

FLOODPLAIN AND DRAINAGE ADVISORY COMMITTEE

October 27, 2011 Meeting



www.dnrec.delaware.gov/swc/Pages/FloodplainandDrainageCodeWorkGroupCommittee.aspx

This Morning's Meeting

- Introductions
- Recap of previous meeting
- Discussion of Floodplain Terms and Concepts
- Top Floodplain Management Issues in Delaware
- Path Forward

RECAP OF PREVIOUS MEETING (Check website for details)

September 20, 2011 Meeting

- Overview of SB-64
- Recurring drainage and floodplain issues
- Expenditures relating to shortfalls in current standards
- DNREC's role in drainage and floodplain management
- Other organizations' roles in drainage and floodplain management
- Issues summary

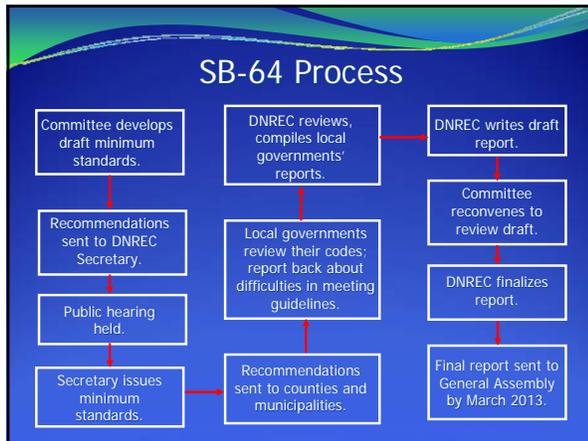


Elements of SB 64

- Authorizes Secretary to develop guidance and minimum standards for improved floodplain management and drainage after consultation with Floodplain and Drainage Advisory Committee. (9 months)
- Requires three county and all municipal governments to review their individual codes and ordinances (with DNREC assistance) to determine consistency and identify hardships and impediments to implementation (next 6 months)
- Mandates DNREC review of comments and preparation of draft and final reports to General Assembly (by March 15, 2013)
- Includes provisions for permit waivers under certain conditions such as life threatening emergencies, regulatory overlaps, etc. (not a Committee charge)

Elements of SB 64

- Drainage standards shall include general requirements and criteria for consideration by local governments.
- Committee will:
 - Consider nationally recognized standards and best practices.
 - Evaluate capacities of local governments to implement standards.
 - Examine adequacy of existing practices associated with property purchasers.
- Opportunity for public comment prior to finalizing standards.



FLOODPLAIN TERMS AND CONCEPTS

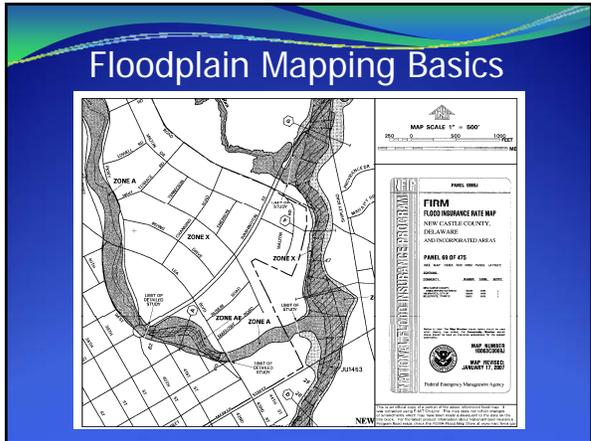
- ### Floodplain vs. Stormwater vs. Drainage
- Floodplain Management
 - Stormwater Management
 - Drainage

- ### Floodplain Definitions
- **National Flood Insurance Program (NFIP)** – Federal program managed by FEMA. 3 components: Flood Insurance, Floodplain Management, and Flood Hazard Mapping.
 - **Flood Insurance Rate Map (FIRM)** – Official map of a community on which the special flood hazard areas and the risk premium zones are delineated.
 - **Community Rating System (CRS)** – Voluntary program for NFIP-participating communities. Goals are to reduce flood losses, to facilitate accurate insurance rating, and to promote the awareness of flood insurance. Provides incentives in the form of premium discounts for communities to go beyond the minimum floodplain management requirements.

