Westmoreland Conservation District

E&S Completeness & Technical Errors

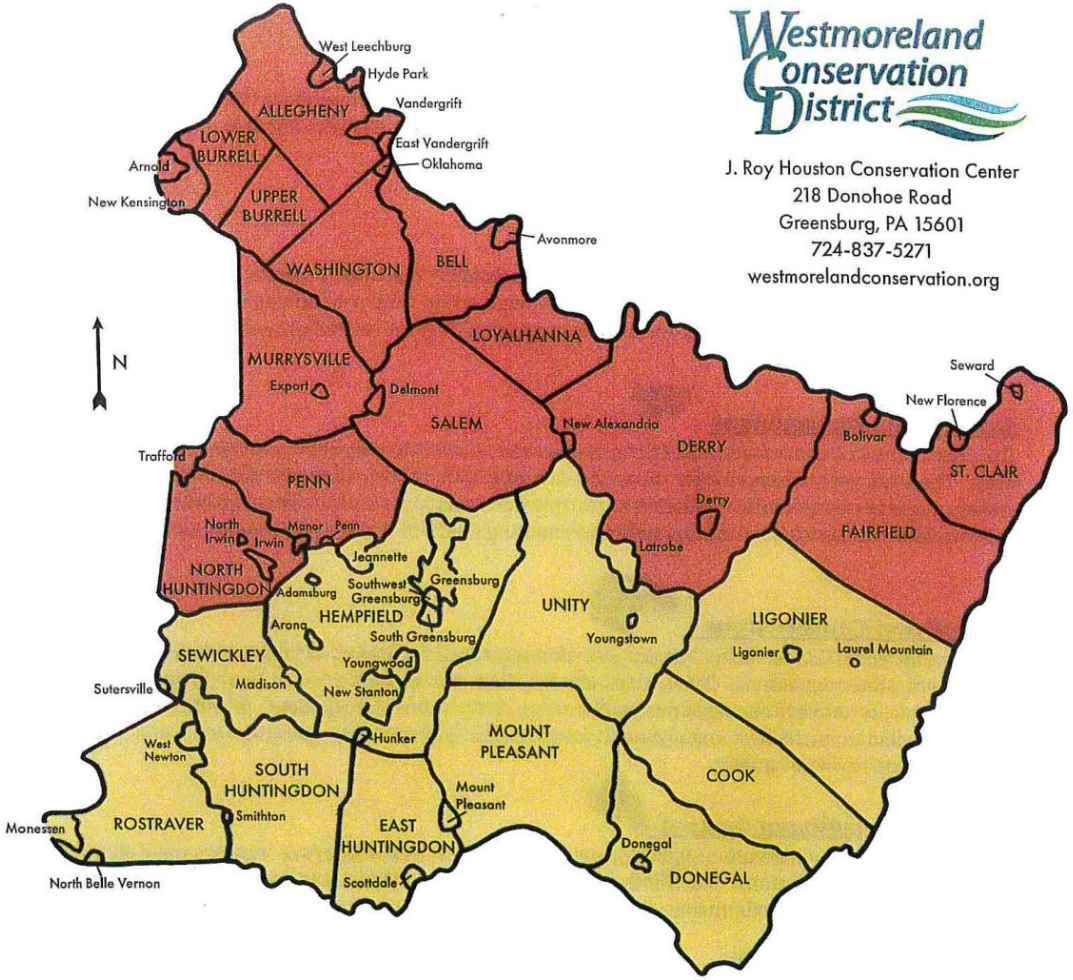
Presented by: Ryan Peckheiser & Jared Meharey

E&S Basics

- 5,000 sqft to 0.99 acres of earth disturbance = E&S plan
  - Check with township if they require WCD approval
- One acre or more = NPDES Permit

Ryan Peckheiser

Jared Meharey



Westmoreland Conservation District

J. Roy Houston Conservation Center
218 Donohoe Road
Greensburg, PA 15601
724-837-5271
westmorelandconservation.org

Completeness Review. What is it?

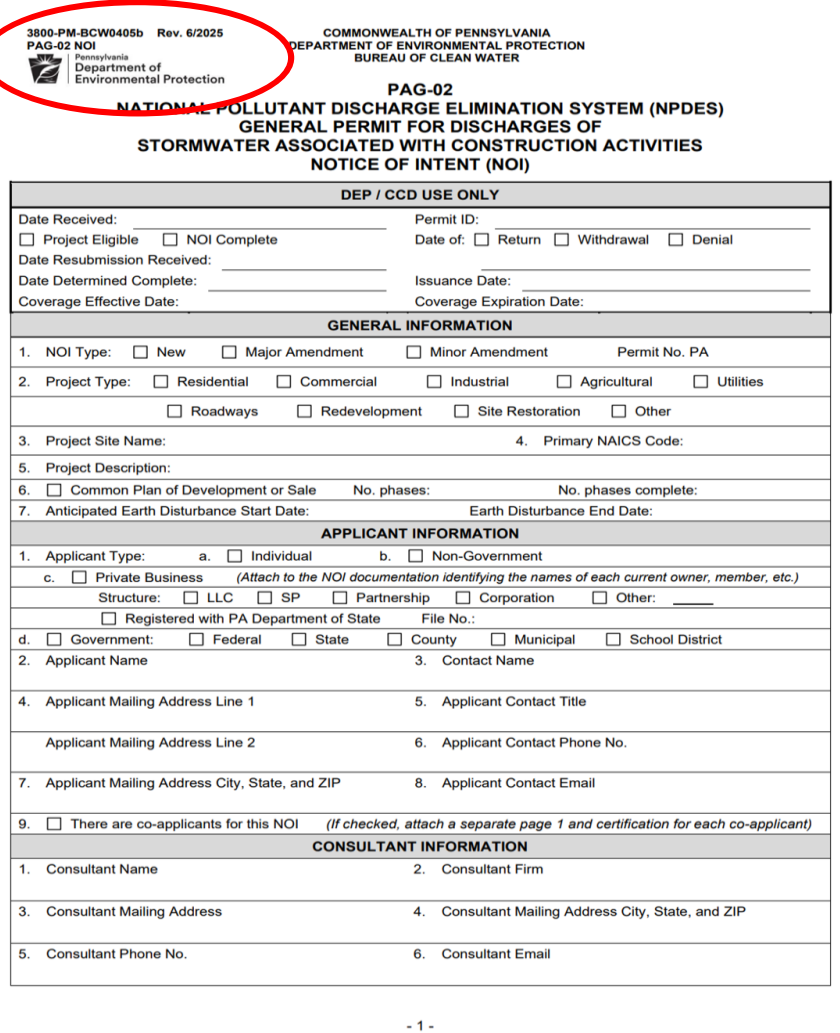
- Initial review that ensures all necessary materials for each permit application have been submitted
  - Includes forms, signatures, plan drawings, and worksheets
- Make sure basic necessities are on plan drawings
  - Includes symbols, BMPs, boundaries, wetland/stream information, construction sequence, soils information, and more

READ THE INSTRUCTIONS

For all forms and documents associated with an NPDES permit, understand information presented in specific form instructions.

NOI Form

- Basic information about the project, applicant, and consultant.
- **Most common errors:**
  - Missing signature
  - Not having "Certificate of Limited Liability Company Authority" or operating agreement
  - No documentation showing signing person is authorized
  - Using old NOI form: **6/2025 being most recent**
  - Total acres and earth disturbance not matching up



3800-PM-BCW0405b Rev. 6/2025
PAG-02 NOI
Pennsylvania Department of Environmental Protection

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

PAG-02
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR DISCHARGES OF
STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES
NOTICE OF INTENT (NOI)

DEP / CCD USE ONLY

Date Received: _____ Permit ID: _____
☐ Project Eligible ☐ NOI Complete Date of: ☐ Return ☐ Withdrawal ☐ Denial
Date Resubmission Received: _____ _____
Date Determined Complete: _____ Issuance Date: _____
Coverage Effective Date: Coverage Expiration Date:

GENERAL INFORMATION

1. NOI Type: ☐ New ☐ Major Amendment ☐ Minor Amendment Permit No. PA
2. Project Type: ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Utilities
   ☐ Roadways ☐ Redevelopment ☐ Site Restoration ☐ Other
3. Project Site Name: 4. Primary NAICS Code:
5. Project Description:
6. ☐ Common Plan of Development or Sale No. phases: No. phases complete:
7. Anticipated Earth Disturbance Start Date: Earth Disturbance End Date:

APPLICANT INFORMATION

1. Applicant Type: a. ☐ Individual b. ☐ Non-Government
   c. ☐ Private Business *(Attach to the NOI documentation identifying the names of each current owner, member, etc.)*
   Structure: ☐ LLC ☐ SP ☐ Partnership ☐ Corporation ☐ Other: ____
   ☐ Registered with PA Department of State File No.:
   d. ☐ Government: ☐ Federal ☐ State ☐ County ☐ Municipal ☐ School District
2. Applicant Name 3. Contact Name
4. Applicant Mailing Address Line 1 5. Applicant Contact Title
   Applicant Mailing Address Line 2 6. Applicant Contact Phone No.
7. Applicant Mailing Address City, State, and ZIP 8. Applicant Contact Email
9. ☐ There are co-applicants for this NOI *(If checked, attach a separate page 1 and certification for each co-applicant)*

CONSULTANT INFORMATION

1. Consultant Name 2. Consultant Firm
3. Consultant Mailing Address 4. Consultant Mailing Address City, State, and ZIP
5. Consultant Phone No. 6. Consultant Email

- 1 -

NOI Form

APPLICANT INFORMATION
1. Applicant Type: a. ☐ Individual b. ☐ Non-Government
c. ☒ Private Business *(Attach to the NOI documentation identifying the names of each current owner, member, etc.)*
Structure: ☐ LLC ☐ SP ☐ Partnership ☐ Corporation ☐ Other: _____
☐ Registered with PA Department of State File No.:
d. ☐ Government: ☐ Federal ☐ State ☐ County ☐ Municipal ☐ School District

NOI – APPLICANT INFORMATION

1. **Applicant Type**. Check the appropriate box to indicate whether the applicant is an a) individual (i.e., a person that is not a business), b) a non-government entity, c) a private business, or d) a government entity.

