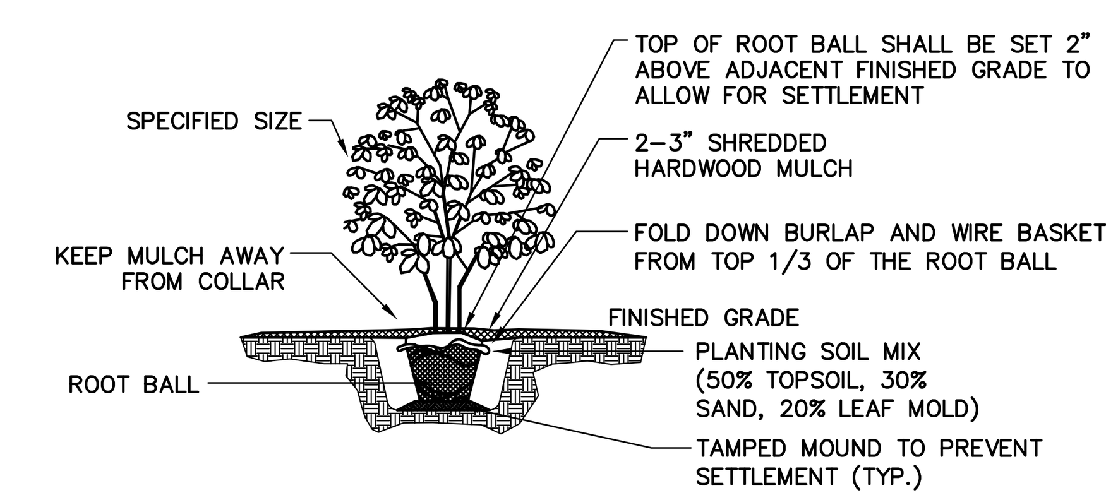
TREE PLANTING DETAIL

NOT TO SCALE



TREE BARK PROTECTION

NOT TO SCALE

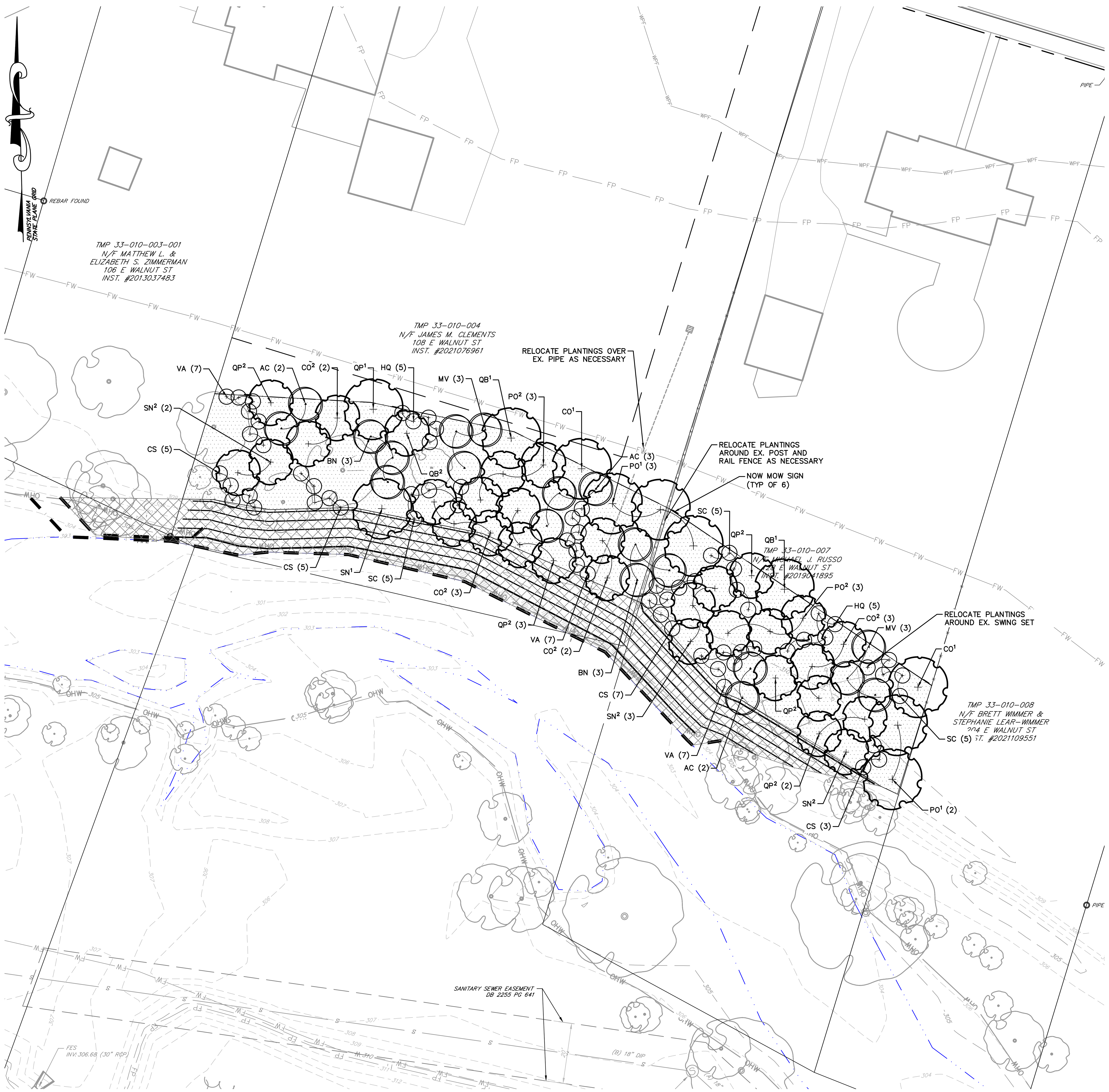


SHRUB PLANTING AND SHRUB BED PREPARATION

NOT TO SCALE

GENERAL NOTES:

1. THIS PLAN IS BASED ON A FIELD SURVEY PERFORMED BY GILMORE & ASSOCIATES, INC. IN DECEMBER OF 2022, AND MARCH OF 2023.
2. THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY AND WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. OTHER RIGHTS TO PROPERTY MAY EXIST.
3. PARCEL LINES WERE OBTAINED FROM CURRENT RECORD OF DEED AND ADJUSTED TO PHYSICAL EVIDENCE FOUND. THEIR LOCATION IS APPROXIMATE.
4. SUBJECT TO COVENANTS, RESTRICTIONS AND/OR EASEMENTS EITHER WRITTEN OR IMPLIED.
5. VERTICAL DATUM IS NAVD88 AND WAS ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS) WITH OBSERVATIONS REFERENCED TO THE KEYNET–GPS VIRTUAL REFERENCE STATION SYSTEM. HORIZONTAL DATUM IS BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM (NAD83) ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS), WITH OBSERVATIONS REFERENCED TO THE KEYNET–GPS VIRTUAL REFERENCE STATION SYSTEM.
6. ANY AREAS OF WATERS/WETLANDS AS ARE DELINEATED AND DEDICATED UPON THIS PLAN OF SUBDIVISION MAY BE SUBJECT TO FEDERAL REGULATION. ANY DISTURBANCE OF THESE AREAS, INCLUDING THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO THESE WETLANDS MAY REQUIRE A DEPARTMENT OF THE ARMY PERMIT PURSUANT TO SECTION 404 OF THE CLEAN WATER ACT. ADDITIONAL INFORMATION MAY BE OBTAINED BY CONTACTING THE PA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND/OR THE ARMY CORPS OF ENGINEERS' OFFICES.
7. PROPERTY IS LOCATED IN A FLOODPLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP FOR BUCKS COUNTY, PA MAP NO. 42017C0256 J, EFFECTIVE DATE MARCH 16, 2015, PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
8. RUNOFF IS COLLECTED BY PLEASANT SPRING CREEK WHICH FLOWS INTO THE EAST BRANCH PERKIOMEN CREEK. PLEASANT SPRING CREEK IS LISTED AS TSF,MF IN CHAPTER 93.
   A. **AS TROUT–STOCKED FISHERY NO WORK IS PERMITTED ON THE STREAM FROM MARCH 1 THROUGH JUNE 15.**



LEGEND

	EXISTING	PROPOSED
EDGE OF PAVE		
PROPERTY LINE		
MAJOR CONTOURS	210	210
MINOR CONTOURS	212	212
SPOT ELEVATION	225.0	225.0
FENCE LINE		
EASEMENT		
GUIDE RAIL		
STORM LINE & INLET		
WATERS OF US		
ORDINARY HIGH WATER LINE	OHW	
1% ANNUAL FLOODPLAIN	FP	
1% ANNUAL FLOODWAY	FW	
SIGN		
UTILITY POLE		

20 0 20 40

SCALE IN FEET

1"=20'

STREAM STABILIZATION AND ENHANCEMENT LEGEND

TP	TREE PROTECTION FENCE
	12" COIR FIBER LOG
	GEOTEXTILE SOIL WRAP w/ BRUSH LAYERING
	JUTE FABRIC WITH LIVE STAKES
	JUTE FABRIC WITH HERBACEOUS PLANTS
	BRUSH MATTRESS OVER EXISTING SLOPE
LOD	LIMIT OF DISTURBANCE: ALL DISTURBANCES ARE RELATED TO CHAPTER 105 WORK.

TOTAL 32,288 SF 0.74 AC

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REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKD

PERMIT PLANS

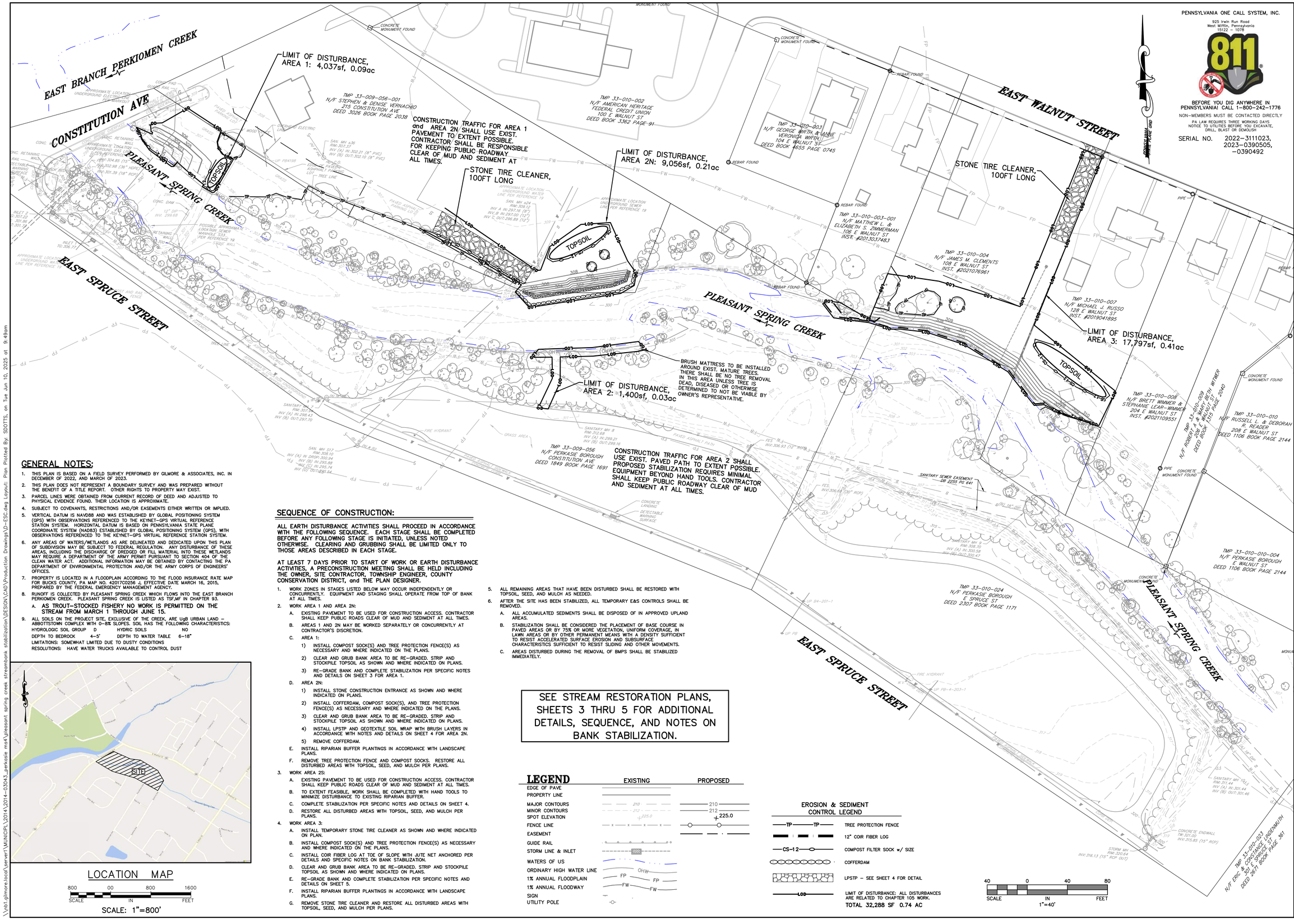
PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