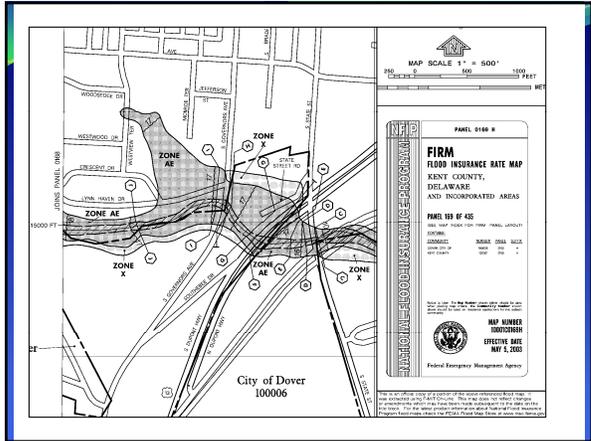
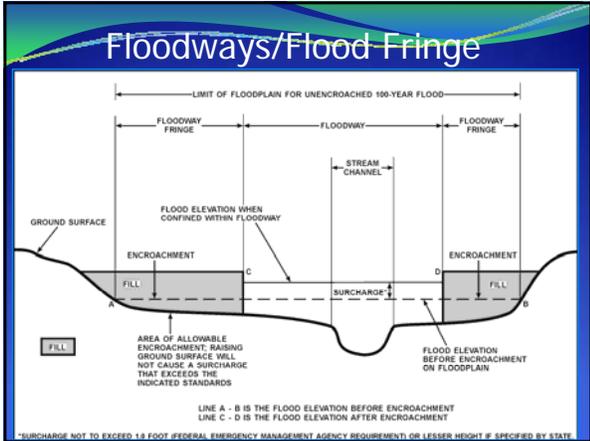
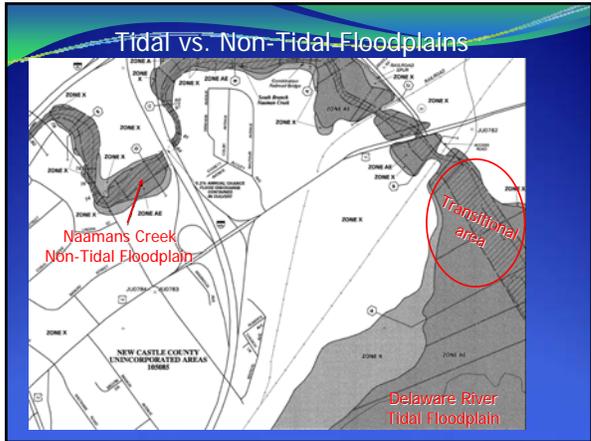
- **Basement** - Any area of the building, including any sunken room or sunken portion of a room, having its floor below ground level (subgrade) on all sides.
- **Zone A** - Areas with a 1% annual chance of flooding. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
- **Zone AE** - The base floodplain where base flood elevations are provided.
- **Zone VE** - Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
- **Zone X (shaded)** - Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods.
- **Zone X (unshaded)** - Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.

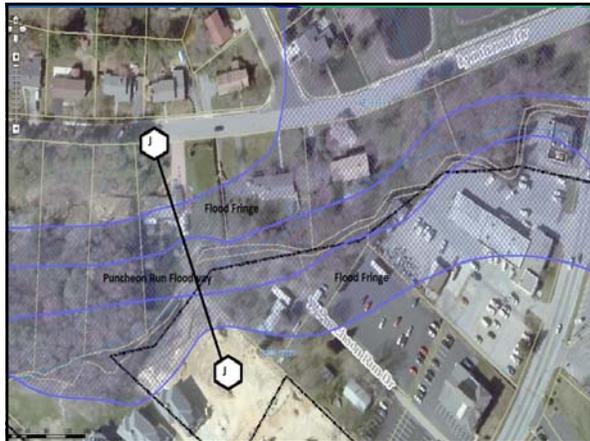
- **Floodplain** - the lowland and relatively flat areas adjoining inland and coastal waters including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year.
- **Base Flood** - the flood which has a one percent chance of being equaled or exceeded in any given year (also known as a 100-year flood). This term is used in the NFIP to indicate the minimum level of flooding to be used by a community in its floodplain management regulations.
- **Pre-FIRM** - Pre-FIRM buildings are those built before the effective date of the first Flood Insurance Rate Map (FIRM) for a community. Can be insured using "subsidized" rates.
- **Post-FIRM** - Post-FIRM buildings are new construction and those built after the effective date of the first Flood Insurance Rate Map (FIRM) for a community. Insurance rates for Post-FIRM buildings are dependent on the elevation of the lowest floor in relation to the Base Flood Elevation (BFE).

- Regulatory Floodway** – the area regulated by Federal, state or local requirements to provide for the discharge of the base flood so the cumulative increase in water surface elevation is no more than a designated amount (not to exceed one foot as set by the NFIP).
- Freeboard** – a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. Freeboard is not required by NFIP standards, but communities are encouraged to adopt at least a one-foot freeboard. Freeboard results in significantly lower flood insurance rates due to lower flood risk.



- ### Tidal and non-tidal floodplains
- Tidal Floodplains** are those areas where the 1% annual chance flood height is due primarily to coastal storm surge, although rainfall runoff may influence flood heights in transitional areas.
 - Non-Tidal Floodplains** are those areas where the 1% annual chance flood height is due primarily to water running off the land, although tidal influence may affect flood heights in transitional areas.





