

**PRP Report and Strategy Plan for Willistown Township
MS4 Individual Permit Application 2018**

Appendix F

Land Development Plans

**PRP Report and Strategy Plan for Willistown Township
MS4 Individual Permit Application 2018**

Troutbeck Farms Subdivision
Riparian Forest Buffer Plans
w/ Stormwater Report Data

dH Enterprises

2815 Penn Avenue
 West Lawn, PA 19609
 Phone: 610-927-4242

Project: Troutbeck Farms
 Order No.: 17-032
 Calc. by: MDH
 Date: 2/1/2021

Drainage Area Summary Table - Post-Development

Total Drainage Area
By Point of Discharge

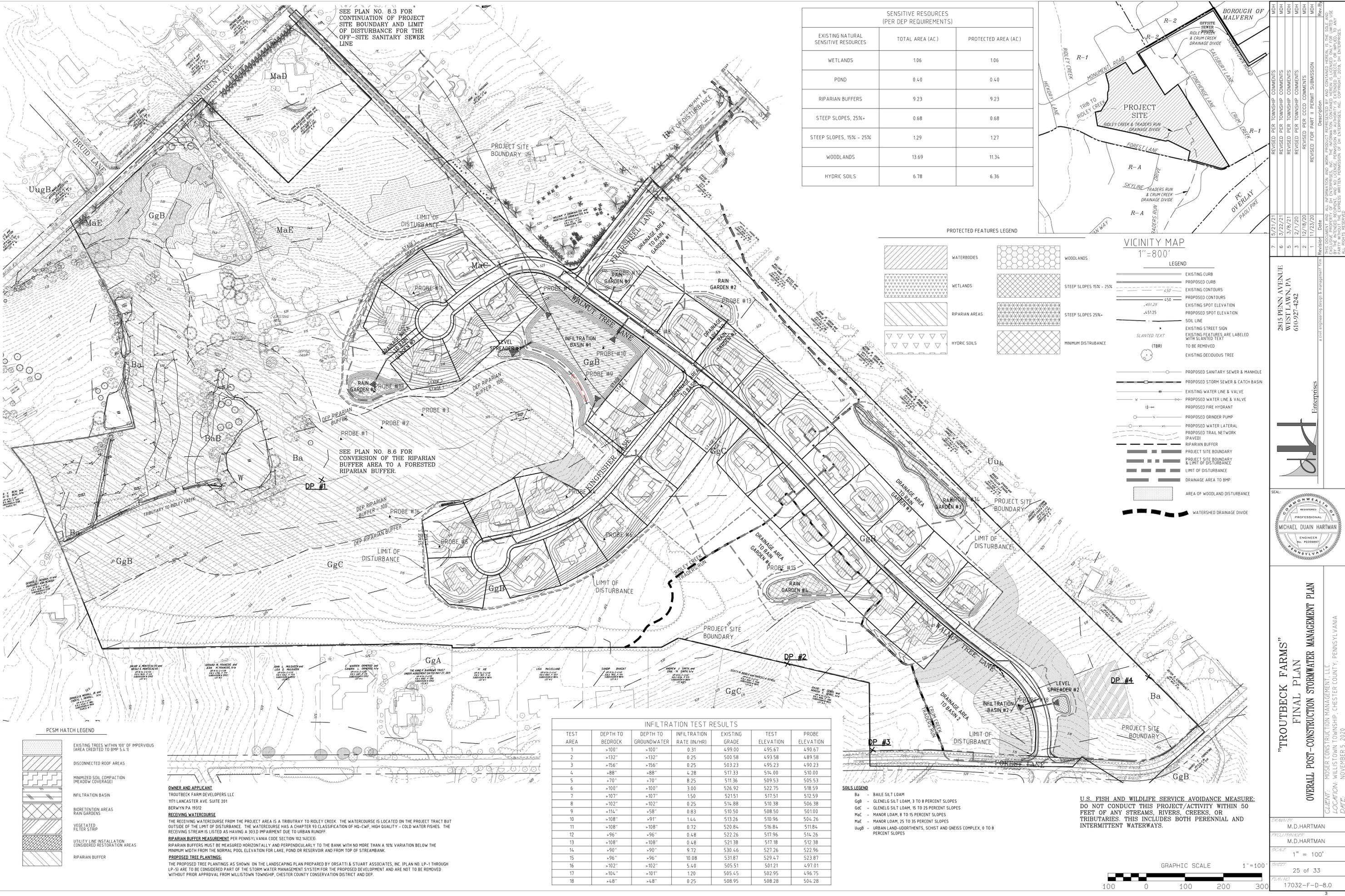
	DP #1**	DP #2**	DP #3	DP #4
NPDES Permit Area	49.27	4.60	0.00	10.77
LOD Area	17.71	1.21	0.00	5.64
Meadow HSG B	0.00	0.00	0.00	0.00
Meadow HSG C	0.10	0.00	0.00	0.06
Meadow HSG D	0.00	0.00	0.00	0.00
Wooded HSG B	0.00	0.00	0.00	0.00
Wooded HSG C	0.00	0.00	0.00	0.00
Wooded HSG D	0.00	0.00	0.00	0.00
Grass HSG B	2.22	0.07	0.00	0.00
Grass HSG C	4.00	0.54	0.00	1.59
Grass HSG D	0.00	0.00	0.00	0.17
Impervious	1.88	0.00	0.00	0.67
On-Lot Impervious*	2.66	0.17	0.00	0.81
On-Lot Grass* HSG B	3.16	0.00	0.00	0.01
On-Lot Grass* HSG C	3.04	0.40	0.00	1.88
Total	17.05	1.18	0.00	5.18
CN_{avg}	76	77	0	81

By Watershed**

	1	2	3	Total
POD 's	1	2 & 3	4	
NPDES Permit Area	49.27	4.60	10.77	64.64
LOD Area	17.71	1.21	5.64	24.56
Meadow HSG B	0.00	0.00	0.00	0.00
Meadow HSG C	0.10	0.00	0.06	0.16
Meadow HSG D	0.00	0.00	0.00	0.00
Wooded HSG B	0.00	0.00	0.00	0.00
Wooded HSG C	0.00	0.00	0.00	0.00
Wooded HSG D	0.00	0.00	0.00	0.00
Grass HSG B	5.38	0.07	0.01	5.46
Grass HSG C	7.04	0.94	3.47	11.45
Grass HSG D	0.00	0.00	0.17	0.17
Impervious	4.53	0.17	1.48	6.18
Total	17.05	1.18	5.18	23.42

* On-lot Impervious is based on allowable coverage (30%) per Zoning Ordinance

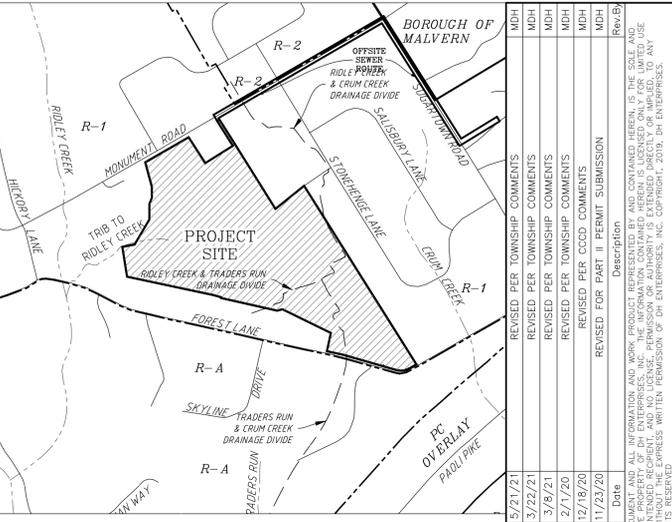
** Only drainage areas within the LOD has been included in the watershed summary



SEE PLAN NO. B.3 FOR CONTINUATION OF PROJECT SITE BOUNDARY AND LIMIT OF DISTURBANCE FOR THE OFF-SITE SANITARY SEWER LINE

SEE PLAN NO. B.6 FOR CONVERSION OF THE RIPARIAN BUFFER AREA TO A FORESTED RIPARIAN BUFFER.

SENSITIVE RESOURCES (PER DEP REQUIREMENTS)		
EXISTING NATURAL SENSITIVE RESOURCES	TOTAL AREA (AC.)	PROTECTED AREA (AC.)
WETLANDS	1.06	1.06
POND	0.40	0.40
RIPARIAN BUFFERS	9.23	9.23
STEEP SLOPES, 25%+	0.68	0.68
STEEP SLOPES, 15% - 25%	1.29	1.27
WOODLANDS	13.69	11.34
HYDRIC SOILS	6.78	6.36



PROTECTED FEATURES LEGEND

- WATERBODIES
- WETLANDS
- RIPARIAN AREAS
- HYDRIC SOILS
- WOODLANDS
- STEEP SLOPES 15% - 25%
- STEEP SLOPES 25%+
- MINIMUM DISTURBANCE

VICINITY MAP 1"=800'

LEGEND

- EXISTING CURB
- PROPOSED CURB
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- SOIL LINE
- EXISTING STREET SIGN
- EXISTING FEATURES ARE LABELED WITH SLANTED TEXT TO BE REMOVED
- EXISTING DECIDUOUS TREE
- PROPOSED SANITARY SEWER & MANHOLE
- PROPOSED STORM SEWER & CATCH BASIN
- EXISTING WATER LINE & VALVE
- PROPOSED WATER LINE & VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED GRINDER PUMP
- PROPOSED WATER LATERAL
- PROPOSED TRAIL NETWORK (PAVED)
- RIPARIAN BUFFER
- PROJECT SITE BOUNDARY
- PROJECT SITE BOUNDARY & LIMIT OF DISTURBANCE
- LIMIT OF DISTURBANCE
- DRAINAGE AREA TO BMP
- AREA OF WOODLAND DISTURBANCE
- WATERSHED DRAINAGE DIVIDE

INFILTRATION TEST RESULTS						
TEST AREA	DEPTH TO BEDROCK	DEPTH TO GROUNDWATER	INFILTRATION RATE (IN/HR)	EXISTING GRADE	TEST ELEVATION	PROBE ELEVATION
1	>100"	>100"	0.31	499.00	495.67	490.67
2	>132"	>132"	0.25	500.58	493.58	489.58
3	>156"	>156"	0.25	503.23	495.23	490.23
4	>88"	>88"	4.28	517.33	514.00	510.00
5	>70"	>70"	8.25	511.36	509.53	505.53
6	>100"	>100"	3.00	526.92	522.75	518.59
7	>107"	>107"	1.50	521.51	517.51	512.59
8	>102"	>102"	0.25	514.88	510.38	506.38
9	>114"	>58"	0.83	510.50	508.50	501.00
10	>108"	>91"	1.44	513.26	510.96	504.26
11	>108"	>108"	0.72	520.84	516.84	511.84
12	>96"	>96"	0.48	522.26	517.96	514.26
13	>108"	>108"	0.48	521.38	517.18	512.38
14	>90"	>90"	9.72	530.46	527.26	522.96
15	>96"	>96"	10.08	531.87	529.47	523.87
16	>102"	>102"	5.40	505.51	501.21	497.01
17	>104"	>101"	1.20	505.45	502.95	496.75
18	>48"	>48"	0.25	508.95	508.28	504.28

PCSM HATCH LEGEND

- EXISTING TREES WITHIN 100' OF IMPERVIOUS AREA (CREDITED TO BMP 5-A-1)
- DISCONNECTED ROOF AREAS
- MINIMIZED SOIL COMPACTION (MEADOW COVERAGE)
- INFILTRATION BASIN
- BIORETENTION AREAS
- RAIN GARDENS
- VEGETATED FILTER STRIP
- UTILITY LINE INSTALLATION CONSIDERED RESTORATION AREAS
- RIPARIAN BUFFER

OWNER AND APPLICANT
 TROUTBECK FARM DEVELOPERS LLC
 1071 LANCASTER AVE. SUITE 201
 BERNYMN PA 19312

RECEIVING WATERCOURSE
 THE RECEIVING WATERCOURSE FROM THE PROJECT AREA IS A TRIBUTARY TO RIDLEY CREEK. THE WATERCOURSE IS LOCATED ON THE PROJECT TRACT BUT OUTSIDE OF THE LIMIT OF DISTURBANCE. THE WATERCOURSE HAS A CHAPTER 93 CLASSIFICATION OF HO-CWF, HIGH QUALITY - COLD WATER FISHES. THE RECEIVING STREAM IS LISTED AS HAVING A 303 D IMPAIRMENT DUE TO URBAN RUNOFF.

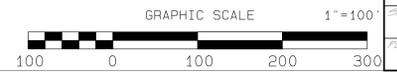
RIPARIAN BUFFER MEASUREMENT PER PENNSYLVANIA CODE SECTION 102.14(d)(3)
 RIPARIAN BUFFERS MUST BE MEASURED HORIZONTALLY AND PERPENDICULARLY TO THE BANK WITH NO MORE THAN A 10% VARIATION BELOW THE MINIMUM WIDTH FROM THE NORMAL POOL ELEVATION FOR LAKE, POND OR RESERVOIR AND FROM TOP OF STREAMBANK.

PROPOSED TREE PLANTINGS:
 THE PROPOSED TREE PLANTINGS AS SHOWN ON THE LANDSCAPING PLAN PREPARED BY ORSATI & STUART ASSOCIATES, INC. (PLAN NO. LP-1 THROUGH LP-5) ARE TO BE CONSIDERED PART OF THE STORM WATER MANAGEMENT SYSTEM FOR THE PROPOSED DEVELOPMENT AND ARE NOT TO BE REMOVED WITHOUT PRIOR APPROVAL FROM WILLISTOWN TOWNSHIP, CHESTER COUNTY CONSERVATION DISTRICT AND DEP.

SOILS LEGEND

- Ba - BAILE SILT LOAM
- GgB - GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES
- GgC - GLENELG SILT LOAM, 15 TO 25 PERCENT SLOPES
- MaE - MAJOR LOAM, 8 TO 15 PERCENT SLOPES
- MaC - MAJOR LOAM, 25 TO 35 PERCENT SLOPES
- UuB - URBAN LAND-UDORTHENTS, SCHIST AND GNEISS COMPLEX, 0 TO 8 PERCENT SLOPES

U.S. FISH AND WILDLIFE SERVICE AVOIDANCE MEASURE:
 DO NOT CONDUCT THIS PROJECT/ACTIVITY WITHIN 50 FEET OF ANY STREAMS, RIVERS, CREEKS, OR TRIBUTARIES. THIS INCLUDES BOTH PERENNIAL AND INTERMITTENT WATERWAYS.