   If the applicant is a private business, select the type of business structure by checking the box for LLC (limited liability company), SP (sole proprietorship), Partnership (e.g., Limited Partnership), Corporation, or Other. If Other is selected enter the business structure in the space provided. Next, check the appropriate box if the business is registered with the Pennsylvania Department of State, and enter the Department of State's File Number for the business. The File Number can be determined by visiting the Department of State's website at: https://file.dos.pa.gov/search/business.

   For all private businesses, attach to the NOI legal documentation identifying the names of each current owner, member, partner, or officer of the business. Examples of legal documentation could include applicable forms provided on the Department of State's website at: https://www.dos.pa.gov/BusinessCharities/Business/RegistrationForms/Pages/default.aspx.

   If the applicant is a government entity, select the type of entity by selecting Federal, State, County, Municipal or School District.

2. **Applicant Name**. Enter the legal name of the applicant. Do not use registered fictitious names.

3. **Applicant Contact Name**. Applicants that are not individuals must provide the name of a person representing the applicant. This applicant contact must be an employee of the organization and must be located at the mailing address of the applicant and may receive correspondence on behalf of the applicant. This individual should be a high-level employee (e.g., CEO, VP, Operations Manager) or someone capable of answering questions regarding the organization. Identify the full name of the applicant contact.

NOI Form

Verify the person signing for the permit has authorization to do so.

3800-PM-BCW405b Rev. 6/2025
PAG-02 NOI

CERTIFICATION FOR PAG-02 APPLICANTS

I certify under penalty of law that this application and all related attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my own knowledge and on inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. The responsible official's signature also verifies: that the activity is eligible for coverage under the PAG-02 General Permit; that BMPs, SCMs, E&S Plan, PPC Plan, PCSM Plan, and other controls are being or will be, implemented to ensure that water quality standards and effluent limits are attained; and that I will submit a Notice of Termination (NOT) to DEP/CCD upon final stabilization of the project site if I am the permittee or co-permittee at that time. I grant permission to DEP/CCD and EPA to enter the project site for inspection purposes. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or both for knowing violations pursuant to Section 309(c)(4) of the Clean Water Act and 18 Pa. C.S.A. § 4904.

For applicants that are individuals or sole proprietors, check the box below and proceed to the signature section.

☐ **Individual / Sole Proprietor**

For all other applicants, select the applicable box after reviewing the certification below.

I hereby certify that I am the signatory pursuant to 25 Pa, Code § 92a.22 and 40 CFR § 122.22 and that I am the person who is responsible for decision-making regarding environmental compliance functions for the entity named below, the manager of one or more manufacturing, production, or operating facilities of the applicant and am authorized to make management decisions which govern the operation of regulated facility including having explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure the applicant's long-term environmental compliance with environmental laws and regulations, and I am responsible for ensuring that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements.

☐ **Corporation/Company:** I am the ☐ Responsible Corporate Officer ☐ President ☐ Vice President ☐ Secretary ☐ Treasurer ☐ Other: _____ for **(Entity Name)** _____

☐ **LLC:** I am a person either holding a position designated or individually listed on a "Certificate of Limited Liability Company Authority" filed with the Pennsylvania Department of State as a position/person with the authority to bind the company OR the person listed in the LLC's most current and active operating agreement as having the authority to bind the company. **Attach the applicable "Certificate of Limited Liability Company Authority" or operating agreement**. If the operating agreement is attached, identify the page and paragraph containing the applicable information.

☐ **Partnership:** I am a general partner of **(Entity Name)** _____
☐ Partnership ☐ LP ☐ LLP

☐ **Government:** I am the principal executive officer or ranking elected official of
(Entity Name) _____
☐ Federal ☐ State ☐ Municipal ☐ Other

☐ **Power of Attorney / delegation of contractual authority** (documentation supporting delegation of contracting authority must be provided) for **(Entity Name)** _____

Name (type or print legibly) _____ **Title** _____

Signature _____ **Date Signed** _____

County/Municipal Notification Forms

- Must have applicant's signature
- If county/municipal signature is not provided, include evidence of mailing to appropriate party
  - **Mailing receipt**
- Make sure limits of disturbance matches with other documents

3800-FM-BCW0271c Rev. 12/2025
Municipal Notification Form

Pennsylvania Department of Environmental Protection

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

Municipal Notification of Planned Land Development
For Chapter 102 Permits

Project Information

Applicant Name: _____ Contact Name: _____
Applicant Address: _____ Contact Phone: _____
Applicant City, State, ZIP: _____ County: _____
Description of Proposed Land Development and Stormwater Controls: Municipality: _____
Project Area: _____ acres ☐ Phased
Disturbance: _____ acres
Surface Waters Receiving Stormwater Discharges:
Tax Parcel ID(s) Affected by Proposed Land Development:
Discharge to: ☐ MS4 ☐ Other SS ☐ CSS
Consultant Name: _____ Consultant Email: _____
The following information was submitted to the municipality for this project:
☐ Land Development / Subdivision Plan ☐ E&S Plan ☐ PCSM Plan ☐ Other:

Municipal Plan / Ordinance Information

1.	Is there an adopted municipal or multi-municipal comprehensive plan?	☐ Yes ☐ No
2.	Is there an enacted municipal or multi-municipal zoning ordinance?	☐ Yes ☐ No
3.	If Yes to #2, is the proposed project consistent with the ordinance?	☐ Yes ☐ No
4.	Is there a municipal stormwater management ordinance?	☐ Yes ☐ No
5.	If Yes to #4, is the proposed project consistent with the ordinance, without waiver?	☐ Yes ☐ No
6.	If Yes to #4, indicate type of ordinance:	☐ Act 167 ☐ DEP Model Ordinance ☐ Other

Applicant Certification

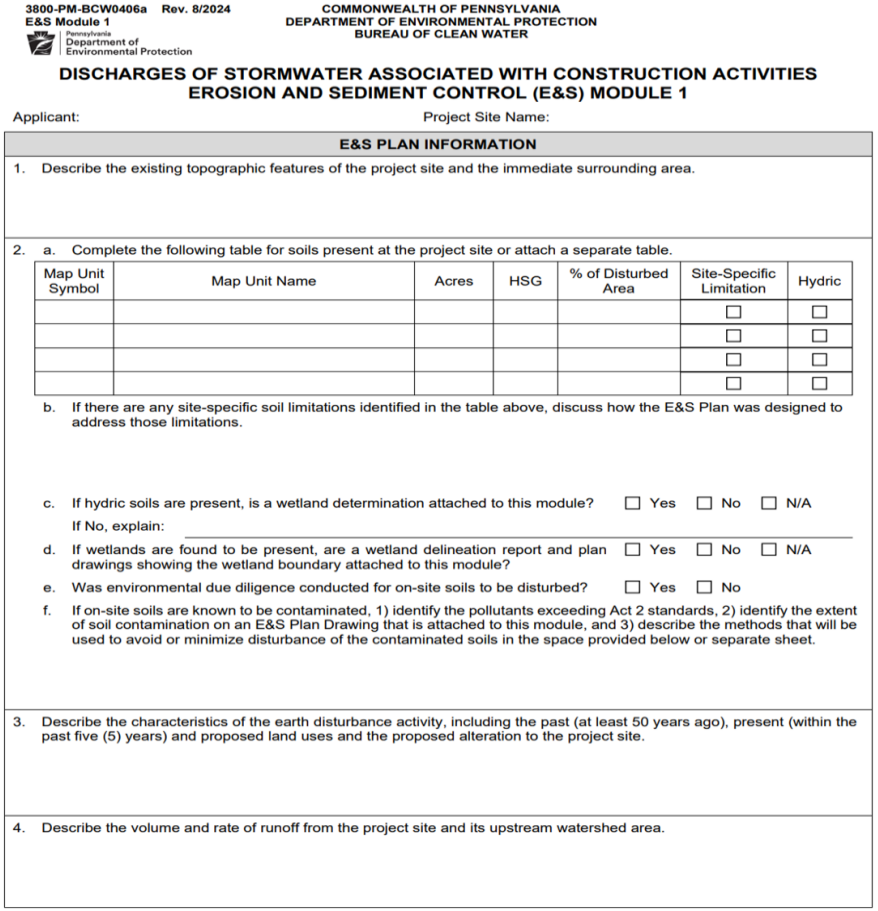
I certify under penalty of law (see 18 Pa.C.S. § 4904 (relating to unsworn falsification)) that the information reported herein was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the information, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant Name
Applicant Signature
Applicant Title
Date of Signature

Municipal Acknowledgement

The municipality acknowledges that a permit application for the above-referenced project has been submitted to a reviewing agency and that notification requirements of Act 14 of 1984 and Acts 67, 68, and 127 of 2000 have been satisfied. The information reported herein by the applicant regarding municipal plan and ordinance information is true and accurate. The municipality reserves the right to comment to the reviewing agency relative to comprehensive plans, zoning, and stormwater ordinance consistency. Municipal acknowledgment of receipt of notification shall not be construed as project approval.

Municipal Representative Name
Municipal Representative Signature
Municipal Representative Title
Date of Signature



3800-PM-BCW0406a Rev. 8/2024
E&S Module 1
Pennsylvania Department of Environmental Protection

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

DISCHARGES OF STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES
EROSION AND SEDIMENT CONTROL (E&S) MODULE 1

Applicant: Project Site Name:

E&S PLAN INFORMATION

1. Describe the existing topographic features of the project site and the immediate surrounding area.

2. a. Complete the following table for soils present at the project site or attach a separate table.