Residual risk

- Margin of error in mapping
- Sea level rise
(Based on tide gauge data, 12 inches in past 100 -years)
- Watershed changes
- Storms which exceed 100-year return frequency

Flood Insurance Basics

- **Eligibility** - The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding.
- **Criteria** - Homes and businesses with mortgages from federally regulated or insured lenders in high-risk flood areas are required to have flood insurance. While flood insurance is not federally required if you live in a moderate-to-low risk flood area, it is still available and strongly recommended.
- **What affects rates** - Year of building construction; Building occupancy; Number of floors; Location of contents; Flood zone; Lowest floor elevation in relation to base flood elevation; Deductible chosen/amount of coverage

Committee Questions

Any questions about the floodplain terms and concepts?

TOP FLOODPLAIN MANAGEMENT ISSUES IN DELAWARE

Common Themes

- Lack of accurate flood data.
- Failure to communicate flood risk.
- Lack of understanding the consequences of building and/or development decisions.
- Lack of clarity and specificity in regulations.

Issue #1

Development in Areas Without Sufficient Mapping and Flood Data

Development in Areas Without Sufficient Mapping and Flood Data

- Floodplains on site plans differ from mapped floodplains.
- Development based on inadequate/inaccurate data.
- Property owners required to pay for survey/engineer to individually map risk.
- Subgrade crawl spaces create moisture risk and very expensive flood insurance.

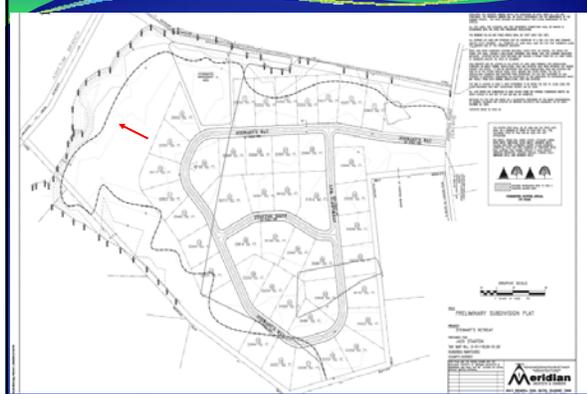
60.3 Zone A regulations

- For all new development greater than 50 lots or 5 acres, whichever is the lesser, include with such proposals base flood elevation data.

➤ Lacks specificity and clarity



Site plan floodplain doesn't match regulatory map



Major Subdivisions are being built in floodplains without accurate floodplain delineations, accurate topography, or base flood elevations determined.



9 Individual property owners are forced to pay for flood study first to get a building permit, and again to correct inaccurate map when flood insurance proves to be unaffordable.



Completion of a detailed flood study proves that the previous floodplain area was inaccurate. Cost of mis-rated flood insurance and individual surveys greatly exceeded the up-front flood study cost. Property owners built homes without the benefit of accurate flood elevation data.

This is an inefficient way to develop flood data.

- \$4000 per mile for Sussex County studies.
- Property owner cost for map corrections in areas without detailed flood studies exceeds \$1000.
- Flood insurance consequences also typically exceed \$1000 per year.

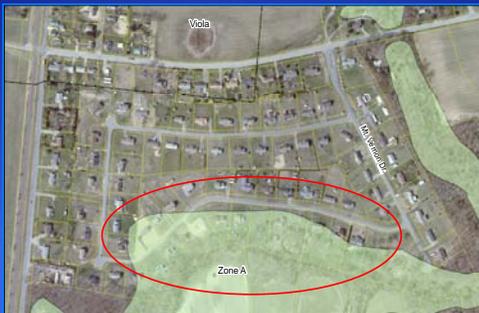
Providing flood study in conjunction with development proposals



Benefits:

- More accurate depiction of flood risk.
- Prevents property owners survey-engineering cost to assess flood risk themselves.
- Lowers the cost of flood insurance or prevents the need entirely.

Numerous houses built in the floodplain without an accurate flood study. Many property owners in this neighborhood have required assistance from DNREC and Kent County, and had to hire engineers and surveyors for floodplain assistance.