2815 PENN AVENUE
 WEST LAWN, PA
 610-927-4242

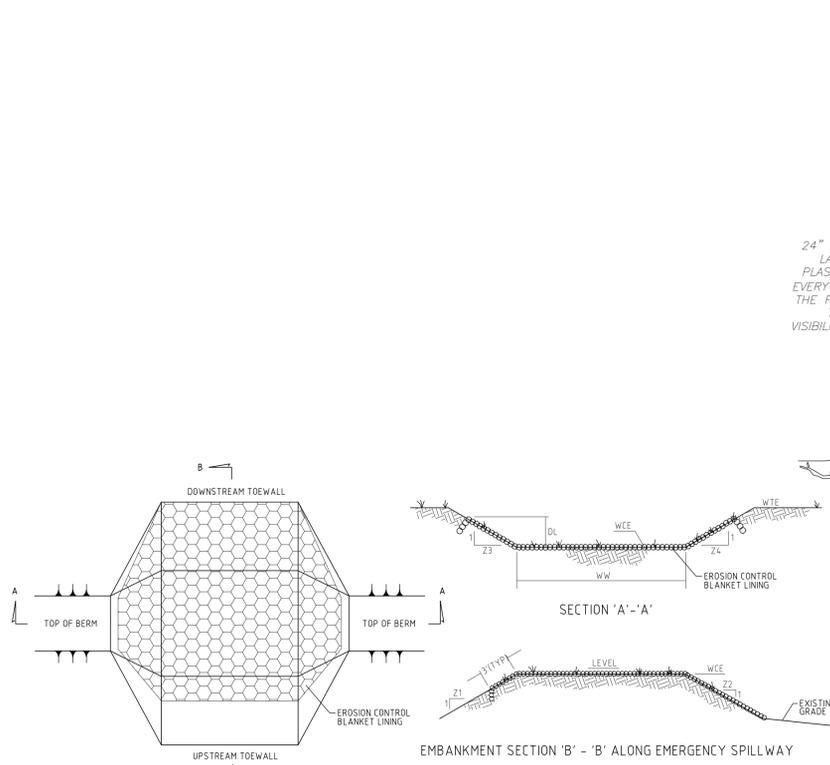
Enterprises

SEAL: MICHAEL DUAIN HARTMAN
 PROFESSIONAL ENGINEER
 PENNSYLVANIA

"TROUTBECK FARMS"
 FINAL PLAN
 OVERALL POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN

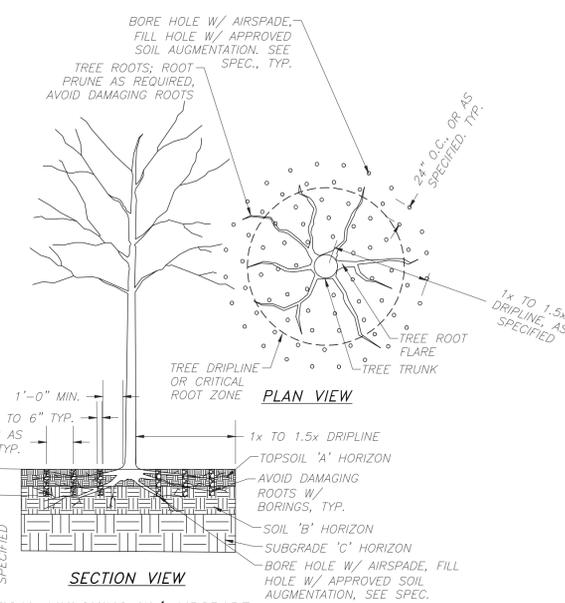
CLIENT: MOSER CONSTRUCTION MANAGEMENT, LLC
 LOCATION: WILLISTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA
 DATE: NOVEMBER 5, 2020

DRAWN BY: M.D.HARTMAN
 PROJECT MANAGER: M.D.HARTMAN
 SCALE: 1" = 100'
 SHEET: 25 OF 33
 PLAN NO: 17032-F-D-8.0



- NOTES:
- SEE SPECIFICATIONS FOR ADDITIONAL TREE PROTECTION REQUIREMENTS.
 - IF THERE IS NO EXISTING IRRIGATION, SEE SPECIFICATIONS FOR WATERING REQUIREMENTS.
 - NO PRUNING SHALL BE PERFORMED EXCEPT BY APPROVED ARBORIST.
 - NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL.
 - SEE SITE PREPARATION PLAN FOR ANY MODIFICATIONS WITH THE TREE PROTECTION AREA.

TREE PROTECTION DETAIL

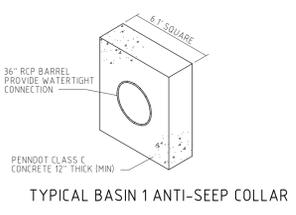


- NOTES:
- DEPTH AND SPACING OF BORE HOLES TO BE DETERMINED BY LANDSCAPE ARCHITECT AND/OR CERTIFIED ARBORIST BASED ON INITIAL SITE INVESTIGATION. SPECIFIED BORE HOLE DEPTH MAY RANGE FROM 18" TO 36" AND SHOULD BE SPECIFIED BASED ON INDIVIDUAL SITE CONDITIONS AND TREE HEALTH CARE NEEDS.
 - USE AIRSPADE TO BARE-ROOT IMPACTED PLANTINGS DURING SOIL AERATION, STOCKPILE, PROTECT AND WATER PLANTS AS NECESSARY, AND ENSURE PROPER REPLANTING OR REPLACEMENT AT COMPLETION OF WORK.
 - ALL WORK TO BE DONE UNDER THE SUPERVISION OF CERTIFIED CONTRACTOR OR APPROVED CONTRACTOR. ENSURE THAT TREES ARE IN GOOD HEALTH AND NOT EXPERIENCING UNUSUAL STRESS PRIOR TO COMMENCING WORK.
 - PROTECT TREES AND TREE ROOTS THROUGHOUT CONSTRUCTION. AIRSPADE OR HAND DIG ONLY WITHIN THE CRITICAL ROOT ZONE. DOCUMENT AND ASSESS ALL DAMAGES TO TREES AT COMMENCEMENT AND THROUGH COMPLETION OF WORK. DAMAGES TO BE COMPENSATED BASED UPON PRE-AGREED TERMS. SEE SPECIFICATIONS.
 - ENSURE PROPER SOIL MOISTURE LEVELS THROUGH DURATION OF WORK. SOIL MUST BE NEAR FIELD CAPACITY, BUT NOT SATURATED, AND PASS A FIELD MOISTURE TEST PRIOR TO USE OF AN AIRSPADE. HAND WATER TREES AS NECESSARY BEFORE COMMENCEMENT OF WORK AND WITHIN 24 HOURS OF COMPLETION. COVER BARE ROOTS AND WATER AS NECESSARY DURING WORK.
 - ARBORIST TO EVALUATE THE OVERALL HEALTH OF TREES, AND TO MAKE A REPORT AND RECOMMENDATIONS FOR ADDITIONAL TREE CARE BEFORE, DURING, AND AFTER THE COMPLETION OF WORK.
 - CALL 811 OR CONTACT THE APPROPRIATE LOCAL AGENCIES TO LOCATE EXISTING UTILITIES PRIOR TO ANY EXCAVATION. PROTECT EXISTING UTILITIES THROUGHOUT THE CONSTRUCTION PROCESS AND REPAIR ANY DAMAGE TO THESE AT NO COST TO THE OWNER.
 - SEE SPECIFICATIONS FOR ANY ADDITIONAL INFORMATION, ALSO SEE MANUFACTURER'S GUIDE FOR PROPER SAFETY AND OPERATION.

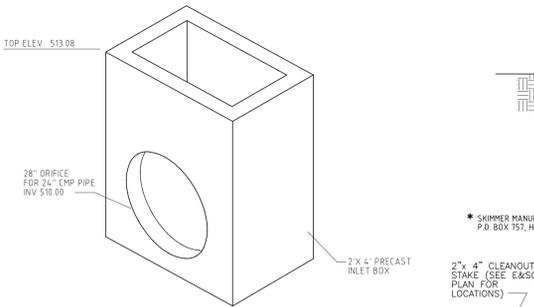
VERTICAL MULCHING W/ AIRSPADE

BASIN	WEIR			ECB LINING		
	Z1	Z2	Z3	DI	DL	Z1
1	3	3	3	515.75	514.50	75
2	3	3	3	515.75	514.50	75
3	3	3	3	515.75	514.50	75

BASIN EMERGENCY SPILLWAY

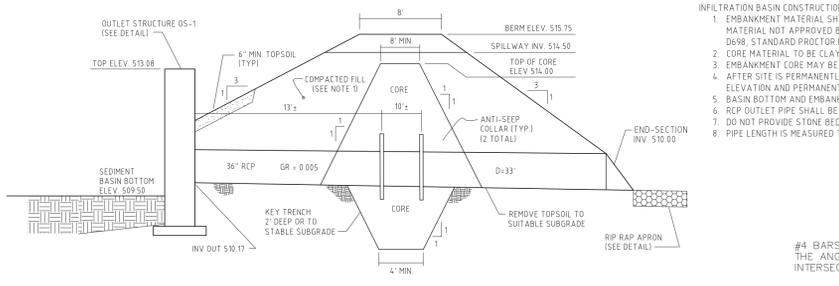


TYPICAL BASIN 1 ANTI-SEEP COLLAR

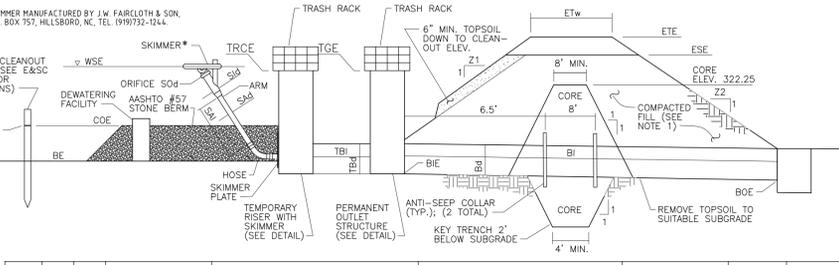


- NOTES:
- PROVIDE MANHOLE STEPS IN ACCORDANCE WITH PennDOT RC-39.
 - DO NOT INSTALL TOP UNIT AT THIS TIME.
 - OUTLET STRUCTURE MANUFACTURED BY TERRE HILL CONCRETE PRODUCTS (800) 242-1509, OR APPROVED EQUAL.

BASIN OUTLET STRUCTURE (OS-1)



SEDIMENT BASIN #1 CROSS-SECTION



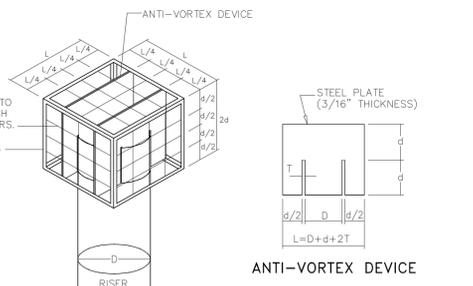
SEDIMENT BASIN CROSS-SECTION ALONG PRINCIPAL SPILLWAY

BASIN NO.	Z1 (FT.)	Z2 (FT.)	PERMANENT OUTLET STRUCTURE TOP OF CRATE ELEV. TGE (FT.)	TEMPORARY RISER		BARREL		EMBANKMENT		EMERGENCY SPILLWAY INV. ELEV. (FT.)	CLEANOUT ELEV. CODE (FT.)	BOTTOM ELEV. BE (FT.)						
				DIA. (IN.)	LENGTH (FT.)	DIA. (IN.)	LENGTH (FT.)	TOP ELEV. (FT.)	TOP WIDTH (FT.)									
1	3	3	513.08**	48	513.08	CMP	6	24	36	510.17	RCP	33	510.00	515.75	8	514.50	510.50	509.50

** SEE TEMPORARY TRASH RACK & ANTI-VORTEX FOR PERMANENT OUTLET STRUCTURE DETAIL

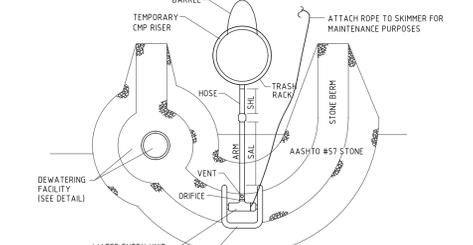
- NOTES:
- SEDIMENT BASINS, INCLUDING ALL APPURTENANCE WORKS, SHALL BE CONSTRUCTED TO THE DETAIL AND DIMENSIONS ON THE E&S PLAN DRAWINGS.
 - AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED TO TOPSOIL TO A DEPTH OF 2 FEET PRIOR TO ANY PLACEMENT AND COMPACTION OF EARTHEN FILL. IN ORDER TO FACILITATE MAINTENANCE AND RESTORATION, THE POOL AREA SHALL BE CLEARED OF ALL BRUSH, TREES AND OBJECTS. MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES AND OTHER OBSTRUCTIVE MATERIALS. THE EMBANKMENT SHALL BE CONSTRUCTED IN LAYERED LIFTS OF NOT MORE THAN 6" TO 9" MAXIMUM ROCK SIZE SHALL BE NO GREATER THAN 2/3 THE LIFT THICKNESS.
 - UPON COMPLETION, THE EMBANKMENT SHALL BE SEEDED, MULCHED, BLANKETED OR OTHERWISE STABILIZED ACCORDING TO THE SPECIFICATIONS OF THE E&S PLAN DRAWINGS. TREES SHALL NOT BE PLANTED ON THE EMBANKMENT.
 - RESPECT ALL SEDIMENT BASINS ON AT LEAST A WEEKLY BASIS AND AFTER EACH RAINFALL EVENT. PROVIDE ACCESS FOR SEDIMENT REMOVAL AND OTHER REQUIRED MAINTENANCE ACTIVITIES. A CLEAN-OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN-OUT ELEVATION ON THE STAKE AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS. DISPOSE OF MATERIALS REMOVED FROM THE BASIN IN A MANNER DESCRIBED IN THE E&S PLAN.
 - BASIN EMBANKMENTS, SPILLWAYS AND OUTLETS SHALL BE INSPECTED FOR EROSION, PIPING AND SETTLEMENT. NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY. DISPLACED RIPRAP WITHIN THE OUTLET ENERGY DISSIPATOR SHALL BE REPLACED IMMEDIATELY.
 - ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED INSIDE THE BASIN BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY. THE DEVICE SHOWN IN THE SEDIMENT BASIN DEWATERING FACILITY DETAIL MAY BE USED TO DEWATER SATURATED SEDIMENT PRIOR TO ITS REMOVAL. ROCK FILTERS SHALL BE ADDED AS NECESSARY.
 - EMBANKMENT MATERIAL SHALL CONSIST OF SUITABLE MATERIAL FREE OF ALL ROOTS, SOIL, FROZEN SOIL, ROCK OVER 4" IN DIAMETER, AND ANY OTHER MATERIAL NOT APPROVED BY THE ENGINEER. FILL SHALL BE COMPACTED IN 8" LIFTS TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY PER ASTM D698, STANDARD PROCTOR. ROCK TO BE PLACED IN A NEW LIFT, THE TOP 3" OF THE PREVIOUS LIFT SHALL BE SCARIFIED.
 - BORE HOLE MATERIAL TO BE CLAYEY SOIL UNIFORM CLASS CL, ML, OR CL-ML COMPACTED TO 95% MAXIMUM DRY DENSITY.
 - EMBANKMENT CORE MAY BE ELIMINATED IF THE ENTIRE EMBANKMENT CONFORMS TO NOTE 2. KEY TRENCH CORE IS STILL REQUIRED.
 - AFTER SITE IS PERMANENTLY STABILIZED, REMOVE SEDIMENT, EXCAVATE TO FINAL SUBGRADE, SPREAD 6" OF TOPSOIL INSIDE BASIN BELOW CLEANOUT ELEVATION AND PERMANENTLY STABILIZE PER SEEDING AND MULCHING SPECIFICATIONS.
 - BASIN BOTTOM AND EMBANKMENT TO BE TOPSOILED AND PERMANENTLY SEEDED AND MULCHED PER SEEDING AND MULCHING SPECIFICATIONS.
 - DO NOT PROVIDE STONE BEDDING OR BACKFILL AROUND THE OUTLET PIPE.
 - PIPE LENGTH IS MEASURED TO THE OUTFALL END OF THE END SECTION, WHERE APPLICABLE.
 - CONSTRUCT THE ANTI-SEEP COLLARS OVER PIPE JOINTS NEAREST THE LOCATION NOTED ABOVE.
 - THE PERMITTEE SHALL BE RESPONSIBLE FOR THE STRUCTURAL STABILITY OF SEDIMENT TRAPS AND FOR THEIR PROTECTION AGAINST UNAUTHORIZED ACTS OF THIRD PARTIES.
 - CLEANOUT STAKES MUST BE PLACED AT HALF DISTANCES FROM POINTS OF CONCENTRATED FLOWS TO SKIMMERS. WHEN SEDIMENT HAS ACCUMULATED TO THE CLEANOUT ELEVATION MARKED ON ANY STAKE, THE SEDIMENT MUST BE REMOVED TO RESTORE TRAP CAPACITY.
 - APPROVAL OF THE USE OF A SKIMMER DOES NOT APPROVE OWNER OR OPERATOR USE OF ANY SKIMMER IN VIOLATION OF ANY PATENT, PATENT RIGHTS AND/OR PATENT LAWS.
 - SEDIMENT TRAPS SHALL BE KEPT FREE OF ALL TRASH, CONCRETE WASH WATER AND OTHER DEBRIS THAT POSE THE POTENTIAL FOR CLOGGING THE TRAP OUTLET STRUCTURES AND/OR POSE THE POTENTIAL FOR POLLUTION TO WATERS OF THE COMMONWEALTH.
 - DO NOT PROVIDE STONE BEDDING OR BACKFILL AROUND THE OUTLET PIPE.
 - SEE OTHER DETAIL SHEET FOR ADDITIONAL PERMANENT DETENTION BASIN CONSTRUCTION DETAILS.

