

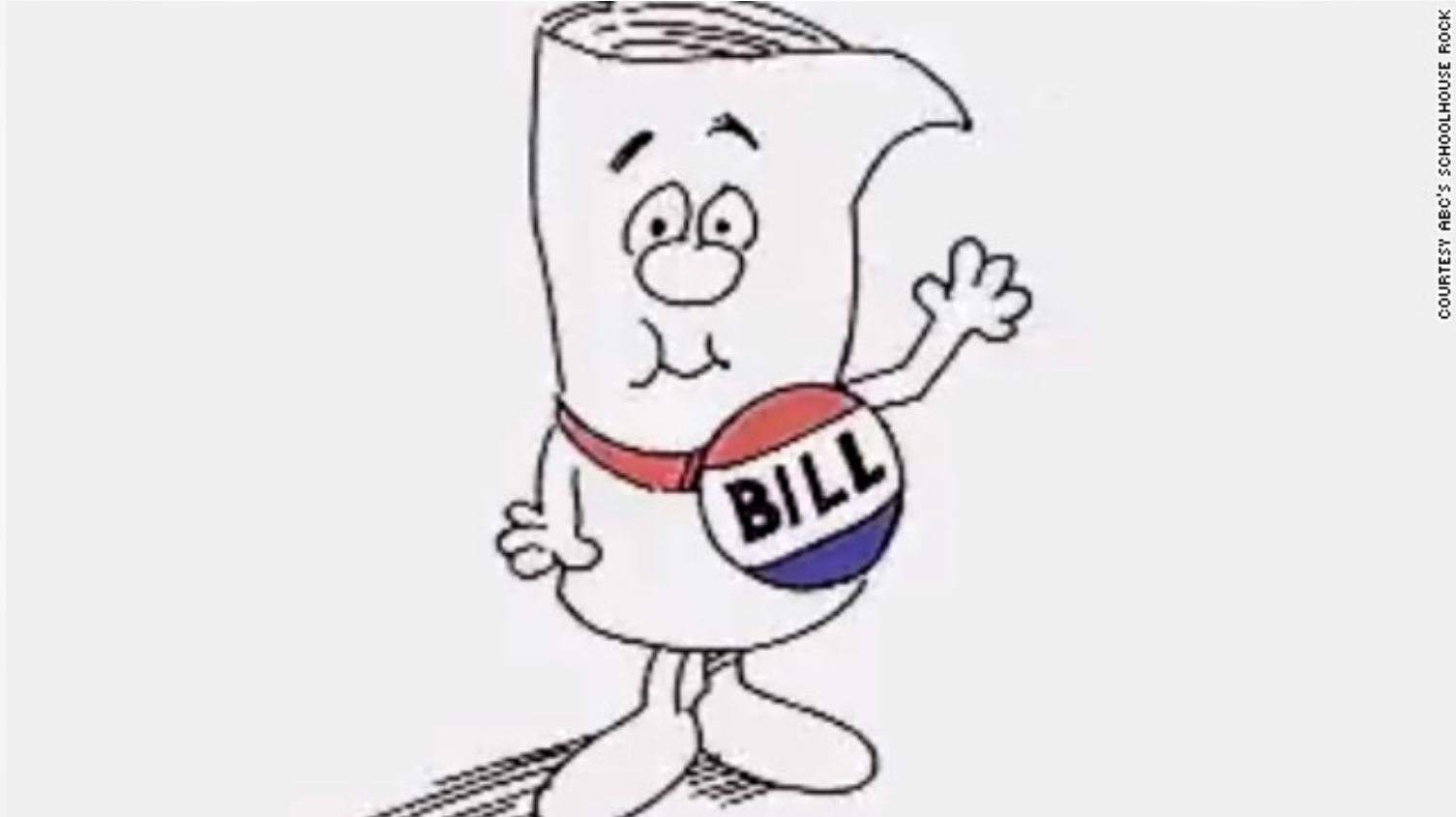
Stormwater vs. Drainage

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In the beginning, it rained...