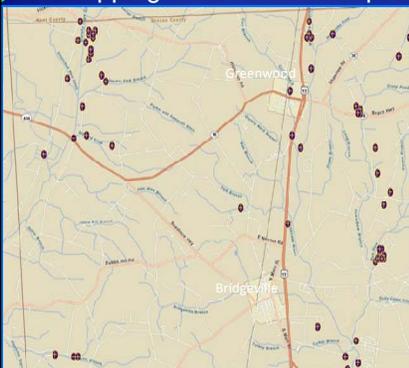
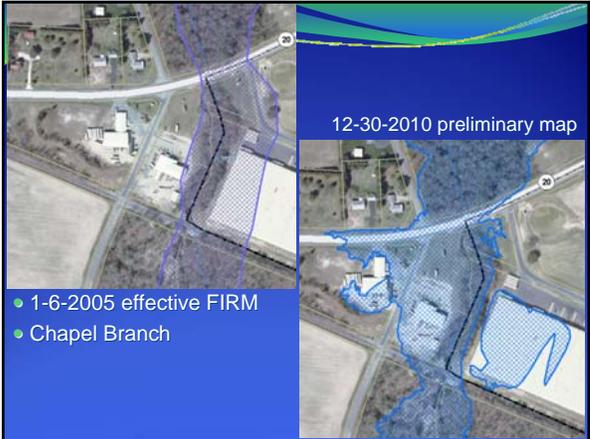
COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION						
COMMUNITY	KENT COUNTY, DELAWARE (Unincorporated Areas)	Lot 14, Mount Vernon Estates Subdivision, as described in Deed, Document No 011154, recorded in Deed 536, Pages 199 through 201, Issd on May 1, 2003, in the Recorder of Deeds' Office, Kent County, Delaware						
	COMMUNITY NO.: 100001							
	NUMBER: 100910243H							
AFFECTED MAP PANEL	NAME: KENT COUNTY, DELAWARE AND INCORPORATED AREAS							
	DATE: 05/09/2003							
FLOODING SOURCE: UNNAMED FLOODING SOURCE		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 38.538, -75.545 SOURCE OF LAT & LONG: PRECISION MAPPING STREETS 6.0 DATUM: NAD 83						
DETERMINATION								
LOT	BLOCK/SECTION	SUBDIVISION	STREET	OUTCOME (WHAT IS NOT REMOVED FROM THE SFHA)	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NGVD 29)	LOWEST ADJACENT GRADE ELEVATION (NGVD 29)	LOWEST LOT ELEVATION (NGVD 29)
14	---	Mount Vernon Estates	165 Princess Ann Avenue	Residential Structure	A	48.6 feet	46.3 feet	---

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any year.

Providing accurate flood risk data and mapping with initial development plan

Benefits:

- Over 50 owner-initiated floodplain corrections to bad maps in one part of Sussex County
- Each property owner spent \$1000+ on survey and \$1000+/year in flood insurance
- Potential saving of about \$10,000 per mile of stream with improved mapping

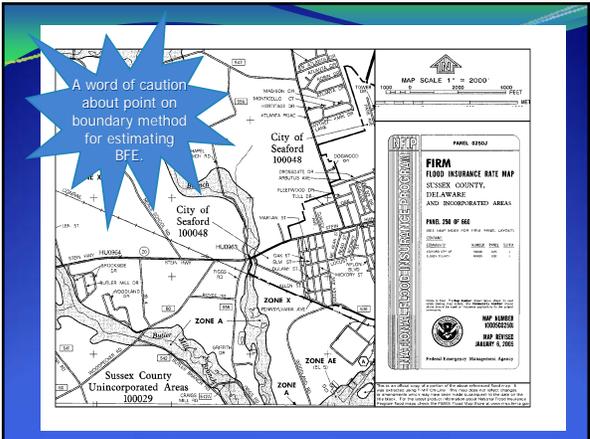



12-30-2010 preliminary map

- 1-6-2005 effective FIRM
- Chapel Branch

Relevant Standard

- Point on the Boundary Method –
 - For any development and/or use of land . . . where other acceptable information is not available, the base flood elevation shall be determined by using the elevation of a point on the boundary of the identified floodplain which is nearest the proposed construction.
 - Accepted by many communities.



A word of caution about point on boundary method for estimating BFE.



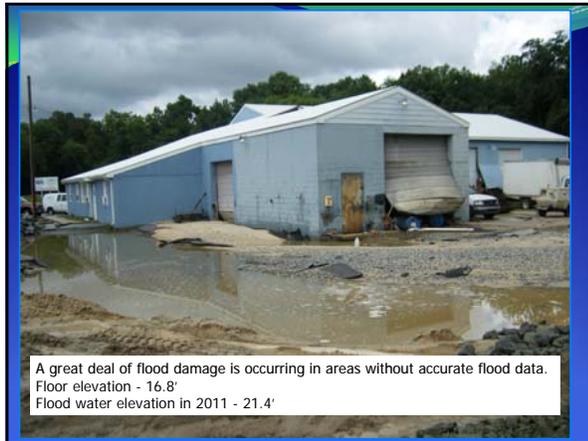
POB = 14

POB = 20

A word of caution about point on boundary method for estimating BFE.



BFE = 18 following detailed study.
POB BFE = 14.
Both buildings have flooded 3 times since 2001.



Best Practices

- Establish a standard for flood studies prior to the subdividing of lots.
 - This takes a tremendous amount of burden off subsequent homeowners.
- Site plans should show results of flood study with FEMA map revised to show accurate floodplain.
- Disclose flood risk to prospective buyers by prohibiting the submittal of site plans with floodplain depictions other than official FEMA maps.
- These standards are mandatory for development proposals which exceed 5 acres or 50 lots, but are poorly defined as written.