SEDIMENT BASIN TEMPORARY SKIMMER AND PERMANENT OUTLET STRUCTURE

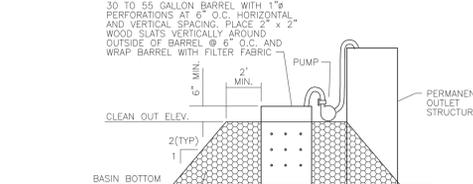


ANTI-VORTEX DEVICE

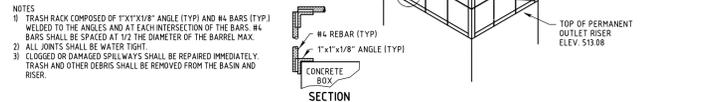
TRASH RACK AND ANTI-VORTEX DEVICE



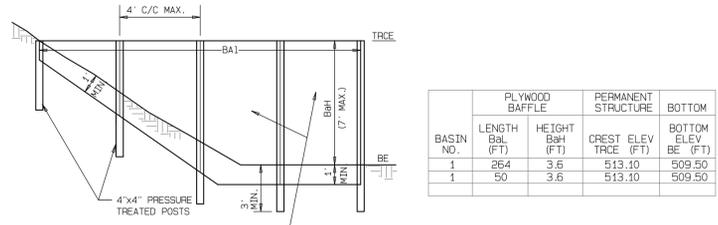
SEDIMENT BASIN SKIMMERS & TEMPORARY CMP RISER



SEDIMENT TRAP DEWATERING FACILITY



TEMPORARY TRASH RACK & ANTI-VORTEX FOR PERMANENT OUTLET STRUCTURE



SEDIMENT BASIN PLYWOOD BAFFLE DETAIL

- NOTES:
- PROVIDE 4x4 POSTS AT ALL SEAMS IN THE PLYWOOD BAFFLE.
 - SEE E&S PLAN FOR LOCATION OF BAFFLES IN BASIN(S).
 - BAFFLES SHALL BE TIED INTO ONE SIDE OF THE BASIN UNLESS SHOWN OTHERWISE ON THE E&S PLAN.
 - DAMAGED OR WARPED BAFFLES SHALL BE REPLACED WITHIN 7 DAYS OF INSPECTION.
 - BAFFLES REQUIRING SUPPORT POSTS SHALL NOT BE INSTALLED IN BASINS REQUIRING IMPERVIOUS LINERS.
 - IN POOLS WITH DEPTHS EXCEEDING 7' THE TOP OF THE PLYWOOD BAFFLE DOES NOT NEED TO EXTEND TO THE TEMPORARY RISER CREST ELEVATION.

BASIN NO.	Z1 (FT.)	Z2 (FT.)	BARREL DIA. (IN.)	CLEANOUT ELEV. (FT.)	RISER DIA. (IN.)	ORIFICE DIA. (IN.)	SKIMMER (SEE NOTES)		TUBE		TEMP RISER CREST ELEV. (FT.)
							ARM DIA. (IN.)	ARM LENGTH (FT.)	INV. ELEV. (FT.)	MATL.	
1	3	3	36	510.17	36	28	3	3	3	3	513.08

SEDIMENT BASIN TEMPORARY SKIMMER AND PERMANENT OUTLET STRUCTURE

2815 PENN AVENUE
WEST LAWN, PA
610-927-4242

REVISIONS:

NO.	DATE	DESCRIPTION
7	5/21/21	REVISED PER TOWNSHIP COMMENTS
6	3/22/21	REVISED PER TOWNSHIP COMMENTS
5	3/8/21	REVISED PER TOWNSHIP COMMENTS
4	2/1/20	REVISED PER TOWNSHIP COMMENTS
3	2/1/20	REVISED PER TOWNSHIP COMMENTS
2	12/18/20	REVISED PER TOWNSHIP COMMENTS
1	11/23/20	REVISED FOR PART II PERMIT SUBMISSION

DATE: 11/23/20

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SCALE: ---

SHEET: 23 of 33

PLAN NO: 17032-F-0-7.5

PROJECT: "TROUTBECK FARMS" FINAL PLAN E&S DETAILS

CLIENT: MOSER CONSTRUCTION MANAGEMENT, LLC
LOCATION: WILLISTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA
DATE: NOVEMBER 5, 2020

DRAWN BY: M.D. HARTMAN

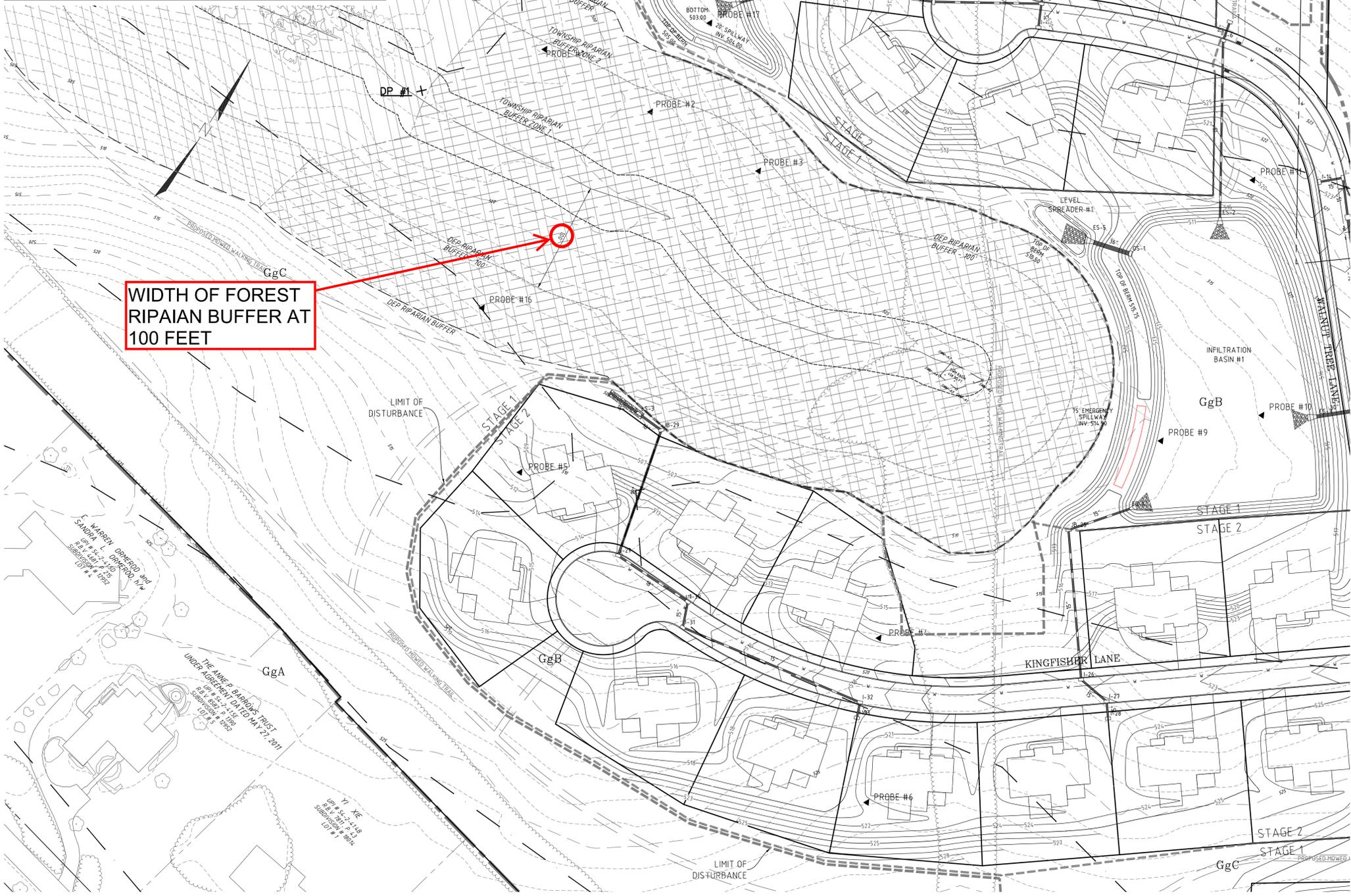
PROJ. MANAGER: M.D. HARTMAN

SCALE: ---

SHEET: 23 of 33

PLAN NO: 17032-F-0-7.5

TASK	YEARS				
	1	2	3	4	5
CHECK TREE SHELTERS (MARCH-APRIL) SUGGESTED ACTIVITIES: STRAIGHTEN AND RE-DRIVE ANY LOOSE STAKES. REPLACE DAMAGED/ROTTEN STAKES. CHECK TIES AND TIGHTEN OR REPLACE IF NEEDED. REMOVE LARGE WASP NESTS (BEFORE THEY COME ACTIVE). REMOVE BIRD NETS IF TREE HAS REACHED THE TOP OF THE SHELTER.	X	X	X	X	X
REMOVE SHELTERS (SPRING) IT IS RECOMMENDED TO REMOVE WHEN TREES THAT ARE AT LEAST 2 INCHES IN DIAMETER AT TOP OF TUBE. LEAVE STAKE IN PLACE TO DETER BUCK RUB. IF TREE IS DROOPY, SECURE TO STAKE WITH BIODEGRADABLE MATERIAL.			X	X	X
HERBICIDE APPLICATION (APRIL-MAY) APPLY BROAD-SPECTRUM HERBICIDE TO PROTECT TREES FROM RODENTS AND REDUCE COMPETITION BY OTHER PLANTS (ADD A PRE-EMERGENT HERBICIDE ADVISABLE). IDEALLY SPRAY 3 STRIPS ALONG SHELTERS OR 4" CIRCLE SPOTS (IF NOT MOWING THE SITE).	X	X	X	X	
MOWING (SUMMER AND FALL) MOW BETWEEN ROWS A MAXIMUM OF TWICE A YEAR BETWEEN JUNE AND LATE SEPTEMBER TO PREVENT WEEDS GOING TO SEED AND REDUCE EXISTING VEGETATION COMPETITION. IF RODENT POPULATION IS HIGH, REDUCE HABITAT BY MOWING THE FALL ONLY IN THE THIRD YEAR (SEE HERBICIDE APPLICATION ABOVE) IF NOT MOWING, SPOT SPRAYING FOR INVASIVE PLANTS IF NEEDED.	X	X			
HERBICIDE APPLICATION (MID-AUGUST-EARLY OCTOBER) APPLY BROAD-SPECTRUM HERBICIDE ONLY TO CONTROL PERENNIAL NOXIOUS OR INVASIVE WEEDS, REDUCE EXISTING VEGETATION COMPETITION, AND PROTECT TREES FROM RODENTS (IDEALLY SPRAY 3 STRIPS ALONG SHELTERS, BUT COULD BE 4" CIRCLES).	X	X	X	X	
SURVIVAL (LATE FALL) CHECK AND NOTE ANY SURVIVAL PROBLEMS - DISEASE, INSECTS AND INVASIVE WEED ISSUES. CHECK FOR NATURAL REGENERATION AND WHERE ABUNDANT LIMIT FURTHER MOWING UNLESS SITE IS PRONE TO RODENTS AND INVASIVE PLANTS.	X	X	X	X	
REPLACEMENT PLANTINGS (FALL TO SPRING) FIRST IDENTIFY AND ADDRESS THE CAUSE OF LOSSES (MOST COMMONLY VOLES AND OTHER RODENTS). REPLANT ANY AREAS WITH SIGNIFICANT LOSSES TO REINFORCE TREE STOCKING TO DESIRED LEVELS. CHECK NATURAL REGENERATION FOR POTENTIAL TREE RECRUITMENT OF TREES.	X	X			
STORM EVENTS GREATER AND THE 2-YEAR/24-HOUR STORM (RAINFALL GREATER THAN 3.24 INCHES) FOLLOWING A STORM EVENT, STRAIGHTEN AND REPOSITION OR REPLACE SHELTERS AND STAKES IF NEEDED - DOWNED TUBES WILL PIN AND KILL TREES AND INVITE RODENT DAMAGE.	X	X	X	X	
FLOODING IF RIPARIAN FOREST BUFFER SITE FLOODS CHECK WITHIN ONE WEEK OF ANY FLOOD. STRAIGHTEN AND REPOSITION OR REPLACE SHELTERS AND STAKES IF NEEDED - DOWNED TUBES WILL PIN AND KILL TREES AND INVITE RODENT DAMAGE.	X	X	X	X	



**WIDTH OF FOREST
RIPAIAI BUFFER AT
100 FEET**

GRAPHIC SCALE 1"=50'

50 0 50 100 150

PCSM HATCH LEGEND

- EXISTING TREES WITHIN 100' OF IMPERVIOUS (AREA CREDITED TO BMP 5.4.1)
- DISCONNECTED ROOF AREAS
- MINIMIZED SOIL COMPACTION (MEADOW COVERAGE)
- INFILTRATION BASIN
- BIORETENTION AREAS (RAIN GARDENS)
- VEGETATED FILTER STRIP
- UTILITY LINE INSTALLATION (CONSIDERED RESTORATION AREAS)
- RIPARIAN BUFFER
- FORESTED RIPARIAN BUFFER CONVERSION AREA

LEGEND

- EXISTING CURB
- PROPOSED CURB
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- SOIL LINE
- EXISTING STREET SIGN
- EXISTING FEATURES ARE LABELED WITH SLANTED TEXT TO BE REMOVED
- EXISTING DECIDUOUS TREE
- PROPOSED SANITARY SEWER & MANHOLE
- PROPOSED STORM SEWER & CATCH BASIN
- EXISTING WATER LINE & VALVE
- PROPOSED WATER LINE & VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED GRINDER PUMP
- PROPOSED WATER LATERAL
- PROPOSED TRAIL NETWORK (PAVED)
- RIPARIAN BUFFER
- PROJECT SITE BOUNDARY
- PROJECT SITE BOUNDARY & LIMIT OF DISTURBANCE
- DRAINAGE AREA TO BMP
- AREA OF WOODLAND DISTURBANCE
- WATERSHED DRAINAGE DIVIDE

OWNER AND APPLICANT
TROUTBECK FARM DEVELOPERS LLC
171 LANCASTER AVE. SUITE 201
BERKYN PA 19312

SOILS LEGEND

- BA - BAILE SILT LOAM
- GGB - GLENGLE SILT LOAM, 3 TO 8 PERCENT SLOPES
- GDC - GLENGLE SILT LOAM, 15 TO 25 PERCENT SLOPES
- MAC - MANOR LOAM, 8 TO 15 PERCENT SLOPES
- MAE - MANOR LOAM, 25 TO 35 PERCENT SLOPES
- UGGB - URBAN LAND-UDORTHENTS, SCHIST AND GNEISS COMPLEX, 0 TO 8 PERCENT SLOPES

GENERAL NOTE:
THE PROPOSED TREE PLANTINGS AS SHOWN ON THE LANDSCAPING PLAN PREPARED BY ORSATTI & STUART ASSOCIATES, INC. (PLAN NO. LP-1 THROUGH LP-5) ARE TO BE CONSIDERED PART OF THE STORM WATER MANAGEMENT SYSTEM FOR THE PROPOSED DEVELOPMENT AND ARE NOT TO BE REMOVED WITHOUT PRIOR APPROVAL FROM WILLISTOWN TOWNSHIP, CHESTER COUNTY CONSERVATION DISTRICT AND DEP.