RIPARIAN BUFFER LANDSCAPE PLAN – AREA 3

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.: 1403043	
OWNERS INFO: PERKASIE BOROUGH, 620 W CHESTNUT ST, BOX 96, PERKASIE, PA 18944, 215–257–5065	
MUNICIPAL FILE No.: 1403043	
TAX MAP PARCEL No.: 33–09–56, 33–10–24, 33–10–04, 33–10–07, 33–09–56–1	
TOTAL AREA: PER LOD	TOTAL LOTS: 5
DATE: 7/02/24	SCALE: 1"=20'
DRAWN BY: XXX	CHECKED BY: XXX



GENERAL NOTES:

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3. PARCEL LINES WERE OBTAINED FROM CURRENT RECORD OF DEED AND ADJUSTED TO PHYSICAL EVIDENCE FOUND. THEIR LOCATION IS APPROXIMATE.
4. SUBJECT TO COVENANTS, RESTRICTIONS AND/OR EASEMENTS EITHER WRITTEN OR IMPLIED.
5. VERTICAL DATUM IS NAVD88 AND WAS ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS) WITH OBSERVATIONS REFERENCED TO THE KEYNET-GPS VIRTUAL REFERENCE STATION SYSTEM. HORIZONTAL DATUM IS BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM (NAD83) ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS), WITH OBSERVATIONS REFERENCED TO THE KEYNET-GPS VIRTUAL REFERENCE STATION SYSTEM.
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8. RUNOFF IS COLLECTED BY PLEASANT SPRING CREEK WHICH FLOWS INTO THE EAST BRANCH PERKIOMEN CREEK. PLEASANT SPRING CREEK IS LISTED AS TSF,MF IN CHAPTER 93.
   A. AS TROUT-STOCKED FISHERY NO WORK IS PERMITTED ON THE STREAM FROM MARCH 1 THROUGH JUNE 15.
9. ALL SOILS ON THE PROJECT SITE, EXCLUSIVE OF THE CREEK, ARE UgB URBAN LAND – ABBOTTSTOWN COMPLEX WITH 0-8% SLOPES. SOIL HAS THE FOLLOWING CHARACTERISTICS:
   HYDROLOGIC SOIL GROUP D HYDRIC SOILS NO
   DEPTH TO BEDROCK 4-5' DEPTH TO WATER TABLE 6-18"
   LIMITATIONS: SOMEWHAT LIMITED DUE TO DUSTY CONDITIONS
   RESOLUTIONS: HAVE WATER TRUCKS AVAILABLE TO CONTROL DUST

LOCATION MAP

800 00 800 1600
SCALE IN FEET

SCALE: 1"=800'

SEQUENCE OF CONSTRUCTION:

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED, UNLESS NOTED OTHERWISE. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

AT LEAST 7 DAYS PRIOR TO START OF WORK OR EARTH DISTURBANCE ACTIVITIES, A PRECONSTRUCTION MEETING SHALL BE HELD INCLUDING THE OWNER, SITE CONTRACTOR, TOWNSHIP ENGINEER, COUNTY CONSERVATION DISTRICT, and THE PLAN DESIGNER.