Best Practices

StreamStats
 Delaware
 The report below documents the regression equations available in StreamStats for Delaware. The methods used to develop the equations measure the base characteristics used in the equations, reference to GIS data layers used in the analysis, and the errors associated with estimates obtained from the equations. Users should familiarize themselves with the report before using StreamStats to obtain estimates for un-gauged sites.

Interactive Map
 StreamStats for Delaware was developed in cooperation with the Delaware Geological Survey and the Delaware Department of Transportation.

Stream Flow (CFS)	Peak Flood (CFS)	Peak Flood (Feet)
100	100	10.0
200	200	10.0
300	300	10.0
400	400	10.0
500	500	10.0
600	600	10.0
700	700	10.0
800	800	10.0
900	900	10.0
1000	1000	10.0

Flood risk in-unmapped flood prone areas

Property Location

**FIRM FLOOD RESURANCE RATE MAP
 NEW CASTLE COUNTY,
 DELAWARE
 AND INCORPORATED AREAS**

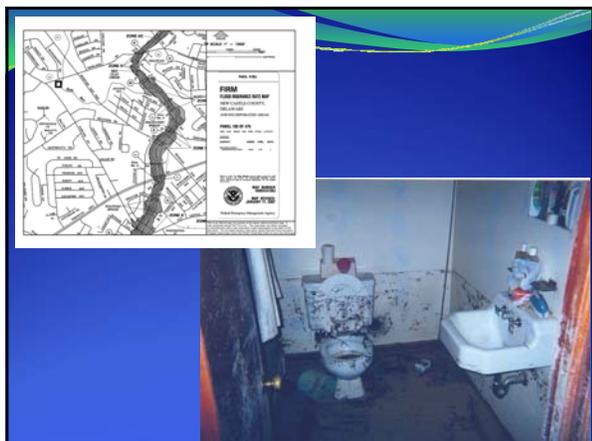
PANEL SIZE OF 475

**MAP NUMBER
 1500000000**

**MAP REVISED
 JANUARY 17, 2002**

Federal Emergency Management Agency

Flooding to house on a stream which has not been mapped by FEMA. This house is not be repairable due to extensive damage during Hurricane Irene.



Best Practices - New Castle County Req.

- Lines and Grades (L&G) plan is required per NCCDC 12.03.006 for structures larger than 480 square feet.
- The L&G plan must identify the non-delineated floodplain.
- The non-delineated floodplain is defined as a 100-year flood line associated with a USGS blue line stream for which FEMA has not delineated a floodplain.
- New construction or substantial improvement requires structures to elevate 18 inches above 100-year flood level per 40.10.316.

Committee Questions

- Any questions on Issue # 1 - Development in areas without sufficient mapping?

Issue #2

Inadequate Building Standards

Inadequate Building Standards

- Filling and encroachment are occurring in and out of floodplains which creates adverse flood and drainage impacts on neighbors.
- Many structures continue to be built without any freeboard.
- Many structures continue to be built without flood vents – expensive flood insurance.
- Subgrade crawl spaces create moisture risk and very expensive flood insurance.

A great deal of new construction is designed to minimum standards which does not provide acceptable levels of flood risk.

- First floor elevated just to base flood elevation levels with no freeboard.
- Below grade crawl spaces and basements accumulate water following floods and make flood insurance prohibitively expensive.

Improved Floodplain Regulations and Enforcement



Foundation collapse of improperly elevated house \$60,000 to repair.

Adjacent house built 1.5 feet above flood level undamaged.

- Benefits:**
- Notify potential buyers about flood risk and insurance requirements.
 - Prevent flood damage which is not covered by homeowners insurance limited coverage by flood insurance.
 - Reduce the need for expensive flood abatement projects.

Many structures are damaged to nearly 40% of value once the water reaches the first floor and can be totaled by less than 2 feet of water above the first floor.

Structure Type

Percent damage by flood depth below/above first floor

Type	-2	-1	0	1	2	3	4	5	6	7	8	9	10
1 Story w/o Basement	0	0	9	14	22	27	29	30	40	43	44	45	46
2 Story w/o Basement	0	0	5	9	13	18	20	22	24	26	29	33	38
Split Level w/o Basement	0	0	3	9	13	25	27	28	35	34	41	43	45
1 or 2 Story w/1a Basement	4	8	11	15	20	23	28	33	38	44	49	51	53
Split Level w/1a Basement	3	5	6	16	19	22	27	32	35	36	44	48	50
Mobile Home	0	0	8	44	63	73	78	80	81	82	82	82	82
Other	0	0	0	0	0	0	0	0	0	0	0	0	0

Actual depth-damage function for a medical services building in Stanton, Delaware built in 1991 with first floor near the 100-year flood elevation.