Map Unit Symbol	Map Unit Name	Acres	HSG	% of Disturbed Area	Site-Specific Limitation	Hydric
					☐	☐
					☐	☐
					☐	☐
					☐	☐

b. If there are any site-specific soil limitations identified in the table above, discuss how the E&S Plan was designed to address those limitations.

c. If hydric soils are present, is a wetland determination attached to this module? ☐ Yes ☐ No ☐ N/A
If No, explain:

d. If wetlands are found to be present, are a wetland delineation report and plan drawings showing the wetland boundary attached to this module? ☐ Yes ☐ No ☐ N/A

e. Was environmental due diligence conducted for on-site soils to be disturbed? ☐ Yes ☐ No

f. If on-site soils are known to be contaminated, 1) identify the pollutants exceeding Act 2 standards, 2) identify the extent of soil contamination on an E&S Plan Drawing that is attached to this module, and 3) describe the methods that will be used to avoid or minimize disturbance of the contaminated soils in the space provided below or separate sheet.

3. Describe the characteristics of the earth disturbance activity, including the past (at least 50 years ago), present (within the past five (5) years) and proposed land uses and the proposed alteration to the project site.

4. Describe the volume and rate of runoff from the project site and its upstream watershed area.

- 1 -

E&S Module 1

- Includes information about E&S features for the permit like soils and E&S BMPs
- **<u>Most common errors:</u>**
  - Missing E&S BMPs
  - Not including cut/fill balance sheet
  - Not including wetland delineation report
  - Missing signature

6.	☐	E&S Plan Drawings have been developed for the project and are attached to the NOI/application.
7.	☐	All applicable Standard E&S Worksheets from Appendix B of the E&S Manual, or other calculations equivalent to Appendix B Worksheets, have been completed and are attached to the NOI/application.
8.	☐	Supporting E&S BMP calculations are attached to the NOI/application.
9.	☐	A complete sequence of BMP installation and removal in relation to the scheduling of earth disturbance activities, prior to, during and after earth disturbance activities, that ensures the proper functioning of all BMPs is provided on the E&S Plan Drawings.
10.	☐	A cut/fill balance sheet with soil volumes identified is attached.
11.	☐	BMPs will be inspected on a weekly basis and after measurable storm events (i.e., at least 0.25 inch).
12.	☐	The following information relating to temporary stabilization measures is identified on the E&S Plan Drawings: 1) vegetative species, 2) % pure live seed, 3) seed application rate, 4) fertilizer type, 5) fertilizer application rate, 6) mulch type, 7) mulching rate, and 8) liming rate.
13.	☐	The following information relating to permanent stabilization measures is identified on the E&S Plan Drawings: 1) vegetative species, 2) % pure live seed, 3) seed application rate, 4) fertilizer type, 5) fertilizer application rate, 6) mulch type, 7) mulching rate, 8) liming rate, 9) anchor material, 10) anchoring method, 11) rate of anchor material application, 12) topsoil placement depth, and 13) seeding season dates.
14.	☐	The procedures that will be taken to ensure that recycling or disposal of materials associated with or from the project site will be conducted properly is described on the E&S Plan Drawings.
15.	☐	The E&S Plan has been planned, designed, and will be implemented to be consistent with the PCSM Plan.
16.	☐	The project includes existing and/or proposed riparian forest buffers as shown on the E&S / PCSM Plan Drawings.
17.	☐	Construction dewatering is expected and BMPs for treating this water are shown on E&S Plan Drawings.
18.		Identify the presence of any naturally occurring geologic formations or soil conditions that may have the potential to cause pollution during earth disturbance activities below. If such formations or conditions exist, identify BMPs on the E&S Plan Drawings that will be implemented to avoid or minimize potential pollution. (Enter "N/A" if not applicable).
19.		Identify whether the potential exists for thermal impacts to surface waters from the earth disturbance activity below. If such potential exists, identify BMPs on the E&S Plan Drawings that will be implemented to avoid, minimize, or mitigate potential thermal impacts.

Cut & Fill “Heat” Map

Elevations Table				
Number	Minimum Elevation	Maximum Elevation	Area	Color
1	-10.00	-5.00	0.00	
2	-5.00	-2.50	25981.13	
3	-2.50	0.00	224960.18	
4	0.00	2.50	368323.03	
5	2.50	5.00	4234.64	
6	5.00	12.00	0.00	

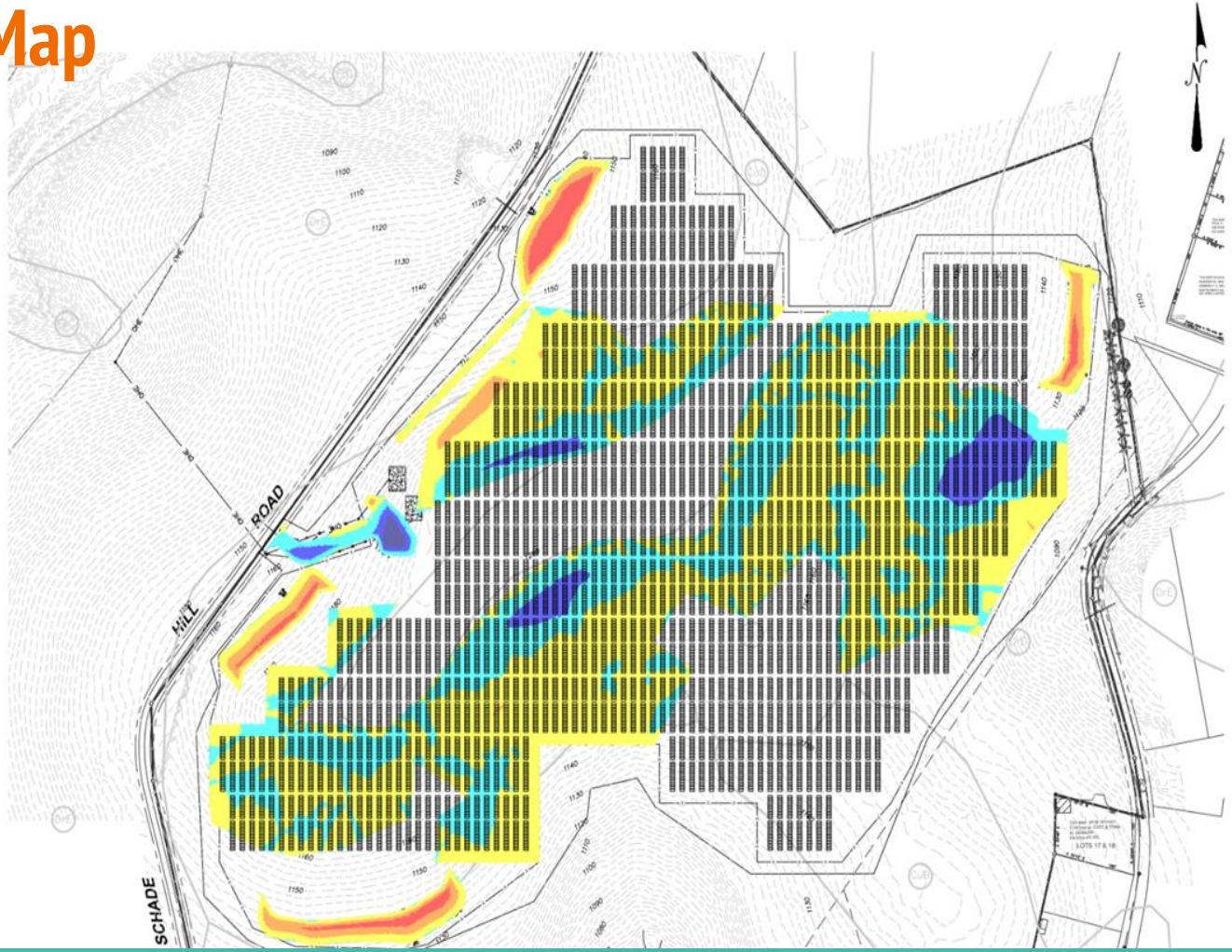
SITE GRADING ELEVATIONS

Elevations Table				
Number	Minimum Elevation	Maximum Elevation	Area	Color
1	-10.00	-5.00	0.00	
2	-5.00	-2.50	0.00	
3	-2.50	0.00	143.01	
4	0.00	2.50	27279.46	
5	2.50	5.00	19948.95	
6	5.00	12.00	11483.26	

INFILTRATION BASIN ELEVATIONS

Elevations Table				
Number	Minimum Elevation	Maximum Elevation	Area	Color
1	-10.00	-5.00	1683.27	
2	-5.00	-2.50	3011.72	
3	-2.50	0.00	5908.40	
4	0.00	2.50	1271.77	
5	2.50	5.00	68.73	
6	5.00	12.00	0.00	

ACCESS ROAD ELEVATIONS



Erosion Potential Analysis (EPA)

- If a discharge point **does not directly** connect to a stream/waterbody, **then an EPA is required**
- Must include photos of flow path and calculations proving that erosion will not be an issue

Pennsylvania Natural Diversity Inventory (PNDI)

- Provides ecological information about species within the area of interest
- **<u>Most common errors:</u>**
  - Missing signature
  - Missing PNDI information on plan sheets
  - Not including PNDI receipt information