1. WORK ZONES IN STAGES LISTED BELOW MAY OCCUR INDEPENDENTLY OR CONCURRENTLY. EQUIPMENT AND STAGING SHALL OPERATE FROM TOP OF BANK AT ALL TIMES.
2. WORK AREA 1 AND AREA 2N:
   A. EXISTING PAVEMENT TO BE USED FOR CONSTRUCTION ACCESS. CONTRACTOR SHALL KEEP PUBLIC ROADS CLEAR OF MUD AND SEDIMENT AT ALL TIMES.
   B. AREAS 1 AND 2N MAY BE WORKED SEPARATELY OR CONCURRENTLY AT CONTRACTOR'S DISCRETION.
   C. AREA 1:
      1) INSTALL COMPOST SOCK(S) AND TREE PROTECTION FENCE(S) AS NECESSARY AND WHERE INDICATED ON THE PLANS.
      2) CLEAR AND GRUB BANK AREA TO BE RE-GRADED. STRIP AND STOCKPILE TOPSOIL AS SHOWN AND WHERE INDICATED ON PLANS.
      3) RE-GRADE BANK AND COMPLETE STABILIZATION PER SPECIFIC NOTES AND DETAILS ON SHEET 3 FOR AREA 1.
   D. AREA 2N:
      1) INSTALL STONE CONSTRUCTION ENTRANCE AS SHOWN AND WHERE INDICATED ON PLANS.
      2) INSTALL COFFERDAM, COMPOST SOCK(S), AND TREE PROTECTION FENCE(S) AS NECESSARY AND WHERE INDICATED ON THE PLANS.
      3) CLEAR AND GRUB BANK AREA TO BE RE-GRADED. STRIP AND STOCKPILE TOPSOIL AS SHOWN AND WHERE INDICATED ON PLANS.
      4) INSTALL LPSTP AND GEOTEXTILE SOIL WRAP WITH BRUSH LAYERS IN ACCORDANCE WITH NOTES AND DETAILS ON SHEET 4 FOR AREA 2N.
      5) REMOVE COFFERDAM.
   E. INSTALL RIPARIAN BUFFER PLANTINGS IN ACCORDANCE WITH LANDSCAPE PLANS.
   F. REMOVE TREE PROTECTION FENCE AND COMPOST SOCKS. RESTORE ALL DISTURBED AREAS WITH TOPSOIL, SEED, AND MULCH PER PLANS.
3. WORK AREA 2S:
   A. EXISTING PAVEMENT TO BE USED FOR CONSTRUCTION ACCESS. CONTRACTOR SHALL KEEP PUBLIC ROADS CLEAR OF MUD AND SEDIMENT AT ALL TIMES.
   B. TO EXTENT FEASIBLE, WORK SHALL BE COMPLETED WITH HAND TOOLS TO MINIMIZE DISTURBANCE TO EXISTING RIPARIAN BUFFER.
   C. COMPLETE STABILIZATION PER SPECIFIC NOTES AND DETAILS ON SHEET 4.
   D. RESTORE ALL DISTURBED AREAS WITH TOPSOIL, SEED, AND MULCH PER PLANS.
4. WORK AREA 3:
   A. INSTALL TEMPORARY STONE TIRE CLEANER AS SHOWN AND WHERE INDICATED ON PLAN.
   B. INSTALL COMPOST SOCK(S) AND TREE PROTECTION FENCE(S) AS NECESSARY AND WHERE INDICATED ON THE PLANS.
   C. INSTALL COIR FIBER LOG AT TOE OF SLOPE WITH JUTE NET ANCHORED PER DETAILS AND SPECIFIC NOTES ON BANK STABILIZATION.
   D. CLEAR AND GRUB BANK AREA TO BE RE-GRADED. STRIP AND STOCKPILE TOPSOIL AS SHOWN AND WHERE INDICATED ON PLANS.
   E. RE-GRADE BANK AND COMPLETE STABILIZATION PER SPECIFIC NOTES AND DETAILS ON SHEET 5.
   F. INSTALL RIPARIAN BUFFER PLANTINGS IN ACCORDANCE WITH LANDSCAPE PLANS.
   G. REMOVE STONE TIRE CLEANER AND RESTORE ALL DISTURBED AREAS WITH TOPSOIL, SEED, AND MULCH PER PLANS.
5. ALL REMAINING AREAS THAT HAVE BEEN DISTURBED SHALL BE RESTORED WITH TOPSOIL, SEED, AND MULCH AS NEEDED.
6. AFTER THE SITE HAS BEEN STABILIZED, ALL TEMPORARY E&S CONTROLS SHALL BE REMOVED.
   A. ALL ACCUMULATED SEDIMENTS SHALL BE DISPOSED OF IN APPROVED UPLAND AREAS.
   B. STABILIZATION SHALL BE CONSIDERED THE PLACEMENT OF BASE COURSE IN PAVED AREAS OR BY 75% OR MORE VEGETATION, UNIFORM COVERAGE, IN LAWN AREAS OR BY OTHER PERMANENT MEANS WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
   C. AREAS DISTURBED DURING THE REMOVAL OF BMPS SHALL BE STABILIZED IMMEDIATELY.

SEE STREAM RESTORATION PLANS, SHEETS 3 THRU 5 FOR ADDITIONAL DETAILS, SEQUENCE, AND NOTES ON BANK STABILIZATION.

LEGEND	EXISTING	PROPOSED
EDGE OF PAVE		
PROPERTY LINE		
MAJOR CONTOURS	210	210
MINOR CONTOURS	212	212
SPOT ELEVATION	225.0	+ 225.0
FENCE LINE	X X X X	
EASEMENT		
GUIDE RAIL		
STORM LINE & INLET		
WATERS OF US		
ORDINARY HIGH WATER LINE	OHW	
1% ANNUAL FLOODPLAIN	FP	FP
1% ANNUAL FLOODWAY	FW	FW
SIGN		
UTILITY POLE		

EROSION & SEDIMENT CONTROL LEGEND

TP — TP	TREE PROTECTION FENCE
	12" COIR FIBER LOG
CS-12	COMPOST FILTER SOCK w/ SIZE
	COFFERDAM
	LPSTP – SEE SHEET 4 FOR DETAIL
LOD	LIMIT OF DISTURBANCE: ALL DISTURBANCES ARE RELATED TO CHAPTER 105 WORK. TOTAL 32,288 SF 0.74 AC

40 0 40 80
SCALE IN FEET
1"=40'

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
CORPORATE HEADQUARTERS
65 EAST BUTLER AVENUE, SUITE 100, NEW BRITAIN, PA 18901 • (215) 345-4330 • www.gilmore-assoc.com

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
Sharon K. Dotts
ENGINEER
NO. PE-045435-E

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKD

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

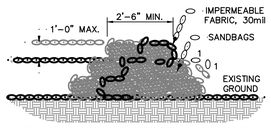
PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

EROSION & SEDIMENT CONTROL PLAN

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.:	1403043
OWNERS INFO:	PERKASIE BOROUGH 620 W CHESTNUT ST, BOX 96 PERKASIE, PA 18944 215-257-5065
MUNICIPAL FILE No.:	1403043
TAX MAP PARCEL No.:	33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1
TOTAL AREA: PER LOD	TOTAL LOTS: 5
DATE: 7/02/24	SCALE: 1"=40'
DRAWN BY: XXX	CHECKED BY: XXX
SHEET NO.:	9 OF 10

\\vbl.gilmore.local\server1\MUNICIPL\2014\2014-03043_perkasie ms4\pleasant spring creek streambank stabilization\DESIGN\CAD\Production Drawings\D-ESC.dwg Layout: Plan Plotted By: SDOTTS, on Tue Jun 10, 2025 at 9:49am

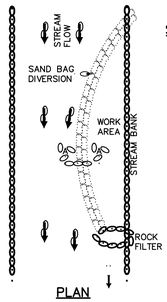


NOTE: SANDBAGS SHALL BE PLACED A MAXIMUM OF 1' ABOVE THE NORMAL WATER SURFACE ELEVATION.

TEMPORARY SANDBAG COFFERDAM DETAIL

NOT TO SCALE

COMMERCIALLY AVAILABLE COFFERDAM SYSTEMS, SUCH AS 'PORTA-DAM' OR EQUAL, SHALL BE ACCEPTABLE ALTERNATIVE TO SANDBAG DAM. SAID SYSTEM SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. PRODUCT DATA SHEETS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION.