CONTENTS DEPTH-DAMAGE FUNCTION (DDF)

Flood Depth (feet)	Building DDF (%)	ESTIMATED CONTENTS DAMAGE - BEFORE		
		Default DDF (%)	User-Entered DDF (%)	Contents DDF (\$)
-2	0	0.0		\$0
-1	0	0.0		\$0
0	5	7.5		\$37,500
1	9	13.5		\$67,500
2	13	19.5		\$97,500
3	18	27.0		\$135,000
4	20	30.0		\$150,000
5	22	33.0		\$165,000
6	24	36.0		\$180,000
7	26	39.0		\$195,000
8	29	43.5		\$217,500
>8	33	49.5		\$247,500

Filling in floodplains should be designed to avoid impacts to adjacent properties.

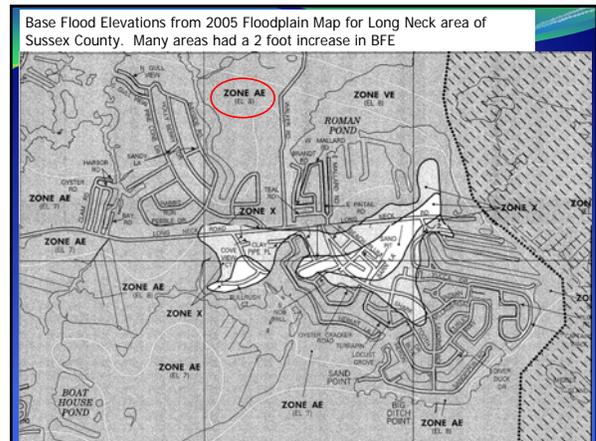
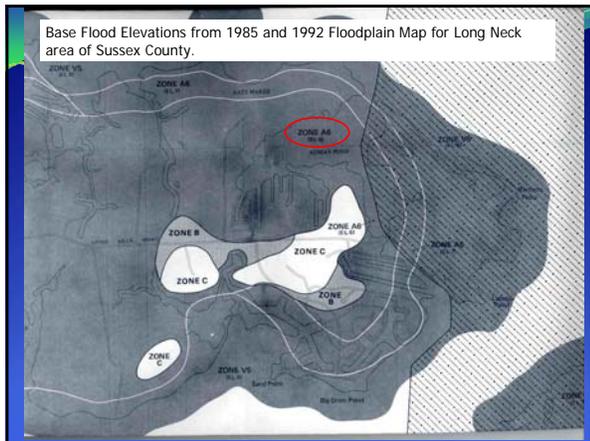


Establish standards to ensure that development activities do not exacerbate flooding and drainage problems.



Structures can be elevated 1-2 feet above the base flood elevation for very little additional construction cost. Flood insurance savings will quickly pay for this higher standard. In many cases, structures with first floor elevated to the base flood elevation have sustained severe damage.





In February 1998, numerous homes and mobile homes built to the 1985 base flood elevation of +6 were flooded. Indian River Bay reached a flood height of +6.6 - +7.0 in 1998 leading many homeowners to request federal disaster assistance to lift post-FIRM buildings that were less than 20 years old.

Sample Insurance Costs Based on Lowest Floor

- 2 feet above BFE = \$550 per year
- At BFE = \$1,850 per year
- 1 foot below BFE = \$4,700 per year

➤ Based on \$250,000 in building coverage only.

Relevant Standard

- Hydrostatic Venting

Require adequate hydrostatic venting within one foot of grade. Lack of proper flood vents subjects foundation walls to hydrostatic pressure and greatly increases the cost of flood insurance.

Relevant Standard

- Below Grade Crawl Space

NFIP defines a "basement" as any enclosed area which has its floor below grade on all sides. Below grade crawl space construction results in a basement which is non-compliant and more expensive to insure.

Relevant Standard

- Development outside mapped floodplains
 - Few if any standards exist for development immediately adjacent to the floodplain or outside mapped floodplains.
 - 30% of flood damages nationally occur to structures which are not in a FEMA-mapped floodplain.



House with proposed basement under construction just outside the floodplain - filled with groundwater.

Best Practices

- Require at least 1- 1.5 ft. of freeboard.
- Prohibit below grade basements and crawl spaces in floodplain or adjacent to floodplain.
- Require adequate venting systems where applicable.
- Include freeboard in areas adjacent to floodplain.

Committee Questions

Any questions on Issue #2 - Building Standards?

Issue #3

Inconsistent and/or Minimum Code Provisions

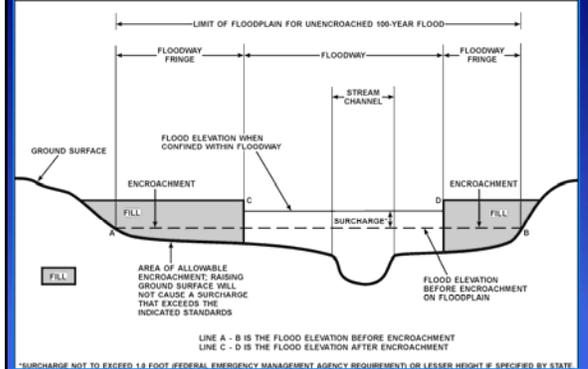
Inconsistent and/or minimum code provisions

- A great deal of new construction is designed to minimum standards which do not provide acceptable levels of flood risk.
 - First floor elevated just to base flood elevation levels with no freeboard.
 - Below grade crawl spaces and basements accumulate water following floods and make flood insurance prohibitively expensive.