...and then came legislation!



COURTESY ABC'S SCHOOLHOUSE ROCK

Stormwater Law

- Water pollution is regulated by federal law via the Clean Water Act **33 U.S.C. §1251 et seq.** (1972) which requires the States to regulate surface water discharges.
- Stormwater is defined in the Clean Water Act as the runoff of water from the surface of the land resulting from any form of precipitation.
- The State of Delaware satisfies the requirement to regulate via 7 Del. C. c. 40.

Drainage Law

- Drainage of Lands and Management of Waters; Tax Ditches is 7 Del. C. c. 41.
- Drainage means water management, by drainage areas or watersheds, to safely remove or control both excess, surface flood waters and damaging, excess subsurface waters.
- Road or Highway includes any public way or road or portion thereof and any sewer, drain or drainage system connected therewith and any bridge, culvert, viaduct or other construction or artificial way used in connection therewith and anything which is accessory to any of the same or to the use thereof.

DeIDOT Legal Authority

- Title 17 – Highways, Chapter 1, Subchapter III, Section 131 – General Jurisdiction
- Title 17 – Highways, Chapter 1, Subchapter III, Section 141 – Regulation of Traffic
- Title 17 – Highways, Chapter 1, Subchapter III, Section 146 – Access to State-Maintained Highways
- Title 17 – Highways, Chapter 5, Section 508 – Dedication of New Roads for State Maintenance
- Title 21 – Motor Vehicles, Chapter 41 – Rules of the Road
- Title 9 – Counties

§ 146 Access to state-maintained highways

- The Department is authorized to adopt standards and regulations...to maintain highway right-of-way drainage, to regulate the drainage from property leading into or carried by the highway drainage system...
- No person, firm, corporation or the like shall construct, open, reconstruct, maintain, modify or use any crossing or entrance onto a state-maintained highway, street or road, including any drainage modifications leading into or carried by the highway drainage system, without first having complied with standards and regulations adopted by the Department and having obtained a permit issued by the Department.

§ 508 Dedication of new roads for state maintenance; approval required

- No person, firm or corporation shall construct, or cause to be constructed any new road ... intended to be dedicated by the owner thereof to the public use, ..., unless such road or street is in conformity with plans and specifications approved by the Department and with this section...

Title 17 - Highways

50



WEIRD DRIVING LAWS OF THE UNITED STATES

You know the BASIC TRAFFIC LAWS - Stop at a red light, Obey the speed limit, Don't drink and drive.

But this is America, land of the free and home of the make-it-up-as-you-go-along, so in addition to the standard traffic laws, there are some weird and wacky ones out there that could blow your mind.

EXIT ONLY



Some More Weird Laws

- Tourist states like Nevada, Hawaii, Alaska and California enforce laws against driving too slow
- Cars may not drive on the streets of Redlands, Calif., unless a man with a lantern is walking ahead of it.
- In Georgia, members of the state assembly cannot be ticketed for speeding while assembly is in session.
- It is illegal to molest a car in Clinton, Oklahoma

Many of these weird driving laws will never apply to you, but they exist, and technically, you could be ticketed for breaking them. Before you get into your car, be sure to ask if there are any strange local laws you should know and whether they are actively enforced.

Sources:
<http://chaaburger.com/7949427908>
<http://www.kuppertomothereview.com/Articles/2009/04/01/0111008>
<http://www.ohio.com/42293290>

Standards and Regulations?!?

- DeIDOT's "Development Coordination Manual" is a Regulation.
- DeIDOT's "Road Design Manual" is a Standard.
- "Delaware Manual on Uniform Traffic Control Devices (MUTCD)" is a Regulation.
- "A Policy on Geometric Design of Highways and Streets" is a Standard.
- DeIDOT's "Standard Construction Details" are a Standard.