STANDARD E&S WORKSHEET # 12
Sediment Basin Capacity Requirements

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

BASIN NUMBER			
PERMANENT OR TEMPORARY BASIN?	(P or T)		
SPECIAL PROTECTION WATERSHED?	(YES OR NO)		
Karst soils?	(YES OR NO)		
(A) MAXIMUM TOTAL DRAINAGE AREA	(AC)		
IS DRAINAGE AREA (A) MORE THAN 10% LARGER THAN THE PRECONSTRUCTION CONDITION?	(YES OR NO)		
(A_1) DISTURBED ACRES IN DRAINAGE AREA (AC)			
(I) INITIAL REQ'D DEWATERING ZONE (5,000 X A)	(CF)		
(T) REDUCTION FOR TOP DEWATERING (-700 X A)	(CF)		
(P) REDUCTION FOR PERMANENT POOL (-700 X A)	(CF)		
(L) REDUCTION FOR 4:1 FLOW LENGTH:WIDTH (-350 X A)	(CF)		
(D) REDUCTION FOR 4 TO 7 DAY DEWATERING (- 350 X A)	(CF)		
(Sv) REQUIRED DEWATERING ZONE [I - (T+P+L+D)][1]	(CF)		
(Sd) REQUIRED SEDIMENT STORAGE VOLUME (1000 X A_1)	(CF)		
(St) TOTAL REQUIRED STORAGE VOLUME (Sv + Sd)	(CF)		
TOTAL STORAGE VOLUME PROVIDED (@ ELEV 3)[2]	(CF)		
DEWATERING TIME FOR DEWATERING ZONE	(DAYS)		
REQUIRED DISCHARGE CAPACITY (2 X A)	(CFS)[3]		
PRINCIPAL SPILLWAY TYPE (PERFORATED RISER, SKIMMER, etc.)			
PEAK FLOW FROM 10 YR/24 HR STORM FOR DRAINAGE AREA (A)			
PRINCIPAL SPILLWAY CAPACITY (@ ELEV 5)	(CFS)[4]		
EMERGENCY SPILLWAY CAPACITY (@ ELEV 5)	(CFS)[4]		
TOTAL BASIN DISCHARGE CAPACITY (@ ELEV 5)	(CFS)		
EMERGENCY SPILLWAY PROTECTIVE LINING[5]			
OUTLET TO A SURFACE WATER?	(YES OR NO)[6]		
PEAK FLOW FROM A 100 YR/24 HR STORM FOR DRG. AREA (A)			

1 The minimum dewatering zone capacity for sediment basins is (3,600 X A). No reduction is permitted in Special Protection (HQ and EV) Watersheds.
2 Total Storage Volume provided at riser crest.
3 Or provide calculations to show peak flow from 25 yr./24 hr. storm for area (A) is routed through the basin.
4 Provide supporting computations.
5 If grass lining is proposed, spillway should be constructed in original ground unless a suitable TRM lining is used. Wherever a TRM is used, riprap should be placed at the bottom of the embankment to prevent scour.
6 If no, and basin is permanent or drainage area is more than 10% larger than pre-construction, provide supporting calculations to show accelerated erosion will not result from the proposed discharge. For discharges increasing volume or rate of flow onto a neighboring property prior to entering a surface water, an easement should be obtained prior to plan submittal.

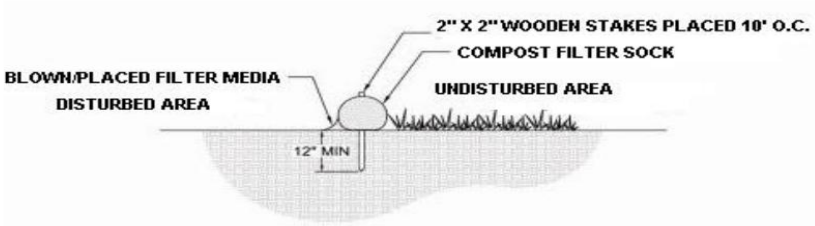
E&S Standard Worksheets

- E&S BMPs have certain worksheets that must be completed
- Other calculations **can be submitted** but the official DEP worksheets **must be included**
- Worksheets that are very similar to the DEP worksheets **can be used IF they have ALL of the same information provided**

Compost Filter Sock

STANDARD E&S WORKSHEET #1
Compost Filter Socks

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____



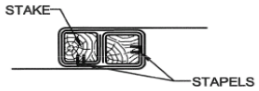
SOCK NO.	Dia. In.	LOCATION	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)

Silt Fence

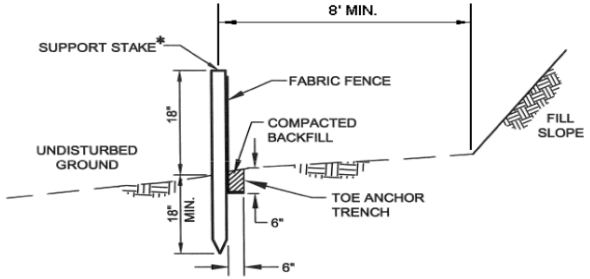
STANDARD E&S WORKSHEET #3
Standard Silt Fence

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

*STAKES SPACED @ 8' MAX.
USE 2" x 2" (± 3/8") WOOD
OR EQUIVALENT STEEL
(U OR T) STAKES



JOINING FENCE SECTIONS



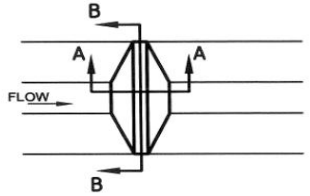
ELEVATION VIEW

FENCE NO.	LOCATION	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)

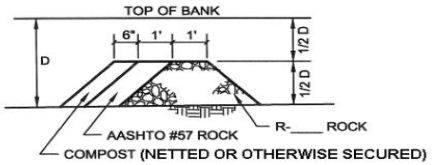
Rock Filters
(** in channels)

STANDARD E&S WORKSHEET # 8
Rock Filters

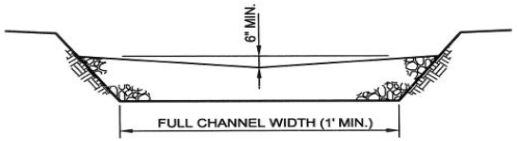
PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____



PLAN VIEW



SECTION A-A



SECTION B-B

Note: Not Suitable for Channels less than two feet total depth

ROCK FILTER NO.	LOCATION	D (FT)	RIPRAP SIZE

Channels - Rational Method, WS 9 & 10 required

STANDARD E&S WORKSHEET # 9
Time of Concentration

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

OVERLAND FLOW:

$$T_{c(sheet\ flow)} = \left[\frac{2(\quad)(n)}{3(\quad)^{0.5}}\right]^{0.4673}$$

PATH NUMBER	LENGTH L (FT)	"n" VALUE	AVERAGE SLOPE (S) (ft/ft)	TIME (minutes)

n	Type of Cover
0.02	smooth pavement
0.1	bare parched soil
0.3	poor grass cover
0.4	average grass cover
0.8	dense grass cover

(L = 150' maximum)

SHALLOW CONCENTRATED FLOW:

PATH NUMBER	LENGTH (FT)	TYPE OF COVER	AVERAGE SLOPE(S) (ft/ft)	V (ft/sec)	TIME (minutes)

CHANNEL FLOW:

PATH NUMBER	LENGTH (ft)	AREA (sq. ft.)	AVG. SLOPE (S) (ft/ft)	WET'D PERIM (ft)	HYDR. RADIUS (ft)	MANNING'S "n"	V (ft/sec)	CHANNEL TIME (minutes)	T_C (minutes)

CHANNEL DIMENSIONS:

PATH NUMBER	BOTTOM WIDTH (ft)	LEFT SIDE SLOPE (H:V)	RIGHT SIDE SLOPE (H:V)	TOTAL DEPTH (ft)	TOP WIDTH (ft)

STANDARD E&S WORKSHEET # 10
Rational Equation

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

DETERMINE WATERSHED "C" VALUE

CHANNEL NUMBER	DRAINAGE AREA NUMBER	TYPE OF COVER	C VALUE	AREA (acres)	(C X A)	C_W

DETERMINE RAINFALL INTENSITY:

CHANNEL NUMBER	T_C	R_2	R_{10}	I_2	I_{10}

DETERMINE PEAK RUNOFF RATES (Q = C I A)

CHANNEL NUMBER	C VALUE	I (in./hr.)	A (acres)	Q_2 (cfs)	Q_{10} (cfs)

Channels

STANDARD E&S WORKSHEET # 11
Channel Design Data

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

CHANNEL OR CHANNEL SECTION						
TEMPORARY OR PERMANENT?	(T OR P)					
DESIGN STORM	(2, 5, OR 10 YR)					
ACRES	(AC)					
MULTIPLIER	(1.6, 2.25, or 2.75)[1]					
Q_r (REQUIRED CAPACITY)	(CFS)					
Q (CALCULATED AT FLOW DEPTH d)	(CFS)					
PROTECTIVE LINING[2]						
n (MANNING'S COEFFICIENT)[2]						
V_a (ALLOWABLE VELOCITY)	(FPS)					
V (CALCULATED AT FLOW DEPTH d)	(FPS)					
τ_a (MAX ALLOWABLE SHEAR STRESS)	(LB/FT^2)					
τ_d (CALC'D SHEAR STRESS AT FLOW DEPTH d)	(LB/FT^2)					
CHANNEL BOTTOM WIDTH	(FT)					
CHANNEL SIDE SLOPES	(H:V)					
D (TOTAL DEPTH)	(FT)					
CHANNEL TOP WIDTH @ D	(FT)					
d (CALCULATED FLOW DEPTH)	(FT)					
CHANNEL TOP WIDTH @ FLOW DEPTH d	(FT)					
BOTTOM WIDTH: FLOW DEPTH RATIO	(12:1 MAX)					
d_{50} STONE SIZE	(IN)					
A (CROSS-SECTIONAL AREA)	(SQ. FT.)					
R (HYDRAULIC RADIUS)						
S (BED SLOPE)[3]	(FT/FT)					
S_c (CRITICAL SLOPE)	(FT/FT)					
$.7S_c$	(FT/FT)					
$1.3S_c$	(FT/FT)					
STABLE FLOW?	(Y/N)					
FREEBOARD BASED ON UNSTABLE FLOW	(FT)					
FREEBOARD BASED ON STABLE FLOW	(FT)					
MINIMUM REQUIRED FREEBOARD[4]	(FT)					
DESIGN METHOD FOR PROTECTIVE LINING [5] PERMISSIBLE VELOCITY (V) OR SHEAR STRESS (S)						

1. Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.
3. Slopes may not be averaged.
4. Minimum Freeboard is 0.5 ft. or ¼ Total Channel Depth, whichever is greater
5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

Sediment Basins

Standard E&S Worksheets 12-18

STANDARD E&S WORKSHEET # 12
Sediment Basin Capacity Requirements

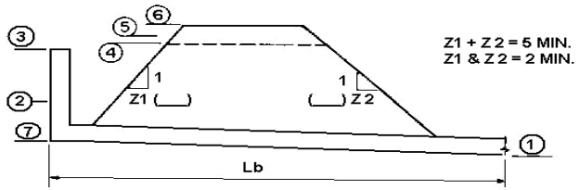
PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

BASIN NUMBER			
PERMANENT OR TEMPORARY BASIN?	(P or T)		
SPECIAL PROTECTION WATERSHED?	(YES OR NO)		
Karst soils?	(YES OR NO)		
(A) MAXIMUM TOTAL DRAINAGE AREA	(AC)		
IS DRAINAGE AREA (A) MORE THAN 10% LARGER THAN THE PRECONSTRUCTION CONDITION?	(YES OR NO)		
(A_1) DISTURBED ACRES IN DRAINAGE AREA (AC)			
(I) INITIAL REQ'D DEWATERING ZONE (5,000 X A)	(CF)		
(T) REDUCTION FOR TOP DEWATERING (-700 X A)	(CF)		
(P) REDUCTION FOR PERMANENT POOL (-700 X A)	(CF)		
(L) REDUCTION FOR 4:1 FLOW LENGTH:WIDTH (-350 X A)	(CF)		
(D) REDUCTION FOR 4 TO 7 DAY DEWATERING (- 350 X A)	(CF)		
(Sv) REQUIRED DEWATERING ZONE [I - (T+P+L+D)][1]	(CF)		
(Sd) REQUIRED SEDIMENT STORAGE VOLUME (1000 X A_1)	(CF)		
(St) TOTAL REQUIRED STORAGE VOLUME (Sv + Sd)	(CF)		
TOTAL STORAGE VOLUME PROVIDED (@ ELEV 3)[2]	(CF)		
DEWATERING TIME FOR DEWATERING ZONE	(DAYS)		
REQUIRED DISCHARGE CAPACITY (2 X A)	(CFS)[3]		
PRINCIPAL SPILLWAY TYPE (PERFORATED RISER, SKIMMER, etc.)			
PEAK FLOW FROM 10 YR/24 HR STORM FOR DRAINAGE AREA (A)			
PRINCIPAL SPILLWAY CAPACITY (@ ELEV 5)	(CFS)[4]		
EMERGENCY SPILLWAY CAPACITY (@ ELEV 5)	(CFS)[4]		
TOTAL BASIN DISCHARGE CAPACITY (@ ELEV 5)	(CFS)		
EMERGENCY SPILLWAY PROTECTIVE LINING[5]			
OUTLET TO A SURFACE WATER?	(YES OR NO)[6]		
PEAK FLOW FROM A 100 YR/24 HR STORM FOR DRG. AREA (A)			

1 The minimum dewatering zone capacity for sediment basins is (3,600 X A). No reduction is permitted in Special Protection (HQ and EV) Watersheds.
2 Total Storage Volume provided at riser crest.
3 Or provide calculations to show peak flow from 25 yr./24 hr. storm for area (A) is routed through the basin.
4 Provide supporting computations.
5 If grass lining is proposed, spillway should be constructed in original ground unless a suitable TRM lining is used. Wherever a TRM is used, riprap should be placed at the bottom of the embankment to prevent scour.
6 If no, and basin is permanent or drainage area is more than 10% larger than pre-construction, provide supporting calculations to show accelerated erosion will not result from the proposed discharge. For discharges increasing volume or rate of flow onto a neighboring property prior to entering a surface water, an easement should be obtained prior to plan submittal.

STANDARD E&S WORKSHEET # 13
Sediment Basin Dimensions and Elevations

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____



BASIN NUMBER			
1. DISCHARGE PIPE ELEVATION	(FT)		
2. ELEVATION AT TOP OF SEDIMENT STORAGE ZONE (@ Sd) (MIN. 1.0' ABOVE ELEVATION 7)	(FT)		
3. ELEVATION AT TOP OF DEWATERING ZONE (St) (CREST OF PRINCIPAL SPILLWAY)	(FT)		
4. EMERGENCY SPILLWAY CREST ELEVATION (MIN. 0.5' ABOVE ELEVATION 3)	(FT)		
5. 2 CFS/ACRE OR 25-YR/24-HR FLOW ELEVATION	(FT)		
6. TOP OF EMBANKMENT ELEVATION (MIN. 24" ABOVE ELEVATION 5 OR 12" WITH ROUTED 100-YR/24-HR STORM)	(FT)		
7. BASIN BOTTOM ELEVATION	(FT)		
AVERAGE BOTTOM WIDTH	(FT)		
AVERAGE BOTTOM LENGTH	(FT)		
(SA_{min}) REQUIRED SURFACE AREA AT ELEVATION 2	(SQ. FT.)		
SURFACE AREA PROVIDED AT ELEVATION 2	(SQ. FT.)		
AVERAGE BASIN WIDTH (W) AT ELEVATION 3	(FT)		
FLOW LENGTH (L) AT ELEVATION 3	(FT)		
FLOW LENGTH:WIDTH RATIO AT ELEVATION 3	(L/W)		
SILT CURTAIN OR FOREBAY? (IF YES, INDICATE WHICH)			
EMBANKMENT TOP WIDTH	(FT, 8' MIN.)		
EMBANKMENT SOIL TYPE(S)			
KEY TRENCH DEPTH	(FT, 2' MIN.)		
KEY TRENCH WIDTH	(FT, 4' MIN.)		
RISER DIAMETER/TYPE	(15" MIN.)		
BARREL DIAMETER/TYPE	(12" MIN.)		
Lb (BARREL LENGTH)	(FT)		
EMERGENCY SPILLWAY WIDTH	(FT)		
EMERGENCY SPILLWAY SIDE SLOPES	(H:V)		
EMERGENCY SPILLWAY DEPTH	(FT)		

For irregular shaped traps, provide stage storage data

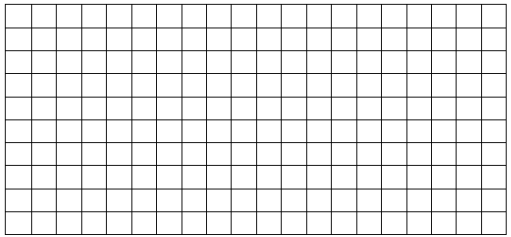
STANDARD E&S WORKSHEET # 14
Sediment Basin/Sediment Trap Storage Data

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

WATER SURFACE ELEVATION (FEET)	AREA (SQ. FT.)	AVERAGE AREA (SQ. FT.)	DIFFERENCE IN ELEVATION (FEET)	STORAGE VOLUME (CUBIC FEET)	
				INCREMENTAL	TOTAL

STAGE STORAGE CURVE

ELEVATION (FT)



STORAGE VOLUME (CF)

NOTE: Show Elevation 2 and Elevation 3 in above table as well as on the Stage Storage Curve.

STANDARD E&S WORKSHEET # 15
Sediment Basin/Sediment Trap Dewatering Discharge Data

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

PERFORATION DISCHARGE (TOP OF RISER TO SEDIMENT CLEAN-OUT ELEVATION)

WATER SURFACE ELEVATION[1]	RISER PERFORATION DISCHARGE RATES ROW ELEVATION[2]									TOTAL DISCHARGE (CFS)[3]
	ROW 1	ROW 2	ROW 3	ROW 4	ROW 5	ROW 6	ROW 7	ROW 8	ROW 9	
Elevation 3										

1. From E&S Worksheet #14: Top elevation is Top of Dewatering Zone (Elevation 3 on E&S Worksheet #13), and bottom elevation is Top of Sediment Storage Zone (Elevation 2 on E&S Worksheet #13).

2. All perforations should be the same size. One-inch diameter perforations are preferred. Specify size of perforations _____ inch diameter. Each orifice row should have approximately the same number of perforations and the orifice rows should be equally spaced vertically. Specify the number of perforations in each orifice row _____.

3. Insert value into column 4 of Standard E&S Worksheet #16

NOTE: Where skimmers are used, Figure 7.2, with basin dewatering volume and skimmer orifice size plotted (or calculations as per Faircloth's handbook), should be submitted instead of Standard E&S Worksheets #15 and #16.

STANDARD E&S WORKSHEET # 16
Sediment Basin Dewatering Time Data

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

WATER SURFACE ELEVATION (FT)[1]	STORAGE VOLUME (CU. FT.)[2]	INCREMENTAL STORAGE VOLUME (CU. FT.)	DISCHARGE (CFS)[3]	AVERAGE DISCHARGE (CFS)	TIME (HRS)	ACCUMULATED TIME (HRS)

1. From E&S Worksheet #15, first column
2. From E&S Worksheet #14, fifth column
3. From E&S Worksheet #15, last column

NOTE: Calculate dewatering time from top of Dewatering Zone (Elevation 3, top of riser) to top of Sediment Storage Zone (Elevation 2).