Inconsistent and/or minimum code provisions (continued)

- Lack of first floor freeboard while still permitting flood fringe encroachment.
 - This will result in up to one foot base flood depths above the first floor without accounting for watershed changes or modeling error.

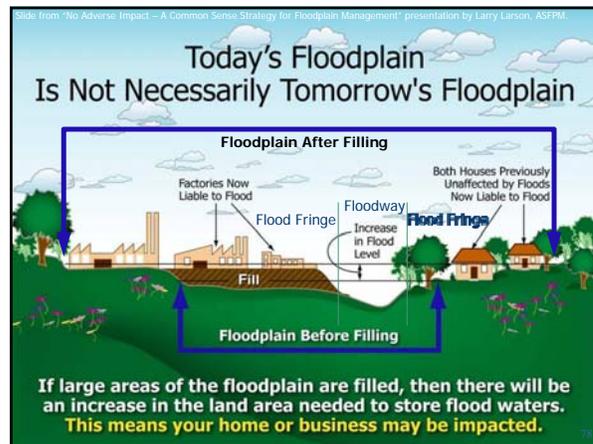
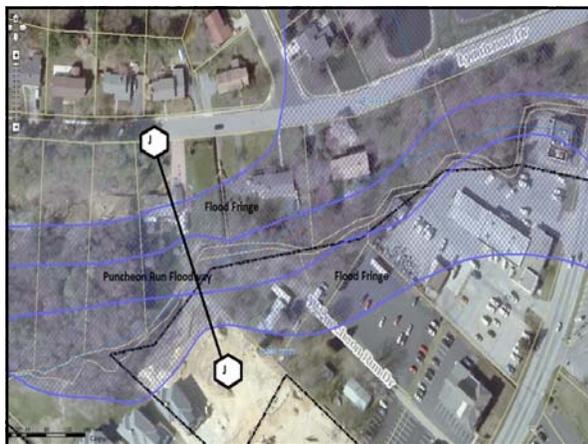
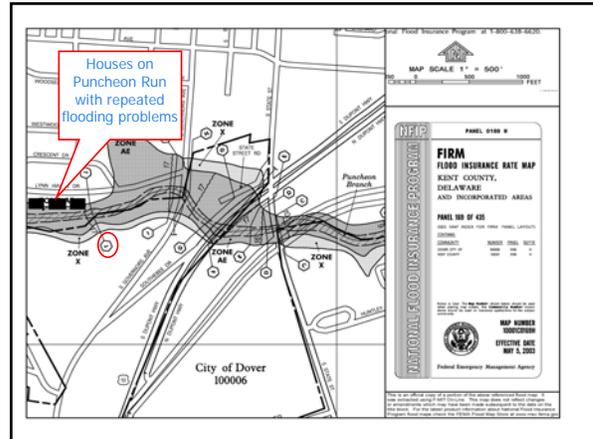
Floodways/Flood fringe

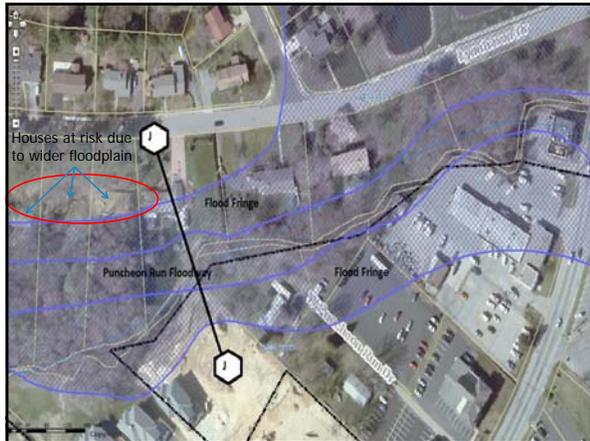


CROSS SECTION	DISTANCE'	WIDTH (FEET)	FLOODWAY		BASE FLOOD WATER SURFACE ELEVATION (FEET MGD)			
			SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Puncheon Branch	0	178	1,233	0.8	8.8	7.8'	7.8	0.0
A	1,360	65	385	2.8	8.8	8.0'	8.1	0.1
B	2,620	38	157	7.5	8.8	8.8	10.1	0.3
C	2,620	38	365	3.0	16.3	16.3	16.3	0.0
D	2,620	101	389	2.8	16.8	16.8	16.8	0.0
E	3,580	148	734	1.5	18.9	18.9	17.1	0.5
F	3,226	45	331	3.3	18.7	18.7	17.2	0.5
G	3,545	69	454	2.3	18.9	18.9	17.9	1.0
H	3,740	75	447	2.4	17.0	17.0	18.0	0.8
I	4,540	91	487	2.2	17.2	17.2	18.2	1.0
J	5,740	98	227	4.8	18.8	18.8	19.4	0.6
K	7,190	40	225	4.9	22.8	22.8	23.7	0.9
L	7,370	17	146	7.6	24.1	24.1	25.1	1.0
M	8,420	204	1,476	0.4	28.0	28.0	27.6	1.0
N	8,860	238	1,378	0.5	28.7	28.7	27.7	1.0
O	10,930	62	275	2.4	27.0	27.0	28.0	1.0