PLAN

SECTION A-A:

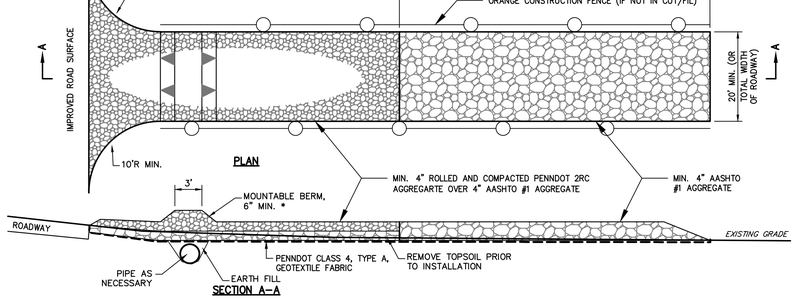
SEE COFFERDAM DETAIL

NOTES:

1. AT CONTRACTOR'S DISCRETION, PUMP AND FILTER BAG MAY BE INSTALLED TO DEWATER WORK AREA. PUMP CAPACITY TO BE DETERMINE BY CONTRACTOR PRIOR TO START OF WORK AND BE SUFFICIENT TO KEEP WORK AREA FREE OF STANDING WATER.
2. ROCK FILTER SHALL BE INSTALLED AT DOWNSTREAM END OF DIVERSION.
3. CONSTRUCTION SHALL TAKE PLACE FROM TOP OF BANKS WHENEVER POSSIBLE.
5. ALL WORK SHALL BE PLANNED DURING PERIODS OF LOW STREAM FLOW.
6. ALL WORK SHALL FOLLOW THE GUIDELINES ESTABLISHED IN THE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 102 REGULATIONS.
7. COFFERDAM SHALL REMAIN IN PLACE UNTIL LPSTP AND GEOTEXTILE SOIL WRAP ARE INSTALLED TO AN ELEVATION ABOVE ORDINARY HIGH WATER (OHW) LINE.

STREAM DIVERSION DETAIL

NOT TO SCALE



*MOUNTABLE BERM SHOULD BE USED WHEREVER OPTIONAL CULVERT PIPE IS USED TO PROVIDE PROPER COVER FOR PIPE PER MANUFACTURER'S SPECIFICATION. PIPE TO BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

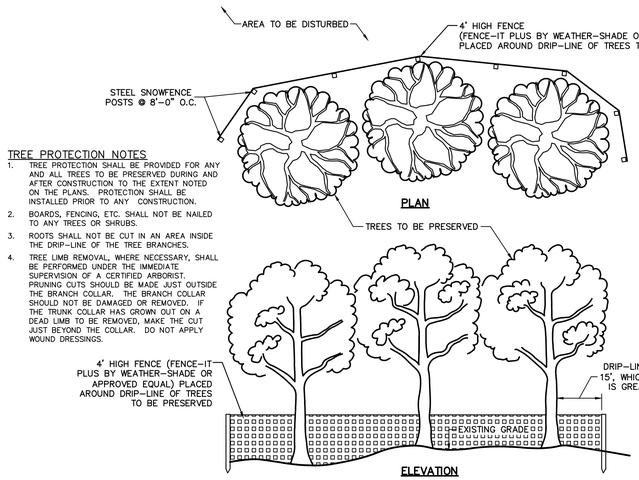
RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PUBLIC ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.

IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50-FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWER, CULVERTS OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

ROCK CONSTRUCTION ENTRANCE - ABACT

NOT TO SCALE

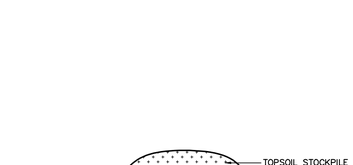


TREE PROTECTION NOTES

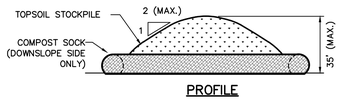
1. TREE PROTECTION SHALL BE PROVIDED FOR ANY AND ALL TREES TO BE PRESERVED DURING AND AFTER CONSTRUCTION TO THE EXTENT NOTED ON THE PLANS. PROTECTION SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION.
2. BOARDS, FENCING, ETC. SHALL NOT BE NAILED TO ANY TREES OR SHRUBS.
3. ROOTS SHALL NOT BE CUT IN AN AREA INSIDE THE DRIP-LINE OF THE TREE BRANCHES.
4. TREE LIMB REMOVAL, WHERE NECESSARY, SHALL BE PERFORMED UNDER THE IMMEDIATE SUPERVISION OF A CERTIFIED ARBORIST. PRUNING CUTS SHOULD BE MADE JUST OUTSIDE THE BRANCH COLLAR. THE BRANCH COLLAR SHOULD NOT BE DAMAGED OR REMOVED. IF THE TRUNK COLLAR HAS GROWN OUT ON A DEAD LIMB TO BE REMOVED, MAKE THE CUT JUST BEYOND THE COLLAR. DO NOT APPLY WOUND DRESSINGS.

TREE PROTECTION DETAIL

NOT TO SCALE



PLAN VIEW

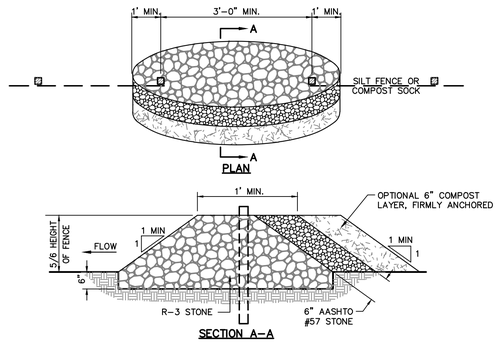


PROFILE

SEDIMENT BARRIER MUST BE PLACED AROUND THE PERIMETER OF ALL STOCKPILES. IMMEDIATELY APPLY TEMPORARY SEEDING & MULCH TO ALL STOCKPILES.