RECEIVING WATERCOURSE
THE RECEIVING WATERCOURSE FROM THE PROJECT AREA IS A TRIBUTARY TO RIDLEY CREEK. THE WATERCOURSE IS LOCATED ON THE PROJECT TRACT BUT OUTSIDE OF THE LIMIT OF DISTURBANCE. THE WATERCOURSE HAS A CHAPTER 39 CLASSIFICATION OF HQ-CWF, HIGH QUALITY - COLD WATER FISHES. THE RECEIVING STREAM IS LISTED AS HAVING A 303-D IMPAIRMENT DUE TO URBAN RUNOFF.

RIPARIAN BUFFER MEASUREMENT (PER PENNSYLVANIA CODE SECTION 102.14(C)(3))
RIPARIAN BUFFERS MUST BE MEASURED HORIZONTALLY AND PERPENDICULARLY TO THE BANK WITH NO MORE THAN A 10% VARIATION BELOW THE MINIMUM WIDTH FROM THE NORMAL POOL ELEVATION FOR LAKE, POND OR RESERVOIR AND FROM TOP OF STREAMBANK.

OPERATIONS AND MAINTENANCE RESPONSIBILITIES
THE OWNER WILL BE RESPONSIBLE FOR THE BMP'S AS SHOWN ON THESE PLANS. THE OWNER SHALL INSPECT AND MONITOR THEM PERIODICALLY AND DURING SIGNIFICANT RUNOFF EVENTS TO ENSURE THEY ARE SUCCESSFULLY CARRYING OUT THEIR INTENDED FUNCTION. THE OWNER SHALL NOT DUMP DIRTY WATER, OIL OR ANY OTHER LIQUIDS OR SOLIDS INTO THE STORM WATER CONVEYANCE SYSTEM, DETENTION PONDS OR ANY OTHER BMP'S. VEHICLES SHALL NOT BE DRIVEN ACROSS BMP'S. THE OWNER SHALL BE RESPONSIBLE FOR THE SHORT TERM AND LONG-TERM OPERATION AND MAINTENANCE MEASURES FOR THE POST CONSTRUCTION STORM WATER MANAGEMENT FACILITIES.

BMP 6.7.1 RIPARIAN BUFFER RESTORATION WATERING

- PLANTINGS NEED DEEP REGULAR WATERING DURING THE FIRST GROWING SEASON, EITHER NATURAL WATERING VIA RAINFALL, OR PLANNED WATERING, VIA CARETAKER.
- PLANTING IN THE FALL INCREASES THE LIKELIHOOD OF SUFFICIENT RAIN DURING PLANTING ESTABLISHMENT.

MULCHING

- MULCH WILL ASSIST IN MOISTURE RETENTION IN THE ROOT ZONE OF PLANTINGS, MODERATE SOIL TEMPERATURE, PROVIDE SOME WEED SUPPRESSION, AND RETARD EVAPORATION.
- USE COARSE, ORGANIC MULCH THAT IS SLOW TO DECOMPOSE IN ORDER TO MINIMIZE REPEAT APPLICATION.
- APPLY 2-3 INCH LAYER, LEAVING AIR SPACE AROUND TREE TRUNK TO PREVENT FUNGUS GROWTH.
- USE COMBINATION OF WOODCHIPS, LEAVES, AND TWIGS THAT ARE STOCKPILED FOR SIX MONTHS TO A YEAR.

WEED CONTROL

- WEED COMPETITION LIMITS BUFFER GROWTH AND SURVIVAL, THEREFORE WEEDS SHOULD BE CONTROLLED BY EITHER HERBICIDES, MOWING, OR WEED MATS.

HERBICIDES
THIS IS A SHORT-TERM MAINTENANCE TECHNIQUE (2-3 YEARS) THAT IS GENERALLY CONSIDERED LESS EXPENSIVE AND MORE FLEXIBLE THAN MOWING AND WILL RESULT IN A QUICKER ESTABLISHMENT OF THE BUFFER. HERBICIDE USE IS REGULATED BY THE PA DEPARTMENT OF AGRICULTURE. PROPER CARE SHOULD BE TAKEN TO ENSURE THAT PROXIMITY TO WATER FEATURES IS CONSIDERED.

MOWING
MOWING CONTROLS THE HEIGHT OF THE EXISTING GRASSES, YET INCREASES NUTRIENT UPTAKE, THEREFORE COMPETITION FOR NUTRIENTS WILL PERSIST UNTIL THE CANOPY CLOSURE SHADES OUT LOWER LAYERS. A PLANTING LAYOUT SIMILAR TO A GRID FORMAT WILL FACILITATE EASE OF MOWING. YET YIELD AN UNNATURALLY SPACED COMMUNITY. MOWING MAY RESULT IN STROKES ON THE TRUNK UNLESS PROTECTIVE MEASURES ARE UTILIZED. MOWING SHOULD OCCUR TWICE EACH GROWING SEASON. MOWER HEIGHT SHOULD BE SET BETWEEN 8-12 INCHES.

WEED MATS
WEED MATS ARE GEO-TEXTILE FABRICS THAT ARE USED TO SUPPRESS WEED GROWTH AROUND NEWLY PLANTED VEGETATION BY PROVIDING SHADE AND PREVENTING SEED DEPOSITION. WEED MATS ARE INSTALLED AFTER PLANTING, AND SHOULD BE REMOVED ONCE THE TREES HAVE DEVELOPED A CANOPY THAT WILL NATURALLY SHADE OUT WEEDS.

DEER DAMAGE

- DEER WILL BROWSE ALL VEGETATION WITHIN REACH, GENERALLY BETWEEN 5-6 FEET ABOVE THE GROUND.
- APPROACHES TO MINIMIZE DAMAGE INCLUDE:
 - SELECTING PLANTS THAT DEER DO NOT PREFER (EX: PAPER BIRCH, BEECH, ASH, COMMON ELDERBERRY)
 - HOMEMADE DEER REPELLANTS

INVASIVE PLANTS

- MONITOR RESTORATION SIGHT REGULARLY FOR ANY SIGNS OF INVASIVE PLANTS.
- APPENDIX B CONTAINS COMMON INVASIVE PLANTS FOUND IN PENNSYLVANIA.
- CHOICE OF CONTROL METHOD IS BASED ON A VARIETY OF CONSIDERATIONS, BUT FALLS INTO THREE GENERAL CATEGORIES:
 - MECHANICAL
 - MECHANICAL WITH APPLICATION OF HERBICIDE
 - HERBICIDE

RIPARIAN BUFFER INSTALLATION SEQUENCE:

- FIELD DELINEATE THE LIMIT OF DISTURBANCE RIPARIAN BUFFER RESTORATION AREA PRIOR TO DISTURBANCE ACTIVITIES WITH SURVEY STAKES OR POSTS & ROPE.
- BEGIN REMOVAL OF ALL INVASIVE SPECIES
 - THE LARGE STANDS OF PHRAGMITES ARE TO BE CONTROLLED THROUGH MOWING.
 - EXISTING INVASIVE SPECIES (OTHER THAN PHRAGMITES) SHALL BE REMOVED FROM THE RESTORATION AREAS. A QUALIFIED PROFESSIONAL SHALL BE CONTRACTED TO PERFORM THE INVASIVE SPECIES REMOVAL.
 - EXISTING HEALTHY TREES SHALL REMAIN AND BE DE-INED. ALL VINES SHALL BE CUT AT GROUND LEVEL AND AT LEAST 10 FEET ABOVE GROUND. THE STUMP SHOULD BE THEN TREATED WITH RODED, OR AN APPROVED HERBICIDE.
- FOLLOWING REMOVAL OF ALL INVASIVE SPECIES, BEGIN INSTALLATION OF PROPOSED PLANTS:
 - TREE PLANTINGS:
 - SPRAY A 3' FOOT DIAMETER CIRCLE AROUND THE PLANTING LOCATIONS. THE PROPOSED PLANTING AREA IS TO BE SPRAYED WITH RODED BY A "QUALIFIED PROFESSIONAL" ACCORDING TO MANUFACTURERS DIRECTIONS TWO WEEKS PRIOR TO INSTALLATION AND TWICE A YEAR FOR 5 YEARS TO CONTINUALLY MAINTAIN BARE EARTH AROUND THE TREE TO PROTECT AGAINST VOLES.
 - PLANTINGS ARE TO BE PLANTED AT APPROXIMATELY 12 FEET ON CENTER TO FACILITATE MOWING OR OTHER MAINTENANCE ACTIVITIES.
 - ALL NEW PLANTINGS ARE TO BE WATERED EVERY WEEK DURING THE FIRST FEW SUMMER MONTHS.
 - ALL NEW PLANTINGS ARE TO BE PROVIDED WITH A TUBEX® STANDARD TREE-SHELTER ATTACHED TO AN OAK STAKE (SEE DETAIL ON LANDSCAPE PLAN). THE TREE SHELTERS SHALL BE REMOVED AFTER THE TREES REACH 2-2.5" CALIPER. AFTER THE TREE SHELTER IS REMOVED A "BLACK LEONARD PLASTIC MESH TREE GUARD" OR APPROVED SUBSTITUTE, SHOULD BE USED UNTIL THE TREE REACHES 5" CALIPER. ZIP TIES ARE NOT TO BE USED TO CONNECT MESH.
 - NATIVE WHIP PLANTINGS: THE NATIVE WHIP PLANTINGS CAN BE INSTALLED AT THE SPACING SPECIFIED ON THE LANDSCAPE PLAN. THE PROPOSED SPECIES SHALL BE EVENLY DISTRIBUTED THROUGHOUT THE RESTORATION AREAS.
 - WITHIN THE DELINEATED RIPARIAN BUFFER ZONES, ALL AREAS NOT OCCUPIED BY PHRAGMITES, OR ARE DELINEATED AS "WETLANDS", ARE TO BE PLANTED WITH THE SENSITIVE RIPARIAN BUFFER SEED MIX (ENR-MK-TB) SEE SEEDING SPECIFICATIONS.
 - THE VEGETATION SHALL BE CONTROLLED AROUND THE BASE OF THE TREE SHELTER FOR THREE (3) YEARS. TREE SHELTERS SHALL BE INSPECTED ANNUALLY FOR THE FIRST THREE (3) YEARS TO ENSURE THEY ARE UPRIGHT AND ATTACHED TO OAK STAKES.
 - THE RESTORATION AREA SHALL BE MOWED TWICE A YEAR FOR THE FIRST FIVE (5) YEARS, ONCE IN EARLY SPRING (BETWEEN FEBRUARY 15 AND MARCH 15), WITH A SECOND MID-SUMMER MOWING (BETWEEN JULY 15 AND AUGUST 15) ONLY AS NECESSARY FOR CONTROL OF INVASIVE PLANTS.
 - THE RESTORATION AREA SHALL BE INSPECTED ANNUALLY BY A "QUALIFIED PROFESSIONAL" TO ENSURE INVASIVE SPECIES DO NOT OVERTAKE THE NATIVE PLANTINGS.

EXISTING, CONVERTED AND NEWLY ESTABLISHED RIPARIAN BUFFERS INCLUDING ACCESS EASEMENTS MUST BE PROTECTED IN PERPETUITY THROUGH DEED RESTRICTION, CONSERVATION EASEMENT, LOCAL ORDINANCE, PERMIT CONDITIONS OR ANY OTHER MECHANISMS THAT ENSURE THE LONG-TERM FUNCTIONING AND INTEGRITY OF THE RIPARIAN BUFFER.

PERSONS WHO PROTECT AN EXISTING RIPARIAN BUFFER OR CONVERT OR ESTABLISH A RIPARIAN BUFFER IN ACCORDANCE WITH 25 PA. CODE § 102.14 (SHALL COMPLETE DATA FORMS PROVIDED BY THE DEPARTMENT AND SUBMIT THE FORMS TO THE DEPARTMENT OR CONSERVATION DISTRICT WITHIN 1 YEAR OF ESTABLISHMENT OR PROTECTION.