Development Coordination's Review Obligation

- DeIDOT is a delegated agency of the DNREC Sediment & Stormwater Program obligating DeIDOT to review for Stormwater. However, in the majority of development cases Stormwater components (Sediment & Stormwater and Erosion and Sediment Control reviews) will be performed by the local Conservation District.
- DeIDOT is the ultimate legal authority for Drainage to and from the State maintained system.
- DeIDOT Development Coordination requires Stormwater reports to be submitted to confirm drainage areas and stormwater outlets.

Critical Items for Review

- Complete schedule for pipe, catch basin, flared-end section, curb and underdrain.
- Drainage via closed system design must include spread computations, conduit sizing, hydraulic grade line, outfall stabilization, and Pipe Cover/Angle Worksheet.
- Drainage via an open system design must include swale flow computations with freeboard and swale stabilization calculations.
- A submission must include a Stormwater Management report and Existing and Proposed Drainage Area Map.
- A 20 ft. buffer from Right-of-Way for all internal Stormwater facilities.

Stormwater Review: The Most Commonly Asked Question

- Why does DeIDOT require SWM? What do we review?
 - DeIDOT is **NOT** re-reviewing approved by other Delegated Agencies.
 - DeIDOT **IS** reviewing the drainage areas and outfalls from the SWM to and from the State's road network.
 - ❖ To do so DeIDOT reviews at a minimum;
 - ✓ The SWM Report Narrative
 - ✓ Maps to confirm discharge locations and that frontage / entrance road conveyance is being accounted
 - ✓ SWM Report Summary to confirm post construction discharge flows

The OTHER Commonly Asked Question

- If I am in compliance with the Sediment and Stormwater regulations, aren't I in compliance with DeIDOT's Drainage Requirement?
 - **NO.** Or at least no necessarily.
 - The Sediment and Stormwater regulations allow drainage areas to change as long as they remain in the same HUC-12 area. However, if DeIDOT's drainage system is conveying the water the change in drainage area may cause an increase to the flow (Q) to DeIDOT's drainage facilities.
 - The Sediment and Stormwater regulations also allow routes of compliance such as Standard Plans that do not analyze the flow (Q) downstream of the site which may need to be attenuated to meet DeIDOT's drainage requirements.
 - Stormwater management facilities, are inspected by the Delegated Agency. Whether these facilities exist for S&S or Drainage purposes.

The *Other*-OTHER Commonly Asked Question

- There is enough capacity in DeIDOT's existing drainage system for my increase in drainage to the DeIDOT Right-of-Way. So I'm good, right?!?
 - **NO.**
 - The DeIDOT Stormwater Engineer, Public Works Engineer, and Legal Council have determined that the capacity that may exist within DeIDOT's existing drainage facilities is a resource owned by the State.
 - Regardless of the capacity of the existing system, if an increase to the drainage to the State Right-of-Way is being proposed that increase must be mitigated on-site, OR the existing drainage system must be improved to accommodate the proposed increase in drainage.