STANDARD E&S WORKSHEET # 17
Sediment Basin Discharge Capacity

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

PRINCIPAL SPILLWAY DISCHARGE CAPACITY

BASIN NO:

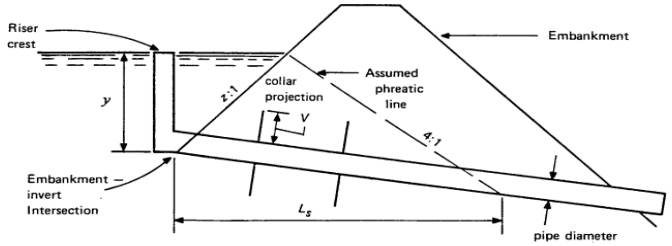
WATER SURFACE ELEVATION[4] (FT)	Flow into Top of TEMPORARY RISER			Flow into Top of PERMANENT RISER			BARREL PIPE FLOW		PRINCIPAL SPILLWAY CAPACITY[3] (CFS)
	HEAD (FT)	ORIFICE FLOW[1] Q(CFS)	WEIR FLOW Q(CFS)	HEAD (FT)	ORIFICE FLOW[1] Q(CFS)	WEIR FLOW Q(CFS)	HEAD[2] (FT)	Q (CFS)	

EMERGENCY SPILLWAY DISCHARGE CAPACITY

WATER SURFACE ELEVATION[4] (FT)	EMERGENCY SPILLWAY BOTTOM WIDTH[5] (FT)	TABLE OR C VALUE USED[6]	EMERGENCY SPILLWAY CAPACITY (CFS)	REQUIRED DISCHARGE CAPACITY (CFS)	TOTAL DISCHARGE CAPACITY PROVIDED (CFS)[7]

1. Flow into top of riser only (Flow through perforations not included)
2. Water surface elevation minus elevation at centerline of pipe outlet
3. Least of orifice, weir, or pipe flow (Peak flow from 10 yr/24 hr storm Min.)
4. 24" below top of embankment (12" if 100-year storm routed through basin)
5. 8 Ft. minimum
6. Use Tables 7.5 through 7.8 or equation for broad-crested weir [$Q = CLH^{1.5}$, where $C \leq 2.8$ (MAX)]; for Riprap larger than R-3 or flows less than 1.5' deep adjust C downward]
7. Principal Spillway Capacity + Emergency Spillway Capacity

STANDARD E&S WORKSHEET # 18
Anti-seep Collar Design



BASIN NO.	TEMP. OR PERM.	Y (FT)	Z	Ls (FT)	Lf (FT)	V (IN)	BARREL DIA. (IN)	COLLAR SIZE (IN)	NO. COLLARS	COLLAR SPACING (FT)	DISTANCE TO 1ST COLLAR (FT)

STANDARD E&S WORKSHEET # 19
Sediment Trap Design Data

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

TRAP NUMBER			
DRAINAGE AREA (5 ACRES MAX)	(AC)		
REQUIRED CAPACITY (2,000 CF/AC)	(CF)		
CAPACITY PROVIDED AT ELEVATION h	(CF)		
SOIL TYPES IN DRAINAGE AREA			
REQUIRED SURFACE AREA (5,300 x AC)[1]	(SQ. FT)		
* AVERAGE BOTTOM LENGTH	(FT)		
* AVERAGE BOTTOM WIDTH	(FT)		
* AVERAGE TRAP LENGTH AT ELEVATION h	(FT)		
* AVERAGE TRAP WIDTH AT ELEVATION h	(FT)		
SURFACE AREA AT ELEVATION h	(SQ FT)		
BOTTOM ELEVATION	(FT)		
CLEAN-OUT ELEVATION (@ 700 CF/AC)[2]	(FT)		
TOP OF EMBANKMENT ELEVATION[3]	(FT)		
EMBANKMENT HEIGHT	(FT)		
CREST OF SPILLWAY ELEVATION[4]	(FT)		
FLOW LENGTH AT ELEVATION h	(FT)		
FLOW LENGTH/WIDTH RATIO AT ELEV. h[5]	(2:1 MIN)		

1 If sandy clays, silty clays, silty clay loams, clay loams, or clays predominate soil types.
2 Minimum 12" above bottom of trap
3 Minimum 12" above elevation at which 1.5 cfs/acre discharge capacity is provided.
4 Minimum 24" above bottom of trap
5 4:1 Flow Length:Width ratio required for HQ and EV watersheds.

EMBANKMENT SPILLWAYS

OUTLET WIDTH (2 x # ACRES MIN.)[1]	(FT)		
SPILLWAY HEIGHT h	(FT)		
OUTLET SIDE SLOPES	(2H:1V MAX.)		
SPILLWAY OUTSIDE SLOPE Z1	(2 MIN.)		
SPILLWAY INSIDE SLOPE Z2	(2 MIN.)		

1 6 x # Acres Min. if not discharging directly to a waterway

RISER PIPE SPILLWAYS

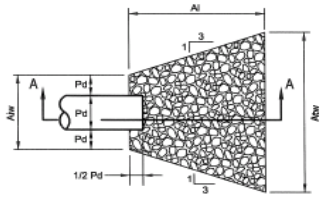
Dr (RISER DIAMETER, 8" MIN.)	(IN)		
Db (BARREL DIAMETER, 6" MIN.)	(IN)		
SPILLWAY CAPACITY WITH 12" FREEBOARD	(CFS)		
BARREL OUTLET ELEVATION	(FT)		
MAX WATER SURFACE ELEVATION (@ 1.5 CFS/AC. DISCHARGE)	(FT)		

OUTLET BASIN

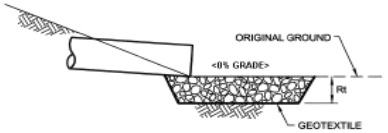
LENGTH (6 Db)	(FT)		
WIDTH (3 Db)	(FT)		
DEPTH (Db)	(FT)		
RIPRAP PROTECTION	(R-Size, R-3 min.)		

STANDARD E&S WORKSHEET # 20
Riprap Apron Outlet Protection

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____



PLAN VIEW



SECTION A - A

NO.	PIPE DIA. Do (in.)	TAIL WATER COND. (Max or Min)	MAN. "n" FOR PIPE	PIPE SLOPE (FT/FT)	Q (CFS)	V* (FPS)	RIPRAP SIZE	Rt (in)	Al (ft)	Aiw (ft)	Atw (ft)

*:The anticipated velocity (V) should not exceed the maximum permissible shown in Table 6.6 for the proposed riprap protection. Adjust for less than full pipe flow. Use Manning's equation to calculate velocity for pipe slopes ≥ 0.05 ft/ft.

Plan drawings

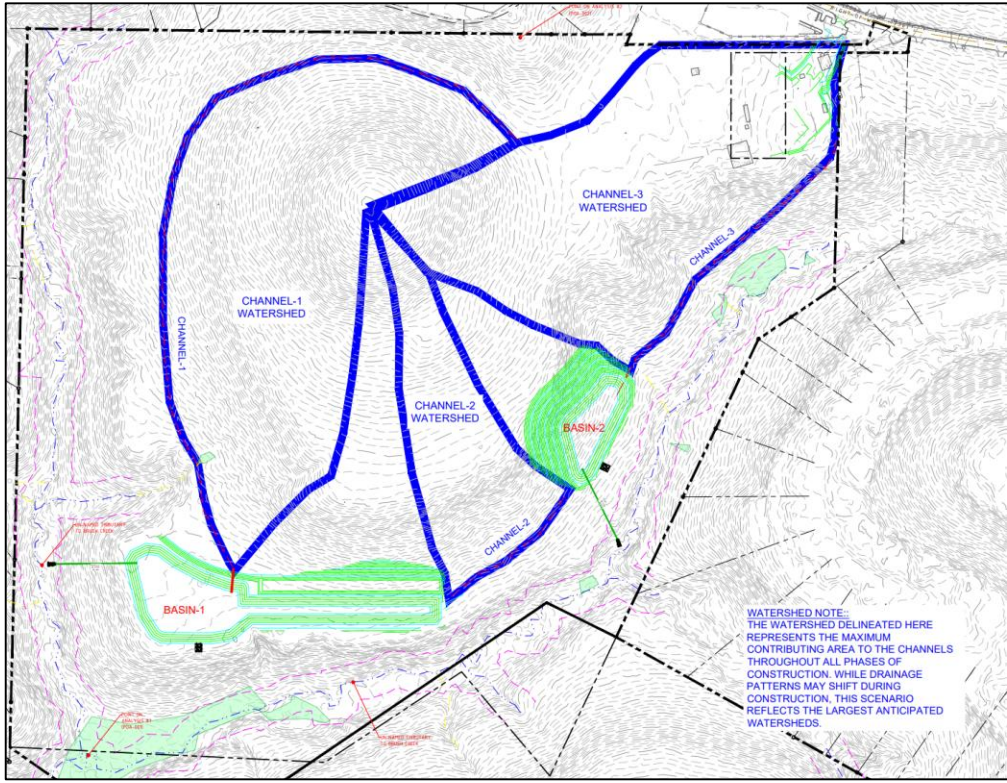
- Basic information/visuals:
  - All symbols identified
  - All E&S BMPs provided with correct construction detail
  - Appropriate labeling
  - **Discharge points provided**
  - **Drainage area map for E&S BMPs**
  - Maintenance and recycling programs