MDH	REVISED PER TOWNSHIP COMMENTS	5/21/21
MDH	REVISED PER TOWNSHIP COMMENTS	3/22/21
MDH	REVISED PER TOWNSHIP COMMENTS	3/8/21
MDH	REVISED PER TOWNSHIP COMMENTS	2/1/20
MDH	REVISED PER TOWNSHIP COMMENTS	2/1/20
MDH	REVISED PER TOWNSHIP COMMENTS	11/23/20
MDH	REVISED FOR PART II PERMIT SUBMISSION	11/23/20
Rev/B	Description	Date

2815 PENN AVENUE
WEST LAWN, PA
610-927-4242

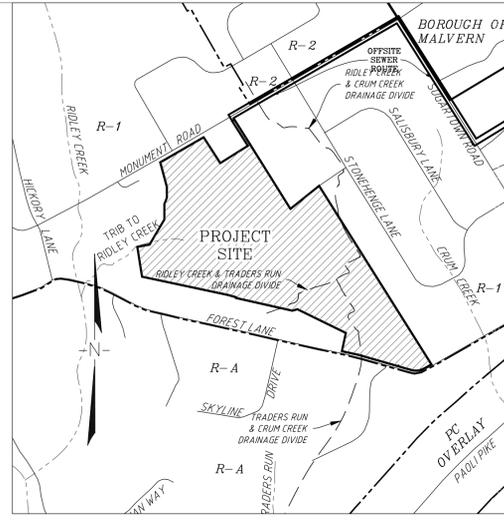
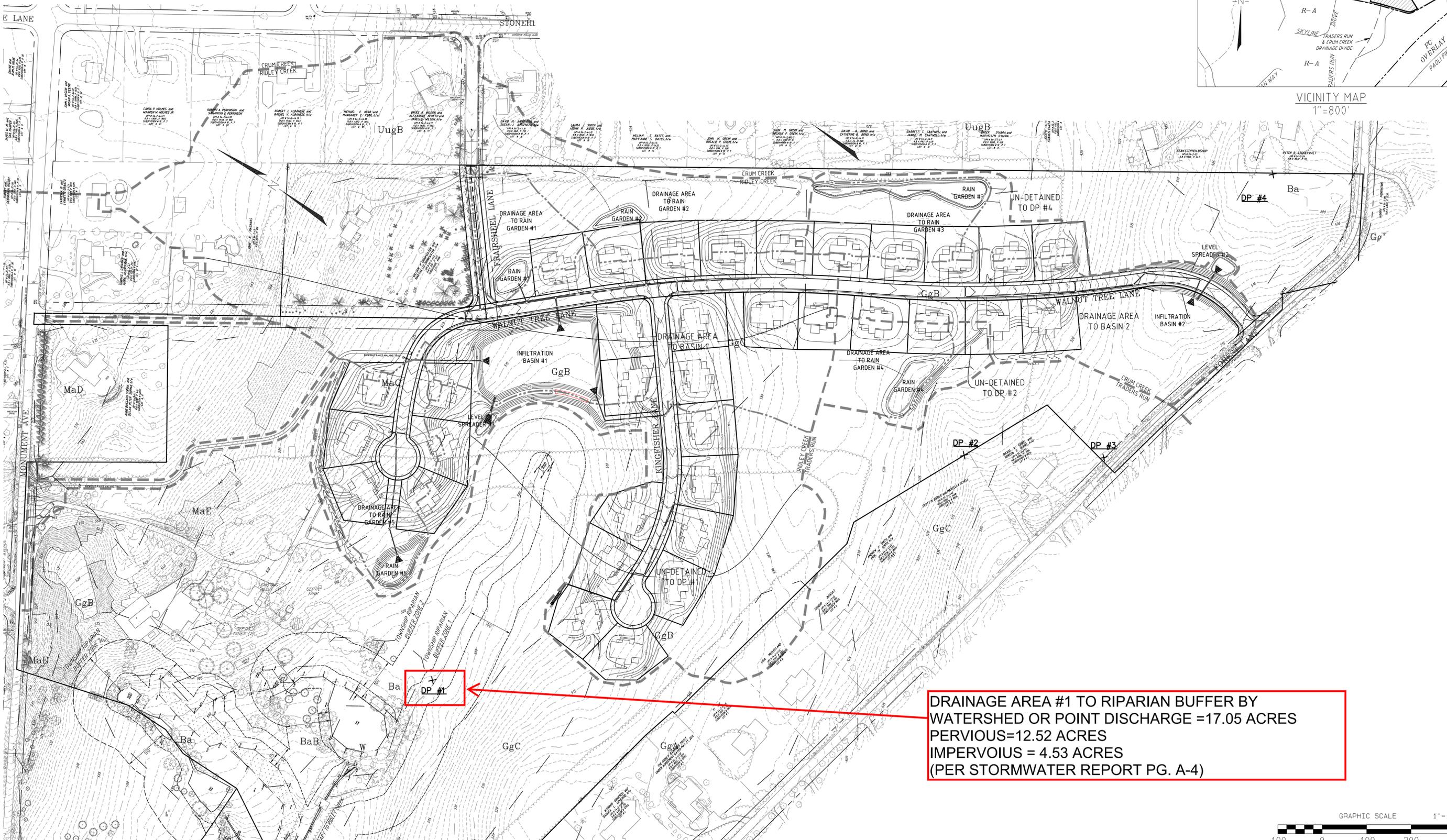
ENTREPRISES

SEAL: MICHAEL DUAIN HARTMAN, ENGINEER IN PROFESSION, PENNSYLVANIA

**"TROUTBECK FARMS"
FINAL PLAN
RIPARIAN BUFFER MANAGEMENT PLAN**

CLIENT: MOSER CONSTRUCTION MANAGEMENT, LLC
LOCATION: WILLISTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA
DATE: NOVEMBER 5, 2020

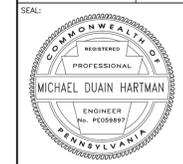
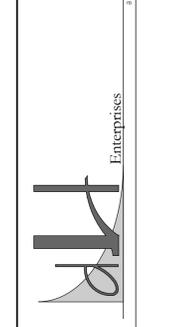
DRAWN BY: M.D.HARTMAN
PROJ. MANAGER: M.D.HARTMAN
SCALE: 1" = 50'
SHEET: 31 OF 33
PLAN NO: 17032-F-0-8.6



Revision	Date	Description
3	12/20/19	REVISED PER TOWNSHIP COMMENTS
4	4/16/20	REVISED FOR SUBMISSION TO DEP AND CCCD
5	7/10/20	REVISED PER CCCD COMMENTS
6	7/28/20	REVISED PER CCCD COMMENTS
F1	11/25/20	REVISED PER CCCD COMMENTS
F2	12/18/20	REVISED PER CCCD COMMENTS

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610-927-4242

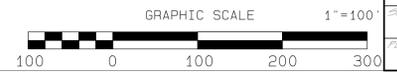


"TROUTBECK FARMS"
FINAL PLAN
DRAINAGE AREA MAP - POST DEVELOPMENT

CLIENT: MOSER CONSTRUCTION MANAGEMENT, LLC
LOCATION: WALLISTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA
DATE: JUNE 1, 2018

DRAWN BY: M.D. HARTMAN
PROJECT MANAGER: M.D. HARTMAN
SCALE: 1" = 100'
SHEET: 2 of 4
PLAN NO: 17032-P-0-10.1

**DRAINAGE AREA #1 TO RIPARIAN BUFFER BY WATERSHED OR POINT DISCHARGE = 17.05 ACRES
PERVIOUS = 12.52 ACRES
IMPERVIOUS = 4.53 ACRES
(PER STORMWATER REPORT PG. A-4)**



**PRP Report and Strategy Plan for Willistown Township
MS4 Individual Permit Application 2018**

Willistown Point Subdivision
Tree Planting Plans
w/ Stormwater Report Data

STORMWATER MANAGEMENT CALCULATIONS - SCS METHOD

1/15/20

POST-DEVELOPMENT

BASIN A

	<i>ONSITE (ACRES)</i>				<i>OFFSITE (ACRES)</i>				<i>OVREALL</i>	<i>CURVE NUMBERS</i>			<i>ONSITE</i>	<i>OFFSITE</i>	<i>TOTAL</i>				
	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>		<i>AREA</i>	<i>A</i>	<i>B</i>				<i>C</i>	<i>CN *A</i>	<i>CN *A</i>	<i>CN *A</i>
	<i>A</i>	<i>B</i>	<i>C</i>		<i>AREA</i>	<i>A</i>	<i>B</i>												
WOODS =	0.00	0.64	0.00	0.64	0.00	0.00	0.00	0.00	0.64	30	55	70	35	0	35				
MEADOW =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30	58	71	0	0	0				
LAWN =	0.00	0.85	0.00	0.85	0.00	0.00	0.00	0.00	0.85	39	61	74	52	0	52				
IMPERVIOUS=	0.00	0.12	0.00	0.12	0.00	0.00	0.00	0.00	0.12	98	98	98	12	0	12				
TOTAL AREA =	0.00	1.61	0.00	1.61	0.00	0.00	0.00	0.00					99	0	99				
OVERALL AREA (AC)=									1.61	WEIGHTED CURVE NO.=			61		61				
												6	MIN.						

FOREBAY A

	<i>ONSITE (ACRES)</i>				<i>OFFSITE (ACRES)</i>				<i>OVREALL</i>	<i>CURVE NUMBERS</i>			<i>ONSITE</i>	<i>OFFSITE</i>	<i>TOTAL</i>				
	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>		<i>AREA</i>	<i>A</i>	<i>B</i>				<i>C</i>	<i>CN *A</i>	<i>CN *A</i>	<i>CN *A</i>
	<i>A</i>	<i>B</i>	<i>C</i>		<i>AREA</i>	<i>A</i>	<i>B</i>												
WOODS =	1.79	2.18	0.67	4.64	0.00	0.00	0.00	0.00	4.64	30	55	70	221	0	221				
MEADOW =	0.06	0.14	0.00	0.20	0.00	0.00	0.00	0.00	0.20	30	58	71	10	0	10				
LAWN =	0.02	1.80	1.06	2.88	0.00	0.00	0.00	0.00	2.88	39	61	74	189	0	189				
IMPERVIOUS=	0.01	1.73	1.15	2.89	0.00	0.00	0.00	0.00	2.89	98	98	98	283	0	283				
TOTAL AREA =	1.88	5.85	2.88	10.61	0.00	0.00	0.00	0.00					703	0	703				
OVERALL AREA (AC)=									10.61	WEIGHTED CURVE NO.=			66		66				
												6	MIN.						

STORMWATER MANAGEMENT CALCULATIONS - SCS METHOD

1/15/20

POST-DEVELOPMENT

BYPASS A

	<i>ONSITE (ACRES)</i>				<i>OFFSITE (ACRES)</i>				<i>OVREALL</i>	<i>CURVE NUMBERS</i>			<i>ONSITE</i>	<i>OFFSITE</i>	<i>TOTAL</i>				
	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>		<i>AREA</i>	<i>A</i>	<i>B</i>				<i>C</i>	<i>CN *A</i>	<i>CN *A</i>	<i>CN *A</i>
	<i>A</i>	<i>B</i>	<i>C</i>		<i>AREA</i>	<i>A</i>	<i>B</i>				<i>C</i>	<i>AREA</i>				<i>A</i>			
WOODS =	0.00	0.28	0.00	0.28	0.00	0.00	0.00	0.00	0.28	30	55	70	15	0	15				
LAWN =	0.00	0.07	0.00	0.07	0.00	0.00	0.00	0.00	0.07	39	61	74	4	0	4				
PERVIOUS PAVING =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39	61	74	0	0	0				
IMPERVIOUS=	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.05	98	98	98	5	0	5				
TOTAL AREA =	0.00	0.40	0.00	0.40	0.00	0.00	0.00	0.00					25	0	25				
OVERALL AREA (AC)=									0.40	WEIGHTED CURVE NO.=			61		61				
												6	MIN.						

UG DETENTION BASIN A

	<i>ONSITE (ACRES)</i>				<i>OFFSITE (ACRES)</i>				<i>OVREALL</i>	<i>CURVE NUMBERS</i>			<i>ONSITE</i>	<i>OFFSITE</i>	<i>TOTAL</i>				
	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>	<i>HYDROLOGIC SOIL GROUP</i>			<i>TOTAL</i>		<i>AREA</i>	<i>A</i>	<i>B</i>				<i>C</i>	<i>CN *A</i>	<i>CN *A</i>	<i>CN *A</i>
	<i>A</i>	<i>B</i>	<i>C</i>		<i>AREA</i>	<i>A</i>	<i>B</i>				<i>C</i>	<i>AREA</i>				<i>A</i>			
WOODS =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30	55	70	0	0	0				
LAWN =	0.00	0.32	0.00	0.32	0.00	0.00	0.00	0.00	0.32	39	61	74	20	0	20				
PERVIOUS PAVING =	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	39	61	74	1	0	1				
IMPERVIOUS=	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.08	98	98	98	8	0	8				
TOTAL AREA =	0.00	0.41	0.00	0.41	0.00	0.00	0.00	0.00					28	0	28				
OVERALL AREA (AC)=									0.41	WEIGHTED CURVE NO.=			68		68				
												6	MIN.						

STORMWATER MANAGEMENT CALCULATIONS - SCS METHOD

1/15/20

POST-DEVELOPMENT

BASIN B

	<i>ONSITE (ACRES)</i>				<i>OFFSITE (ACRES)</i>				<u>OVREALL</u>	<u>CURVE NUMBERS</u>			<u>ONSITE</u>	<u>OFFSITE</u>	<u>TOTAL</u>				
	<i>HYDROLOGIC SOIL GROUP</i>			<u>TOTAL</u>	<i>HYDROLOGIC SOIL GROUP</i>			<u>TOTAL</u>		<u>AREA</u>	<u>A</u>	<u>B</u>				<u>C</u>	<u>CN *A</u>	<u>CN *A</u>	<u>CN *A</u>
	<u>A</u>	<u>B</u>	<u>C</u>		<u>A</u>	<u>B</u>	<u>C</u>				<u>A</u>	<u>B</u>				<u>C</u>			
WOODS =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30	55	70	0	0	0				
LAWN =	0.00	0.05	0.18	0.23	0.00	0.00	0.00	0.00	0.23	39	61	74	16	0	16				
IMPERVIOUS=	0.00	0.09	0.21	0.30	0.00	0.00	0.00	0.00	0.30	98	98	98	29	0	29				
TOTAL AREA =	0.00	0.14	0.39	0.53	0.00	0.00	0.00	0.00					46	0	46				
OVERALL AREA (AC)=									0.53	WEIGHTED CURVE NO.=			86			86			
												TIME OF CONCENTRATION=		6	MIN.				