TOPSOIL STOCKPILE AREA DETAIL

NOT TO SCALE

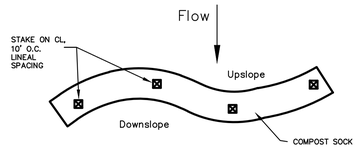


ROCK FILTER OUTLET DETAIL

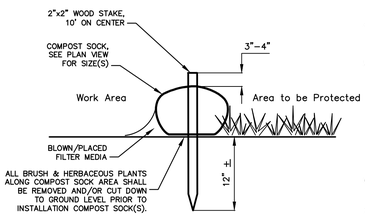
NOT TO SCALE

NOTES:

1. ROCK FILTER OUTLETS TO BE PROVIDED AT ALL EXISTING OR PROPOSED LOW POINTS AND ALL AREAS OF CONCENTRATED FLOWS.
2. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLETS.
3. COMPOST LAYER IS REQUIRED IN ALL HQ AND EV WATERSHEDS.



PLAN VIEW: SLOPE PROTECTION (SILT FENCE)



SECTION VIEW: COMPOST SOCK INSTALLATION

NOTES:

1. COMPOST SOCK SHALL BE "SILTSOXX" AS SUPPLIED BY MCS INC. (1971 N. BLACK HORSE PIKE, WILLIAMSTOWN, NJ 08094, 856-629-1044, www.mcsnjinc.com) OR EQUAL PRODUCT BY OTHER MANUFACTURER.
2. FOR INSTALLATIONS ON EXISTING PAVEMENT, CINDER BLOCKS ON DOWNSTREAM SIDE MAY BE USED IN LIEU OF WOOD STAKES TO ANCHOR THE SOCKS.
3. UPON COMPLETION OF THE PROJECT, COMPOST MATERIAL SHALL BE MIXED WITH ONSITE SOIL/TOPSOIL AND SPREAD ON THE SITE AS DETAILED IN SEEDING AND MULCHING SCHEDULE.
4. SOCK FABRIC SHALL BE 5mil PHOTO-DEGRADABLE, HDPE FOR INSTALLATIONS LESS THAN 9 MONTHS. FOR PROJECTS WITH LONGER DURATIONS, SOCKS SHALL BE MULTI-FILAMENT POLYPROPYLENE FABRIC.
5. INFILL MATERIAL SHALL BE WEED FREE COMPOST DERIVED FROM WELL-DECOMPOSED ORGANIC MATTER. COMPOST SHALL BE PRODUCED USING AEROBIC COMPOSTING PROCESS MEETING CFR 503 REGULATIONS. COMPOST MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS:

ORGANIC MATTER CONTENT	25% - 100%
ORGANIC PORTION	FIBROUS & ELONGATED
pH	5.5 - 8.5
MOISTURE CONTENT	30% - 60%
PARTICLE SIZE	30-50% PASS 3/8" SIEVE
SOLUBLE SALT	5.0 dS/m MAXIMUM

6. COMPOST SOCKS SHALL BE PLACED AT LEVEL GRADE AND BOTH ENDS EXTENDED 8' MIN. UP SLOPE AT 45° ANGLE.
7. ACCUMULATED SEDIMENT SHALL BE REMOVED WHENIT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED OF IN APPROVED UPLAND AREA.