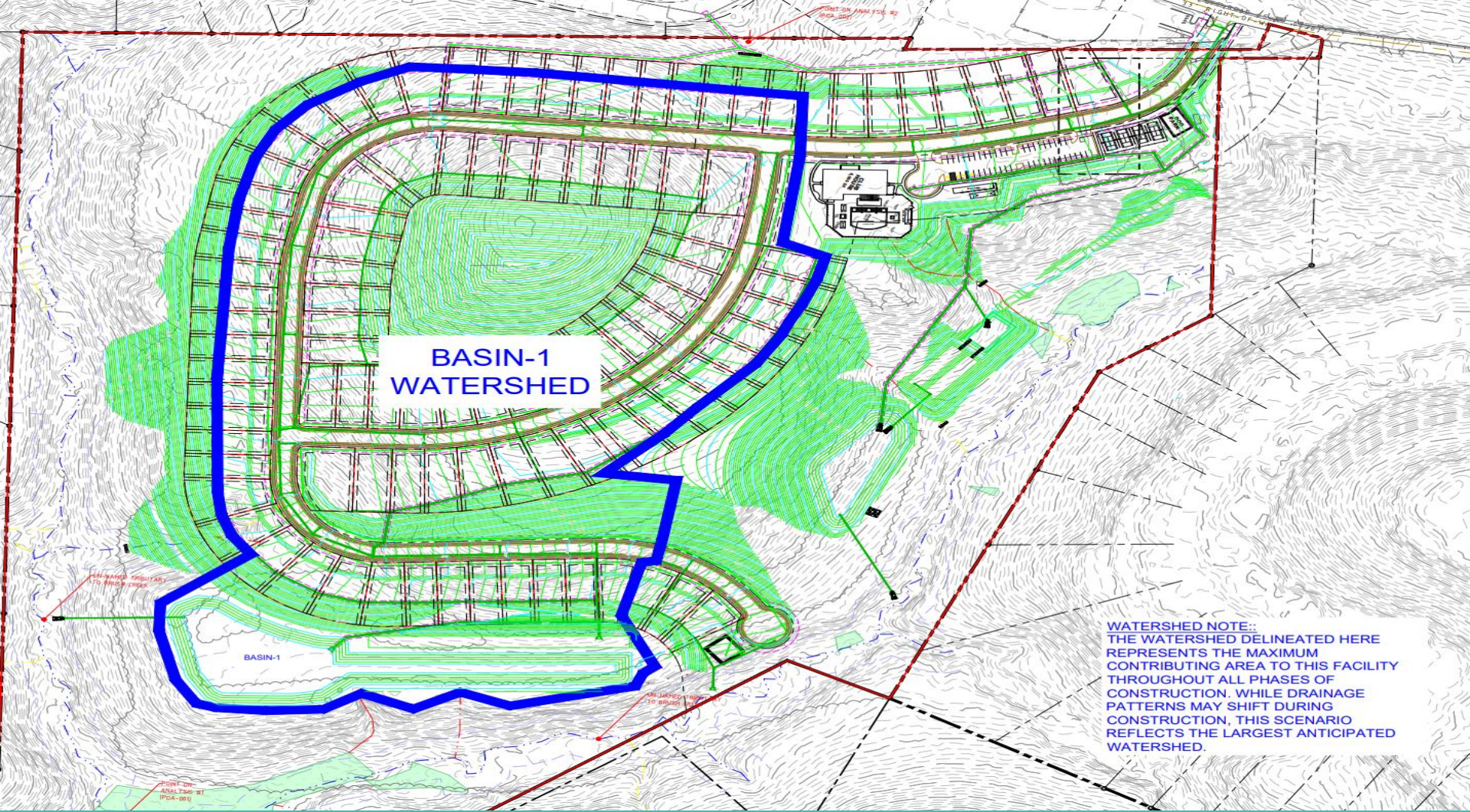
Plan Drawings

- No more “not for construction” labels. Plans received for permit application review must be designated as final plans.
- On both the E&S and PCSM plans, the permit/project boundary must be shown in addition to the LOD.
  - May be same boundary, shown as LOD/Permit or LOD/Project
- Wetlands, streams, and floodways clearly shown on E&S and PCSM plans.
  - Label streams based on delineation of perennial, intermittent, ephemeral.

E&S BMP Drainage Areas

- Common BMP's that should have drainage areas shown on E&S plans:
  1. Sediment Basins
  2. Sediment Traps (including compost sock sediment traps)
  3. Channels




BASIN-1
WATERSHED
BASIN-1
WATERSHED NOTE::
THE WATERSHED DELINEATED HERE REPRESENTS THE MAXIMUM CONTRIBUTING AREA TO THIS FACILITY THROUGHOUT ALL PHASES OF CONSTRUCTION. WHILE DRAINAGE PATTERNS MAY SHIFT DURING CONSTRUCTION, THIS SCENARIO REFLECTS THE LARGEST ANTICIPATED WATERSHED.

Westmoreland Conservation District

Technical Review

What is it?

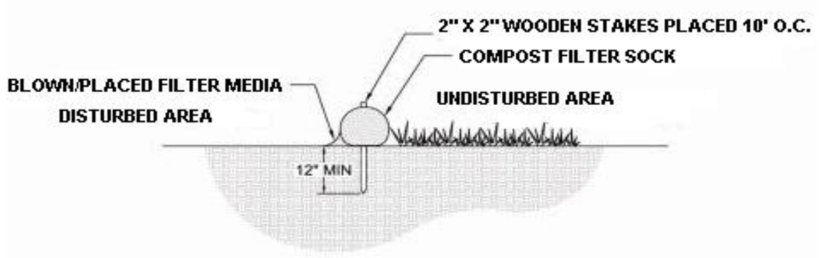
- Detailed evaluation about the permit application as a whole which includes:
  - Calculations making sense/are matching up
  - Construction sequence
  - Locations of BMPs
  - More BMPs needed?
  - Do BMPs need readjusted?

Sediment Barriers

- Compost filter sock (CFS), silt fence, and others similar barriers
- **<u>Most common errors:</u>**
  - Barriers going <u>against contours</u>
  - CFS and silt fence <u>not having the 8ft 45 degree</u> up turn
  - Worksheet <u>calculations not matching</u> what is on the plans

STANDARD E&S WORKSHEET #1
Compost Filter Socks

PROJECT NAME: ______________________
LOCATION: ______________________
PREPARED BY: ______________ DATE: ______________
CHECKED BY: ______________ DATE: ______________



SOCK NO.	Dia. In.	LOCATION	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)

STANDARD E&S WORKSHEET # 11
Channel Design Data

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

CHANNEL OR CHANNEL SECTION						
TEMPORARY OR PERMANENT?	(T OR P)					
DESIGN STORM	(2, 5, OR 10 YR)					
ACRES	(AC)					
MULTIPLIER	(1.6, 2.25, or 2.75)[1]					
Q_r (REQUIRED CAPACITY)	(CFS)					
Q (CALCULATED AT FLOW DEPTH d)	(CFS)					
PROTECTIVE LINING[2]						
n (MANNING'S COEFFICIENT)[2]						
V_a (ALLOWABLE VELOCITY)	(FPS)					
V (CALCULATED AT FLOW DEPTH d)	(FPS)					
τ_a (MAX ALLOWABLE SHEAR STRESS)	(LB/FT^2)					
τ_d (CALC'D SHEAR STRESS AT FLOW DEPTH d)	(LB/FT^2)					
CHANNEL BOTTOM WIDTH	(FT)					
CHANNEL SIDE SLOPES	(H:V)					
D (TOTAL DEPTH)	(FT)					
CHANNEL TOP WIDTH @ D	(FT)					
d (CALCULATED FLOW DEPTH)	(FT)					
CHANNEL TOP WIDTH @ FLOW DEPTH d	(FT)					
BOTTOM WIDTH: FLOW DEPTH RATIO	(12:1 MAX)					
d_{50} STONE SIZE	(IN)					
A (CROSS-SECTIONAL AREA)	(SQ. FT.)					
R (HYDRAULIC RADIUS)						
S (BED SLOPE)[3]	(FT/FT)					
S_c (CRITICAL SLOPE)	(FT/FT)					
$.7S_c$	(FT/FT)					
$1.3S_c$	(FT/FT)					
STABLE FLOW?	(Y/N)					
FREEBOARD BASED ON UNSTABLE FLOW	(FT)					
FREEBOARD BASED ON STABLE FLOW	(FT)					
MINIMUM REQUIRED FREEBOARD[4]	(FT)					
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBLE VELOCITY (V) OR SHEAR STRESS (S)						

1. Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.
3. Slopes may not be averaged.
4. Minimum Freeboard is 0.5 ft. or ¼ Total Channel Depth, whichever is greater
5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

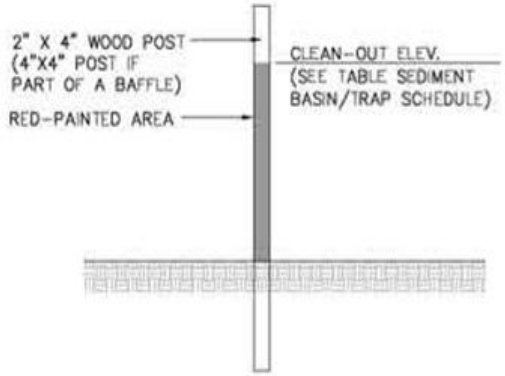
Channels

- Diversions divert runoff coming from off site and collectors collect runoff coming from the site
- **Most common errors:**
  - Dimensions from worksheet not matching plan drawings. Example: **Channel widths**
  - Not providing two sets of calculations for vegetated channels, one set for temporary liner and the other for vegetated conditions
  - Permanent channels must have the 10 YR design storm

Sediment Basins

- There are multiple sediment basin worksheets that relate to each other. For instance worksheets 14 & 12 since the information in both reflect storage.
- **Most common errors:**
  - Cleanout stake location not provided
  - Basin elevations not matching up between map sheets, construction details, and worksheets
  - Cleanout elevation needs to be at least 1ft above the bottom elevation

Sediment Basins

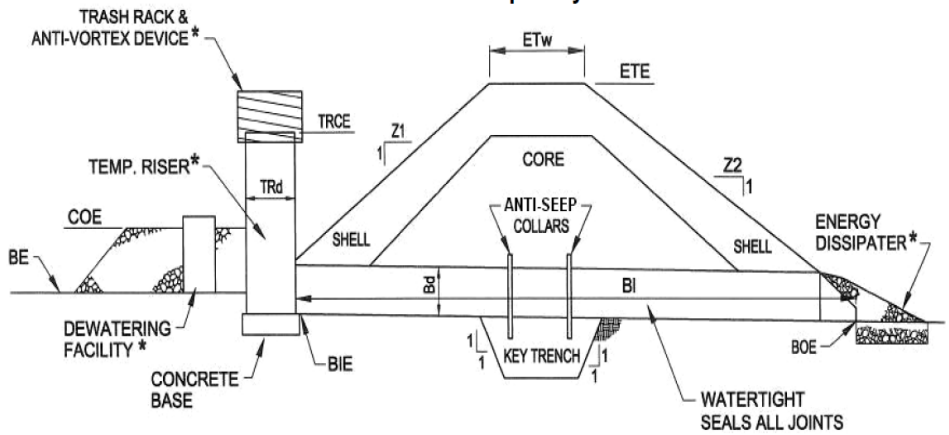


NOTES:

1. A CLEAN OUT STAKE SHALL BE PLACED IN THE CENTER OF EACH SEDIMENT TRAP AND BASIN.
2. WHEN SEDIMENT REACHES THE CLEAN OUT ELEVATION, ALL ACCUMULATED SEDIMENT SHALL BE REMOVED FROM SEDIMENT TRAPS AND BASINS. TRAPS AND BASINS MUST BE RESTORED TO ORIGINAL DIMENSIONS.