BYPASS B

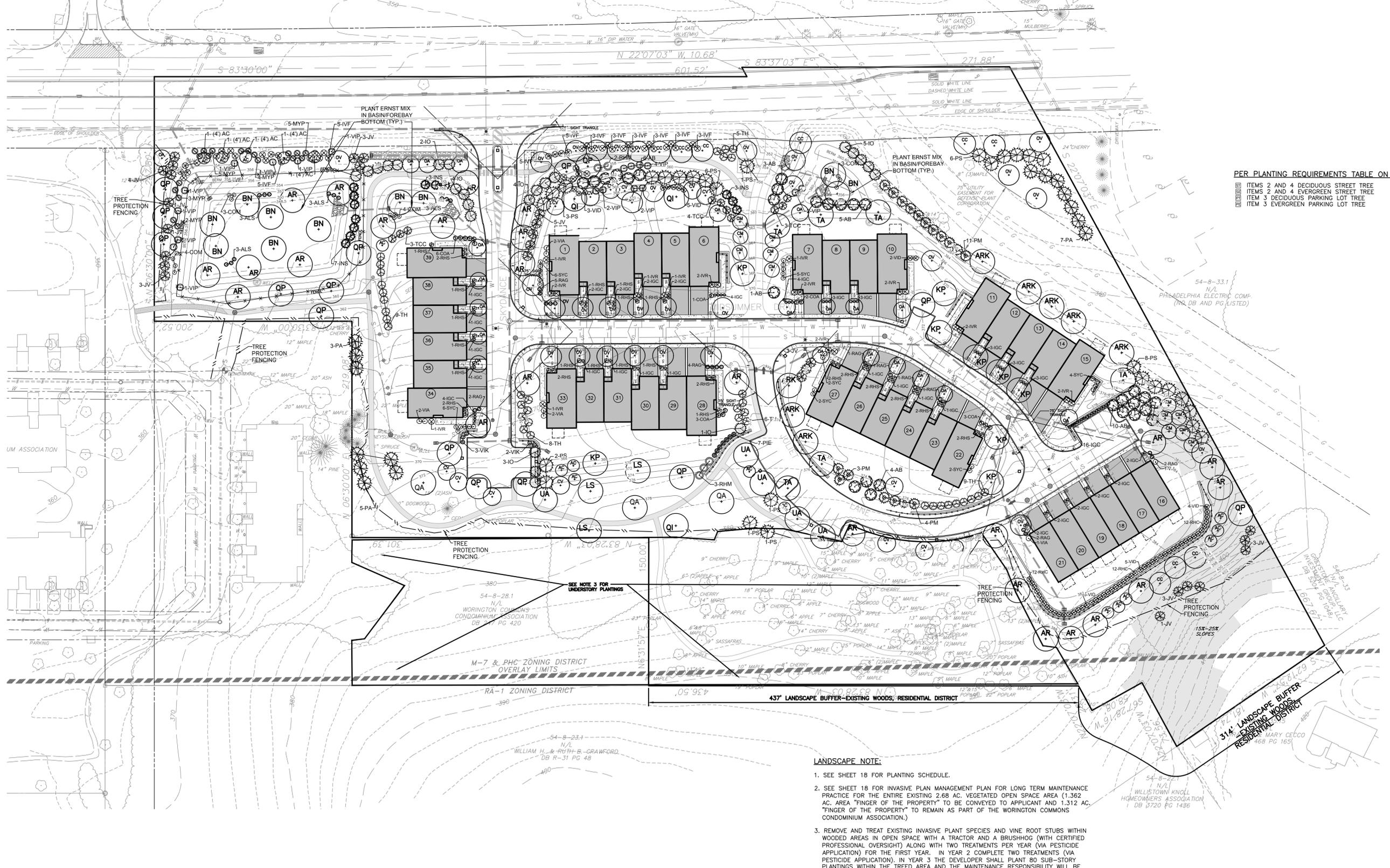
	<i>ONSITE (ACRES)</i>				<i>OFFSITE (ACRES)</i>				<u>OVREALL</u>	<u>CURVE NUMBERS</u>			<u>ONSITE</u>	<u>OFFSITE</u>	<u>TOTAL</u>				
	<i>HYDROLOGIC SOIL GROUP</i>			<u>TOTAL</u>	<i>HYDROLOGIC SOIL GROUP</i>			<u>TOTAL</u>		<u>AREA</u>	<u>A</u>	<u>B</u>				<u>C</u>	<u>CN *A</u>	<u>CN *A</u>	<u>CN *A</u>
	<u>A</u>	<u>B</u>	<u>C</u>		<u>A</u>	<u>B</u>	<u>C</u>				<u>A</u>	<u>B</u>				<u>C</u>			
WOODS =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30	55	70	0	0	0				
LAWN =	0.00	0.15	0.38	0.53	0.00	0.00	0.00	0.00	0.53	39	61	74	37	0	37				
IMPERVIOUS=	0.00	0.01	0.05	0.06	0.00	0.00	0.00	0.00	0.06	98	98	98	6	0	6				
TOTAL AREA =	0.00	0.16	0.43	0.59	0.00	0.00	0.00	0.00					43	0	43				
OVERALL AREA (AC)=									0.59	WEIGHTED CURVE NO.=			73			73			
												TIME OF CONCENTRATION=		10	MIN.				

Willitown Point Acres
Pervious and Impervious Tabulation

Post-Dev	Pervious	Impervious
	Basin A	Basin A
	0.64	0.12
	0.85	
Total	1.49	0.12
	Forebay A	Forebay A
	4.64	2.89
	0.2	
	2.88	
Total	7.72	2.89
	UG Basin	UG Basin
	0.32	0.08
	0.01	
Total	0.33	0.08
	Basin B	Basin B
Total	0.23	0.3
TOTALS	9.77	3.39

ROUTE 3 WEST CHESTER PIKE (S.R. 0003)
SPEED LIMIT 55 MPH

DUTTON MILL RD.

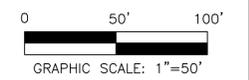


PER PLANTING REQUIREMENTS TABLE ON SHEET 18
 ITEMS 2 AND 4 DECIDUOUS STREET TREE
 ITEMS 2 AND 4 EVERGREEN STREET TREE
 ITEM 3 DECIDUOUS PARKING LOT TREE
 ITEM 3 EVERGREEN PARKING LOT TREE

EXISTING FEATURES LEGEND	
SITE BENCHMARK	
PROPERTY LINE	
ADJACENT LINE	
LEGAL RIGHT OF WAY	
EASEMENT LINE	
CONCRETE CURB	
EDGE OF PAVEMENT	
EDGE OF DRIVE	
CONTOURS	
SPOT ELEVATION	
WOOD LINE	
TREES	
SANITARY SEWER MAIN	
SANITARY SEWER CLEANOUT	
SANITARY SEWER MANHOLE	
STORM SEWER	
MAN TYPE INLETS	
WATER MAIN	
FIRE HYDRANT	
WATER VALVE	
WATER MANHOLE	
GAS MAIN	
GAS VALVE	
OVERHEAD WIRES	
UNDERGROUND WIRES	
UTILITY POLE	
SIGN	
15-25% SLOPES	
ZONING LINE	
SLANTED TEXT DENOTES EXISTING FEATURE	
PROPOSED LEGEND	
BUILDING	
ROAD CENTERLINE	
DEPRESSED CURB	
EDGE OF PAVING	
CURB	
SEWER MAIN	
SEWER SERVICE LATERAL	
SANITARY SEWER MANHOLE	
SANITARY SEWER CLEANOUT	
SANITARY SEWER STRUCTURE IDENTIFIER	
STORMWATER PIPE	
CAM TYPE STORMWATER INLET	
HEADWALL/ENDWALL	
RR-RAP APRON	
STORMWATER MANHOLE	
STORMWATER STRUCTURE IDENTIFIER	
WATER MAIN	
WATER SERVICE (FIRE)	
WATER SERVICE (DOMESTIC)	
WATER METER	
WATER GATE VALVE	
FIRE HYDRANT	
SPOT ELEVATION	
INTERMEDIATE CONTOUR	
INDEX CONTOUR	
DIRECTION OF FLOW	
WOODS LINE	
UNIT NUMBER	
FENCE	
RETAINING WALL AND SPLIT RAIL FENCE W/ MESH	
TREE PROTECTION FENCING	
ADA DETECTABLE WARNING STRIP	
STREET LIGHT	
VERTICAL TEXT DENOTES PROPOSED FEATURE	

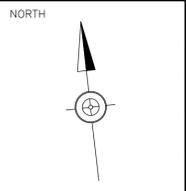
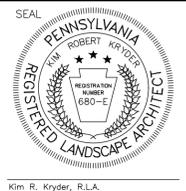
LANDSCAPE NOTE:

- SEE SHEET 18 FOR PLANTING SCHEDULE.
- SEE SHEET 18 FOR INVASIVE PLAN MANAGEMENT PLAN FOR LONG TERM MAINTENANCE PRACTICE FOR THE ENTIRE EXISTING 2.68 AC. VEGETATED OPEN SPACE AREA (1.362 AC. AREA "FINGER OF THE PROPERTY" TO BE CONVEYED TO APPLICANT AND 1.312 AC. "FINGER OF THE PROPERTY" TO REMAIN AS PART OF THE WORINGTON COMMONS CONDOMINIUM ASSOCIATION.)
- REMOVE AND TREAT EXISTING INVASIVE PLANT SPECIES AND VINE ROOT STUBS WITHIN WOODED AREAS IN OPEN SPACE WITH A TRACTOR AND A BRUSHHOG (WITH CERTIFIED PROFESSIONAL OVERSIGHT) ALONG WITH TWO TREATMENTS PER YEAR (VIA PESTICIDE APPLICATION) FOR THE FIRST YEAR. IN YEAR 2 COMPLETE TWO TREATMENTS (VIA PESTICIDE APPLICATION). IN YEAR 3 THE DEVELOPER SHALL PLANT 80 SUB-STORY PLANTINGS WITHIN THE TREADED AREA AND THE MAINTENANCE RESPONSIBILITY WILL BE TURNED OVER TO THE RESPECTIVE HOMEOWNERS ASSOCIATION.



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NO.	REVISION	DATE	BY
7	REVISED PER TOWNSHIP REVIEW LETTER DATED 2/17/20	3/6/20	STA
6	FINAL PLAN SUBMISSION TO TOWNSHIP	1/17/20	STA
5	REVISED PER PENNDOT REVIEW LETTER	10/14/19	JJ
4	REVISED PER CCCD SUBMISSION	4/2/19	JJ
3	UPDATED RETAINING WALL INFORMATION TO COORDINATE WITH RETAINING WALL PLANS	4/1/19	BG
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 12/11/18	1/30/19	BG
1	REVISED PER TOWNSHIP REVIEW LETTERS DATED 9/13/18 & 10/26/18	11/5/18	BG



MANAGER	
DESIGN	NF
DRAFT	BG
FILE	ROU-01
NOTES	SCALE

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SUBJECT
PCSM LANDSCAPE PLAN
WILLISTOWN POINT
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA

JOB NO.
187872

SHEET NO.
17 OF 26

DWG. NO.
LA187872

INVASIVE PLANT MANAGEMENT PLAN

THE FOLLOWING ARE THE MANAGEMENT RECOMMENDATIONS FOR INVASIVE PLANT MANAGEMENT OF THE PRESERVED WOODLANDS AS TAKEN FROM THE INVASIVE PLANT MANAGEMENT PLAN PREPARED BY BCMA ARBORIST CONSULTING, LLC, DATED JANUARY 17, 2020:

- DURING CONSTRUCTION:**
 - ERECT TREATMENT AREA FLAGGING AT THE EDGE OF THE PROJECT AREA TO PREVENT DISTURBANCE BEYOND ITS LIMIT.
 - MAINTAIN A VEGETATIVE COVER OVER THE TREATMENT AREA TO MINIMIZE SOIL EROSION AND RE-ESTABLISHMENT OF INVASIVE SPECIES.
 - YEAR 1 – REMOVE AND TREAT EXISTING INVASIVE PLANT SPECIES AND VINE ROOT STUBS WITHIN THE PROJECT AREA AND/OR AS RECOMMENDED BY A PROFESSIONAL CONSULTANT.
 - YEAR 2 – RE-INSPECT AREA WITH PROFESSIONAL. REMOVE AND TREAT ANY REMAINING INVASIVE PLANT SPECIES AND VINE ROOT STUBS AND/OR AS RECOMMENDED BY A PROFESSIONAL CONSULTANT.
 - YEAR 3 – RE-INSPECT AREA WITH PROFESSIONAL. IF INVASIVE SPECIES ARE SUFFICIENTLY ABATED, PROCEED WITH INSTALLATION OF SUB-STORY PLANTINGS WITHIN THE TREATED AREA.
- POST CONSTRUCTION:**
 - INSPECT ANNUALLY THE PRESERVED WOODLAND AREA AND FRINGES OF ADJOINING FOREST FOR COLONIZATION BY INVASIVE PLANTS, PARTICULARLY VINES CAPABLE OF GROWING INTO CANOPY TREES, AND ADDRESS AS NEEDED. THE BEST TIME TO SURVEY IS LATE SUMMER/ EARLY FALL TO IDENTIFY WOODY (TREES AND SHRUBS) AND HERBACEOUS INVASIVE SPECIES. INSPECTIONS SHOULD BE PERFORMED BY A CONSULTANT WITH AT LEAST A BACHELOR'S DEGREE IN BOTANY, FORESTRY, HORTICULTURE, OR ECOLOGY AND AT LEAST FIVE YEARS OF FIELD EXPERIENCE IN SOUTHEAST PENNSYLVANIA. ANY WORK TO CONTROL INVASIVE PLANTS SHOULD BE SUPERVISED BY A CONSULTANT WITH SIMILAR CREDENTIALS.
 - INVASIVE PLANTS IDENTIFIED WITHIN THE PROTECTION AREA SHOULD BE TREATED AS SOON AS PRACTICAL BUT PRIOR TO THE NEXT FLOWERING PERIOD OF EACH SPECIES. A REPORT SUMMARIZING MONITORING RESULTS AND RECOMMENDATIONS AND ANY INVASIVE PLANT RELATED WORK PERFORMED WITHIN OR ADJACENT TO THE PROTECTION AREA DURING EACH CALENDAR YEAR SHOULD BE PROVIDED TO THE ASSOCIATION AND TOWNSHIP.

PLANTING REQUIREMENTS

ITEM	QUANTITY	REQUIRED	PROPOSED
ITEM 1			
PER 1,000 SF OF GROSS BUILDING FOOTPRINT AREA	83,838 SF		
2 DECIDUOUS TREES	128	128	
4 DECIDUOUS SHRUBS	256	256	
1 EVERGREEN TREE	64	64	
2 EVERGREEN SHRUBS	128	128	
ITEM 2			
PER 40 LF OF PAVED STREET FRONTAGE	2,800 LF		
1 DECIDUOUS TREE	70	65 + 5 EXISTING	
0 DECIDUOUS SHRUBS	0	0	
1 EVERGREEN TREE	0	0	
0 EVERGREEN SHRUBS	0	0	
ITEM 3			
PER 2,000 SF OF PARKING/LOADING AREA	4,800 SF		
1 DECIDUOUS TREE	3	3	
0 DECIDUOUS SHRUBS	0	0	
1 EVERGREEN TREE	3	3	
2 EVERGREEN SHRUBS	6	6	
ITEM 4			
PER 40 LF OF EXISTING PUBLIC ROAD FRONTAGE	900 LF		
1 DECIDUOUS TREE	23	23	
0 DECIDUOUS SHRUBS	0	0	
1 EVERGREEN TREE	23	23	
0 EVERGREEN SHRUBS	0	0	
ITEM 5			
PER 100 LF OF PROPERTY BOUNDARY ADJOINING RESIDENTIAL OR INSTITUTIONAL PROPERTIES	751 LF		
3 DECIDUOUS TREES	23	23	
3 DECIDUOUS SHRUBS	23	23	
3 EVERGREEN TREES	23	19 + 4 EXISTING	
10 EVERGREEN SHRUBS	76	76	

OPEN SPACE UNDERSTORY PLANTINGS

THE REHABILITATED OPEN SPACE WOODS WITHIN THIS PROJECT AND ADJACENT WASHINGTON COMMONS OPEN SPACE SHALL CONSIST OF 80 PLANTS. THESE PLANTS ARE PART OF THE REQUIRED SHRUB PLANTINGS FOR ITEM 1 (BUILDING FOOTPRINT AREA).

PLANTING LOCATIONS SHALL BE COORDINATED WITH THE TOWNSHIP.