*Feet above confluence with St. James River
 †Elevation computed without consideration of backwater effects from Delaware Bay

FEDERAL EMERGENCY MANAGEMENT AGENCY
 KENT COUNTY, DE AND INCORPORATED AREAS
 FLOODWAY DATA
 PUNCHEON BRANCH





Relevant Standards

44 CFR 60.3 Floodway regulations

(d) When the Federal Insurance Administrator has provided a notice of final base flood elevations ... and has provided data from which the community shall designate its regulatory floodway, the community shall:

(2) Select and adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any point;

(3) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;

Improved Floodplain Regulations and Enforcement



Benefits:

- Lowers the cost of flood insurance.
- Avoiding NFIP probation ensures continued insurance availability.
- Reduce flood damage and expensive drainage solutions.

- Filling land to remove it from the floodplain eliminates all floodplain management provisions for current and future development.

Removal of land by filling it to 0.1 feet above the base flood elevation removes all basic NFIP flood protection requirements.

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	SUSSEX COUNTY, DELAWARE (Unincorporated Areas)	Lot 215, Americana Bayside, Phase 4, as shown on the Plat, recorded in Book 105, Page 127; Lots 501 through 526, Americana Bayside, Phase 11, as shown on the Plat, recorded in Book 157, Page 55. All Plats Filed in the Office of the Recorder of Deeds, Sussex County, Delaware
AFFECTED MAP PANEL	COMMUNITY NO.: 100029	
	NUMBER: 1005C0655J	
	DATE: 1/6/2005	
FLOODING SOURCE: ASSAWOMAN BAY; ROY CREEK		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 38.456 -76.116 SOURCE OF LAT & LONG: E8H FEMA 06C0006/GOOGLE MAPS DATUM: NAD 83

LOT	BLOCK/SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
501	--	Americana Bayside, Phase 11	Wild Rose Circle	Property	X (shaded)	5.2 feet	--	5.3 feet

LOT	BLOCK/SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
515A	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.0 feet
515B	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.8 feet
515A	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.8 feet
516B	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
517A	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
517B	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.5 feet
518A	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
518B	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
519A	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.0 feet
519B	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
520	--	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.2 feet

Or even filling it to 0.0 feet above the base flood elevation. In this community several dozen lots were completely removed, all with just a few inches of freeboard.



All of these lots being removed by filling to a few tenths of a foot above BFE are located in the tidal floodplain of Assawoman Bay. Sea level rise is occurring and will return this land to the floodplain with structures built under no floodplain provisions.

Relevant Standard

- Local regulations which fail to adopt the revised floodplain maps as FEMA produces them. This has led to situations where community counsel has advised that old maps are still the basis for building code regulations.
 - This would be considered a violation of NFIP regulations.

Relevant Standard

- Phrases such as: “no land below the level of the 100-year flood may be developed unless . . .” have the effect of removing parts of the floodplain from regulation.
 - This is especially problematic in V-Zones where floodplain maps intentionally include land above the 100 year flood level because erosion hazards exist.
 - This would be considered a violation of NFIP regulations.

Relevant Standard

- Local regulations which permit manufactured homes to be on a 36” piers where base flood elevations are more than 3 feet above grade to prevent MH’s from having tall foundations or from clashing with adjacent pre-FIRM MH’s in the same park.
 - NFIP regulations, and Sussex County Zoning used to allow this. In 1998, post-FIRM manufactured homes on 36” piers were flooded in Long Neck, and requested federal assistance to elevate to a foot above base flood elevation.

Standards in surrounding states

- **New Jersey** – does have state floodplain regulations. The state requires 1 foot of freeboard above the NJ Flood Hazard Area Design Flood (100 year BFE + 25% of flow).
- **Virginia** – does not have state floodplain management regulations, but does have a Unified Statewide Building Code (USBC). This requires 1 foot of freeboard in an established “Coastal A Zone” where there are 1.5 to 3.0 foot waves.

Standards in surrounding states

- **Maryland** – does have state regulations for non-tidal floodplains. They require 1 foot of freeboard and recommend 2 feet.

Best Practices

- Prohibit all floodplain fill which would increase flood levels.
- Adopt freeboard for all construction in the floodplain.

Committee Questions

Any questions on Issue #3 - Inconsistent and/or minimum code provisions?