CLEAN OUT STAKE DETAIL

STANDARD CONSTRUCTION DETAIL # 7-6
Sediment Basin Embankment and Spillway Details - Perforated Riser



PA DEP

NOTE: This table is intentionally blank and should be filled in by the plan preparer.

BASIN NO.	Z1 (FT)	Z2 (FT)	TEMPORARY RISER DIA TRd (IN)	TEMPORARY RISER CREST ELEV TRCE (FT)	TEMPORARY RISER MAT'L	BARREL DIA Bd (IN)	BARREL INLET ELEV BIE (FT)	BARREL MAT'L	BARREL LENGTH BI (FT)	BARREL OUTLET ELEV BOE (FT)

EMBANKMENT TOP ELEV ETE (FT)	TOP WIDTH Etw (FT)	KEY TRENCH DEPTH (FT)	KEY TRENCH WIDTH (FT)	CLEANOUT ELEV COE (FT)	BOTTOM ELEV BE (FT)

Sediment Traps

- Similar to sediment basins in many ways including common errors
- **Most common errors:**
  - Cleanout stake location missing
  - Information between map sheets, construction details, and worksheets not matching up
  - Clean out elevation needs to be 1ft or more above the trap bottom elevation.
  - Bottom elevation above seasonal high-water table or other water bodies

STANDARD E&S WORKSHEET # 19
Sediment Trap Design Data

PROJECT NAME: _____
LOCATION: _____
PREPARED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

TRAP NUMBER			
DRAINAGE AREA (5 ACRES MAX)	(AC)		
REQUIRED CAPACITY (2,000 CF/AC) (CF)			
CAPACITY PROVIDED AT ELEVATION h	(CF)		
SOIL TYPES IN DRAINAGE AREA			
REQUIRED SURFACE AREA (5,300 x AC)[1]	(SQ. FT)		
* AVERAGE BOTTOM LENGTH	(FT)		
* AVERAGE BOTTOM WIDTH	(FT)		
* AVERAGE TRAP LENGTH AT ELEVATION h	(FT)		
* AVERAGE TRAP WIDTH AT ELEVATION h	(FT)		
SURFACE AREA AT ELEVATION h	(SQ FT)		
BOTTOM ELEVATION	(FT)		
CLEAN-OUT ELEVATION (@ 700 CF/AC)[2]	(FT)		
TOP OF EMBANKMENT ELEVATION[3]	(FT)		
EMBANKMENT HEIGHT	(FT)		
CREST OF SPILLWAY ELEVATION[4]	(FT)		
FLOW LENGTH AT ELEVATION h	(FT)		
FLOW LENGTH/WIDTH RATIO AT ELEV. h[5]	(2:1 MIN)		

1 If sandy clays, silty clays, silty clay loams, clay loams, or clays predominate soil types.
2 Minimum 12" above bottom of trap
3 Minimum 12" above elevation at which 1.5 cfs/acre discharge capacity is provided.
4 Minimum 24" above bottom of trap
5 4:1 Flow Length:Width ratio required for HQ and EV watersheds.

EMBANKMENT SPILLWAYS

OUTLET WIDTH (2 x # ACRES MIN.)[1]	(FT)		
SPILLWAY HEIGHT h	(FT)		
OUTLET SIDE SLOPES	(2H:1V MAX.)		
SPILLWAY OUTSIDE SLOPE Z1	(2 MIN.)		
SPILLWAY INSIDE SLOPE Z2	(2 MIN.)		

1 6 x # Acres Min. if not discharging directly to a waterway

RISER PIPE SPILLWAYS

Dr (RISER DIAMETER, 8" MIN.)	(IN)		
Db (BARREL DIAMETER, 6" MIN.)	(IN)		
SPILLWAY CAPACITY WITH 12" FREEBOARD	(CFS)		
BARREL OUTLET ELEVATION	(FT)		
MAX WATER SURFACE ELEVATION (@ 1.5 CFS/AC. DISCHARGE)	(FT)		

OUTLET BASIN

LENGTH (6 Db)	(FT)		
WIDTH (3 Db)	(FT)		
DEPTH (Db)	(FT)		
RIPRAP PROTECTION	(R-Size, R-3 min.)		

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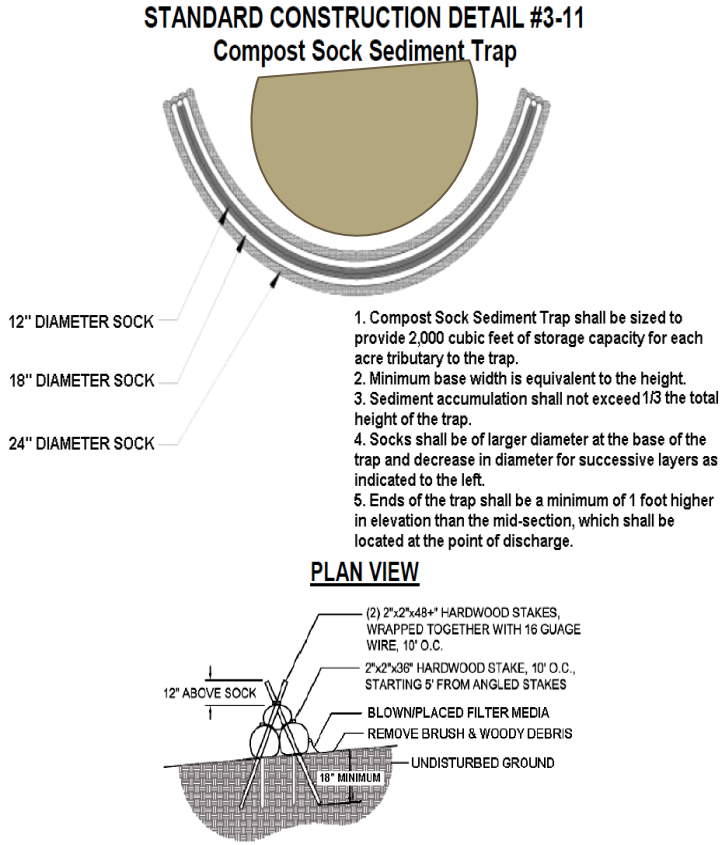


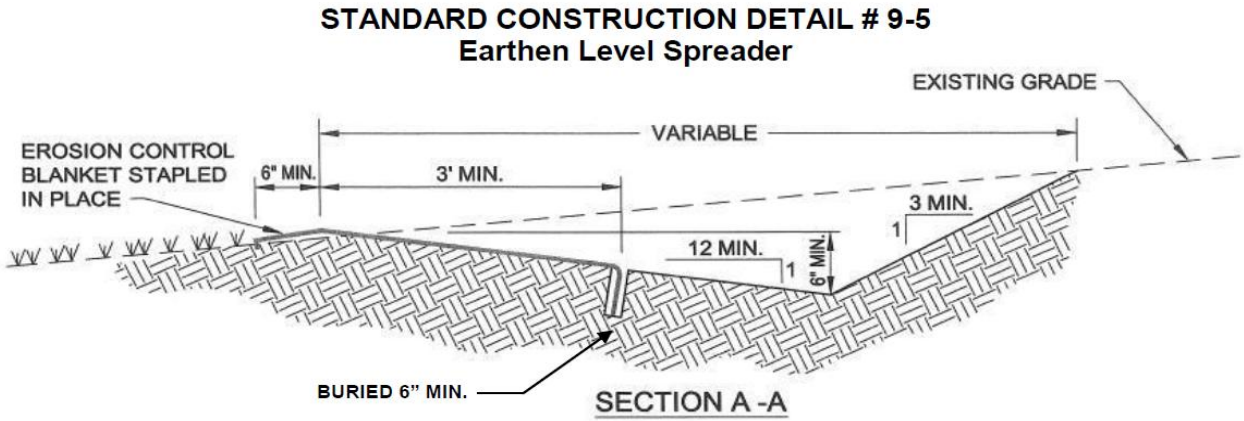
Compost Sock Trap

- Usually stacks of compost filter sock <u>but the minimum trap height can be one 24” diameter sock</u>
- Most common errors:
  - Not including <u>cleanout information</u>
  - Drainage area being <u>too big</u> (maximum is 5 acres)
  - Not including <u>upturns</u>
- **Highly recommend sump pits, increases capacity**

Level Spreaders

- Make sure to provide level spreader information on E&S plan sheets
- Difficult to install effectively
  - **Includes: location, construction detail, and dimensions**
- Two types of level spreaders:
  - Structural
  - Earthen

Refer to Appendix G in E&S Manual



Westmoreland Conservation District

Questions?