TOTAL LANDSCAPING

	REQUIRED	PROPOSED
DECIDUOUS TREES	247	184 + 83 EXISTING = 267
DECIDUOUS SHRUBS	284	285 + EXISTING
EVERGREEN TREES	183	180 + 4 EXISTING = 184
EVERGREEN SHRUBS	209	209 + EXISTING

SITE MAINTENANCE AND GUARANTY

- ALL LANDSCAPE IMPROVEMENTS TO BE PROVIDED IN ACCORDANCE WITH ARTICLE X AND ARTICLE IV OF TOWNSHIP ORDINANCE 73. CONSERVATION OF VALUED WOODLANDS AND OTHER VEGETATION SHALL BE INSTALLED AND MAINTAINED BY ACCEPTED PRACTICES AS RECOGNIZED BY THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANTING AND MAINTENANCE OF VEGETATION SHALL INCLUDE, AS APPROPRIATE, BUT NOT NECESSARILY BE LIMITED TO PROVISIONS FOR SURFACE MULCH, GUY-WIRES AND STAKES, IRRIGATION, FERTILIZATION, INSECT AND DISEASE CONTROL, PRUNING, MULCHING, WEEDING AND WATERING.
- THE APPLICANT SHALL MAKE ARRANGEMENTS ACCEPTABLE TO THE TOWNSHIP THAT ALL LANDSCAPE IMPROVEMENTS INSTALLED IN ACCORDANCE WITH ARTICLE X OF TOWNSHIP ORDINANCE 73 SHALL BE GUARANTEED AND MAINTAINED IN A HEALTHY AND/OR SOUND CONDITION OR OTHERWISE BE REPLACED BY EQUIVALENT IMPROVEMENTS FOR A PERIOD OF AT LEAST 12 MONTHS FOLLOWING THEIR ACCEPTANCE BY THE TOWNSHIP, EXCEPT AS OTHERWISE REQUIRED BY THE TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE. AFTER INSTALLATION AND PRIOR TO TOWNSHIP ACCEPTANCE OF THE SITE IMPROVEMENTS, REPRESENTATIVES OF THE TOWNSHIP SHALL PERFORM AN INSPECTION OF THE FINISHED SITE FOR COMPLIANCE WITH THE APPROVED PLANTING PLAN. PROVIDED THAT THE FINISHED SITE IS FOUND TO BE ACCEPTABLE, THE TWELVE-MONTH GUARANTY PERIOD SHALL COMMENCE FIVE DAYS FROM THE DATE OF INSPECTION. PLANTS FOUND TO BE IN POOR HEALTH OR LACKING NORMAL GROWTH HABIT SHALL BE REPLACED WITH A SUBSTITUTE MATERIAL DETERMINED BY THE TOWNSHIP TO BE MORE SUITABLE FOR THE PLANTING SCHEME. REPLACEMENT PLANTS SHALL BE INSPECTED BY REPRESENTATIVES OF THE TOWNSHIP AFTER INSTALLATION. ALL PLANTS SHALL BE IN A VIGOROUS AND THRIVING CONDITION AT THE END OF THE TWELVE-MONTH PERIOD AS DETERMINED ABOVE. FINAL INSPECTION OF THE SITE FOLLOWING THE TWELVE-MONTH PERIOD WILL BE MADE BY REPRESENTATIVES OF THE TOWNSHIP AND FINAL APPROVAL GIVEN.
- THE APPLICANT SHALL MAKE ARRANGEMENTS ACCEPTABLE TO THE TOWNSHIP FOR THE PROPERTY'S LONG-TERM LANDSCAPE MAINTENANCE. THE APPLICANT SHALL PROVIDE THE NAMES, ADDRESSES AND TELEPHONE NUMBERS OF THOSE PERSONS OR ORGANIZATIONS WHO WILL BE ASSUMING SUCH RESPONSIBILITIES. LANDSCAPING IMPROVEMENTS REQUIRED BY THIS CHAPTER OR ANY OTHER ORDINANCE SHALL BE SUBJECT TO SUITABLE RESTRICTIVE COVENANTS AND, IF PRACTICABLE, RULES AND REGULATIONS GOVERNING THE USE AND MAINTENANCE OF COMMON LANDS AND FACILITIES, WHICH COVENANTS, RULES AND REGULATIONS SHALL BE IN FORM AND SUBSTANCE ACCEPTABLE TO THE TOWNSHIP AND, IN THE CASE OF COVENANTS, RULES AND REGULATIONS, SHALL, WITHOUT LIMITING THE FOREGOING, REQUIRE THE MAINTENANCE AND REPLACEMENT AND PROHIBIT THE DESTRUCTION OR REMOVAL OF ALL LANDSCAPING MATERIALS AND IMPROVEMENTS DERIVED ON THE LANDSCAPING PLAN EMPLOYEE THE TOWNSHIP TO ENFORCE SAID OBLIGATIONS, AND PROHIBIT THE AMENDMENT OR TERMINATION OF ANY OF THE MANDATORY TERMS THEREOF WITHOUT THE EXPRESS APPROVAL OF THE TOWNSHIP.
- WHERE ACCIDENTAL DAMAGE OR WANDALISM OF PLANTS OCCUR, THE APPLICANT SHALL REPLACE THE DAMAGED PLANT MATERIAL IN ACCORDANCE WITH THE ORIGINAL OR MODIFIED PLANTING PLAN. IN SUCH CASES, THE TWELVE-MONTH REPLACEMENT POLICY REQUIRED ABOVE MAY BE WAIVED, AND ANY REMAINING TIME IN THE GUARANTY PERIOD SHALL BE BINDING FOR REPEAT REPLACEMENTS.
- AT THE TOWNSHIP'S DISCRETION, THE APPLICANT MAY BE REQUIRED TO ESCROW SUFFICIENT FUNDS FOR THE MAINTENANCE AND/OR REPLACEMENT OF THE PROPOSED VEGETATION DURING THE TWELVE-MONTH REPLACEMENT PERIOD. IN ADDITION, AN ESCROW MAY BE REQUIRED FOR THE REMOVAL AND REPLACEMENT OF SPECIMEN TREES DAMAGED DURING CONSTRUCTION.

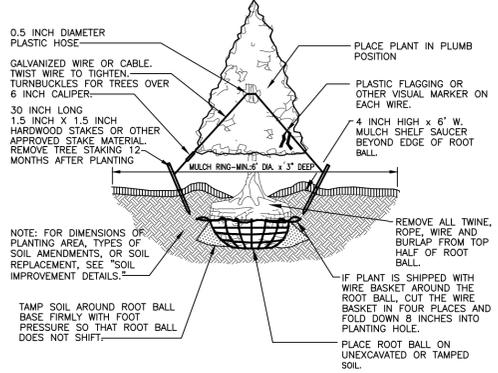
LANDSCAPE NOTES:

- THE LOCATION, DIMENSIONS AND SPACING OF REQUIRED PLANTINGS SHOULD BE ADEQUATE FOR THEIR PROPER GROWTH AND MAINTENANCE, TAKING INTO ACCOUNT THE SIZES OF SUCH PLANTINGS AT MATURITY AND THEIR PRESENT AND FUTURE ENVIRONMENTAL REQUIREMENTS, SUCH AS WIND, SOIL, MOISTURE AND SUNLIGHT.
- PLANT MATERIAL SHALL BE TRUE TO SPECIES AND VARIETY. ALL PLANTS SHALL CONFORM TO THE MINIMUM STANDARDS FOR HEALTH, FORM AND ROOT CONDITION AS OUTLINED IN THE PUBLICATIONS OF THE AMERICAN STANDARD FOR NURSERY STOCK, ANSI OR U.S.A.S SECTION 60.1 OF THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS, LATEST EDITION.
- ALL PLANT MATERIAL SHALL BE HARDY WITHIN THE UNITED STATES. DEPARTMENT OF AGRICULTURE (USDA) HARDINESS ZONE 6, APPLICABLE TO MILLSTOWN TOWNSHIP AND SHALL BE NURSERY GROWN.
- ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE DEVELOPER FOR 12 MONTHS FROM THE DATE OF FINAL APPROVAL OF THE LANDSCAPE INSTALLATION BY TOWNSHIP ENGINEER. ANY PLANT MATERIAL THAT IS 20% OR GREATER (AAN) STANDARDS, LATEST EDITION.
- SOIL CONDITIONS SHALL BE TESTED PRIOR TO PLANTING AND TREATED WITH APPROPRIATE INGREDIENTS TO BALANCE THE PH.
- THE CONTRACTOR SHALL VERIFY ALL QUANTITIES AND DIMENSIONS, AND SHALL REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
- THE CONTRACTOR SHALL ASCERTAIN THE LOCATION OF ALL UTILITIES AND SHALL ASSUME RESPONSIBILITY FOR DAMAGES TO UTILITIES AND PROPERTY AS A RESULT OF HIS WORK.
- PLANT MATERIAL SHALL BE OF NURSERY STOCK, BALLED AND BURLAPPED OR CONTAINER GROWN. IT SHALL BE OF SYMMETRICAL GROWTH, FREE OF INSECTS, PESTS AND DISEASE, HAVE A NORMAL GROWTH HABIT, WOODROT ROOT SYSTEM AND DURABLE UNDER THE MAINTENANCE CONTEMPLATED.
- ALL PLANTING MATERIALS SHALL BE INSTALLED PER THE A.A.N. STANDARDS WITH REGARD TO PLANTING, PIT SIZE, BACKFILL MIXTURE, STACKING AND GUYING, OR AS MAY BE INDICATED ON THE DRAWINGS.
 - ADDITIONALLY:
 - TREES WITH POOR QUALITY ROOT BALLS OR ROOT BALLS THAT HAVE BEEN CRACKED OR DAMAGED SHALL BE REJECTED.
 - TREES THAT HAVE GROWN TOO CLOSE TOGETHER IN THE NURSERY, RESULTING IN WEAK TRUNKS SHALL BE REJECTED.
 - TREES WITH CENTRAL LEADER BROKEN SHALL BE REJECTED.
 - TREES THAT DO NOT DISPLAY THE NORMAL CHARACTERISTICS SHALL BE REJECTED.
 - TREES THAT HAVE GROWN TOGETHER IN NURSERY, RESULTING IN WEAK TRUNKS SHALL BE REJECTED.
 - TREES AND SHRUBS SHALL BE FREE FROM DEFECTS AND INJURIES AND BE CERTIFIED BY THE APPROPRIATE FEDERAL AND STATE AUTHORITIES TO BE FREE FROM DISEASES AND INSECT INFESTATIONS.
 - TREES AND SHRUBS SHALL BE FRESHLY DUG AND NURSERY GROWN. THEY SHALL HAVE BEEN GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE TOWNSHIP OR PROPERLY ACCLIMATED TO CONDITIONS OF THE TOWNSHIP.
- ALL STREET TREES SHALL BE PLANTED A MINIMUM DISTANCE OF FIVE (5) FEET FROM THE ULTIMATE RIGHT-OF-WAY LINE OF WEST CHESTER PIKE.
- TREES SHALL BE PLANTED A MINIMUM DISTANCE OF THREE (3) FEET FROM CURBS AND SIDEWALKS, FIFTEEN (15) FEET FROM OVERHEAD UTILITIES AND SIX (6) FEET FROM UNDERGROUND UTILITIES.
- TREES AND OTHER REQUIRED PLANT MATERIAL SHALL NOT BE PLANTED UNTIL THE FINISHED GRADING OF THE LAND DEVELOPMENT HAS BEEN COMPLETED.
- ADDITIONAL FOUNDATION OR SITE LANDSCAPING MAY BE ADDED AT THE OWNER'S EXPENSE.
- AFTER INSTALLATION PRUNE BRANCHES AND FOLIAGE (NOT ALL EVERGREENS OR DECIDUOUS END TIPS) BY 1/3, RETAINING NATURAL PLANT SHAPE. DO NOT CUT LEADER ON ANY EVERGREEN SHRUB OR ANY EVERGREEN OR DECIDUOUS TREE. STRAY TRUNK STEM AND BRANCHES WITH ANTI-DESICANT WAX.
- TREES AND SHRUBS SHALL BEAR SAME RELATION TO FINISH GRADE AS PREVIOUS FINISH GRADE IN NURSERY.
- SCAFFRY COMPACTED SUBSOILS AT BOTTOM AND SIDES OF PLANTING PIT BEFORE INSTALLATION.
- THESE LANDSCAPE PLANS SHALL BE REGARDED AS SCHEMATIC IN NATURE. ALL PLANT LOCATIONS SHALL BE SUBJECT TO FIELD ADJUSTMENT BY THE OWNER'S REPRESENTATIVE.
- ALL AREAS UNDERLAIN BY ROCK ARE TO BE MEASURED TO DETERMINE IF MINIMUM DEPTH NECESSARY TO PERMIT PLACEMENT OF BACKFILL REQUIRED TO ENSURE PROPER DRAINAGE IS FEASIBLE OR ALTERNATELY, IF ADDITIONAL FILL MATERIAL IS FEASIBLE TO ACHIEVE PROPER PLANTING, CONTRACTOR SHALL REPORT THIS CONDITION TO THE LANDSCAPE ARCHITECT AND RECEIVE APPROVAL ON METHOD OF PLANTING.
- FILLING OF SOILS OVER THE ROOTS OF TREES TO BE PRESERVED IS STRICTLY PROHIBITED.
- CLEANLY PRUNE ALL DAMAGED ROOT ENDS IMMEDIATELY PRIOR TO BACKFILLING PLANTING PIT.
- ALL SIGHT TRIANGLES SHALL REMAIN CLEAR OF OBSTRUCTIONS AND ANY PLANT MATERIAL WHICH COULD ENDANGER SAFETY SHALL BE REMOVED. IT SHALL BE THE RESPONSIBILITY OF THE HOMEOWNERS ASSOCIATION TO ENSURE ALL PLANTINGS AND ARCHITECTURAL ELEMENTS ARE MAINTAINED TO PROVIDE A SAFE ENVIRONMENT.
- ROOT BARRIERS SHALL BE PLACED ALONG SIDEWALKS AND WALKWAYS WHERE TREES ARE TO BE PLACED WITHIN 10' OF THE WALK.
- FOUNDATION PLANTINGS MAY BE SUBSTITUTED WITH ALTERNATE LANDSCAPING WITH THE APPROVAL OF THE TOWNSHIP LANDSCAPE ARCHITECT. ADDITIONAL LANDSCAPING CAN BE PROVIDED AT THE DISCRETION OF THE DEVELOPER.