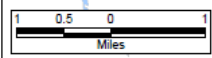
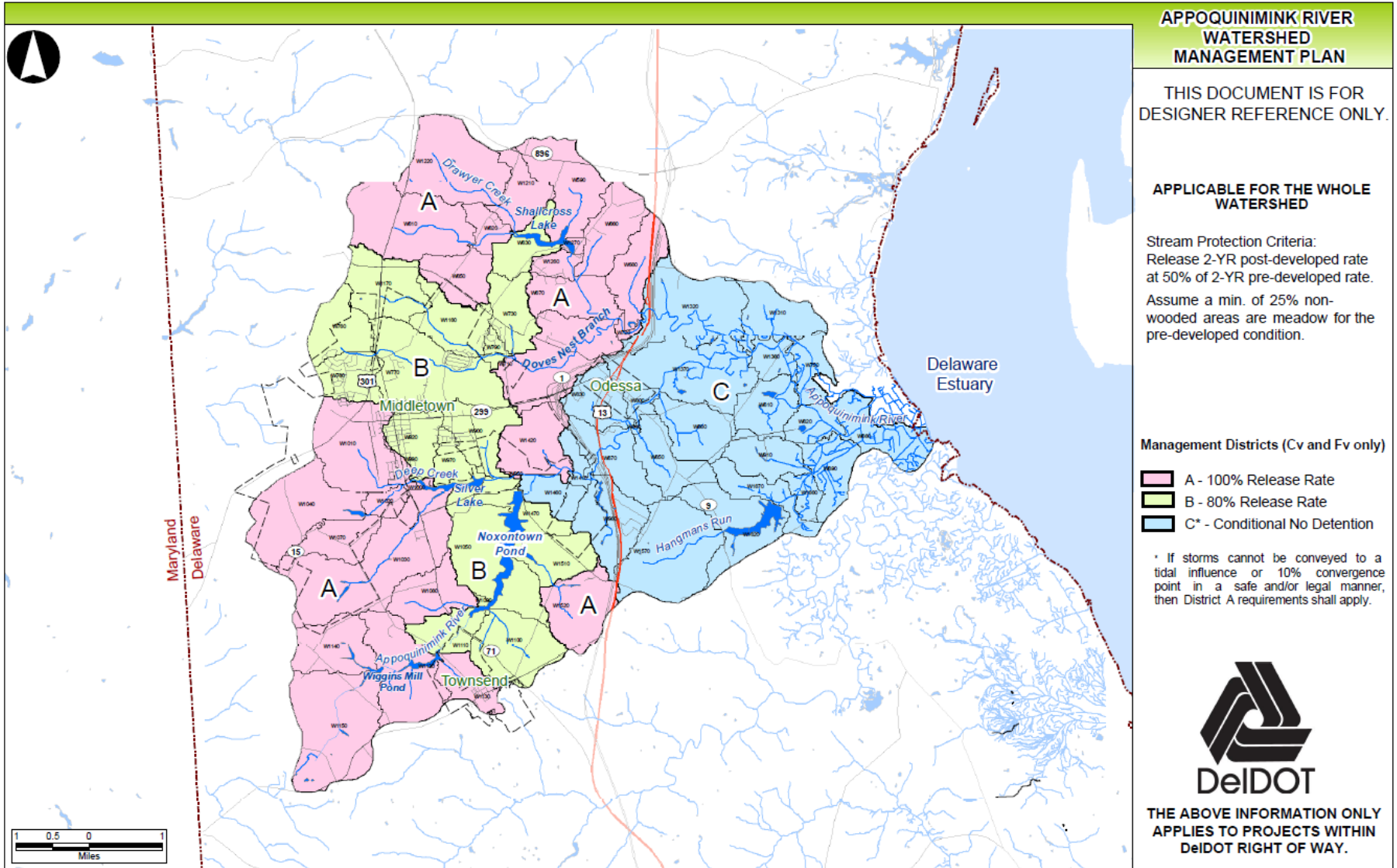
Stormwater vs Drainage: Design Requirements

- Design Storm Requirement Differences:
 - Design storms for Stormwater Management are the RPv (2-year design storm), Cv (10-year design storm) and the Fv (100-year design storm).
 - Design Storms for DeIDOT Drainage requirements vary by Functional Classification of the roadway, whether the conveyance system is open or closed drainage, spread requirements, and even whether or not the drainage system is in a depressed area. See DeIDOT Road Design Manual Chapter 6 Drainage and Stormwater Management for more details.
- Conveyance must be proved via the Pipe Cover Angle Worksheet, Hydraulic Grade Line calculations, and ponding requirements.

Rainfall Update

- DNREC Sediment and Stormwater program would like me to remind everyone that Delaware will be switching to the NOAA rainfall distributions on January 1, 2020.
- This will specifically impact peaks calculated in Hydraulics and Hydrology programs. HydroCAD, for example, will require the design engineer to change their rainfall distributions by going to:
 Settings -> Calculation Settings -> Rainfall
- New Castle and Kent Counties should use NOAA “C”
- Sussex County should use NOAA “D”

Appoquinimink Watershed Update



QUESTIONS?

LASAGNA