COMPOST SOCK "SILT FENCE" DETAIL

NOT TO SCALE

EROSION & SEDIMENT CONTROL NOTES

1. BEFORE EARTH DISTURBANCES BEGIN, THE LANDOWNER OR HIS DESIGNATED REPRESENTATIVE IS ADVISED TO BECOME FAMILIAR WITH THE PROVISIONS OF APPENDIX 64, 'EROSION CONTROL RULES AND REGULATIONS,' TITLE 25, PART 1, DEPT. OF ENVIRONMENTAL PROTECTION, SUBPART C-PROTECTION OF NATURAL RESOURCES, ARTICLE III- WATER RESOURCES, CHAPTER 102-EROSION CONTROL AND WITH THE "EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL" BY THE COMMONWEALTH OF PA, DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2000 OR LATEST EDITION.
2. AT LEAST 3 WORKING DAYS BEFORE STARTING ANY EARTH DISTURBANCE, THE LANDOWNER OR HIS DESIGNATED REPRESENTATIVE SHALL NOTIFY BUCKS COUNTY CONSERVATION DISTRICT. AT LEAST 3 DAYS BEFORE EARTH DISTURBANCE BEGINS, THE CONTRACTOR SHALL CONTACT THE PA ONE-CALL SYSTEM TO OBTAIN INFORMATION ON BURIED UTILITY LOCATIONS.
3. COPIES OF THESE PLANS MUST BE AVAILABLE ON SITE THROUGHOUT CONSTRUCTION.
4. ANY REVISIONS TO THIS PLAN, OR TO ANY OTHER PLANS THAT MAY AFFECT IT, MUST HAVE PRIOR APPROVAL OF THE BUCKS COUNTY CONSERVATION DISTRICT.
5. THE CONTRACTOR SHALL ASSURE THAT AN APPROVED EROSION & SEDIMENT CONTROL PLAN IS BEING IMPLEMENTED AND MAINTAINED FOR ALL OFFSITE BORROW OR SPOIL SITES.
   A. ALL FILL MATERIALS TO BE USED ON THIS SITE SHALL BE CLEAN FILL UNLESS OTHERWISE APPROVED BY THE MUNICIPALITY AND THE CONSERVATION DISTRICT. THE CONTRACTOR SHALL BE RESPONSIBLE TO PERFORM DUE DILIGENCE IN DETERMINING THAT FILL IS CLEAN.
   B. INVESTIGATIVE TECHNIQUES SHALL INCLUDE, BUT ARE NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS.
6. THE LANDOWNER OR HIS DESIGNATED REPRESENTATIVE SHALL ASSURE THAT THE APPROVED EROSION & SEDIMENT CONTROL PLAN IS PROPERLY IMPLEMENTED.
7. UNTIL THE SITE IS STABILIZED, THE LANDOWNER OR HIS DESIGNATED REPRESENTATIVE SHALL ENSURE THAT ALL EROSION AND SEDIMENT CONTROL DEVICES ARE MAINTAINED PROPERLY. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING MUST BE PERFORMED IMMEDIATELY.
8. FOR PROJECTS THAT REQUIRE **NPDES PERMIT,** LANDOWNER OR HIS DESIGNATED REPRESENTATIVE SHALL MAINTAIN AND MAKE AVAILABLE TO THE BUCKS COUNTY CONSERVATION DISTRICT COMPLETE, WRITTEN INSPECTION LOGS OF THE ABOVE NOTED INSPECTION AND MAINTENANCE.
9. CONCRETE WASHOUT AREA SHALL BE PROVIDED FOR CLEANING OF CHUTES, MIXERS, AND HOPPERS OF DELIVERY VEHICLES. NO WASH WATER FROM THESE VEHICLES SHALL BE ALLOWED TO ENTER ANY SURFACE WATERS. WASHOUT FACILITIES SHALL NOT BE LOCATED WITHIN 50 FEET OF STORM DRAINS, OPEN DITCHES, INFILTRATION FACILITIES OR SURFACE WATERS.
10. SEEDING, MULCHING AND FERTILIZING SHALL BE IN ACCORDANCE WITH THE SEEDING AND MULCHING SCHEDULE.
11. UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE MEASURES TO ADDRESS SAID CIRCUMSTANCES.
12. ANY SEDIMENT OR MUD THAT IS TRACKED ONTO THE PUBLIC ROADWAY MUST BE CLEANED OFF IMMEDIATELY BY BROOMING AND/OR SHOVELING TO THE SATISFACTION OF THE TOWNSHIP AT THE EXPENSE OF THE DEVELOPER AND/OR RESPONSIBLE CONTRACTOR. USE OF A BACKHOE BUCKET TO SCRAPE ROADWAY SURFACE IS PROHIBITED. WHERE SAND AND/OR SEDIMENT IS CAUSING SLICK OR HAZARDOUS CONDITIONS, ROADWAY SURFACE SHALL BE PRESSURE WASHED TO REMOVE THE CONDITION. ALL SEDIMENT LADEN WATER MUST BE FILTERED IN A MANNER SATISFACTORY TO THE BUCKS COUNTY CONSERVATION DISTRICT BEFORE ENTERING STORM SEWERS AND/OR DRAINAGE CHANNELS.
13. NO SEDIMENT OR SEDIMENT LADEN WATER MUST BE ALLOWED TO LEAVE THE SITE/PROPERTY WITHOUT FIRST BEING FILTERED TO THE SATISFACTION OF BUCKS COUNTY CONSERVATION DISTRICT. ANY PUMPED WATER MUST BE DIRECTED TO A FILTER BAG DEVICE DISCHARGING OVER NON-DISTURBED AREAS.
14. THE SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THIS PLAN HAVE BEEN PREPARED IN ACCORDANCE WITH REQUIREMENTS OF THE BUCKS COUNTY CONSERVATION DISTRICT. GILMORE AND ASSOCIATES DOES NOT TAKE ANY RESPONSIBILITY IN OBSERVING AND CERTIFYING THE CONSTRUCTION OF THESE FACILITIES UNLESS REQUESTED SPECIFICALLY BY THE OWNER AND/OR CONTRACTOR. THEREFORE, GILMORE AND ASSOCIATES DOES NOT ACCEPT ANY RESPONSIBILITY FOR DAMAGES AS A RESULT OF IMPROPER CONSTRUCTION AND/OR MAINTENANCE OF FACILITIES DURING CONSTRUCTION.
15. ACCUMULATED SEDIMENTS REMOVED FROM ANY AND ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES. REPLACED SOILS SHALL BE SEEDED AND MULCHED IMMEDIATELY.
16. PROCEDURES WHICH ENSURE THAT THE PROPER MEASURES FOR THE RECYCLING OR DISPOSAL OF MATERIALS ASSOCIATED WITH OR FROM THE PROJECT SITE WILL BE UNDERTAKEN IN ACCORDANCE WITH DEP'S SOLID WASTE MANAGEMENT REGULATIONS, AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED OR DISCHARGED AT THE SITE.
17. **CONTRACTOR SHALL FOLLOW THE PROCEDURES OUTLINED BY THE APPROVED EROSION & SEDIMENT CONTROL PLAN AND THE SEQUENCE OF CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE TOWNSHIP ENGINEER AND THE BUCKS COUNTY CONSERVATION DISTRICT.**

MAINTENANCE OF FACILITIES

1. COMPOST FILTER SOCKS SHOULD BE INSPECTED AND MAINTAINED ON A DAILY BASIS.
2. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RAIN FALL EVENT OF 1/4" OR MORE AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF E&S CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS OR MODIFICATIONS OF INSTALLED MEASURES WILL BE REQUIRED.
3. CONTRACTOR SHALL MAINTAIN AND MAKE AVAILABLE TO THE BUCKS COUNTY CONSERVATION DISTRICT COMPLETE, WRITTEN INSPECTION LOGS OF THE ABOVE NOTED INSPECTION AND MAINTENANCE.
4. SEEDING, MULCHING AND FERTILIZING SHALL BE IN ACCORDANCE WITH THE SEEDING AND MULCHING SCHEDULE.
5. SHOULD THE TREE PROTECTION FENCING BE DISTURBED AT ANY POINT, IT SHALL BE REPLACED IMMEDIATELY.
6. THE CONTRACTOR SHALL HAVE AVAILABLE WATER TRUCKS OR OTHER MEANS OF CONTROLLING EXCESSIVE DUST AND AIRBORNE DEBRIS.
7. ALL AREAS OF CONCENTRATED SURFACE DRAINAGE SHALL BE SEEDED AND MULCHED, AND PROTECTED WITH TEMPORARY TURF REINFORCEMENT MAT: NORTH AMERICAN GREEN #SC150 (OR EQUAL). IF AREAS ARE TO BE SODDED, TURF REINFORCEMENT IS NOT REQUIRED.
8. AFTER THE WORK IS COMPLETED, MONTHLY INSPECTIONS WILL BE MADE. AN INSPECTION OF ALL FACILITIES WILL BE MADE AFTER EVERY STORM TO DETERMINE THEIR RESISTANCE TO DRIVING RAINS AND ACCUMULATED RUNOFF.
9. SEEDED AREAS THAT HAVE WASHED AWAY SHALL BE FILLED AND GRADED AS NECESSARY AND THEN RESEEDED. A BURLAP OR STRAW COVER WILL BE APPLIED TO RETAIN THE SEED UNTIL IT HAS A CHANCE TO ROOT PROPERLY.
10. THE ABOVE PROCEDURE SHALL BE REPEATED AFTER EACH SIZABLE STORM UNTIL NO MORE SIGNS OF EROSION ARE EVIDENT. AT MONTHLY INTERVALS THEREAFTER, INSPECTIONS AND NECESSARY CLEANING WILL BE DONE. TRASH THAT IS REMOVED FROM ANY OF THE CONTROL DEVICES SHALL BE DISPOSED OF AT AN APPROVED DISPOSAL AREA. SILT THAT HAS ACCUMULATED SHALL BE REMOVED AND ALLOWED TO DRY AND USED AS FILL WHEREVER REQUIRED ON THE SITE.