QUAN	BOTANICAL NAME	COMMON NAME	MIN. PLANTING HEIGHT/WIDTH	ROOT
UNDERSTORY SHRUBS				
EVERGREEN SHRUBS				
30	RHOODENDRON MAXIMUM	ROSEBAY RHOODENDRON	24" HIGH	CONTAINER
DECIDUOUS SHRUBS				
8	AMELANCHER CANADENSIS	SHADBLow SERVICEBERRY	4' HIGH	CONTAINER or B&B
8	CERCIS CANADENSIS	EASTERN REDBUD	4' HIGH	CONTAINER or B&B
8	CORNUS FLORIDA	FLOWERING DOGWOOD	4' HIGH	CONTAINER or B&B
8	HAMAMELIS VIRGINIANA	WITCH HAZEL	3' HIGH	CONTAINER or B&B
8	LINDERA BENZONIN	SPICEBUSH	3' HIGH	CONTAINER or B&B
10	VIBURNUM DENTATUM	ARROWWOOD	24" HIGH	CONTAINER
50	TOTAL	100% NATIVE - DECIDUOUS		

PLANTING SCHEDULE SHADE AND ORNAMENTAL TREES						
SYM	QUAN	BOTANICAL NAME	COMMON NAME	MIN. PLANTING HEIGHT/WIDTH	ROOT	COMMENTS
DECIDUOUS TREES						
AR	25	ACER RUBRUM 'OCTOBER GLORY'	'OCTOBER GLORY' RED MAPLE	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
AK	8	ACER RUBRUM 'KARPICK'	'KARPICK' RED MAPLE	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
AC	12	AMELANCHER CANADENSIS	SHADBLow SERVICEBERRY	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
BN	10	BETULA NIGRA	RIVER BIRCH	2-2 1/2" CAL.	B&B	MULTI-TRUNK, FULL HEAD
PC	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
VC	13	CHIONANTHUS VIRGINICUS	WHITE FRINGEE TREE	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
CM	12	CORNUS MAS	COSELANGE CHERRY DOGWOOD	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
PL	9	KOELREUTERIA PANICULATA 'ROSE LANTERN'	ROSE LANTERN GOLDENRAINTREE	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
LS	3	LIQUIDAMBAR STRYACIFLUA ROTUNDOLOBA	ROUNDLOBA SWEET GUM	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
Y	30	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
Y	21	OXYDENDRON ARBOREUM	SOURWOOD	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
QA	3	QUERCUS ALBA	WHITE OAK	3 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
Q	3	QUERCUS IMBRICARIA	SHINGLE OAK	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
PF	15	QUERCUS PHELLOS	WILLOW OAK	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
TA	6	TILIA AMERICANA	AMERICAN LINDEN	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
VA	5	ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE ELM	2-2 1/2" CAL.	B&B	STRAIGHT TRUNK, FULL HEAD
	184	TOTAL	89% NATIVE - 11% NON-NATIVE			
EVERGREEN TREES						
AB	29	ABIES CONCOLOR	WHITE FIR	6' HIGH	B&B	STRAIGHT TRUNK, FULL BODY
IO	24	ILEX OPACA	AMERICAN HOLLY	6' HIGH	B&B	STRAIGHT TRUNK, FULL BODY
JD	27	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6' HIGH	B&B	STRAIGHT TRUNK, FULL BODY
KA	15	PICEA ABIES	NORWAY SPRUCE	6' HIGH	B&B	STRAIGHT TRUNK, FULL BODY
LA	29	PINUS STROBUS	WHITE PINE	6' HIGH	B&B	STRAIGHT TRUNK, FULL BODY
MA	18	PSEUDOTSUGA TAXIFOLIA	DOUGLAS FIR	6' HIGH	B&B	STRAIGHT TRUNK, FULL BODY
TH	37	THUJA OCCIDENTALIS 'WINTERGREEN'	WINTERGREEN ARBORVITAE	6' HIGH	B&B	STRAIGHT TRUNK, FULL BODY
	179	TOTAL	82% NATIVE - 18% NON-NATIVE			
DECIDUOUS SHRUBS						
ALS	12	ALNUS SERRULATA	SMOOTH ALDER	18"-24" HIGH	CONTAINER	
AM	5	AMELANCHER CANADENSIS	SHADBLow SERVICEBERRY	4' HIGH	B&B	BY BASIN A
COM	14	CORNUS AMOMUM	SILKY DOGWOOD	18"-24" HIGH	CONTAINER	
COA	15	COTONEASTER APICULATUS	CRANBERRY COTONEASTER	18"-24" SPREAD	CONTAINER	
IVF	48	ILEX VERTICILLATA	WINTERBERRY HOLLY	24"-36" HIGH	CONTAINER	(41) WINTER RED (FEMALE) (6) RHETT BUTLER (MALE)
IVR	20	ILEX VERTICILLATA	WINTERBERRY HOLLY	18"-24" HIGH	CONTAINER	(45) RED SPRITE (FEMALE) (7) JIM DANDY (MALE)
MYP	19	MYRICA PENNSYLVANIA	BAYBERRY	24" HIGH	CONTAINER	
RAG	19	RHUS AROMATICA 'GROW-LOW'	GROW LOW AROMATIC SUMAC	18"-24" SPREAD	CONTAINER	
SYC	27	SYMPHORICARPUS CHENALTHI	CHENALTHI CORALBERRY	18"-24" SPREAD	CONTAINER	
VA	8	VIBURNUM ACERIFOLIUM	MAPLELEAF VIBURNUM	18"-24" SPREAD	CONTAINER	
VK	5	VIBURNUM CARLESII	KOREAN SPICE VIBURNUM	18"-24" HIGH	CONTAINER	
VD	24	VIBURNUM DENTATUM	ARROWWOOD	18"-24" HIGH	CONTAINER	
VP	19	VIBURNUM PRUNIFOLIUM	BLACKHAW VIBURNUM	36" HIGH	CONTAINER or B&B	
	235	TOTAL	91% NATIVE - 9% NON-NATIVE			
EVERGREEN SHRUBS						
ICC	75	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY HOLLY	18"-24" HIGH	CONTAINER	
INS	13	ILEX X NELLIE R STEVENS	NELLIE STEVENS HOLLY	36" HIGH	CONTAINER or B&B	
PIE	7	PIERIS FLORIBUNDA	MOUNTAIN ANDROMEDA	24" HIGH	CONTAINER	
RHC	36	RHOODENDRON CAROLINIANUM 'ALBUM'	WHITE CAROLINA RHOODENDRON	24" HIGH	CONTAINER	
RHM	5	RHOODENDRON MAXIMUM	ROSEBAY RHOODENDRON	36" HIGH	CONTAINER or B&B	
RHS	34	RHOODENDRON SCHLIPPENBACHII	ROYAL AZALEA	18"-24" HIGH	CONTAINER	
TCC	10	TAXUS CUSPIDATA CAPITATA	PYRAMIDAL ENGLISH YEW	30" HIGH	CONTAINER or B&B	
	180	TOTAL	87% NATIVE - 13% NON-NATIVE			

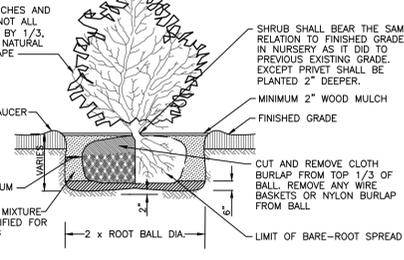
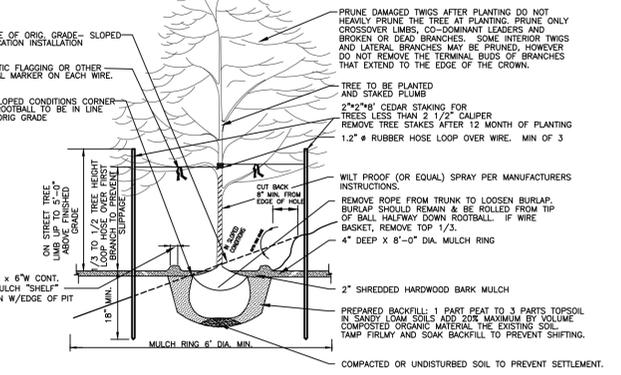
SEE ADDITIONAL PLANTINGS FOR WOODED UNDERSTORY PLANTS NOTED IN PLANTING REQUIREMENTS.



SEED MIX #1 - USE FOR OVERSEEDING BASIN & FOREBAY BOTTOM
SEEDING : BASIN FLOOR SEEDING FOR WILDLIFE AND PLANT DIVERSITY.
ERNMX - 127 FROM ERNST CONSERVATION SEEDS OR EQUAL

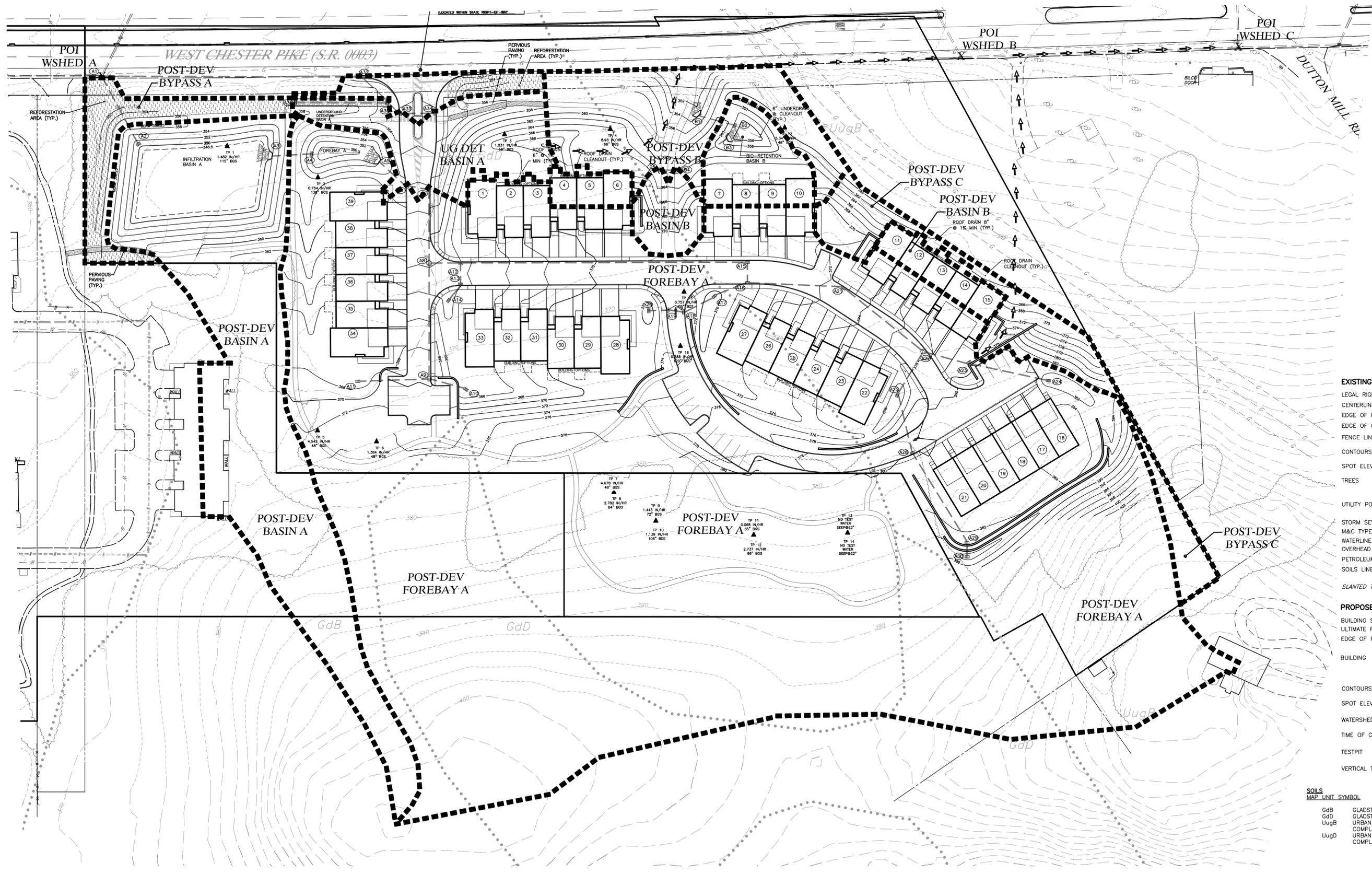
PERCENT	BOTANICAL NAME	COMMON NAME
25%	ALOPECURUS ARUNDINACEUS	CREeping FOXTAIL
25%	ELYMUS VIRGINICUS	VIRGINIA WILD RYE
20%	CAREX VULPINOIDEA	FOX SEDGE
5%	AGROSTIS SCABRA	TICKLEGRASS / ROUGH BENTGRASS
5%	POA PALUSTRIS	FOWL BLUEGRASS
4%	BIDENS CERNUA	NODDING BUR MARIGOLD
3%	SPARGANIUM EURYCARPUM	GIANT BUR REED
3%	VERBENA HASTATA	BLUE VERVAIN
2%	JUNCUS EFFUSUS	SOFT RUSH
2%	SCIRPUS ATROVIRENS	GREEN BULBRUSH
2%	SCIRPUS CYPERINUS	BONESET
2%	SCIRPUS POLYPHYLLUS	MANY LEAVED BULBRUSH
1%	MIMULUS RINGENS	SQUARE STEMMED
1%	SOLIDAGO PATULA	ROUGH LEAVED GOLDENROD
100%	TEMPORARY GRASSES	
100%	LOLIUM PERENNE	ANNUAL RYEGRASS

SEEDING RATE: 1/3 LB. PER 1000 SQ. FT.

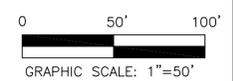


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NO.	REVISION	DATE	BY
7	REVISED PER TOWNSHIP REVIEW LETTER DATED 2/17/20	3/6/20	STA
6	FINAL PLAN SUBMISSION TO TOWNSHIP	1/17/20	STA
5	REVISED PER PENNDOT REVIEW LETTER	10/14/19	JJ
4	REVISED PER CCCD SUBMISSION	4	



- EXISTING FEATURES LEGEND**
- LEGAL RIGHT OF WAY
 - CENTERLINE OF ROAD
 - EDGE OF PAVE
 - EDGE OF GRAVEL
 - FENCE LINE
 - CONTOURS
 - SPOT ELEVATION
 - TREES
 - UTILITY POLE
 - STORM SEWER
 - M&C TYPE INLETS
 - WATERLINE
 - OVERHEAD WIRE
 - PETROLEUM GAS PIPELINE
 - SOILS LINE
 - SLANTED TEXT DENOTES EXISTING FEATURE
- PROPOSED LEGEND**
- BUILDING SETBACK LINE
 - ULTIMATE RIGHT-OF-WAY
 - EDGE OF PAVING
 - BUILDING
 - CONTOURS
 - SPOT ELEVATION
 - WATERSHED
 - TIME OF CONCENTRATION
 - TESTPIT
 - VERTICAL TEXT DENOTES PROPOSED FEATURE
- SOILS**
- | MAP UNIT SYMBOL | MAP UNIT NAME |
|-----------------|--|
| GdB | GLADSTONE GRAVELLY LOAM, 3-8% SLOPES |
| GdD | GLADSTONE GRAVELLY LOAM, 15-25% SLOPES |
| UugB | URBAN LAND-UDORTHENTS, SCHIST AND GNEISS COMPLEX, 0-8% SLOPES |
| UuD | URBAN LAND-UDORTHENTS, SCHIST AND GNEISS COMPLEX, 8-25% SLOPES |



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NO.	REVISION	DATE	BY
6	FINAL PLAN SUBMISSION TO TOWNSHIP	1/17/20	STA
5	REVISED PER PENNDOT REVIEW LETTER	10/14/19	JJ
4	REVISED PER CCCD SUBMISSION	4/2/19	JJ
3	UPDATED RETAINING WALL INFORMATION TO COORDINATE WITH RETAINING WALL PLANS	4/1/19	BG
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 12/11/18	1/30/19	BG
1	REVISED PER TOWNSHIP REVIEW LETTERS DATED 9/13/18 & 10/26/18	11/5/18	BG

SEAL	NORTH

MANAGER	
DESIGN	CHKD. BY
KK	
DRAFT	CHKD. BY
BG	
FILE	DATE
ROU-01	8/9/2018
NOTES	SCALE
	1"=50'

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SUBJECT
POST DEVELOPMENT WATERSHED PLAN
PRESERVE AT WILLISTOWN
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA

JOB NO.	187872
SHEET NO.	2 OF 3
DWG. NO.	WS287872