SEEDING AND MULCHING SCHEDULE

1. SITE PREPARATION, STABILIZATION, AND MAINTENANCE SHALL BE PERFORMED IN ACCORDANCE WITH PENN STATE UNIVERSITY'S "THE AGRONOMY GUIDE" AND PENNDOT FORM 408 SPECIFICATIONS' MOST RECENT ADDITION.

   TEMPORARY SEEDING SPECIFICATION FORMULA 1: OATS IN SPRING, CEREAL RYE IN FALL

   PERMANENT SEEDING SPECIFICATION FORMULA B - RESIDENTIAL MIX
   - 50% KENTUCKY BLUEGRASS MIXTURE
   - 30% CREEPING RED FESCUE OR CHEWING FESCUE
   - 20% PERENNIAL RYEGRASS MIXTURE

   STEEP SLOPE SEEDING SPECIFICATION FORMULA C - CONSERVATION MIX

50%	NURSERY CROP: OATS IN SPRING, CEREAL RYE IN FALL				
10%	LITTLE BLUESTEM	7.5%	SHOWY TICK-TREFOIL	13.3%	PARTRIDGE PEA
10%	BIG BLUESTEM	3%	CANADA WILDRYE	3.67%	BLACK-EYED SUSAN
2%	PURPLE TOP	0.5%	SMOOTH BLUE ASTER		

   SEEDING RATE FOR THE ABOVE MIXTURES:
   - 6 LBS/1,000 SY FOR TEMPORARY SEEDING
   - 42 LBS/1,000 SY FOR PERMANENT SEEDING
   - 12 LBS/1,000 SY FOR STEEP SLOPE SEEDING (SEE NOTE 5)

   OTHER SEED MIXES, AS MAY BE SPECIFIED ON LANDSCAPE PLANS, SHALL MEET THE REQUIREMENTS AND SEEDING RATES NOTED ON THAT PLAN. THE ABOVE SPECIFICATIONS ARE TO BE USED WHERE SPECIFIC SEED MIXES ARE NOT NOTED.
2. HAY OR STRAW MULCH SHALL BE APPLIED AT THE RATES OF AT LEAST 3.0 TONS PER ACRE. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN. HAY OR STRAW MULCH SHALL BE ANCHORED WITH MULCH CONTROL NETTING OR OTHER METHODS TO PREVENT BEING WINDBLOWN.
3. PULVERIZED AGRICULTURAL LIMESTONE AND COMMERCIAL FERTILIZER SHALL BE APPLIED TO ALL DISTURBED AREAS WHICH ARE TO BE SEEDED EXCEPT FOR TEMPORARY SEED AREAS ARE THE FOLLOWING RATES:
   - PULVERIZED AGRICULTURAL LIMESTONE - 90 LBS/1,000 SF
   - 10-20-20 ANALYSIS COMMERCIAL FERTILIZER - 20 LBS/1,000 SF

   NOTE: APPLICATION OF LIME AND FERTILIZER FOR TEMPORARY SEEDING IS UNNECESSARY AND ONLY SERVES TO CONTRIBUTE TO AN OVERABUNDANCE OF NUTRIENT POLLUTION IN THE WATERSHED.
4. PERMANENT SEEDING SHALL TAKE PLACE FROM MARCH 15 TO JUNE 1 OR FROM AUGUST 1 TO OCTOBER 15. IF COMPLETED AT IN OTHER SEASONS, AREAS SHALL RECEIVE TEMPORARY SEEDING AND 3.0 TONS PER ACRE MULCH.
5. STEEP SLOPE AREAS, CONSIDERED SLOPES GREATER THAN 3:1, SHALL BE PROTECTED FROM EROSION BY ONE OF THE FOLLOWING METHODS. MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED FOR PARTICULAR METHOD AND SPECIFIC SITE CONDITIONS.

   FLEXIBLE GROWTH MEDIUM: SHALL BE HYDRAULICALLY APPLIED COMBINATION OF SEED, MULCH, AND EROSION PROTECTION MATERIAL SIMILAR TO "FLEXTERRA" BY ACF OR EQUAL BY OTHER MANUFACTURER.

   EROSION CONTROL MATTING: SHALL BE TEMPORARY MATTING SIMILAR TO SC350 BY NORTH AMERICAN GREEN OR EQUAL BY OTHER MANUFACTURER.

SEEDING & MULCHING SCHEDULE ABOVE IS FOR GENERAL LAWN AREAS. SEE STREAM RESTORATION AND LANDSCAPE PLANS FOR ADDITIONAL SEED MIXES.

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
CORPORATE HEADQUARTERS
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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
Sharon K. Dotts
ENGINEER
No. PE-045305-E

REV.	DESCRIPTION	DATE	BY
1	REVISED TO ADD AREA 2 NORTH TO PLANS	6/10/25	SKD

PERMIT PLANS

PLEASANT SPRING CREEK REHABILITATION

PERKASIE BOROUGH, BUCKS COUNTY, PENNSYLVANIA

EROSION-SEDIMENT CONTROL NOTES & DETAILS

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

PROJECT No.:	1403043
OWNERS INFO:	PERKASIE BOROUGH 620 W CHESTNUT ST, BOX 96 PERKASIE, PA 18944 215-257-5065
MUNICIPAL FILE No.:	1403043
TAX MAP PARCEL No.:	33-09-56, 33-10-24, 33-10-04, 33-10-07, 33-09-56-1
TOTAL AREA: PER LOD	TOTAL LOTS: 5
DATE: 7/02/24	SCALE: N.T.S.
DRAWN BY: XXX	CHECKED BY: XXX
SHEET NO.:	10 OF 10